```
Last login: Fri Apr 12 17:26:52 on ttys000
source ~/.zprofile
```

mariapalafox@x86_64-apple-darwin13 ~ % source ~/.zprofile

(base) mariapalafox@ 7:36PM ~ % cd Desktop

(base) mariapalafox@ 7:46PM Desktop % ssh palafm01@minerva.hpc.mssm.edu

From April 30st, 2020, Minerva is accessbile only via VPN.

To request VPN:

https://labs.icahn.mssm.edu/minervalab/internal-users-minerva-action-required-external-login-nodes-being-removed-on-april-15/

New Minerva website:

https://labs.icahn.mssm.edu/minervalab/

Please input your password and two factor token:

(palafm01@minerva.hpc.mssm.edu) Password:

Last failed login: Fri Apr 12 18:37:09 EDT 2024 from 10.125.146.225 on ssh:notty

There were 13 failed login attempts since the last successful login.

Run "Minerva_help" for useful Minerva commands and websites

Minerya Documentation at https://labs.icahn.mssm.edu/mineryalab/documentation/

Globus guide at https://labs.icahn.mssm.edu/minervalab/documentation/file-transfer-globus/

Minerva training slides at https://labs.icahn.mssm.edu/minervalab/resources/the-minerva-user-group-and-training-classes/

Data Ark Data Sets available on Minerva at https://labs.icahn.mssm.edu/minervalab/resources/data-ark/

GPU guide at https://labs.icahn.mssm.edu/minervalab/documentation/gpgpu/

====*****If you have NIH-funded projects, you MUST include the following acknowledgement in all your publications*****====

This work was supported in part through the computational and data resources and staff expertise provided by Scientific Computing and Data at the Ica hn School of Medicine at Mount Sinai and supported by the Clinical and Translational Science Awards (CTSA) grant UL1TR004419 from the National Center for Advancing Translational Sciences. Research reported in this publication was also supported by the Office of Research Infrastructure of the Natio nal Institutes of Health under award number \$100D026880 and \$100D030463. The content is solely the responsibility of the authors and does not necessa rily represent the official views of the National Institutes of Health.

====*****If you DONOT have NIH-funded projects, you MUST include the following acknowledgement in all your publications*****===

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==!!!!!!!!SEVEN Minerva SPRING TRAINING SESSIONS!!!!!!!!!=====

FULL details at https://labs.icahn.mssm.edu/minervalab/minerva-hpc-information-and-training-sessions-2/

Session 2: Load Sharing Facility (LSF) Job Scheduler - Wednesday, April 3, 1 pm-2 pm

Location: Icahn School of Medicine building (1425 Madison Ave) Room 14-84 (14th FL)

Zoom Registration at https://mssm.zoom.us/webinar/register/WN_lVp2A5SvRV6iL_1u4PeCTA

GPU/AT

Session 3. Introduction to GPU/AI resources on Minerva - Wednesday, April 10, 1 pm -2 pm

Session 4. 5 Ways to Get Started with GPUs - Friday, April 12, 1 pm-2 pm

Session 5: Accelerated General Data Science in Medicine with RAPIDS, CuPy and Numba - Wednesday, April 17, 1 pm-2 pm

Session 7: How to Accelerate Genome Analysis Toolkit (GATK) by using Parabricks - Wednesday, May 1, 1 pm-2 pm

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Data Ark

Session 6: Introduction to Data Ark - Mount Sinai Data Commons - Wednesday, April 24, 1 pm-2 pm

Location: Icahn School of Medicine building (1425 Madison Ave) Room L3-36 (3rd FL)

Zoom Registration at https://mssm.zoom.us/webinar/register/WN_Mblda2FySuKpVbvhIg7ArQ

=== Send tickets to hpchelp@hpc.mssm.edu ===

!!!!!WE DO NOT BACKUP USER FILES

!!!!PLEASE ARCHIVE/BACKUP YOUR IMPORTANT FILES

Disk auotas for user palafm01 (uid 26222):

Filesystem space quota limit grace files quota limit grace

40K 19456M 20480M nfs01-ib0:/hpc

Last report update 2024-04-15-13:34

Project(arion) Files User Usaae arion_projects_vascbrain palafm01 0 1 palafm01 0 24 root

[palafm01@li03c03 ~]\$ pwed -bash: pwed: command not found

[palafm01@li03c03 ~]\$ pwd

/hpc/users/palafm01
[palafm01@li03c03 ~]\$ ls
[palafm01@li03c03 ~]\$ ls

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[palafm01@li03c03	~]\$ cd
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abida02	choik06	giottb01	konerk01	molzaa01	rhoads01	torrem68
abraha12	choiy07	girdhk01	kongy02	monach01	richaa21	tostag01
adamsa23	chos14	gleasa01	konovk01	moncam01	richtf01	townsk05
adlerm14	chowda26	gleasc04	kornbi01	mongai01	riinan01	tranm05
admodifiers	chowed01		koromm03	montek06	riraks01	tristm01
		glennm10				
adsp	chrisa21	gnjats01	kosowj01	moolhl01	rissop01	troncl03
afzalr01	chrisb05	goateomics	kosoyr01	morgap04	riverm99	tsanka01
agarwa18	chuk15	gobbut01	koutrm02	morges01	rna	tsankova_admin
agarwp02	chul08	gohels01	kowalr03	morril11	rocanm03	tsetsf01
agawua01	chunga08	golesn01	kozike01	mosaic	rocheg01	turhab01
aggara01	chuny02	gomesp04	kozlea01	moskeo01	rodrij188	turnej11
aggarv01	churcn01	gonzaa51	kreka01	mscicadmin	rodril71	turroe01
aggarv02	cillea01	gonzae34	krishr12	msm_admin	rodrin15	tuz01
aguirk04	cimenc01	gorinm01	kritze01	muenzk01	rodriy04	tylers01
ahmadr02	civlja01	gottas01	kroneb01	mukhek03	rosemf01	tzavan01
ahmedn29	clarkj25	gownip01	krugea01	mukhek05	rosenb16	ukbiobankadmin
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aiskom01	clarku01	gp-cryoadmin	ksiezm01	mukunp01	rosene22	ulukag01
ajanab03	clemej05	greaty01	kubler01	muldel01	rosenj57	vaida02
akaluy01	coccie01	greend41	kudrid01	mulleb01	rosenm36	valdeb02
akinka05	cogaadmin	greenk27	kulkak01	mullin04	rothsj06	valena17
alabbs01	cohene20	greenr49	kumara82	muncha01	roudkv01	valend08
alburb02	cohenl07	•	kunoa01		roussoslab	vanbah01
		grimee01		nadkag01		
alcalc01	cohenp05	grosse08	kurowa01	nadkarnilab-admin	roussp01	vandea10
alcane07	colbes01	guckhp01	kwasia01	nadukr01	rowanb01	vanooj01
alleve01	colemc07	guindm01	kyriad02	naira12	rsheu01	vanvlt02
altaiz01	colemc08	guisad01	lagana01	naitot01	ruand01	vanvok01
althok01	colonj34	gulamf01	lahoty01	narasa01	rubena05	vargac10
altmag01	comelp01	gumusz01	lakhac01	nashij01	ruchnd01	vartan01
alzaha01	congx01	guor01	lallim01	naskat01	ruff01	vasudv02
aminih01	cookea02	guow03	lamare01	nativm02	ruizom01	vazar01
amreeb01	correj08	guptam18	lambel02	neala03	ruthek04	vemurk01
andres12	cotea02	gurums01	lambet02	neffr01	ryderj03	venkas08
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ankerj01	craryj01	gutiei03	lamw05	neue01	rykund01	ventun01
anyfam01	crokem02	gutien07	landii03	neukap01	sachsd01	verbam01
arakea01	cryosparctest-admin	gux01	larosf01	nga14	saddih01	veremb01
archiving_bings	cryosparc-user	ayasia01	lashbn01	ngaik01	saffem03	vhatkt01
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argmac01 arista03	cullis01 cummid06	haass02 habibj02	laube02 layerd01	ngj05 nguyec05	sakhua01 salasl04	viegac01 villaa06
argmac01 arista03 arivan01	cullis01 cummid06 cunnia06	haass02 habibj02 hackmn01	laube02 layerd01 laynet03	ngj05 nguyec05 nguyed06	sakhua01 salasl04 salsan01	viegac01 villaa06 vinsod01
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argmac01 arista03 arivan01	cullis01 cummid06 cunnia06	haass02 habibj02 hackmn01	laube02 layerd01 laynet03	ngj05 nguyec05 nguyed06	sakhua01 salasl04 salsan01	viegac01 villaa06 vinsod01
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argmac01 arista03 arivan01 arooja01 arrasj01 asgars03	cullis01 cummid06 cunnia06 daid02 daij06 daiy07	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47	sakhua01 salasl04 salsan01 sanchm63 sanch003 sangz01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50	sakhua01 salasl04 salsan01 sanchm63 sancho03 sangz01 sanies01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57	sakhua01 salasl04 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01
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argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 danzn01 dasa06	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 leel26	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01	sakhua01 salas104 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13
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argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzet01 danzet01 danzet01 dasa06 dasild04 daskeb01 dealms01 defeln01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 leel26 leer50 lees111 lees117 leew13	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wang120 wangm05
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 danzio01 dasa06 dasild04 daskeb01 deelms01 defeln01 defrej02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01 harnea01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 leel26 leer50 lees111 lees117 leew13 leew14	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wang120 wangm05 wangm08
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 babbon01 bangs02	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 danzn01 dasa06 dasild04 daskeb01 declms01 defeln01 defrej02 degrae01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 haren01 harnea01 harsod01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02	sakhua01 salas104 salsan01 sanchm63 sancho03 sang201 sanies01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wang100 wangm05 wangm08 wangm08
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 bangs02 bankes02	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 danzn01 dasa06 dasild04 daskeb01 dealms01 defeln01 defrej02 degrae01 degtya01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01 harnea01 harsod01 harvej01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24 seahc01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wangh36 wangm08 wangm08 wangm08 wangm08 wangm32 wangx38
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 babbon01 bangs02	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 danzn01 dasa06 dasild04 daskeb01 declms01 defeln01 defrej02 degrae01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 haren01 harnea01 harsod01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02	sakhua01 salas104 salsan01 sanchm63 sancho03 sang201 sanies01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wang100 wangm05 wangm08 wangm08
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argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 balbon01 bangs02 bankes02 banuec01 baptia05	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 danzn01 dasa06 dasild04 daskeb01 dealms01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01 harnea01 harsod01 harrea01 harsod01 haurej01 hec10 heddej01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 angl20 wangm05 wangm05 wangm05 wangm08 wangw32 wangx38 wangx40 wangx44
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 baptii01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 dealms01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01 harnea01 hassod01 hareri01 haurej01 hec10 heddej01 heflim01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01	sakhua01 salas104 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24 seahc01 seaveradmin sebrar01 seeles01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wang120 wangm05 wangm05 wangm08 wangw22 wangx38 wangx40 wangx44 wangy27
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 baptii01 barrae02	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 dealms01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 dengg02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harnea01 haurej01 hec10 heddej01 heflim01 hegdes02	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01	sakhua01 salas104 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 vong120 wangm05 wangm08 wangm08 wangm22 wangx44 wangy27 wangy33
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 bapti01 barrae02 bartul01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danze01 dasa06 dasild04 daskeb01 defeln01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 dengg02 depina02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamop01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harei01 haurej01 hec10 heddej01 heflim01 hegdes02 heisis01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odont02 oeltef01 ohw02 olumue01 oreip01 oria01 ortegr01	sakhua01 salasl04 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01 sarvef01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wangl20 wangm05 wangm08
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argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 bapti01 barrae02 bartul01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danze01 dasa06 dasild04 daskeb01 defeln01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 dengg02 depina02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamop01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harei01 haurej01 hec10 heddej01 heflim01 hegdes02 heisis01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odont02 oeltef01 ohw02 olumue01 oreip01 oria01 ortegr01	sakhua01 salasl04 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01 sarvef01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wangl20 wangm05 wangm08
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barupd01 barupd01 barvij01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzn01 dasa06 dasild04 daskeb01 declms01 defrej02 degrae01 deftya01 delgaa07 demird01 dengc02 dengc02 depina02 derear02 derese01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamonp01 hanw09 hankss01 hanw07 haoc03 haok01 harern01 harnea01 harei01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 henaoj02	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nudelg01 nuder01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oria01 oria01 ortegr01 osmanr01 oterol04	sakhua01 salas104 salsan01 sanchm63 sancho03 sangz01 sanies01 sarvof01 savana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wang170 wangm05 wangm08 wangw22 wangx38 wangx40 wangx44 wangy27 wangy33 wang218 wang219 wangz21
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barupd01 barvij01 bazilm05	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 deeln01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 dengg02 depina02 derese01 derosc01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 henaoj02 hendee03	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17 levyt03	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01 ortegr01 osmanr01 otero104 ozbeys01	sakhua01 salas104 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01 shadrm01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh35 wangh36 vangl20 wangm08 wangw22 wangx38 wangx40 wangx44 wangy27 wangy33 wangz18 wangz19 wangz11 warbup01
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 bairam01 bairam01 bairag02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barvij01 barvij01 bazilm05 becheo01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 deeln01 defeln01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 dengg02 derese01 derosc01 desmaj01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamonp01 hanh09 hankss01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harei01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 henaoj02 hendee03 hernad36	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 leel26 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17 levyt03 lewisd36	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 ocons06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01 ortegr01 osmanr01 oterol04 ozbeys01 padhia01	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01 shadrm01 shafrk01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wangh20 wangm08 wangm08 wangm22 wangx38 wangx40 wangx44 wangy27 wangy33 wangz18 wangz19 wangz21 warbup01 warrea08
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 bairam01 bairag01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barvij01 barvij01 bazilm05 becheo01 becke01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 deeln01 defeln01 defeln01 defeln01 defrej02 degrae01 degtya01 dengc02 denia02 denia02 derese01 derosc01 desmaj01 desoui01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamonp01 hamonp01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harei01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 hemae03 hernad36 herrin01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17 levyt03 lewisd36 lewise11	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01 ortegr01 osmann01 oterol04 ozbeys01 padhia01 paib01	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01 shadrm01 shafrk01 shahh06	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 vangl20 wangm05 wangm05 wangm07 vangm21 wangw32 wangx38 wangx40 wangx44 wangy27 vangy33 wangz18 wangy21 warpup01 warrea08 warrir01
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 bairam01 bairam01 balsu01 balsu01 balbon01 babase02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barvij01 barvij01 bazilm05 becheo01 becke01 beckec03	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 deelms01 defeln01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 depina02 derear02 derear02 derear02 derese01 desmaj01 desoui01 desoui01 devara02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hamop01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harei01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 hemae01 henaoj02 hendee03 hernad36 herrin01 heyerm01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 leel26 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17 levyt03 lewisd36 lewise11 liharl02	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01 ortegr01 osmanr01 oterol04 ozbeys01 padhia01 palafm01	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01 shafrk01 shah06 shahr24	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 wangh20 wangm08 wangm08 wangm22 wangx38 wangx40 wangx44 wangy27 wangy33 wangz18 wangz19 wangz21 warbup01 warrea08
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 bairam01 bairag01 balasu01 balbon01 bangs02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barvij01 barvij01 bazilm05 becheo01 becke01	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 deeln01 defeln01 defeln01 defeln01 defrej02 degrae01 degtya01 dengc02 denia02 denia02 derese01 derosc01 desmaj01 desoui01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halas101 halvom01 hamonp01 hamonp01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harei01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 hemae03 hernad36 herrin01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17 levyt03 lewisd36 lewise11	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01 ortegr01 osmann01 oterol04 ozbeys01 padhia01 paib01	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01 shadrm01 shafrk01 shahh06	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 vangl20 wangm05 wangm05 wangm07 vangm21 wangw32 wangx38 wangx40 wangx44 wangy27 vangy33 wangz18 wangy21 warpup01 warrea08 warrir01
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 baggea01 bairam01 bajicg01 balasu01 balbon01 babase02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barupd01 baruj01 bazilm05 becheo01 becke01 becke03 becklab_admin	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 danleg01 daniem14 danzet01 danzn01 dasa06 dasild04 daskeb01 dealms01 defeln01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 depina02 derear02 derear02 derese01 deosui01 desoui01 devara02 dibelh01	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hamop01 hanw07 haoc03 haoc01 harern01 harern01 haresod01 hareri01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 hemaoj02 hendee03 hernad36 herrin01 heyerm01 hirscl07	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 lee123 lee126 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17 levyt03 lewisd36 lewise11 liharl02 lij61	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01 ortegr01 osmanr01 oterol04 ozbeys01 padhia01 palafm01 palm01	sakhua01 salas104 salsan01 sanchm63 sancho03 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schuml01 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01 shadrm01 shadrn01 shadrn01 shadrv01	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh36 wang120 wangm05 wangm08 wangw22 wangx38 wangx40 wangx44 wangy27 wangy33 wang218 wang219 wangz19 wangz21 warbup01 warrea08 warrir01 watanh02 watant01
argmac01 arista03 arivan01 arooja01 arrasj01 asgars03 asline01 assadn01 athanr01 ayalaj19 ayvasv01 babrob01 babupk01 bairam01 bairam01 balsu01 balsu01 balbon01 babase02 bankes02 banuec01 baptia05 baptii01 barrae02 bartul01 barvij01 barvij01 bazilm05 becheo01 becke01 beckec03	cullis01 cummid06 cunnia06 daid02 daij06 daiy07 damarn02 damleg01 daniem14 danzet01 danzio01 dasa06 dasild04 daskeb01 deelms01 defeln01 defeln01 defrej02 degrae01 degtya01 delgaa07 demird01 dengc02 depina02 derear02 derear02 derear02 derese01 desmaj01 desoui01 desoui01 devara02	haass02 habibj02 hackmn01 hadasy01 haghif01 haghighi_admin hahna03 haidef02 halasl01 halvom01 hamonp01 hamop01 hanw07 haoc03 haok01 harern01 harnea01 harnea01 harei01 hec10 heddej01 heflim01 hegdes02 heisis01 hemmeb01 hemae01 henaoj02 hendee03 hernad36 herrin01 heyerm01	laube02 layerd01 laynet03 lazarm11 lazarus_cryo-admin leea63 leed28 leed62 leed77 leej111 leej167 leel23 leel26 leer50 lees111 lees117 leew13 leew14 leew17 leforr01 lehres01 leonep03 lepowl01 lessec02 levene03 levene04 levys17 levyt03 lewisd36 lewise11 liharl02	ngj05 nguyec05 nguyed06 nguyeh16 nguyep07 nguyet47 nguyet50 nguyet57 nicolp01 nim01 nirens01 novikg01 nudelg01 nukavn01 nwanec01 oconnp06 oconns05 oconns06 odonnt02 oeltef01 ohw02 olumue01 oreilp01 oria01 ortegr01 osmanr01 oterol04 ozbeys01 padhia01 palafm01	sakhua01 salas104 salsan01 sanchm63 sanch003 sangz01 sanies01 sariys01 sartof01 sawana02 sazeic01 sc schade01 schafm03 schmig04 schnej22 schron01 schum101 scottm24 seahc01 seaveradmin sebrar01 seeles01 selvam01 seoh02 service_xltech sevimc01 shafrk01 shah06 shahr24	viegac01 villaa06 vinsod01 virant01 voloug01 vornhe01 vpnh02 vyt01 wacked01 wackerlab_cryoadmin wackerlab-cryoadmin.tbd walker05 wange13 wangh35 wangh36 vangl20 wangm05 wangm05 wangm21 wangw32 wangx38 wangx40 wangx44 wangy27 wangy33 wang218 wang219 wangz21 warbup01 warrea08 warrir01 watanh02

beganp01	dilips01	hoffmg01	lim39	panti01	sharma45	weia03
bekris02	dillac01	hoganc04	linge01	pareka02	sharmh15	weic04
beltrj11	dinizm01	hoggac01	lingik01	parke15	sharmr06	weilep01
benazm01	disalg01	holtb01	lint07	parkis01	shemir03	weismj01
bendlj01	ditulf02	hoppem02	linx19	parkk14	shen103	weitzs01
benmek01	divagt01	hos09	lioul01	parkm17	shermj09	wert2301 wengeb01
bennej21	dogran01	hossar07	LiShen admin	parkr02	sheuc01	wenglk01
bercor01	domidata	houldj01	liuc06	parpoa01	shevlb01	wengtkor weng01
bergea18	domind07	housea03	liuc10	parsonsadmin	shibar02	whitek04
bergqt01	dongp01	houveg01	liuh20	parvam01	shins21	wickrs01
bergqt01 bermaj08	dor01	hradif01	liun05	patela110	shirss01	wiener02
bernel01	dossaj01	hsrdata_admin	lius18	patelf06	siad01	wilsoa28
bernhl03	doughm04	hsuanc01	liux07	pateln127	siehw01	wilsoe22
	dougnille4 downeh02			· ·		windae01
beykma01	drachs01	huangk06	liuy22	patels115	sigelk01	winstk01
bhagwa01		humble01	liuy35	patelt16	signam01	
bhalls02	drfroa01	humphj04	liuy39	pathologywsi_web	signer01	wojcim01
bhattm11	dsouzd04	hur03	livana02	patila06	simonm26	wongh04
bhedas01	dsouzs04	hutchk02	liy40	patinj01	simonn10	woodr04
bicakm01	duboib01	huw06	liy42	paulf03	sims01	wuh13
bihiem01	duffya02	ibesw01	liy54	pavlya01	singhb22	wur10
bijia01	duongs02	ibings01	loadadmin	pawlip01	singhm14	wuy21
birnbr02	duplek01	ilkovm01	loboi01	pedicc01	singhs100	wuz07
bobrot01	durenm02	illins01	loherp01	pedrov01	singhs83	wuz08
boixa01	duttas04	imtiaz03	lohy01	pejavv01	singhs96	wylerb01
bonavb01	ebnerj01	indias01	lol01	pengs03	siskr02	xgail01
borrej02	ebraht01	invera03	loosr01	peream01	sistia01	xiad01
bouhae01	edwart10	ioanng02	lounsw01	perezp12	slauga01	xiaoy04
boukes01	eggers01	ioniti03	lozanr01	peris01	slesinger-cryoadmin	xiez01
bowlek01	egglel01	ipm	lubitg01	perkd01	slesip02	xiongy01
brat	elahif01	irikih01	luffs01	perkim01	sloofl01	xnat_irw
breene02	elhaim01	irizaa03	luj12	peteri02	slosat03	xuc04
breenm01	ellisr05	iyegbc01	lujama01	peterl02	smitha55	xuj24
brewek04	elmasa02	jacobc05	lukato01	petrab01	smithg17	xuk07
brophe01	elyb01	jacobm07	lukinj01	petraf01	smitr01	xum04
brownm82	emhsr-admin	jacoby02	lukszm01	petris05	socraa01	xup04
buckld05	ensari01	jadhab01	lunda02	petrok01	songh05	xuz07
buckum01	eolia01	jainp08	lundse01	phadna01	song105	yadavv03
buk02	epibrowser	jalads01	luy12	philis12	songq01	yanga27
bunyas02	epstem06	janecm01	macdok02	phuay01	songw01	yangh17
burgee02	erekaa02	jangb03	macdol02	piaoz03	songx04	yangj27
burstd02	erjavl01	jangdm02	magena01	picard03	songy12	yangj31
busson02	espess02	jangj06	maherc02	pierap01	sonim01	yangn07
butas01	estebr02	janusm01	mahjab01	pillas03	sooj02	yangs17
butleg04	estilm01	jardis02	mahonr02	pinniu01	soongb02	yaoh01
buxbaa02	evansv03	jayarp02	ma106	pintod02	sorgs01	yaom03
buxbaj01	evardr01	jethav01	malikr02	piquem01	soroke02	yashac01
byunm01	faithj02	jia02	man02	piquem02	soroua01	yeturs08
cabalm04	falcoc04	jiangb02	mandaa05	pjanim03	souait02	yingz01
cabalr04	fangg03	jiangj07	mangoj02	planua01	spehak01	yitshm01
caggic02	fans03	jiangp06	manigc02	plazaa01	spencc13	yiz01
cahann01	fany03	jiangt04	marcoe02	poddan01	spindm02	yoonj17
callej03	fariag01	jiangw02	margom04	podlea01	spiven01	yoony09
campag01	farrek04	johnsj64	marina10	polide01	sridhs01	yoos06
canalp02	fenneb02	johnsk86	marina16	porrac01	srisua01	youngh02
cantoa03	fentos02	johnsm50	markek03	pradha04	stalbl01	youssm03
caox01	ferlaj01	jordad05	marketscan	prashf01	stanea02	yua27
cappic01	ferrea06	joshia13	marquc08	preusm01	stapym01	yuang01
carcas01	ferrec14	joshih02	marquc11	priggk01	stechy01	yug03
carroe09	filipd02	joshit02	marros02	printa04	steind16	yuh04
castre11	filizolalab	jostes01	marsae01	provad01	stewao02	yuh08
cattoa01	finka03	juh01	marshd13	providuo1 prytki01	stocka01	yuj25
celebjadmin	fiorev01	jungs10	martia68	psychgenadmin	strasa01	zafers02
cetinb01	fiorib01	justa01		pullit02	suarem08	zaidz01
		•	martij172	•		
chaiz01	fischj04	kaintk01	martim78	pulsij01	sullim11	zakiy01
chaj03	fleysl01	kajid02	martit26	qasims01	sumowj01	zamard03
chamin01	flodad01	kalagp01	marxg01	qij01	sunc04	zamojm01
chanc36	fludee01	kandos01	maryas01	quidwm02	sunh14	zatorn01
chandp05	fludee02	kannah01	mas07	rabbaa02	sunr02	zbareg01
changa20	fontas06	karaa01	massen06	radkee01	suns09	zebroa01
changh14	forrei01	karabm01	mathud03	rafatf01	suny04	zeibed01
changj33	forstc01	karake01	may08	rahmas14	sunz04	zengb02
chanj24	foxb02	karlom01	maz07	rahmat03	susmaa01	zengq02
charna02	frasem04	karsm02	mccanj06	rajaup01	sutkoj01	zhangb03
chatzc02	freedg02	karven01	mccuss01	rajt01	swansm02	zhangd14
chatzc03	freudy02	kaszet01	mcdona09	ramaka02	syedb01	zhangj62
chavej12	fribom01	kathij01	mckina04	rambam01	syedm13	zhangl26

```
chdi
                  fridrm01
                                        katss02
                                                        mclaic01
                                                                             ramira22
                                                                                                 szeszko admin
                                                                                                                       zhangw09
chenc51
                  friedb08
                                        kauffj01
                                                        mclenk02
                                                                             ramirj30
                                                                                                 szeszp01
                                                                                                                       zhangx24
chengc12
                  friedr05
                                        kaufmo01
                                                        meadoa02
                                                                             ramm02
                                                                                                 taglim02
                                                                                                                       zhanax32
chengh04
                  fuchst04
                                        kellyg03
                                                        medinc13
                                                                             ramosn13
                                                                                                 takkak01
                                                                                                                       zhangy40
chengw06
                  fultob01
                                        kennve02
                                                        meic07
                                                                             ramoss18
                                                                                                 talwas01
                                                                                                                       zhanaz05
chengy10
                  fuq01
                                        kepina01
                                                        melned01
                                                                             ramses01
                                                                                                 tandop03
                                                                                                                       zhangz19
chenj02admin
                  fushia01
                                                                             randoh01
                                        keraii01
                                                        menonk02
                                                                                                 tangy08
                                                                                                                       zhanaz20
chen154
                  fuw01
                                        khaliz03
                                                        meranr01
                                                                             ranglm01
                                                                                                 tangy11
                                                                                                                       zhaoh02
chenla01
                  gail01
                                        kimc46
                                                        merzoe01
                                                                             rantid01
                                                                                                 tasakr01
                                                                                                                       zhaow05
chenm37
                  ganesg01
                                       kimg20
                                                        mesroa02
                                                                             raov04
                                                                                                 tastac01
                                                                                                                       zhaoy14
chenns01
                                       kimm61
                                                                             rashea05
                                                                                                 techdev
                                                                                                                       zhaoz03
                 aaox08
                                                        mestra01
chenr07
                  garcij62
                                        kimm62
                                                        meyery05
                                                                             ratscg01
                                                                                                 techdev6
                                                                                                                       zhengs07
chenr11
                                        kimt15
                                                        mezeim01
                                                                             ravia04
                                                                                                                       zhoub04
                  aarcim54
                                                                                                 tenas07
chens61
                 gardng03
                                        kimurh01
                                                        miam01
                                                                             rawalo01
                                                                                                 teppea02
                                                                                                                       zhour02
chent12
                 gargp01
                                       kimy56
                                                        micelr03
                                                                             reala02
                                                                                                 theodd05
                                                                                                                       zhoux05
cheny60
                  gelbb01
                                        kinros01
                                                        michar13
                                                                             rebelv01
                                                                                                 therrk01
                                                                                                                       zhua06
chenz09
                 gellej01
                                        kirchm05
                                                        midyav01
                                                                             rechko01
                                                                                                 thomaa68
                                                                                                                       zhuj05
chessa01
                  generb01
                                        kittrh01
                                                        mina03
                                                                             rechte01
                                                                                                 thomaa74
                                                                                                                       zhux02
chestm01
                 gergut01
                                        kittss01
                                                        minerg01
                                                                             reddam02
                                                                                                 thomam32
                                                                                                                       zilbeg01
cheunk02
                  gettlk01
                                       klange01
                                                        mizet01
                                                                             reinfe01
                                                                                                 thompr21
chinc18
                 gey01
                                        kleinr08
                                                        mmedsadmin
                                                                             rentoa01
                                                                                                 thorpa03
chi sha02
                 ahelie01
                                        kodysy02
                                                        moeins01
                                                                             rentzf01
                                                                                                 tichks01
chob04
                 ghoshr05
                                        koenid03
                                                        mognoi01
                                                                             restrp01
                                                                                                 tomall01
                 gibsok04
choh07
                                        kohlis03
                                                        mohamk08
                                                                             revab01
                                                                                                 torred23
[palafm01@li03c03 users]$ cd ..
[palafm01@li03c03 hpc]$ ls
admin-scripts backups benchmark config data home logs lsf packages slurm stats tsm users web
[palafm01@li03c03 hpc]$ cd data
-bash: cd: data: Permission denied
[palafm01@li03c03 hpc]$ cd slurm
-bash: cd: slurm: Permission denied
Fpalafm01@li03c03 hpcl$ cd lsf
[palafm01@li03c03 lsf]$ ls
10.1 allocation conf conf.backup08152022 log lsf-10.1-tar lsf-perl-api LSF_redist.txt pam_lsf patch patch.conf properties work
[palafm01@li03c03 lsf]$ cd work
[palafm01@li03c03 work]$ ls
chimera
[palafm01@li03c03 work]$ ls
chimera
[palafm01@li03c03 work]$ cd
[palafm01@li03c03 ~]$ ls
「palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ cd ..
[palafm01@li03c03 users]$ ls
                                       gillr10
                                                        kollis05
abbote02
                 choi01
                                                                             moik01
                                                                                                 rezazs01
                                                                                                                       torrem67
abida02
                 choik06
                                       giottb01
                                                        konerk01
                                                                             molzaa01
                                                                                                 rhoads01
                                                                                                                       torrem68
abraha12
                  choiy07
                                        girdhk01
                                                        kongy02
                                                                             monach01
                                                                                                 richaa21
                                                                                                                       tostag01
adamsa23
                  chos14
                                       gleasa01
                                                        konovk01
                                                                             moncam01
                                                                                                 richtf01
                                                                                                                       townsk05
                                                        kornbi01
adlerm14
                 chowda26
                                       aleasc04
                                                                             mongai01
                                                                                                 riinan01
                                                                                                                       tranm05
admodifiers
                 chowed01
                                       glennm10
                                                        koromm03
                                                                             montek06
                                                                                                 riraks01
                                                                                                                       tristm01
adsp
                 chrisa21
                                       anjats01
                                                        kosowj01
                                                                             moolhl01
                                                                                                 rissop01
                                                                                                                       troncl03
afzalr01
                  chrisb05
                                       goateomics
                                                        kosoyr01
                                                                             morgap04
                                                                                                 riverm99
                                                                                                                       tsanka01
                 chuk15
aaarwa18
                                       gobbut01
                                                        koutrm02
                                                                                                                       tsankova admin
                                                                             moraes01
                                                                                                 rna
                 chul08
agarwp02
                                       gohels01
                                                        kowalr03
                                                                             morril11
                                                                                                 rocanm03
                                                                                                                       tsetsf01
                                                                                                                       turhab01
                                                        kozike01
                                                                                                 rocheg01
agawua01
                  chunga08
                                        golesn01
                                                                             mosaic
                                                        kozlea01
                                                                                                                       turnej11
aggara01
                  chuny02
                                        aomesp04
                                                                             moskeo01
                                                                                                 rodrii188
                 churcn01
                                                        kreka01
                                                                             mscicadmin
                                                                                                                       turroe01
aggarv01
                                       aonzaa51
                                                                                                 rodril71
                  cillea01
                                                        krishr12
                                                                             msm_admin
aggarv02
                                       qonzae34
                                                                                                 rodrin15
                                                                                                                       tuz01
aguirk04
                 cimenc01
                                        aorinm01
                                                        kritze01
                                                                             muenzk01
                                                                                                 rodriv04
                                                                                                                       tvlers01
ahmadr02
                  civlja01
                                                        kroneb01
                                                                             mukhek03
                                                                                                 rosemf01
                                                                                                                       tzavan01
                                        aottas01
                                                                             mukhek05
                                                                                                                       ukbiobankadmin
ahmedn29
                 clarki25
                                       aownip01
                                                        kruaea01
                                                                                                 rosenb16
aiskom01
                  clarku01
                                                        ksiezm01
                                                                             mukunp01
                                                                                                 rosene22
                                                                                                                       ulukag01
                                        gp-cryoadmin
aianab03
                  clemei05
                                        areatv01
                                                        kubler01
                                                                             muldel01
                                                                                                 roseni57
                                                                                                                       vaida02
akaluy01
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                                       greend41
                                                        kudrid01
                                                                             mulleb01
                                                                                                 rosenm36
                                                                                                                       valdeb02
                                                        kulkak01
akinka05
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                                                                             mullin04
                                                                                                 rothsi06
                                                                                                                       valena17
alabbs01
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                                       greenr49
                                                        kumara82
                                                                             muncha01
                                                                                                 roudkv01
                                                                                                                       valend08
alburb02
                 cohen107
                                                        kunoa01
                                                                             nadkaa01
                                                                                                 roussoslab
                                                                                                                       vanbah01
                                       arimee01
alcalc01
                 cohenp05
                                       grosse08
                                                        kurowa01
                                                                             nadkarnilab-admin
                                                                                                roussp01
                                                                                                                       vandea10
alcane07
                 colbes01
                                                                             nadukr01
                                                                                                 rowanb01
                                                                                                                       vanooj01
                                       auckhp01
                                                        kwasia01
alleve01
                  colemc07
                                        guindm01
                                                        kyriad02
                                                                             naira12
                                                                                                 rsheu01
                                                                                                                       vanvlt02
altaiz01
                  colemc08
                                                                             naitot01
                                        auisad01
                                                        laaana01
                                                                                                 ruand01
                                                                                                                       vanvok01
althok01
                 colonj34
                                       aulamf01
                                                        lahoty01
                                                                             narasa01
                                                                                                 rubena05
                                                                                                                       vargac10
altmag01
                 comelp01
                                                        lakhac01
                                                                             nashij01
                                                                                                 ruchnd01
                                                                                                                       vartan01
                                       qumusz01
alzaha01
                  congx01
                                        guor01
                                                        lallim01
                                                                             naskat01
                                                                                                 ruff01
                                                                                                                       vasudv02
aminih01
                  cookea02
                                       guow03
                                                        lamare01
                                                                             nativm02
                                                                                                 ruizom01
                                                                                                                       vazar01
                                                        lambel02
amreeb01
                 correj08
                                       guptam18
                                                                             neala03
                                                                                                 ruthek04
                                                                                                                       vemurk01
```

andres12	cotea02	gurums01	lambet02	neffr01	ryderj03	venkas08
ankerj01	craryj01	gutiei03	lamw05	neue01	rykund01	ventun01
anyfam01	crokem02	gutien07	landii03	neukap01	sachsd01	verbam01
arakea01	cryosparctest-admin	gux01	larosf01	nga14	saddih01	veremb01
archiving_bings	cryosparc-user	gyasia01	lashbn01	ngaik01	saffem03	vhatkt01
argmac01	cullis01	haass02	laube02	ngj05	sakhua01	viegac01
arista03	cummid06	habibj02	layerd01	nguyec05	salas104	villaa06
arivan01	cunnia06	hackmn01	laynet03	nguyed06	salsan01	vinsod01
arooja01	daid02	hadasy01	lazarm11	nguyeh16	sanchm63	virant01
arrasj01 asaars03	daij06	haghif01 haghighi_admin	lazarus_cryo-admin leea63	nguyep07	sancho03	voloug01
asline01	daiy07 damarn02	hahna03	leed28	nguyet47 nguyet50	sangz01 sanies01	vornhe01 vpnh02
assadn01	damleg01	haidef02	leed62	nguyet57	sariys01	vyt01
athanr01	daniem14	halasl01	leed77	nicolp01	sartof01	wacked01
ayalaj19	danzet01	halvom01	leej111	nim01	sawana02	wackerlab_cryoadmin
ayvasv01	danzio01	hamonp01	leej167	nirens01	sazeic01	wackerlab-cryoadmin.tbd
babrob01	danzn01	hanh09	leel23	novikg01	SC	walker05
babupk01	dasa06	hankss01	leel26	nudelg01	schade01	wange13
baggea01	dasild04	hanw07	leer50	nukavn01	schafm03	wangh35
bairam01	daskeb01	haoc03	lees111	nwanec01	schmig04	wangh36
bajicg01	dealms01	haok01	lees117	oconnp06	schnej22	wangl20
balasu01	defeln01	harern01	leew13	oconns05	schron01	wangm05
balbon01	defrej02	harnea01 hassod01	leew14 leew17	oconns06 odonnt02	schuml01 scottm24	wangm08
bangs02 bankes02	degrae01 degtya01	haurej01	leforr01	odonntv2 oeltef01	scottm24 seahc01	wangw32 wangx38
banuec01	delgaa07	hec10	lehres01	ohw02	seaveradmin	wangx40
baptia05	denird01	heddej01	leonep03	olumue01	sebrar01	wangx44
baptii01	dengc02	heflim01	lepowl01	oreilp01	seeles01	wangy27
barrae02	dengg02	hegdes02	lessec02	oria01	selvam01	wangy33
bartul01	depina02	heisis01	levene03	ortegr01	seoh02	wangz18
barupd01	derear02	hemmeb01	levene04	osmanr01	service_xltech	wangz19
barvij01	derese01	henaoj02	levys17	oterol04	sevimc01	wangz21
bazilm05	derosc01	hendee03	levyt03	ozbeys01	shadrm01	warbup01
becheo01	desmaj01	hernad36	lewisd36	padhia01	shafrk01	warrea08
becke01	desoui01	herrin01	lewise11	paib01	shahh06	warrir01
beckec03	devara02	heyerm01	liharl02	palafm01	shahr24	watanh02
becklab_admin	dibelh01	hirscl07	lij61	palm01	shakyd01	watanr01
beckmn01	dicksj02	hoangd02	lik17	pandeg01	shangj01	webbb02
bedirk01	diezov01 dilips01	hoffmd09	lik26 lim39	pankoa01 panti01	shaon01 sharma45	weeklb01 weia03
beganp01 bekris02	dillac01	hoffmg01 hoganc04	linge01	pareka02	sharmh15	weic04
beltrj11	dinizm01	hoggac01	lingik01	parke15	sharmr06	weilep01
benazm01	disalg01	holtb01	lint07	parkis01	shemir03	weismj01
bendlj01	ditulf02	hoppem02	linx19	parkk14	shen103	weitzs01
benmek01	divagt01	hos09	lioul01	parkm17	shermj09	wengeb01
bennej21	dogran01	hossar07	LiShen_admin	parkr02	sheuc01	wenglk01
bercor01	domidata	houldj01	liuc06	parpoa01	shevlb01	wenq01
bergea18	domind07	housea03	liuc10	parsonsadmin	shibar02	whitek04
bergqt01	dongp01	houveg01	liuh20	parvam01	shins21	wickrs01
bermaj08	dor01	hradif01	liun05	patela110	shirss01	wiener02
bernel01	dossaj01	hsrdata_admin	lius18 liux07	patelf06	siad01	wilsoa28
bernhl03 beykma01	doughm04 downeh02	hsuanc01 huangk06	liuy22	pateln127 patels115	siehw01 sigelk01	wilsoe22 windae01
bhagwa01	drachs01	humble01	liuy35	patelt16	signam01	winstk01
bhalls02	drfroa01	humphj04	liuy39	pathologywsi_web	signer01	wojcim01
bhattm11	dsouzd04	hur03	livana02	patila06	simonm26	wongh04
bhedas01	dsouzs04	hutchk02	liy40	patinj01	simonn10	woodr04
bicakm01	duboib01	huw06	liy42	paulf03	sims01	wuh13
bihiem01	duffya02	ibesw01	liy54	pavlya01	singhb22	wur10
bijia01	duongs02	ibings01	loadadmin	pawlip01	singhm14	wuy21
birnbr02	duplek01	ilkovm01	loboi01	pedicc01	singhs100	wuz07
bobrot01	durenm02	illins01	loherp01	pedrov01	singhs83	wuz08
boixa01	duttas04	imtiaz03	lohy01	pejavv01	singhs96	wylerb01
bonavb01	ebnerj01	indias01	lol01	pengs03	siskr02	xgail01
borrej02	ebraht01	invera03	loosr01	peream01	sistia01	xiad01
bouhae01 boukes01	edwart10 eggers01	ioanng02 ioniti03	lounsw01 lozanr01	perezp12 peris01	slauga01 slesinger-cryoadmin	xiaoy04 xiez01
boukes01 bowlek01	egglel01	ipm	lubitg01	perkd01	slesip02	xiongy01
brat	elahif01	irikih01	luffs01	perkim01	sloofl01	xnat_irw
breene02	elhaim01	irizaa03	luj12	peteri02	slosat03	xuc04
breenm01	ellisr05	iyegbc01	lujama01	peter102	smitha55	xuj24
brewek04	elmasa02	jacobc05	lukato01	petrab01	smithg17	xuk07
brophe01	elyb01	jacobm07	lukinj01	petraf01	smitr01	xum04
brownm82	emhsr-admin	jacoby02	lukszm01	petris05	socraa01	xup04
buckld05	ensari01	jadhab01	lunda02	petrok01	songh05	xuz07
buckum01	eolia01	jainp08	lundse01	phadna01	songl05	yadavv03

buk02	epibrowser	ialads01	luy12	philis12	songq01	yanga27
bunyas02	epstem06	janecm01	macdok02	phuay01	songw01	yangh17
burgee02	erekaa02	jangb03	macdol02	piaoz03	songx04	yangj27
burstd02	erjavl01	jangdm02	magena01	picard03	songy12	yangj31
busson02	espess02	jangj06	maherc02	pierap01	sonim01	yangn07
butas01	estebr02	janusm01	mahjab01	pillas03	sooj02	yangs17
butleg04	estilm01	jardis02	mahonr02	pinniu01	soongb02	yaoh01
buxbaa02	evansv03	jayarp02	ma106	pintod02	sorgs01	yaom03
buxbaj01	evardr01	jethav01	malikr02	piquem01	soroke02	yashac01
byunm01	faithj02	jia02	man02	piquem02	soroua01	yeturs08
cabalm <mark>04</mark>	falcoc04	jiangb02	mandaa05	pjanim03	souait02	yingz01
cabalr04	fangg03	jiangj07	mangoj02	planua01	spehak01	yitshm01
caggic02	fans03	jiangp06	manigc02	plazaa01	spencc13	yiz01
cahann01	fany03	jiangt04	marcoe02	poddan01	spindm02	yoonj17
callej03	fariag01	jiangw02	margom04	podlea01	spiven01	yoony09
campag01	farrek04	johnsj64	marina10	polide01	sridhs01	yoos06
canalp02	fenneb02	johnsk86	marina16	porrac01	srisua01	youngh02
cantoa03	fentos02	johnsm50	markek03	pradha04	stalbl01	youssm03
caox01	ferlaj01	jordad05	marketscan	prashf01	stanea02	yua27
cappic01	ferrea06	joshia13	marquc08	preusm01	stapym01	yuang01
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carroe09	filipd02	joshit02	marros02	printa04	steind16	yuh04
castre11	filizolalab	jostes01	marsae01	provad01	stewao02	yuh08
cattoa01	finka03	juh01	marshd13	prytki01	stocka01	yuj25
celebjadmin	fiorev01	jungs10	martia68	psychgenadmin	strasa01	zafers02
cetinb01	fiorib01	justa01	martij172	pullit02	suarem08	zaidz01
chaiz01	fischj04	kaintk01	martim78	pulsij01	sullim11	zakiy01
chaj03	fleysl01	kajid02	martit26	qasims01	sumowj01	zamard03
chamin01	flodad01	kalagp01	marxg01	qij01	sunc04	zamojm01
chanc36	fludee01 fludee02	kandos01 kannah01	maryas01 mas07	quidwm02 rabbaa02	sunh14 sunr02	zatorn01
chandp05	fontas06	karnanoi karaa01	massen06	radkee01	suns09	zbareg01 zebroa01
changa20 changh14	forrei01	karabm01	mathud03	rafatf01		zeibed01
changi33	forstc01	karake01	may08	rahmas14	suny04 sunz04	zengb02
chanj24	foxb02	karlom01	maz07	rahmat03	susmaa01	zengq02
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chavej12	fribom01	kathij01	mckina04	rambam01	syedm13	zhang126
chdi	fridrm01	katss02	mclaic01	ramira22	szeszko_admin	zhangw09
chenc51	friedb08	kauffj01	mclenk02	ramirj30	szeszp01	zhangx24
chengc12	friedr05	kaufmo01	meadoa02	ramm02	taglim02	zhangx32
chengh04	fuchst04	kellyg03	medinc13	ramosn13	takkak01	zhangy40
chengw06	fultob01	kennye02	meic07	ramoss18	talwas01	zhangz05
chengy10	fuq01	kepina01	melned01	ramses01	tandop03	zhangz19
chenj02admin	fushia01	keraii01	menonk02	randoh01	tangy08	zhangz20
chen154	fuw01	khaliz03	meranr01	ranglm01	tangy11	zhaoh02
chenla01	gail01	kimc46	merzoe01	rantid01	tasakr01	zhaow05
chenm37	ganesg01	kimg20	mesroa02	raov04	tastac01	zhaoy14
chenns01	gaox08	kimm61	mestrg01	rashea05	techdev	zhaoz03
chenr07	garcij62	kimm62	meyery05	ratscg01	techdev6	zhengs07
chenr11	garcim54	kimt15	mezeim01	ravia04	tengs07	zhoub04
chens61	gardng03	kimurh01	miam01	rawalo01	teppea02	zhour02
chent12	gargp01	kimy56	micelr03	reala02	theodd05	zhoux05
cheny60	gelbb01	kinros01	michar13	rebelv01	therrk01	zhua06
chenz09	gellej01	kirchm05	midyav01	rechko01	thomaa68	zhuj05
chessa01	generb01	kittrh01	mina03	rechte01	thomaa74	zhux02
chestm01	gergut01	kittss01	minerg01	reddam02	thomam32	zilbeg01
cheunk02	gettlk01	klange01	mizet01	reinfe01	thompr21	
chinc18	gey01	kleinr08	mmedsadmin	rentoa01	thorpa03	
chisha02	ghelie01	kodysy02	moeins01	rentzf01	tichks01	
chob04	ghoshr05	koenid03	mognoi01	restrp01	tomall01	
choh07	gibsok04	kohlis03	mohamk08	revab01	torred23	
	03 users]\$ cd sc					
[palafm01@li03c	ws sc]\$ ls					

ls: cannot open directory .: Permission denied

[palafm01@li03c03 sc]\$ ls

ls: cannot open directory .: Permission denied

[palafm01@li03c03 sc]\$ [palafm01@li03c03 sc]\$ [palafm01@li03c03 sc]\$ ls

ls: cannot open directory .: Permission denied

[palafm01@li03c03 sc]\$ cd arion

-bash: cd: arion: No such file or directory

[palafm01@li03c03 sc]\$ cd [palafm01@li03c03 ~]\$

[palafm01@li03c03	~]\$	ls	
[palafm01@li03c03	~]\$	ls	
[palafm01@li03c03	~]\$	cd .	
[palafm01@li03c03	user	¹s]\$	ls
abbo+o02	choi (11	

[palafm01@li03c0	3 users]\$ ls					
abbote02	choi01	gillr10	kollis05	moik01	rezazs01	torrem67
abida02	choik06	giottb01	konerk01	molzaa01	rhoads01	torrem68
abraha12	choiy07	girdhk01	kongy02	monach01	richaa21	tostag01
adamsa23	chos14	gleasa01	konovk01	moncam01	richtf01	townsk05
adlerm14	chowda26	gleasc04	kornbi01	mongai01	riinan01	tranm05
admodifiers	chowed01	glennm10	koromm03	montek06	riraks01	tristm01
adsp	chrisa21	gnjats01	kosowj01	moolhl01	rissop01	troncl03
afzalr01	chrisb05	goateomics	kosoyr01	morgap04	riverm99	tsanka01
agarwa18	chuk15	gobbut01	koutrm02	morges01	rna	tsankova_admin
agarwp02	chul08	gohels01	kowalr03	morril11	rocanm03	tsetsf01
agawua01 aggara01	chunga08	golesn01	kozike01 kozlea01	mosaic moskeo01	rocheg01	turhab01 turnej11
aggarv01	chuny02 churcn01	gomesp04 gonzaa51	kreka01	mscicadmin	rodrij188 rodril71	turnejii turroe01
aggarv02	cillea01	gonzae34	krishr12	msm_admin	rodrin15	tuz01
aguirk04	cimenc01	gorinm01	kritze01	muenzk01	rodriy04	tylers01
ahmadr02	civlja01	gottas01	kroneb01	mukhek03	rosemf01	tzavan01
ahmedn29	clarkj25	gownip01	krugea01	mukhek05	rosenb16	ukbiobankadmin
aiskom01	clarku01	gp-cryoadmin	ksiezm01	mukunp01	rosene22	ulukag01
ajanab03	clemej05	greaty01	kubler01	muldel01	rosenj57	vaida02
akaluy01	coccie01	greend41	kudrid01	mulleb01	rosenm36	valdeb02
akinka05	cogaadmin	greenk27	kulkak01	mullin04	rothsj06	valena17
alabbs01	cohene20	greenr49	kumara82	muncha01	roudkv01	valend08
alburb02	cohen107	grimee01	kunoa01	nadkag01	roussoslab	vanbah01
alcalc01	cohenp05	grosse08	kurowa01	nadkarnilab-admin	roussp01	vandea10
alcane07	colbes01	guckhp01	kwasia01	nadukr01	rowanb01	vanooj01
alleve01	colemc07	guindm01	kyriad02	naira12	rsheu01	vanvlt02
altaiz01	colemc08	guisad01	lagana01	naitot01	ruand01	vanvok01
althok01	colonj34	gulamf01	lahoty01	narasa01	rubena05	vargac10
altmag01	comelp01	gumusz01	lakhac01	nashij01	ruchnd01	vartan01
alzaha01	congx01	guor01	lallim01	naskat01	ruff01	vasudv02
aminih01	cookea02	guow03	lamare01	nativm02	ruizom01	vazar01
amreeb01	correj08	guptam18	lambel02	neala03	ruthek04	vemurk01
andres12	cotea02	gurums01	lambet02	neffr01	ryderj03	venkas08
ankerj01	craryj01	gutiei03	lamw05	neue01	rykund01	ventun01
anyfam01	crokem02	gutien07	landii03	neukap01	sachsd01	verbam01
arakea01	cryosparctest-admin	gux01	larosf01	nga14	saddih01	veremb01
archiving_bings	cryosparc-user	gyasia01	lashbn01	ngaik01	saffem03	vhatkt01
argmac01 arista03	cullis01 cummid06	haass02 habibj02	laube02 layerd01	ngj05 nguyec05	sakhua01 salasl04	viegac01 villaa06
arivan01	cunnia06	hackmn01	laynet03	nguyed06	salsan01	vinsod01
arooja01	daid02	hadasy01	lazarm11	nguyeh16	sanchm63	virant01
arrasj01	daij06	haghif01	lazarus_cryo-admin	nguyep07	sancho03	voloug01
asgars03	daiy07	haghighi_admin	leea63	nguyet47	sangz01	vornhe01
asline01	damarn02	hahna03	leed28	nguyet50	sanies01	vpnh02
assadn01	damleg01	haidef02	leed62	nguyet57	sariys01	vyt01
athanr01	daniem14	halasl01	leed77	nicolp01	sartof01	wacked01
ayalaj19	danzet01	halvom01	leej111	nim01	sawana02	wackerlab_cryoadmin
ayvasv01	danzio01	hamonp01	leej167	nirens01	sazeic01	wackerlab-cryoadmin.tbd
babrob01	danzn01	hanh09	leel23	novikg01	SC	walker05
babupk01	dasa06	hankss01	leel26	nudelg01	schade01	wange13
baggea01	dasild04	hanw07	leer50	nukavn01	schafm03	wangh35
bairam01	daskeb01	haoc03	lees111	nwanec01	schmig04	wangh36
bajicg01	dealms01	haok01	lees117	oconnp06	schnej22	wang120
balasu01	defeln01	harern01	leew13	oconns05	schron01	wangm05
balbon01	defrej02	harnea01	leew14	oconns06	schuml01	wangm08
bangs02	degrae01	hassod01	leew17	odonnt02	scottm24	wangw32
bankes02	degtya01	haurej01	leforr01	oeltef01	seahc01	wangx38
banuec01	delgaa07	hec10	lehres01	ohw02	seaveradmin	wangx40
baptia05	demird01	heddej01 heflim01	leonep03	olumue01	sebrar01 seeles01	wangx44
baptii01 barrae02	dengc02 dengq02	heades02	lepowl01 lessec02	oreilp01 oria01	selvam01	wangy27
bartul01	denggoz depina02	heisis01	levene03		seoh02	wangy33
barupd01	derear02	hemmeb01	levene04	ortegr01 osmanr01	service_xltech	wangz18 wangz19
barvij01	derese01	henaoj02	levys17	oterol04	sevimc01	wangz21
bazilm05	derosc01	hendee03	levyt03	ozbeys01	shadrm01	warbup01
becheo01	desmaj01	hernad36	lewisd36	padhia01	shafrk01	warrea08
becke01	desoui01	herrin01	lewise11	paib01	shahh06	warrir01
beckec03	devara02	heyerm01	liharl02	palafm01	shahr24	watanh02
becklab_admin	dibelh01	hirscl07	lij61	palm01	shakyd01	watanr01
beckmn01	dicksj02	hoangd02	lik17	pandeg01	shangj01	webbb02
bedirk01	diezov01	hoffmd09	lik26	pankoa01	shaon01	weeklb01
beganp01	dilips01	hoffmg01	lim39	panti01	sharma45	weia03

halani a02	4:1101	h04	1:01		ala a semba 1 E	
bekris02	dillac01	hoganc04	linge01	pareka02	sharmh15	weic04
beltrj11	dinizm01	hoggac01	lingik01	parke15	sharmr06	weilep01
benazm01	disalg01	holtb01	lint07	parkis01	shemir03	weismj01
bendlj01	ditulf02	hoppem02	linx19	parkk14	shen103	weitzs01
benmek01	divagt01	hos09	lioul01	parkm17	shermj09	wengeb01
bennej21	dogran01	hossar07	LiShen_admin	parkr02	sheuc01	wenglk01
bercor01	domidata	houldj01	liuc06	parpoa01	shevlb01	weng01
bergea18	domind07	housea03	liuc10	parsonsadmin	shibar02	whitek04
bergqt01	dongp01	houveg01	liuh20	parvam01	shins21	wickrs01
bermaj08	dor01	hradif01	liun05	patela110	shirss01	wiener02
•				· ·		
bernel01	dossaj01	hsrdata_admin	lius18	patelf06	siad01	wilsoa28
bernhl03	doughm04	hsuanc01	liux07	pateln127	siehw01	wilsoe22
beykma01	downeh02	huangk06	liuy22	patels115	sigelk01	windae01
bhagwa01	drachs01	humble01	liuy35	patelt16	signam01	winstk01
bhalls02	drfroa01	humphj04	liuy39	pathologywsi_web	signer01	wojcim01
bhattm11	dsouzd04	hur03	livana02	patila06	simonm26	wongh04
bhedas01	dsouzs04	hutchk02	liy40	patinj01	simonn10	woodr04
bicakm01	duboib01	huw06	liy42	paulf03	sims01	wuh13
				· ·		
bihiem01	duffya02	ibesw01	liy54	pavlya01	singhb22	wur10
bijia01	duongs02	ibings01	loadadmin	pawlip01	singhm14	wuy21
birnbr02	duplek01	ilkovm01	loboi01	pedicc01	singhs100	wuz07
bobrot01	durenm02	illins01	loherp01	pedrov01	singhs83	wuz08
boixa01	duttas04	imtiaz03	lohy01	pejavv01	singhs96	wylerb01
bonavb01	ebnerj01	indias01	lol01	pengs03	siskr02	xgail01
		invera03			sistia01	_
borrej02	ebraht01		loosr01	peream01		xiad01
bouhae01	edwart10	ioanng02	lounsw01	perezp12	slauga01	xiaoy04
boukes01	eggers01	ioniti03	lozanr01	peris01	slesinger-cryoadmin	xiez01
bowlek01	egglel01	ipm	lubitg01	perkd01	slesip02	xiongy01
brat	elahif01	irikih01	luffs01	perkim01	sloofl01	xnat_irw
breene02	elhaim01	irizaa03	luj12	peteri02	slosat03	xuc04
breenm01	ellisr05	iyegbc01	lujama01	peter102	smitha55	xuj24
brewek04	elmasa02		lukato01	· ·		xuk07
		jacobc05		petrab01	smithg17	
brophe01	elyb01	jacobm07	lukinj01	petraf01	smitr01	xum04
brownm82	emhsr-admin	jacoby02	lukszm01	petris05	socraa01	xup04
buckld05	ensari01	jadhab01	lunda02	petrok01	songh05	xuz07
buckum01	eolia01	jainp08	lundse01	phadna01	songl05	yadavv03
buk02	epibrowser	jalads01	luy12	philis12	songq01	yanga27
bunyas02	epstem06	janecm01	macdok02	phuay01	songw01	yangh17
	erekaa02	•	macdol02	The second secon	•	
burgee02		jangb03		piaoz03	songx04	yangj27
burstd02	erjavl01	jangdm02	magena01	picard03	songy12	yangj31
busson02	espess02	jangj06	maherc02	pierap01	sonim01	yangn07
butas01	estebr02	janusm01	mahjab01	pillas03	sooj02	yangs17
butleg04	estilm01	jardis02	mahonr02	pinniu01	soongb02	yaoh01
buxbaa02	evansv03	jayarp02	ma106	pintod02	sorgs01	yaom03
buxbaj01	evardr01	jethav01	malikr02	piquem01	soroke02	yashac01
byunm01	faithj02	jia02	man02	piquem02	soroua01	yeturs08
byurille1	-	•	mandaa05		souait02	
Caba Lino4	falcoc04	jiangb02		pjanim03		yingz01
cabalr04	fangg03	jiangj07	mangoj02	planua01	spehak01	yitshm01
caggic02	fans03	jiangp06	manigc02	plazaa01	spencc13	yiz01
cahann01	fany03	jiangt04	marcoe02	poddan01	spindm02	yoonj17
callej03	fariag01	jiangw02	margom04	podlea01	spiven01	yoony09
campag01	farrek04	johnsj64	marina10	polide01	sridhs01	yoos06
canalp02	fenneb02	johnsk86	marina16	porrac01	srisua01	youngh02
				•		
cantoa03	fentos02	johnsm50	markek03	pradha04	stalbl01	youssm03
caox01	ferlaj01	jordad05	marketscan	prashf01	stanea02	yua27
cappic01	ferrea06	joshia13	marquc08	preusm01	stapym01	yuang01
carcas01	ferrec14	joshih02	marquc11	priggk01	stechy01	yug03
carroe09	filipd02	joshit02	marros02	printa04	steind16	yuh04
castre11	filizolalab	jostes01	marsae01	provad01	stewao02	yuh08
cattoa01	finka03	juh01	marshd13	prytki01	stocka01	yuj25
celebjadmin	fiorev01	jungs10	martia68	psychgenadmin	strasa01	zafers02
cetinb01	fiorib01	justa01	martij172	pullit02	suarem08	zaidz01
chaiz01	fischj04	kaintk01	martim78	pulsij01	sullim11	zakiy01
chaj03	fleysl01	kajid02	martit26	qasims01	sumowj01	zamard03
chamin01	flodad01	kalagp01	marxg01	qij01	sunc04	zamojm01
chanc36	fludee01	kandos01	maryas01	quidwm02	sunh14	zatorn01
chandp05	fludee02	kannah01	mas07	rabbaa02	sunr02	zbareg01
changa20	fontas06	karaa01	massen06	radkee01	suns09	zebroa01
changh14	forrei01	karabm01	mathud03	rafatf01	suny04	zeibed01
changj33	forstc01	karake01	may08	rahmas14	sunz04	zengb02
chanj24	foxb02	karlom01	maz07	rahmat03	susmaa01	zengq02
charna02	frasem04	karsm02	mccanj06	rajaup01	sutkoj01	zhangb03
chatzc02	freedg02	karven01	mccuss01	rajt01	swansm02	zhangd14
chatzc03	freudy02	kaszet01	mcdona09	ramaka02	syedb01	zhangj62
chavej12	fribom01	kathij01	mckina04	rambam01	syedm13	zhangl26
chdi	fridrm01	katss02	mclaic01	ramira22	szeszko_admin	zhangw09
CHUL	TT ENT HIOT	KW C330L	CEGECOI	T GITTET GEE	SZCSZKO_UUIITI	Zilaligwo3

chenc51	friedb08	kauffj01	mclenk02	ramirj30	szeszp01	zhangx24
chengc12	friedr05	kaufmo01	meadoa02	ramm02	taglim02	zhangx32
•	fuchst04		medinc13	ramosn13	takkak01	zhangy40
chengh04		kellyg03				•
chengw06	fultob01	kennye02	meic07	ramoss18	talwas01	zhangz05
chengy10	fuq01	kepina01	melned01	ramses01	tandop03	zhangz19
chenj02admin	fushia01	keraii01	menonk02	randoh01	tangy08	zhangz20
chen154	fuw01	khaliz03	meranr01	ranglm01	tangy11	zhaoh02
chenla01	gail01	kimc46	merzoe01	rantid01	tasakr01	zhaow05
chenm37	ganesg01	kimg20	mesroa02	raov04	tastac01	zhaoy14
chenns01	gaox08	kimm61	mestrg01	rashea05	techdev	zhaoz03
	•					
chenr07	garcij62	kimm62	meyery05	ratscg01	techdev6	zhengs07
chenr11	garcim54	kimt15	mezeim01	ravia04	tengs07	zhoub04
chens61	gardng03	kimurh01	miam01	rawalo01	teppea02	zhour02
chent12	gargp01	kimy56	micelr03	reala02	theodd05	zhoux05
cheny60	gelbb01	kinros01	michar13	rebelv01	therrk01	zhua06
chenz09	gellej01	kirchm05	midyav01	rechko01	thomaa68	zhuj05
chessa01	generb01	kittrh01	mina03	rechte01	thomaa74	zhux02
chestm01	gergut01	kittss01	minerg01	reddam02	thomam32	zilbeg01
						ZIIbegoi
cheunk02	gettlk01	klange01	mizet01	reinfe01	thompr21	
chinc18	gey01	kleinr08	mmedsadmin	rentoa01	thorpa03	
chisha02	ghelie01	kodysy02	moeins01	rentzf01	tichks01	
chob04	ghoshr05	koenid03	mognoi01	restrp01	tomall01	
choh07	gibsok04	kohlis03	mohamk08	revab01	torred23	
[palafm01@li03c0	3 users]\$ cd sc					
Γpalafm01@li03c0	_					
	directory .: Permissi	on denied				
	-	on dented				
[palafm01@li03c0	-					
[palafm01@li03c0	=					
abbote02	choi01	gillr10	kollis05	moik01	rezazs01	torrem67
abida02	choik06	giottb01	konerk01	molzaa01	rhoads01	torrem68
abraha12	choiy07	girdhk01	kongy02	monach01	richaa21	tostag01
adamsa23	chos14	gleasa01	konovk01	moncam01	richtf01	townsk05
adlerm14	chowda26	gleasc04	kornbi01	mongai01	riinan01	tranm05
admodifiers	chowed01	glennm10	koromm03	montek06	riraks01	tristm01
adsp	chrisa21	gnjats01	kosowj01	moolhl01	rissop01	troncl03
					•	
afzalr01	chrisb05	goateomics	kosoyr01	morgap04	riverm99	tsanka01
agarwa18	chuk15	gobbut01	koutrm02	morges01	rna	tsankova_admin
agarwp02	chul08	gohels01	kowalr03	morril11	rocanm03	tsetsf01
agawua01	chunga08	golesn01	kozike01	mosaic	rocheg01	turhab01
aggara01	chuny02	gomesp04	kozlea01	moskeo01	rodrij188	turnej11
aggarv01	churcn01	gonzaa51	kreka01	mscicadmin	rodril71	turroe01
aggarv02	cillea01	gonzae34	krishr12	msm_admin	rodrin15	tuz01
aguirk04	cimenc01	gorinm01	kritze01	muenzk01	rodriy04	tylers01
ahmadr02	civlja01	gottas01	kroneb01	mukhek03	rosemf01	tzavan01
ahmedn29		•	krugea01	mukhek05	rosenb16	ukbiobankadmin
	clarkj25	gownip01	•			
aiskom01	clarku01	gp-cryoadmin	ksiezm01	mukunp01	rosene22	ulukag01
ajanab03	clemej05	greaty01	kubler01	muldel01	rosenj57	vaida02
akaluy01	coccie01	greend41	kudrid01	mulleb01	rosenm36	valdeb02
akinka05	cogaadmin	greenk27	kulkak01	mullin04	rothsj06	valena17
alabbs01	cohene20	greenr49	kumara82	muncha01	roudkv01	valend08
alburb02	cohen107	grimee01	kunoa01	nadkag01	roussoslab	vanbah01
alcalc01	cohenp05	grosse08	kurowa01	nadkarnilab-admin	roussp01	vandea10
alcane07	colbes01	guckhp01	kwasia01	nadukr01	rowanb01	vanooj01
alleve01	colemc07	guindm01	kyriad02	naira12	rsheu01	vanvlt02
		•				
altaiz01	colemc08	guisad01	lagana01	naitot01	ruand01	vanvok01
althok01	colonj34	gulamf01	lahoty01	narasa01	rubena05	vargac10
altmag01	comelp01	gumusz01	lakhac01	nashij01	ruchnd01	vartan01
alzaha01	congx01	guor01	lallim01	naskat01	ruff01	vasudv02
aminih01	cookea02	guow03	lamare01	nativm02	ruizom01	vazar01
amreeb01	correj08	guptam18	lambel02	neala03	ruthek04	vemurk01
andres12	cotea02	gurums01	lambet02	neffr01	ryderj03	venkas08
ankerj01	craryj01	gutiei03	lamw05	neue01	rykund01	ventun01
anyfam01	crokem02	gutien07	landii03	neukap01	sachsd01	verbam01
		•				
arakea01	cryosparctest-admin	gux01	larosf01	nga14	saddih01	veremb01
archiving_bings	cryosparc-user	gyasia01	lashbn01	ngaik01	saffem03	vhatkt01
argmac01	cullis01	haass02	laube02	ngj05	sakhua01	viegac01
arista03	cummid06	habibj02	layerd01	nguyec05	salasl04	villaa06
arivan01	cunnia06	hackmn01	laynet03	nguyed06	salsan01	vinsod01
arooja01	daid02	hadasy01	lazarm11	nguyeh16	sanchm63	virant01
arrasj01	daij06	haghif01	lazarus_cryo-admin	nguyep07	sancho03	voloug01
asgars03	daiy07	haghighi_admin	leea63	nguyet47	sangz01	vornhe01
asline01	damarn02	hahna03	leed28		sanies01	vpnh02
				nguyet50		
assadn01	damleg01	haidef02	leed62	nguyet57	sariys01	vyt01
athanr01	daniem14	halasl01	leed77	nicolp01	sartof01	wacked01
ayalaj19	danzet01	halvom01	leej111	nim01	sawana02	wackerlab_cryoadmin
ayvasv01	danzio01	hamonp01	leej167	nirens01	sazeic01	wackerlab-cryoadmin.tbd

	danzn01	hanh09	leel23	nováka01	5.0	walker05
babrob01 babupk01	danznei dasa06	hankss01	lee126	novikg01 nudelg01	sc schade01	wange13
baggea01	dasild04	hanw07	leer50	nukavn01	schafm03	wangh35
bairam01	daskeb01	haoc03	lees111	nwanec01	schmig04	wangh36
bajicg01	dealms01	haok01	lees117	oconnp06	schnej22	wanal 20
balasu01	defeln01	harern01	leew13	oconns05	schron01	wangm05
balbon01	defrej02	harnea01	leew14	oconns06	schuml01	wangm08
	•	hassod01	leew17	odonnt02	scottm24	wangw32
bangs02	degrae01					
bankes02	degtya01	haurej01	leforr01	oeltef01	seahc01	wangx38
banuec01	delgaa07	hec10	lehres01	ohw02	seaveradmin	wangx40
baptia05	demird01	heddej01	leonep03	olumue01	sebrar01	wangx44
baptii01	dengc02	heflim01	lepowl01	oreilp01	seeles01	wangy27
barrae02	dengg02	hegdes02	lessec02	oria01	selvam01	wangy33
bartul01	depina02	heisis01	levene03	ortegr01	seoh02	wangz18
barupd01	derear02	hemmeb01	levene04	osmanr01	service_xltech	wangz19
barvij01	derese01	henaoj02	levys17	oterol04	sevimc01	wangz21
bazilm05	derosc01	hendee03	levyt03	ozbeys01	shadrm01	warbup01
becheo01	desmaj01	hernad36	lewisd36	padhia01	shafrk01	warrea08
becke01	desoui01	herrin01	lewise11	paib01	shahh06	warrir01
beckec03	devara02	heyerm01	liharl02	palafm01	shahr24	watanh02
becklab_admin	dibelh01	hirscl07	lij61	palm01	shakyd01	watanr01
beckmn01	dicksj02	hoangd02	lik17	pandeg01	shangj01	webbb02
bedirk01	diezov01	hoffmd09	lik26	pankoa01	shaon01	weeklb01
beganp01	dilips01	hoffmg01	lim39	panti01	sharma45	weia03
bekris02	dillac01	hoganc04	linge01	pareka02	sharmh15	weic04
beltrj11	dinizm01	hoggac01	lingik01	parke15	sharmr06	weilep01
benazm01	disalg01	holtb01	lint07	parkis01	shemir03	weismj01
bendlj01	ditulf02	hoppem02	linx19	parkk14	shenl03	weitzs01
benmek01	divagt01	hos09	lioul01	parkm17	shermj09	wengeb01
bennej21	dogran01	hossar07	LiShen_admin	parkr02	sheuc01	wenglk01
bercor01	domidata	houldj01	liuc06	parpoa01	shevlb01	wenq01
bergea18	domind07	housea03	liuc10	parsonsadmin	shibar02	whitek04
bergqt01	dongp01	houveg01	liuh20	parvam01	shins21	wickrs01
bermaj08	dor01	hradif01	liun05	patela110	shirss01	wiener02
bernel01	dossaj01	hsrdata_admin	lius18	patelf06	siad01	wilsoa28
bernhl03	doughm04	hsuanc01	liux07	pateln127	siehw01	wilsoe22
beykma01	downeh02	huangk06	liuy22	patels115	sigelk01	windae01
bhagwa01	drachs01	humble01	liuy35	patelt16	signam01	winstk01
bhalls02	drachs01 drfroa01	humphj04	liuy39		•	wojcim01
				pathologywsi_web	signer01	-
bhattm11	dsouzd04	hur03	livana02	patila06	simonm26	wongh04
bhedas01	dsouzs04	hutchk02	liy40	patinj01	simonn10	woodr04
bicakm01	duboib01	huw06	liy42	paulf03	sims01	wuh13
bihiem01	duffya02	ibesw01	liy54	pavlya01	singhb22	wur10
bijia01						
•	duongs02	ibings01	loadadmin	pawlip01	singhm14	wuy21
birnbr02	duplek01	ibings01 ilkovm01	loboi01	pedicc01	singhs100	wuz07
birnbr02 bobrot01	duplek01 durenm02	ibings01 ilkovm01 illins01	loboi01 loherp01	pedicc01 pedrov01	singhs100 singhs83	wuz07 wuz08
birnbr02 bobrot01 boixa01	duplek01	ibings01 ilkovm01 illins01 imtiaz03	loboi01 loherp01 lohy01	pedicc01	singhs100 singhs83 singhs96	wuz07 wuz08 wylerb01
birnbr02 bobrot01	duplek01 durenm02	ibings01 ilkovm01 illins01	loboi01 loherp01	pedicc01 pedrov01	singhs100 singhs83	wuz07 wuz08
birnbr02 bobrot01 boixa01	duplek01 durenm02 duttas04	ibings01 ilkovm01 illins01 imtiaz03	loboi01 loherp01 lohy01	pedicc01 pedrov01 pejavv01	singhs100 singhs83 singhs96	wuz07 wuz08 wylerb01
birnbr02 bobrot01 boixa01 bonavb01	duplek01 durenm02 duttas04 ebnerj01	ibings01 ilkovm01 illins01 imtiaz03 indias01	loboi01 loherp01 lohy01 lol01	pedicc01 pedrov01 pejavv01 pengs03	singhs100 singhs83 singhs96 siskr02	wuz07 wuz08 wylerb01 xgail01
birnbr02 bobrot01 boixa01 bonavb01 borrej02	duplek01 durenm02 duttas04 ebnerj01 ebraht01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03	loboi01 loherp01 lohy01 lol01 loosr01	pedicc01 pedrov01 pejavv01 pengs03 peream01	singhs100 singhs83 singhs96 siskr02 sistia01	wuz07 wuz08 wylerb01 xgail01 xiad01
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 boukes01	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 boukes01 bowlek01	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xiongy01
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 boukes01 bowlek01 brat	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xiongy01 xnat_irw
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 brat breene02	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xiongy01 xnat_irw xuc04
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 brat breene02 breenm01 brewek04	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55	wuz07 wuz08 wylerb01 xgail01 xia001 xiaoy04 xiez01 xiongy01 xnat_irw xuc04 xuj24
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowkes01 bowkek01 brat breene02 breenm01	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02 elyb01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02 petrab01 petraf01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01	wuz07 wuz08 wylerb01 xgail01 xiad01 xiacy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 boukes01 bowlek01 brat breene02 breenm01 brewek04 brophe01	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02 petrab01 petraf01 petraf01 petraf01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 bowlek01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lukszm01 lunda02	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02 petrab01 petraf01 petraf01 petraf01 petris05 petrok01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xup04 xuz07
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05 buckum01	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01 eolia01	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01 jainp08	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubfts01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lunda02 lundse01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02 petrab01 petraf01 petraf01 petris05 petrok01 phadna01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05 songl05	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xup04 xup04 yadavv03
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05 buckum01 buk02	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01 eolia01 epibrowser	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01 jainp08 jalads01	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lunda02 lundse01 luy12	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02 petrab01 petraf01 petraf01 petris05 petrok01 phadna01 philis12	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05 song105 songq01	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xuz07 yadavv03 yanga27
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05 buckum01 buk02 bunyas02	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01 eolia01 epibrowser epstem06	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01 jainp08 jalads01 janecm01	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lunda02 lundse01 luy12 macdok02	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02 peterl02 petrab01 petraf01 petris05 petrok01 phadna01 philis12 phuay01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05 song105 songq01 songw01	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xuz07 yadavv03 yanga27 yangh17
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05 buckum01 buk02 bunyas02 burgee02	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 eggle101 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01 eolia01 epibrowser epstem06 erekaa02	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01 jainp08 jalads01 janecm01 jangb03	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lunda02 lundse01 luy12 macdok02 macdol02	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 peterl02 petrab01 petraf01 petrs05 petrok01 phadna01 philis12 phuay01 piaoz03	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05 songl05 songq01 songw01 songx04	wuz07 wuz08 wylerb01 xgail01 xia001 xiaoy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xup04 xuz07 yadavv03 yanga27 yangh17 yangj27
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowlek01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05 buckum01 buk02 bunyas02 burgee02 burstd02	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 eggle101 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01 eolia01 epibrowser epstem06 erekaa02 erjav101	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01 jainp08 jalads01 janecm01 jangb03 jangdm02	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lunda02 lundse01 luy12 macdok02 macdok02 magena01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 petrab01 petraf01 petrs05 petrok01 phadna01 philis12 phuay01 piaoz03 picard03	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05 songl05 songq01 songw01 songx04 songy12	wuz07 wuz08 wylerb01 xgail01 xia001 xiaoy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xuz07 yadavv03 yango27 yangh17 yangj27 yangj31
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowles01 bowles01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05 buckum01 buk02 bunyas02 burgee02 burstd02 busson02	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 eggle101 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01 eolia01 epibrowser epstem06 erekaa02 erjav101 espess02	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01 jainp08 jalads01 janecm01 jangb03 jangdm02 jangj06	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lunda02 lundse01 luy12 macdok02 macdol02 magena01 maherc02	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 perkim01 peteri02 petrab01 petraf01 petris05 petrok01 phadna01 philis12 phuay01 piaoz03 picard03 pierap01	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05 songl05 songl05 songq01 songw01 songx04 songy12 sonim01	wuz07 wuz08 wylerb01 xgail01 xiad01 xiac01 xiongy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xup07 yadavv03 yanga27 yangh17 yangj27 yangj31 yangn07
birnbr02 bobrot01 boixa01 bonavb01 borrej02 bouhae01 bowles01 bowles01 brat breene02 breenm01 brewek04 brophe01 brownm82 buckld05 buckum01 buk02 bunyas02 burgee02 burstd02 busson02 butas01	duplek01 durenm02 duttas04 ebnerj01 ebraht01 edwart10 eggers01 egglel01 elahif01 elhaim01 ellisr05 elmasa02 elyb01 emhsr-admin ensari01 eolia01 epibrowser epstem06 erekaa02 erjavl01 espess02 estebr02	ibings01 ilkovm01 illins01 imtiaz03 indias01 invera03 ioanng02 ioniti03 ipm irikih01 irizaa03 iyegbc01 jacobc05 jacobm07 jacoby02 jadhab01 jainp08 jalads01 janecm01 jangb03 jangdm02 jangj06 janusm01	loboi01 loherp01 lohy01 lol01 loosr01 lounsw01 lozanr01 lubitg01 luffs01 luj12 lujama01 lukato01 lukinj01 lukszm01 lunda02 lundse01 luy12 macdok02 macdok02 magena01 maherc02 mahjab01	pedicc01 pedrov01 pejavv01 pengs03 peream01 perezp12 peris01 perkd01 petri02 petrl02 petrab01 petraf01 petris05 petrok01 phadna01 philis12 phuay01 piaoz03 picard03 pierap01 pillas03	singhs100 singhs83 singhs96 siskr02 sistia01 slauga01 slesinger-cryoadmin slesip02 sloof101 slosat03 smitha55 smithg17 smitr01 socraa01 songh05 songl05 songl05 songq01 songw01 songx04 songy12 sonim01 sooj02	wuz07 wuz08 wylerb01 xgail01 xiad01 xiaoy04 xiez01 xiongy01 xnat_irw xuc04 xuj24 xuk07 xum04 xup04 xup07 yadavv03 yanga27 yangj17 yangj27 yangj31 yangn07 yangs17
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canalp02	fenneb02	johnsk86	marina16	porrac01	srisua01	youngh02	
cantoa03	fentos02	johnsm50	markek03	pradha04	stalbl01	youssm03	
caox01	ferlaj01	jordad05	marketscan	prashf01	stanea02	yua27	
cappic01	ferrea06	joshia13	marquc08	preusm01	stapym01	yuang01	
carcas01	ferrec14	joshih02	marquc11	priggk01	stechy01	yug03	
carroe09	filipd02	joshit02	marros02	printa04	steind16	yuh04	
castre11	filizolalab	jostes01	marsae01	provad01	stewao02	yuh08	
cattoa01	finka03	juh01	marshd13	prytki01	stocka01	yuj25	
celebjadmin	fiorev01	jungs10	martia68	psychgenadmin	strasa01	zafers02	
cetinb01	fiorib01	justa01	martij172	pullit02	suarem08	zaidz01	
chaiz01	fischj04	kaintk01	martim78	pulsij01	sullim11	zakiy01	
chaj03	fleysl01	kajid02	martit26	qasims01	sumowj01	zamard03	
chamin01	flodad01	kalagp01	marxg01	qij01	sunc04	zamojm01	
chanc36	fludee01	kandos01	maryas01	quidwm02	sunh14	zatorn01	
chandp05	fludee02	kannah01	mas07	rabbaa02	sunr02	zbareg01	
changa20	fontas06	karaa01	massen06	radkee01	suns09	zebroa01	
changh14	forrei01	karabm01	mathud03	rafatf01	suny04	zeibed01	
changj33	forstc01	karake01	may08	rahmas14	sunz04	zengb02	
chanj24	foxb02	karlom01	maz07	rahmat03	susmaa01	zengq02	
charna02	frasem04	karsm02	mccanj06	rajaup01	sutkoj01	zhangb03	
chatzc02	freedg02	karven01	mccuss01	rajt01	swansm02	zhangd14	
chatzc03	freudy02	kaszet01	mcdona09	ramaka02	syedb01	zhangj62	
chavej12	fribom01	kathij01	mckina04	rambam01	syedm13	zhang126	
chdi	fridrm01	katss02	mclaic01	ramira22	szeszko_admin	zhangw09	
chenc51	friedb08	kauffj01	mclenk02	ramirj30	szeszp01	zhangx24	
chengc12	friedr05	kaufmo01	meadoa02	ramm02	taglim02	zhangx32	
chengh04	fuchst04	kellyg03	medinc13	ramosn13	takkak01	zhangy40	
chengw06	fultob01	kennye02	meic07	ramoss18	talwas01	zhangz05	
chengy10	fuq01	kepina01	melned01	ramses01	tandop03	zhangz19	
chenj02admin	fushia01	keraii01	menonk02	randoh01	tangy08	zhangz20	
chen154	fuw01	khaliz03	meranr01	ranglm01	tangy11	zhaoh02	
chenla01	gail01	kimc46	merzoe01	rantid01	tasakr01	zhaow05	
chenm37	ganesg01	kimg20	mesroa02	raov04	tastac01	zhaoy14	
chenns01 chenr07	gaox08 garcij62	kimm61 kimm62	mestrg01 meyery05	rashea05 ratscg01	techdev techdev6	zhaoz03 zhengs07	
chenr11	garcim54	kimt15	meyery03	ravia04	tengs07	zhoub04	
chens61	gardng03	kimurh01	miam01	rawalo01	teppea02	zhour02	
chent12	gargp01	kimy56	micelr03	reala02	theodd05	zhoux05	
cheny60	gelbb01	kinros01	michar13	rebelv01	therrk01	zhua06	
chenz09	gellej01	kirchm05	midyav01	rechko01	thomaa68	zhuj05	
chessa01	generb01	kittrh01	mina03	rechte01	thomaa74	zhux02	
chestm01	gergut01	kittss01	minerg01	reddam02	thomam32	zilbeg01	
cheunk02	gettlk01	klange01	mizet01	reinfe01	thompr21		
chinc18	gey01	kleinr08	mmedsadmin	rentoa01	thorpa03		
chisha02	ghelie01	kodysy02	moeins01	rentzf01	tichks01		
chob04	ghoshr05	koenid03	mognoi01	restrp01	tomall01		
choh07	gibsok04	kohlis03	mohamk08	revab01	torred23		
	:03 users]\$ cd						
[palafm01@li03c	:03 hpc]\$ ls						
· ·	backups benchmark	config data ho	ome logs lsf pack	ages slurm stats	tsm users web		
[palafm01@li03c	,						
[palafm01@li03c	_						
bin dev gpfs	The second secon			s usr xcat-inven	tory_build		
		edia mnt opt	root sbin srv tm	var xcatpost			
[palafm01@li03c	=						
[palafm01@li03c	_						
arion cmsdata	•						
	:03 sc]\$ cd arion						
[palafm01@li03c	=				a tam manta		
	_home gpfs oldHPCBa c03 arion]\$ cd projec		projects scratch	trasn trasnaatneta	o tsm work		
	:03 projects]\$ ls						
abcd	ChowellL Chowell	ah	GCF_OUTPUT	V.	ennyComputational	osmanr01c	sbsuser
abcd_indices	ChromoZo		GENECAD		ennylab	pacbio	scec_editing
adineto	CISNET		Gene-PARE		ET-MCI	PacbioGenomes	SCENT
adolpvs	clemej05	5a	GenomicsProsta		ET-MCI ETMR_K23	packages	schade01a
ad-omics	CL_RNAse		geospatial_cts		iralyLab	PAGES	schaeferLab
ADsystems	COGA	-4	glycoprotein		leinr08a	pandeg01a	SchizophreniaS
AD-TS	CogNeuro		gnbr		leinr08b	Pan-Squamous	schlea02a
aggara01a	CommonMi		GnjaticLab		onigorski_lab	pareks02a	schzrnas

schaeferLab SchizophreniaSVs schlea02a GnjaticLab GOCAR aggara01a CommonMind Konigorski_lab pareks02a schzrnas aggara01c aggara01d COMP201 kraft_lab parsonslab scMultiscale comppath_500k GPCRSLC KRAS parvam01a scNetwork comppath_detectors AGS_COVID19 GriceWES Labprojects pathologywsi scRNA-limbal_stem_ cells AHAStratNet comppath_dev GTEX paul_oreilly scRNATools comppath_HNSCC_TMA GuccioneLab PBG sealfs01a Lazarus_Cryo ai

AIGH	comppath_liver	quLab	LCNE	PBGTCGA	sealfs01a1
AINO	comppath_lungEGFR	qumus-hipc	LEAP	PCa-Genomics	Sea
airms	comppath_prostateCIN	qumusz01a	lessec02p1	PCOSgenetic	SegLiver
airms_workspace	comppath_viewer	guptay01	LevinsonMDD	PD1signal	sezen-erk
AirUS	ConAD	gutbiome	LINCS	pd-omics	SGG
akbars02a	cordoc02a	H_ad-omics	lin_lab	pejaverlab	sharpa01a
AllSample_VCFFILE_woW0112	COVID	H_aggara01d	Lippert_lab	Perturb-map	shenl03_ml
als-omics	CRAMP_Study	haghi f01a	load	peteri02a	Signatures
AMPADWGS	craniofacial	H_AHAStratNet	LOAD	PetraliaLab	sinai-biodesign
AndyIslet	CranioNet	hansor03a	loosr01a	PGDAC	SITAMCOF
ANRP	CranioProject	haok01a	losich01a	PGV	sleeplab
AQP4	creeds	haok01b	lothar_lab	PHIME-3	SlesingerLab
AREP	CRIPT	HAPmodel	lujama01a	pid_detection	songlab
argmac01a	cross_prime	H_ASChub	lukszaLab	pintod02a	span
ASCcolumbia	croxsp01a	hATTR		pintod02b	SPARK
ASChub	cryosparc	H_bicsharing	lungwgs LymeMind	pintod02c	SpikeID
AsgariLab	cryosparcTest	H_bsr2401	LymeMIND2	PLK2	SRB_DG
asthma-allergy	ctcl	H_buxbaj01a	mabc	pMorpheus	STARNET
•••				The state of the s	
AtopicDerm	CV NSCV	HCC	MACRO	polyg	statgen
bakellab	CV_NSGY	H_clemej05a	mahajm02a	PostopOutcomes	StatHighD
bashia02a	DAC_Murrough	hcup-study	mahjani	prcasurv	sterne04a
bashia02b	DADisorders	HDIPMM	MASCTCD	precisemd	stolog01a
bashia02c	DARPA	H_dudlej01d	mc_dp2	preproc	strive
bashia02d	data-ark	HERVP	MCSimu	primavo	StrokeCode
BAT-NATIVE	dbGAP_CVD	HetLiverCancer	MDMA	prism-mtDNA	subtilis
bcisrf	dcalab	Heyne_lab	MECONIUM	PROGRESS-MRI	sumo
BC_Reservoir	ddp	H_filizm02a	Merad_Lab	project1000	sumo2
BCWG	deep_phenotype	H_guLab	meradm01a	ProteinDesign	SuperHairGEL
BD2K	DeepPROTAC	H_hypatia_shortclinicaltrials	MetaDope	PsoriasisMulti	Szeszko_Biobank
BDS1005	DHasthma	H_IcahnInstitute	mezeim01a	psychAD	tauomics
BeckerLab	DHIPC	HIMC	mezeim01b	psychgen	TCGA
becklab	DigiIBD	HIVAN	Microglia	psychgen2	tenoeb01a
Bedmaster	Digital	hmDNAmap	midbrain_cross_disorder	psychres	test
BernerLab	dincea01a	H_MMEDS	mincej01a	PVI	Tmuris
bernse03a	DiseaseGeneCell	H_onelLab	MLCM	PVR	tochea01a
bhardwajLab	dleseq	hoshiy01a	MLCxCancer	R61_Ezogabine	TRD
bicbot	DLP	Houton_Sander	ML_DTC_Recurrence_Risk	RADIEMS	Tsankov_Normal_Lun
g					
bicsharing	DOCM	H_pacbio	ML_in_Heme	radonc_headneck	TSM_TEMP
bigbrain	DRISM	H_PBG	MLlabAllergy	RandR	tuz01a2
BiNGS	DrugSensitivity	hpcadmins	ml_liver_nmp	RAPPS	tuz01b
Biofeedback_VTA	DTR-EFGR	hpcstaff	MMAAAS	rareADRs	ubarri01a
BK_Lab	duboin02a	H_pd-omics	MMEDS	regeneron	ubarri01b
bladder-sea	DYRKNFAT	H PGDAC	mm-kinase	Resilience	ubarri01c
BMEII_DT	dysphonia	hpims-hpi	MML	rg_bowcoa01	ukb18177_oreilly
BMI1007	EASI-COG	H_rg_psychgen	MNMcohort	rg_buxbaj01a	UKBGWAS
BrainVar	ECHO_ML	HSC_and_Leukemia	moebius		UKBIOBANK
				rg_byunm01	
BRD4	ECHOpm	H_schlea02a	motor	rg_choj07	untreatedIBD
breast_nlp	ehrlich60	H_SeqLiver	MouseDIPGscRNAseq	rg_cunnic02	urology_llms
breen_lab	EHR_ML	H_Signatures	MPN-seq	rg_dunaia01	va-biobank
BRNAFXTAS	elahiomics	HSRData	mscic1	rg_gelbb01	VandECMS
brrbrtseq	eMERGE	HTS	mscic2	rg_goatea01	vascbrain
brrccsi	emhsr	H_tuz01a	msdw_covid	rg_gumusz01	VIMS
brrCD8TscmIFN	endocare	Huygens	MSIH-seq	rg_HPIMS	VIVA
brrdnmt3a	ensari_lab	H_webbb02a	MSM	rg_huangk06	walkerlab
brriavgrn	envepi	hypatia_shortclinicaltrials	MTC	rg_kennye02	walshm02a
brrifnmemory	EPIASD	ibdgc	MUBCD	rg_kleinr08	wanglab
brrmpiav	epiAUD	IcahnInstitute	myeloidiPSC	rg_kontoa02	watanabe
brrnrhv	epigenAD	IFNbeta	NARC	rg_lagana01	watanh02a
brrrnvc	epigenBD	igh	NASAWES	rg_nicolp01	webbb02a
brryfvvax	epilepsy_prediction_project	Ignaz	ncRNAs	rg_parsons	weijiaTemp
BSR3101	epimark	immunotherapy	Nestlerlab	rg_peterl02	WL
bsr6402	ESCAPE1	INC	Neurofeedback_connectome	rg_psychgen	wnv_forecast
BTCseq	ExoRNA	InfectiousDisease	ngs	rg_sharpa01	WTC_Cancer
buxbaj01a	faithj02a	ipm	NGSCRC	rg_turroe01	XEN1101
buxbaum_data	Fanconi	ipm_Sema4	NGS-MiSeq	rg_turroe01-snap	XLTEK
CABGvsPCI	fangg03a	IRW-BMEII	nicu_ai	rg_voloug01	xuj09a
Cai_ApoE	fangg03b	ISDandHC	nicunet	rg_zhangw09	YangLab_NGS
CALCIUM	Faroese	ISDS	NLPSDOH	RMsystems	yangy13a
canan	fibro-mann	Itan_lab	NMAGM	robot	YEATS
cbd_neuroimaging	filizm02a	jacobm07a	nmibc_bcg	rosenb16a	Yong_Lab_SCS
CCG	FioreLab	JanssenIBD	ochanj01a	roussp01a	YuanLab
celebj01a	FLAI	JanssenIBD-Prospective	OlfMem	roussp01b	zeynep_chip
cellPlasticity	FluVac	jianglab	OneBatch	RTP	zeynep_cittp zeynep_signatures
chdiTrios	FMD	ji_lab	onelLab	SAA	zeynep_signatures zeynep_virus
CHEAR_Untargeted	friedmanlab	Johnsonlab	ophth_glaucoma	sachsd01a	zhangb03a
CHEAR_OITCUT geted	TT LEGINGTEGD	JOHNSONEGO	opricii_gradcolla	SUCHSUUTU	<u> </u>

cheni02a friedr05-bioinf K01 connectome OrACLE ATWG Sahool ab zhangb03b fuchs_lab K01_VTA chessa01a Organoid formation SALUD zhangw09a zhoum01a chessa01b funEpi k23 OSHAL sam_bryn chessa01c GCF_MicroArray karrj02a osmanr01a samstr01a zhuj05a kellnc01a zwakat01a Chipuk Laboratory GCF MiSea osmanr01b sbdd

[palafm01@li03c03 projects]\$ cd vascbrain/

[palafm01@li03c03 vascbrain]\$ ls

A5002 A5009 C7001 C7006 create_rapid_structure.py N2001 N2006 P6003 P6009 pipeline_trace.txt sample_fastq_table.

tsv

A5004 A5010 C7002 C7007 FileZilla_3.66.5_win64-setup.exe N2002 N2007 P6004 P6011 pipeline_trace.txt.1 WGS-iPSC A5006 A5012 C7003 C7009 multiqc_general_stats.txt N2003 N2008 P6006 pilot pipeline_trace.txt.2 work

A5007 BioMe C7004 create_fastq_key.R multiqc_report.html N2004 P6002 P6008 pilot_data report.html

[palafm01@li03c03 vascbrain]\$ pwd
/sc/arion/projects/vascbrain

[palafm01@li03c03 vascbrain]\$ client_loop: send disconnect: Broken pipe (base) mariapalafox@11:56PM Desktop % ssh palafm01@minerva.hpc.mssm.edu

From April 30st, 2020, Minerva is accessbile only via VPN.

To request VPN:

https://labs.icahn.mssm.edu/minervalab/internal-users-minerva-action-required-external-login-nodes-being-removed-on-april-15/

New Minerva website:

https://labs.icahn.mssm.edu/minervalab/

Please input your password and two factor token:

(palafm01@minerva.hpc.mssm.edu) Password:

Last login: Mon Apr 15 19:47:53 2024 from 10.125.146.225

Run "Minerva_help" for useful Minerva commands and websites

Minerva Documentation at https://labs.icahn.mssm.edu/minervalab/documentation/ Globus guide at https://labs.icahn.mssm.edu/minervalab/documentation/file-transfer-globus/

Minerva training slides at https://labs.icahn.mssm.edu/minervalab/resources/the-minerva-user-group-and-training-classes/

Data Ark Data Sets available on Minerva at https://labs.icahn.mssm.edu/minervalab/resources/data-ark/

GPU guide at https://labs.icahn.mssm.edu/minervalab/documentation/gpgpu/

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=======!!!!!!!!!SEVEN Minerva SPRING TRAINING SESSIONS!!!!!!!!!=========

FULL details at https://labs.icahn.mssm.edu/minervalab/minerva-hpc-information-and-training-sessions-2/

Session 2: Load Sharing Facility (LSF) Job Scheduler - Wednesday, April 3, 1 pm-2 pm

Location: Icahn School of Medicine building (1425 Madison Ave) Room 14-84 (14th FL)

Zoom Registration at https://mssm.zoom.us/webinar/register/WN_lVp2A5SvRV6iL_1u4PeCTA

GPU/AI

Session 3. Introduction to GPU/AI resources on Minerva - Wednesday, April 10, 1 pm -2 pm

Session 4. 5 Ways to Get Started with GPUs - Friday, April 12, 1 pm-2 pm

Session 5: Accelerated General Data Science in Medicine with RAPIDS, CuPy and Numba - Wednesday, April 17, 1 pm-2 pm

Session 7: How to Accelerate Genome Analysis Toolkit (GATK) by using Parabricks - Wednesday, May 1, 1 pm-2 pm

Data Ark

Session 6: Introduction to Data Ark - Mount Sinai Data Commons - Wednesday, April 24, 1 pm-2 pm

Location: Icahn School of Medicine building (1425 Madison Ave) Room L3-36 (3rd FL)

Zoom Registration at https://mssm.zoom.us/webinar/register/WN_Mblda2FySuKpVbvhIg7ArQ

=== Send tickets to hpchelp@hpc.mssm.edu ===

!!!!!WE DO NOT BACKUP USER FILES

!!!!PLEASE ARCHIVE/BACKUP YOUR IMPORTANT FILES

```
Disk quotas for user palafm01 (uid 26222):
    Filesystem space quota limit grace
                                             files
                                                    auota
                                                           limit
                 40K 19456M 20480M
nfs01-ib0:/hpc
                                               15
                                                        0
                                                               0
Last report update 2024-04-16-13:40
Project(arion)
                                               Usaae
                                                         Files
                                     User
arion_projects_vascbrain
                                    palafm01
                                               0
                                                         1
                                    palafm01 0
                                                         24
root
[palafm01@li03c03 ~]$ cd /sc/arion/projects/vascbrain
[palafm01@li03c03 vascbrain]$ ls
A5002 A5010 C7003 create_fastq_key.R
                                                 N2001 N2007 P6006 pilot_data
                                                                                         sample_fastq_table.tsv
A5004 A5012 C7004 create_rapid_structure.py
                                                 N2002 N2008
                                                              P6008 pipeline_trace.txt
                                                                                        WGS-iPSC
A5006 BioMe C7006 FileZilla_3.66.5_win64-setup.exe N2003 P6002 P6009
                                                                    pipeline_trace.txt.1 work
A5007 C7001 C7007 multiqc_general_stats.txt
                                                 N2004 P6003 P6011
                                                                    pipeline trace.txt.2
A5009 C7002 C7009 multiqc_report.html
                                                 N2006 P6004 pilot report.html
[palafm01@li03c03 vascbrain]$ cd WGS-iPSC/
[palafm01@li03c03 WGS-iPSC]$ ls
[palafm01@li03c03 WGS-iPSC]$ ls
[palafm01@li03c03 WGS-iPSC]$ ls
FastQC_output MD5 Novogene report raw_data raw_data.zip Readme.html
「palafm01@li03c03 WGS-iPSC]$ cd
[palafm01@li03c03 ~]$ ls
Lingo Reminder.rtf
[palafm01@li03c03 ~]$ rm Lingo\ Reminder.rtf
[palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ vim .bash
.bash_history .bash_logout .bash_profile .bashrc
[palafm01@li03c03 ~]$ vim .bash_profile
[palafm01@li03c03 ~]$ vim .bashrc
[palafm01@li03c03 ~]$ source .bashrc
[palafm01@li03c03 ~]$ data
[palafm01@li03c03 vascbrain]$ cd
[palafm01@li03c03 ~]$ client_loop: send disconnect: Broken pipe
(base) mariapalafox@11:57PM Desktop % ssh palafm01@minerva.hpc.mssm.edu
From April 30st, 2020, Minerva is accessbile only via VPN.
To request VPN:
https://labs.icahn.mssm.edu/minervalab/internal-users-minerva-action-required-external-login-nodes-being-removed-on-april-15/
New Minerva website:
https://labs.icahn.mssm.edu/minervalab/
```

Please input your password and two factor token:

(palafm01@minerva.hpc.mssm.edu) Password:

Last failed login: Tue Apr 16 15:41:10 EDT 2024 from 10.125.143.75 on ssh:notty

There were 12 failed login attempts since the last successful login.

Last login: Tue Apr 16 15:00:01 2024 from 10.125.143.75

Run "Minerva_help" for useful Minerva commands and websites

Minerva Documentation at https://labs.icahn.mssm.edu/minervalab/documentation/ Globus guide at https://labs.icahn.mssm.edu/minervalab/documentation/file-transfer-globus/ Minerva training slides at https://labs.icahn.mssm.edu/minervalab/resources/the-minerva-user-group-and-training-classes/ Data Ark Data Sets available on Minerva at https://labs.icahn.mssm.edu/minervalab/resources/data-ark/ GPU guide at https://labs.icahn.mssm.edu/minervalab/documentation/gpgpu/

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    === Send tickets to hpchelp@hpc.mssm.edu ===
!!!!!WE DO NOT BACKUP USER FILES
         !!!!PLEASE ARCHIVE/BACKUP YOUR IMPORTANT FILES
Disk quotas for user palafm01 (uid 26222):
    Filesystem space quota limit grace files quota limit grace
                 44K 19456M 20480M
 nfs01-ib0:/hpc
                                                16
                                                         0
                                                                   0
Last report update 2024-04-17-03:42
                                                 Usage
                                                            Files
Project(arion)
                                       User
arion_scratch
                                       palafm01 0
                                                             1
                                       palafm01 0
root
                                                             24
                                       palafm01 186.7G
arion_projects_vascbrain
Fpalafm01@li03c03 ~\$ data
[palafm01@li03c03 vascbrain]$ ls
A5002 C7004
                                       N2003 P6011
A5004 C7006
                                       N2004 pilot
Δ5006 (7007
                                       N2006 pilot_data
A5007 C7009
                                       N2007 pipeline_trace.txt
A5009 create_fastq_key.R N2008 pipeline_trace.txt.1
A5010 create_rapid_structure.py P6002 pipeline_trace.txt.2
A5012 FileZilla_3.66.5_win64-setup.exe P6003 report.html
BioMe multiqc_general_stats.txt P6004 sample_fastq_table.tsv
                                      P6006 WGS-iPSC
C7001 multiqc_report.html
C7002 N2001
                                       P6008 work
C7003 N2002
                                       P6009
[palafm01@li03c03 vascbrain]$ cd WGS-iPSC/
[palafm01@li03c03 WGS-iPSC]$ ls
FastQC_output MD5 Novogene report raw_data raw_data.zip Readme.html
[palafm01@li03c03 WGS-iPSC]$ mkdir aligned_reads reads scripts results data
[palafm01@li03c03 WGS-iPSC]$ ls
aligned_reads FastQC_output Novogene report raw_data.zip reads scripts
        MD5
                            raw_data Readme.html results
[palafm01@li03c03 WGS-iPSC]$ ls
aligned_reads FastQC_output Novogene report raw_data.zip reads scripts
          MD5
                         raw_data
                                           Readme.html results
[palafm01@li03c03 WGS-iPSC]$ unzip -l raw_data.zip
Archive: raw_data.zip
 Length Date Time Name
  185370 05-25-2022 18:06 raw_data/Rawdata_Readme.pdf
     162 05-26-2022 17:54 raw_data/P732912/MD5.txt
23948553718 05-25-2022 23:03 raw_data/P732912/P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz
24432028934 \quad 05-25-2022 \quad 22:56 \quad \text{raw\_data/P732912/P732912\_FDSW220142847-1r\_HYMM2DSX2\_L1\_2.fq.gz}
25530322114 05-26-2022 04:13 raw_data/P931263/P931263_FDSW220142848-1r_HYMM2DSX2_L1_1.fq.gz
26308842234 05-26-2022 04:15 raw_data/P931263/P931263_FDSW220142848-1r_HYMM2DSX2_L1_2.fq.gz
     162 05-26-2022 17:54 raw_data/P931263/MD5.txt
                            -----
100219932694
                               7 files
[palafm01@li03c03 WGS-iPSC]$ bsub
bsub> ^C
[palafm01@li03c03 WGS-iPSC]$ bsub -q interactive -n 1 -R 4
bsub> ^C
[palafm01@li03c03 WGS-iPSC]$ bsub -P vascbrain -q interactive -n 8 -W 15 -R span[hosts=1]
bsub>
bsub> ^C
```

[palafm01@li03c03 WGS-iPSC]\$ bsub -P vascbrain

acc_vascbrain

BODE/CATS

No

bsub> ^C

palafm01

```
[palafm01@li03c03 WGS-iPSC]$ bsub -P acc_vascbrain -q interactive -n 8 -W 15 -R span[hosts=1]
bsub> ^C
[palafm01@li03c03 WGS-iPSC]$ bsub -P acc_vascbrain -q interactive -W 6:00 -J WGS1 -n 8 -R span[hosts=1]
bsub> ^C
[palafm01@li03c03 WGS-iPSC]$ bjobs -l
No unfinished job found
[palafm01@li03c03 WGS-iPSC]$ cd
[palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ bsub -P acc_vascbrain -q interactive -W 6:00 -J WGS1 -n 8 -R span[hosts=1]
bsub> ^C
[palafm01@li03c03 ~]$ data
[palafm01@li03c03 vascbrain]$ cd WGS-iPSC/
[palafm01@li03c03 WGS-iPSC]$ ls
aligned_reads FastQC_output Novogene report raw_data.zip reads
                                                                                                                                          scripts
                            MD5
                                                           raw_data
                                                                                             Readme.html results
[palafm01@li03c03 WGS-iPSC]$ unzip raw_data.zip
Archive: raw_data.zip
\label{lem:condition} \mbox{replace } \mbox{raw\_data\_Readme.pdf? [y]es, [n]o, [A]ll, [N]one, [r]ename: y \\ \mbox{replace } \mbox{raw\_data\_Readme.pdf? [y]es, [n]o, [A]ll, [N]one, [r]ename: y \\ \mbox{replace } \mbox{raw\_data\_Readme.pdf? [y]es, [n]o, [A]ll, [N]one, [r]ename: y \\ \mbox{replace } \mbox{raw\_data\_Readme.pdf? [y]es, [n]o, [A]ll, [N]one, [r]ename: y \\ \mbox{replace } \m
    inflating: raw_data/Rawdata_Readme.pdf
replace raw_data/P732912/MD5.txt? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
   inflating: raw_data/P732912/MD5.txt
replace raw_data/P732912/P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz? [y]es, [n]o, [A]ll, [N]one, [r]ename: y
   inflating: raw_data/P732912/P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz y
replace raw_data/P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz? [y]es, [n]o, [A]ll, [N]one, [r]ename: inflating: raw_data/P732912_F
DSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
\label{eq:continuous} $$ replace $$ raw_data/P931263/P931263_FDSW220142848-1r_HYMM2DSX2_L1_1.fq.gz? [y]es, [n]o, [A]ll, [N]one, [r]ename: y and y all the properties of the 
   inflating: raw_data/P931263/P931263_FDSW220142848-1r_HYMM2DSX2_L1_1.fq.gz y
replace raw_data/P931263/P931263_FDSW220142848-1r_HYMM2DSX2_L1_2.fq.gz? [y]es, [n]o, [A]ll, [N]one, [r]ename: inflating: raw_data/P931263/P931263_F
{\tt DSW220142848-1r\_HYMM2DSX2\_L1\_2.fq.gz} \quad {\tt y}
replace raw_data/P931263/MD5.txt? [y]es, [n]o, [A]ll, [N]one, [r]ename: inflating: raw_data/P931263/MD5.txt
error: invalid zip file with overlapped components (possible zip bomb)
 To unzip the file anyway, rerun the command with UNZIP_DISABLE_ZIPBOMB_DETECTION=TRUE environmment variable
[palafm01@li03c03 WGS-iPSC]$ bsub -P acc_vascbrain -q interactive -n 4 -W 2:00 -R rusage[mem=4000] -R span[hosts=1] -Is /bin/bash
Job <124353955> is submitted to queue <interactive>.
<<Waiting for dispatch ...>>
<<Starting on lc02a28.chimera.hpc.mssm.edu>>
[palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads FastQC_output Novogene report raw_data.zip reads
                                                                                                                                           scripts
data
                             MD5
                                                           raw_data
                                                                                             Readme.html results
[palafm01@lc02a28 WGS-iPSC]$ cd raw_data
[palafm01@lc02a28 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@lc02a28 raw_data]$ cd P732912/
[palafm01@lc02a28 P732912]$ ls
MD5.txt P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@lc02a28 P732912]$ cd ..
[palafm01@lc02a28 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@lc02a28 raw_data]$ cd ..
[palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads FastQC_output Novogene report raw_data.zip reads
                                                                                                                                         scripts
                            MD5
                                                           raw data
                                                                                             Readme.html results
[palafm01@lc02a28 WGS-iPSC]$ cd raw_data
[palafm01@lc02a28 raw_data]$ ls
P732912 P931263 Rawdata Readme.pdf
[palafm01@lc02a28 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@lc02a28 raw_data]$ cd ..
[palafm01@lc02a28 WGS-iPSC]$ pwd
/sc/arion/projects/vascbrain/WGS-iPSC
[palafm01@lc02a28 WGS-iPSC]$ pwd
/sc/arion/projects/vascbrain/WGS-iPSC
Fpalafm01@lc02a28 WGS-iPSCT$ mkdir ha38
[palafm01@lc02a28 WGS-iPSC]$ wget -P /sc/arion/projects/vascbrain/WGS-iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
--2024-04-17 07:46:45-- https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
Resolving hgdownload.soe.ucsc.edu (hgdownload.soe.ucsc.edu)... 128.114.119.163
Connecting to hgdownload.soe.ucsc.edu (hgdownload.soe.ucsc.edu)|128.114.119.163|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 983659424 (938M) [application/x-gzip]
Saving to: '/sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.fa.gz'
```

======>] 983,659,424 39.0MB/s in 25s

100%[=====

[palafm01@lc02a28 WGS-iPSC]\$ gunzip /sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.fa.gz

```
「palafm01@lc02a28 WGS-iPSC]$
[palafm01@lc02a28 WGS-iPSC]$
[palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads FastQC_output MD5
                                           raw_data
                                                        Readme.html results
             hq38
                           Novogene report raw_data.zip reads
                                                                 scripts
data
[palafm01@lc02a28 WGS-iPSC]$ cd hg38
[palafm01@lc02a28 hg38]$ ls
ha38.fa
[palafm01@lc02a28 hg38]$ cd ..
[palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads FastQC_output MD5
                                           raw_data
                                                        Readme.html results
                           Novogene report raw_data.zip reads
                                                                   scripts
data
            hg38
[palafm01@lc02a28 WGS-iPSC]$ samtools faidx /sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.fa
bash: samtools: command not found
[palafm01@lc02a28 WGS-iPSC]$ module aval
lmod settarg
------/opt/hpc/packages/minerva-centos7/modulefiles ------
                                              libbsd/0.11.6
  1.79.1
                                                                             (D)
                                              libcap/v2
  ANTs/1.9
  ANTs/2.4.2
                                       (D)
                                              libcares/1.16.1
  BGW-TWAS/07192023
                                              libdrm/2.4.102
  BN/2012
                                              libdrm/2.4.107
  BaseSpaceCLI/1.1.0
                                              libdrm/2.4.112
  BaseSpaceCLI/1.5.3
                                       (D)
                                              libdrm/2.4.115-gcc-11.2.0
                                                                             (D)
  BrainNetViewer/1.7
                                              libedit/3.1
  CPAN/5.16.3
                                       (D)
                                              libelf/0.8.2-gcc-11.2.0
  CPAN/5.36.0
                                              libepoxy/1.5.4
  CTPL/0.0.2
                                              libevent/2.1.12-gcc-11.2.0
                                                                             (D)
  CTPL/0.3.3
                                       (D)
                                              libexif/0.6.24
  EDirect/15.5
                                              libfabric/1.11.1
  FastSMC/18Sep2020
                                              libffi/3.0.9
                                              libffi/3.3
  FoxitReader/2.4.5
  G-PhoCS/1.3
                                              libffi/3.4.2
                                              libffi/3.4.4-gcc-11.2.0
                                                                             (D)
  GWAMA/2.2.2
  GenomeAlignmentTools/1.0
                                              libgd/2.3.0
                                              libgflags/2.2.2
  GraphicsMagick/1.3.36
  HiC-Pro/3.1.0
                                              libgit2/1.1.0
  ICU/73.2-gcc-11.2.0
                                              libglew/2.1.0
  Imath/3.1.5
                                              libglm/0.9.9.8
  JasPer/4.0.0-gcc-11.2.0
                                              libglu/9.0.1
  LSFqueue/1.0
                                              libglvnd/1.6.0-gcc-11.2.0
                                              libgsf/1.14.17
  LeTRS/2.2.1
  LibreOffice/6.4.6
                                              libgsf/1.14.49
                                                                             (D)
  LibreOffice/7.4.3.2
                                       (D)
                                              libidn/1.9
  MAESTRO/1.3.1
                                              libimagequant/4.0.0
  MCR/R2017a
                                              libjpeg-turbo/3.0.0-nasm-2.15.05
  MCR/R2017b
                                              libjpeg/v9
  MCR/R2018a
                                              libmd/1.0.4
  MCR/R2019b
                                              libmng/2.0.3
                                              libmnl/1.0.5
  MCR/R2020b
  MsCAVIAR/6May2021
                                              libnet/0.10.11
  NBIA/4.2.1
                                              libnet/1.3
                                                                             (D)
  NVFlare/2.4.0
                                              libnftables/1.0.4
  NiftvFit/29Jun17
                                              libnftnl/1.2.2
  PRScs/4Jun2021
                                              libnl/3.5.0
  PTRC/1.1
                                              libnvidia-container/1.13.4
  ParseBio/1.0.4
                                              libpciaccess/0.16
                                                                             (D)
  R/3.5.1t
                                              libpng/1.6.40-gcc-11.2.0
  R/3.5.3
                                              libpsm-infinipath/3.3.26
  R/3.6.0dev
                                              librsvq/2.50.2
  R/3.6.0
                                              libsigc++/2.0.18
  R/3.6.2
                                              libsigc++/2.10.2
  R/3.6.3
                                              libsigc++/3.0.2
                                                                             (D)
  R/4.0.2
                                              libsodium/1.0.18
                                              libspng/0.7.2
  R/4.0.3
  R/4.0.4-llvm
                                              libtiff/test
                                              libtiff/3.9.7
  R/4.1.0-cairo
```

R/4.1.0		libtiff/4.6.0t	(D)
R/4.2.0	(D)	libunwind/1.6.2-gcc-11.2.0	
R/4.2.1		liburcu/v0.14.0-67	
R/4.2.2		liburcu/0.12	
R/4.3.0		liburcu/0.14	(D)
R/4.3.3-intel-mkl		libvips/8.10.6	
R/4.3.3		libvips/8.12.2	(D)
ReadZS/1.0.0		libwebp/1.2.3	
Rmath/3.5.3		libxcb-iccm/0.4.1-5	
Rmath/3.6.3	(D)	libxcb-image/0.4.0-2	
Seurat/3.0		libxcb-keysyms/0.4.0	
abc/0.2.2		libxcb-render-util/0.3.9	
adam/0.27.0		libxcb/1.15	(D)
adapterremoval/2.3.1		libxinerama/190ct2021	
adfr/1.0		libxkbcommon/1.4.0	
admixtools/7.0.2		libxkbcommon/1.5.0	(D)
admixture/1.3.0		libxml2/2.9.10	(D)
advntr/1.3.3		libxmlsec1/1.2.31	
afni/22.3.03		libxshmfence/1.3.2-gcc-11.2.0	
afni/24.0.05		libxslt/1.1.34	
alphafold/2.2.0		libxtend/0.1.6	
alphafold/2.3.2.singularity		liftover/09-Jul-2019	
alphafold/2.3.2-singularity		linuxbrew/2.2.5	(D)
alphafold/2.3.2	(D)	llvm-project/8.0.1	
alphamissense/0.0.1		llvm/10.0.1	
amazon-genomics-cli/1.6.0		llvm/11.1.0	
amazon-genomics-cli]/1.6.0		llvm/13.0.1	
amber/18-tools-18-v100		llvm/14.0.6	
amber/18-tools-18		llvm/16.0.6	(D)
amber/20-tools-20-a100		lofreq/2.1.5	(D)
amber/20-tools-20-v100		longtr/2023-12-01	
amber/20-tools-20		lopass/2021-07-19	
amber/20-tools-21-a100		lortia/0.9.9	
amber/20-tools-21-v100		lpsolve/5.5.2.11	
amber/20-tools-21		lsf/10.1	(D)
amber/22-tools-23-a100		lsf_drmaa/1.11re	• •
amber/22-tools-23-v100	(D)	lsf_drmaa/1.11	(D)
anaconda2/latest	. ,	lsgkm/2020-09-09	
anaconda2/2019.03		lz4/1.9.3	
anaconda2/2019.10dev		lz4/1.9.4-gcc-11.2.0	(D)
anaconda2/2019.10	(D)	lzip/1.22	
anaconda3/junk	(-)	macs/3.0.0b1	(D)
anaconda3/latest		mafft/7.505	(D)
anaconda3/2018.12	(D)	magma/2.5.4-ampere	
anaconda3/2019.10		magma/2.5.4-volta	
anaconda3/2020.11		magma/2.5.4	(D)
anaconda3/2021.5		magma_gwas/1.0.7b	(5)
anaconda3/2022.10		magma_gwas/1.0.8	
anaconda3/2023.09		magma_gwas/1.10	(D)
anaconda3/2024.02		make/4.2	(D)
annotsv/2.2		makehub/1.0.5	(0)
annotsv/3.0.7	(D)	mallet/202108	
ant/1.10.9	(0)	manta/1.6.0	
apache-maven/3.6.1		mantra/1.0	
apptainer/1.2.5		marketscan/9.4	
arcashla/0.2.0		matlab/R2012b	
aria2/1.35.0		matlab/R2017a	
		matlab/R2018b	
arpack-ng/3.8.0 arrow/0.16.0		matlab/R2019a	
arvados-cli/2.0.3.1		matlab/R2020b	
aselux/1.0.2-beta		matlab/R2021a	
aspera-connect/3.9.6	(D)	matlab/R2021b	(D)
aspera-connect/4.2.4	(D)	matlab/R2022a	(D)
at-spi2-atk/2.38.0		matlab_runtime/R2019b	(D)
at-spi2-core/2.40.3		megan/6.18.10	(D)
atacprimertool/1.0		meme/5.1.0	
ataqv/1.2.1		meme/5.4.1	(D)
athr/2.0.0		meme/5.5.1	(D)
atk/2.34.1		mesa/20.1.6	(D)
atk/2.36.0		mesa/22.1.4	(D)
atlas/3.10.3		mesc/24jun2022	
atool/0.39.0		metabat/2.12.1	(0)
augustus/f748db4	(D)	metal/2018-08-28	(D)
autoconf/2.71	(D)	metamaps/2020-12-07	(0)
autodock/4.2.6		metaphlan/097a52362c79	(D)
autodock_vina/1.1.2		metasoft/2.0.1	

aws-cdk/2.75.1		methpipe/4.1.1	
awscli/latest awscli/1.18.195		methyldackel/0.4.0 micromamba/1.5.3-0	
awscli/2.2.14		migec/1.2.9	
awscli/2.4.0		miniforge3/23.3.1-1	
awscli/2.15.15	(D)	minimac4/1.0.2	
axel/2.17.6		minimac4/1.6	(D)
azcopy/10.15.0 bam2fastx/1.3.1		minimap2/2.24 miso/0.5.4	(D)
bambamc/0.0.50		mixcr/3.0.13	(D)
bamscale/1.0		mmseqs2/13-45111	(D)
bamsurgeon/2019-10		mmvec/1.0.6	
bamtofastq/1.4.1		model-angelo/0.2.4	
bamtools/2.5.1	(D)	modeller/10.4	(D)
basset/0.1.0 bayestyper/1.5		monai/1.3.0 mosdepth/0.3.1	(D)
bazam/1.0.2		mothur/1.43.0	(D)
bazel/0.24.1	(D)	motioncor2/1.4.2	(D)
bazel/0.29.1		mpfr/4.0.2	(D)
bazel/2.0.0		mpibzip2/0.6	
bbmap/39.06 bcel/6.4.1		mplayer/1.5 mpxstreveal/2022-10-19	
bcftools/1.9		mr-mega/0.1.5	
bcftools/1.10.2		mr-mega/0.2	(D)
bcftools/1.12		mricron/1.0.20190902	
bcftools/1.15.1		mrtrix3/3.0_RC4	
bcftools/1.16	(D)	mrtrix3/3.0.3	(D)
bcftools/1.17 bcl2fastq/2.20.0p3	(D) (D)	mrtrix3/3.0.4 msgsteiner/1.3	(D)
beagle/5.1	(0)	msisensor-pro/1.0.a	
bedops/2.4.36	(D)	msisensor/0.6	
bedtools/2.29.2		msodbcsql17/17.6.1.1	
bedtools/2.31.0	(D)	mtag/2017-April	
bfg/1.13.2		<pre>mtoolbox/1.2.1 mutect/1.1.6</pre>	
bgen/1.1.7 bgen/2020-03-13	(D)	mutserve/2.0.0-rc12	
binutils/2.38	(5)	mutsig/1.41	
binutils/2.40-gcc-11.2.0	(D)	mysql++/3.3.0	
biogrinder/0.5.3		mysql/8.0.20	
biolibc/0.2.3		namd/2.13-smp-cuda	
bionemo/1.3 bismark/0.22.3	(D)	namd/2.13 namd/2.14-smp-cuda	(D)
bison/3.5	(0)	namd/2.14	(0)
blast/2.9.0+		namd/3.0a13-multicore-cuda-A100	
blast/2.13.0+		namd/3.0a13-multicore-cuda-H100	
bolotie/3May2021		namd/3.0a13-multicore-cuda-V100	
bolt/2.3.6 boost/1.60.0c		namd/3.0a13-multicore-cuda namd/3.0b3-multicore-cuda-A100	
boost/1.60.0.test		namd/3.0b3-multicore-cuda-V100	
boost/1.69.0.intel		nano/4.2	
boost/1.69.0		nasm/2.15.05	
boost/1.78.0-gcc-11.2.0		nbc/1.1	
boost/1.82.0-gcc-11.2.0	(D)	ncboost/1.0.0	
bowtie/1.3.0 bowtie2/2.4.1	(D) (D)	nccl/2.19.4 ncdu/1.15.1	
bowtie2/2.4.4	(5)	ncurses/6.4-gcc-11.2.0	
boxcli/3.0.0		netcat/1.10	
brainiak/0.11		netpbm/10.79.00	
braker/2.1.6		netsurfp/3.0	(D)
brotli/1.0.9-gcc-11.2.0 bs-cli/1.1.0		nextflow/20.10.0 nextflow/21.10.6	
bustools/0.40.0		nextflow/22.02.1	
bwtool/2019.09.21		nextflow/22.10.6	(D)
bx_python/0.7.3		ngmerge/0.3	
byacc/23May2021		ngs-bits/2020_03	(D)
bzip2/1.0.8-gcc-11.2.0	(D)	ngs-sdk/2.11.0	(D)
c3d/1.4.0 cDNA_Cupcake/19.0.0		ninja/1.11.0 nlopt/2.7.1	(D)
cadd/1.6		noddi/1.05	(D)
cairo/1.17.4		nodejs/10.16.3	
cairo/1.17.6-gcc-11.2.0	(D)	nodejs/14.15.1	
capnp/0.8.0		nodejs/14.17.5	
cargs/1.0.3 ccmpred/0.3.2		<pre>nodejs/18.16.1-gcc-11.2.0 nsight-systems/2019.4.2</pre>	(D)
ccp4/8.0	(D)	nvtop/1.2.2	
ccpem/1.6.0	(5)	ocaml/4.11.1	(D)
			-

cdbfasta/2018.10.05		octave/5.2.0	
cdna_cupcake/7.0		octave/6.2.0	(D)
<pre>cdna_cupcake/7.6 cdna_cupcake/8.1</pre>		oligoarrayaux/3.8 oneAPI/p_2024.1.0.560	
cdna_cupcake/9.0.1		oneapi/p_2024.1.0.560	
cdna_cupcake/9.1.1	(D)	onedrive-cli/1.0.6	
cdna_cupcake/10.0.1		ontad/1.2	
cdna_cupcake/11.0.0		openBLAS/0.3.13	
cdna_cupcake/19.0.0		openBLAS/0.3.21	(D)
cdna_cupcake/21.0.0 cdna_cupcake/28.0.0		openEXR/3.1.5 openbabel/3.1.1	
cellbender/0.2.1-cpu		opency/3.4.6	
cellbender/0.2.1-qpu	(D)	opency/4.1.0	
cellranger-arc/1.0.0		opencv/4.5.1	(D)
cellranger-arc/1.0.1		openeye/2020.2.0	(D)
cellranger-arc/2.0.0		openjpeg/2.3.1	
cellranger-arc/2.0.2	(D)	openjpeg/2.4.0	(D)
cellranger-atac/1.1.0		openmpi/4.0.1	(D)
cellranger-atac/1.2.0 cellranger-atac/2.0.0		openmpi/4.0.5 openslide/3.4.1	
cellranger-atac/2.1.0	(D)	openssl/1.1.1w-GCC-4.8.5	
cellranger-dna/1.1.0	(-)	optitype/1.3.3	(D)
cellranger/3.1.0		orca/1.3.1	
cellranger/4.0.0		orqas/9May2019	
cellranger/5.0.0		p7zip/16.02	
cellranger/5.0.1		p7zip/23.01	(D)
cellranger/6.0.0 cellranger/6.0.0-p3		pairadise/1.0.0 pandaseq/2.11	
cellranger/6.1.0		pango/1.40.1	
cellranger/6.1.2		pango/1.44.7	(D)
cellranger/7.0.0		panphlan/3.0	(-)
cellranger/7.0.1		parabricks/4.3.0-1	
cellranger/7.1.0		paraclu/2021-02-04	
cellranger/7.2.0		paragraph/2.4a	(D)
cellranger/8.0.0	(D)	paralyzer/1.5	(D)
cellsnp-lite/1.2.2 centrifuge/1.0.4		paraview/5.11.0 pcre/8.44	(D)
cgif/0.3.0		pcre/8.45	(D)
chiapipe/13Aug2020		pcre2/10.35	• •
chrom3d/1.0.2		pcre2/10.40-gcc-11.2.0	(D)
chromopainter/0.0.4		pdf2svg/0.2.3	
cipher/1.0.0 circos/0.69-6	(D)	peakachu/0.2.0 peakhood/0.3	
clark/1.2.6.1	(D)	pear/0.9.11	
clipper/2.1.0		penncnv/1.0.5	
clomics/1.0		peregrine/1.6.3	
cmake/3.14.1		perf/3.10.0	
cmake/3.19.3		periscope/0.1.2	
cmake/3.22.0	(D)	perl5/5.36.0.p	
cmake/3.25.2-gcc-11.2.0 cns/1.3		per15/5.36.0	(D)
cnvision/2015-10-27		petsc/3.18.5-cuda petsc/3.18.5	(D)
cnvnator/0.2.7		phantomjs/2.1.1	
cnvnator/0.4.1	(D)	pheniqs/2.1.0	
cnvnator/0.4.1p3		phenix/1.15.2	(D)
comet/0.1.13		phenix/1.19.2	
conga/0.1.1		phonon/4.8	
coverm/0.6.0		php/8.1.6	
cppunit/1.13.2 cppunit/1.15.1	(D)	phylosift/1.0.0_01 phylowgs/1.0-rc2	
cramtools/3.0	(6)	picard/2.20.0	
crcmapper/2020-04-10	(D)	picard/2.20.5	
cread/0.84		picard/2.22.3	
cryosparc/2.9.0		picard/2.26.10	
cscoretool/1.1		picard/3.1.1	
ctffind/4.1.13 ctffind/4.1.14		picrust/1.1.4-anaconda2	
cuFFTAdvisor/100ct2019		picrust2/2.3.0b pileup_region/2022	
cuda-compat/11.7.0		piper/2.0.0	
cuda-compat/12.1.1	(D)	piranha/1.1.3	
cuda/10.1.105		pixman/0.40.0	
cuda/10.2.89		pixman/0.42.2-gcc-11.2.0	(D)
cuda/11.0.2	(D)	plink/1.90b6.10	
cuda/11.1	(D)	plink/1.90b6.18	(D)
cuda/11.3 cuda/11.3.1		plink/1.90b6.21 plink/2.0dev060421	(D)

cuda/11.7.0		plink2/dev.3May22	
cuda/11.8.0		plink2/dev.15Apr22	
cuda/12.0.1 cuda/12.1.1		plink2/dev.26Jun plink2/v2.00a3.3.cuda	
cudf/cuda100		plink2/v2.00a3.3	
cudnn/7.6.5		plink2/2.3	
cudnn/8.0.5	(D)	plumed/isdb-intel	
cudnn/8.2.0		plumed/2.6.2	(D)
cudnn/8.9.5-11 cudnn/8.9.5-12		polyfun/2022-02-04 poppler/22.07.0	(D)
curl/7.64.1	(D)	popscle/0.1b	(0)
curl/7.74.0		proj/6.3.1	
cutadapt/4.2		proj/8.1.0	(D)
cutruntools/2020-01-04		prothint/2.6.0	
d4tools/0.3.0		protobuf-c/1.3.3	(D)
dap/1.0.0 dataark/1.0		protobuf-c/1.4.0 protobuf/3.11.4	(D)
datamash/1.4		protobuf/3.21.1	(D)
dbeaver/22.3.4		protoc-c/1.3.3	
dbus/1.12.20	(D)	proxies/1	
dcm2niix/1.0.20201102		prsice/2.2.6	
dcm2niix/1.0.20230411 dcmtk/3.6.7	(D)	prsice/4Nov2021	(D)
deepEMhancer/2Dec2020		<pre>pugixml/1.14 purge_dups/1.2.5</pre>	
deeplabcut/2.3		pv/1.6.20	
deeplabcut/2.3.1	(D)	pycharm/2019-03-01	(D)
deepvariant/0.8.0		pyem/0.5	(D)
deepvariant/1.1.0		pyqt/4.12.3	
deepvariant/1.2.0		pyqt4/4.12.3	
deepvariant/1.3.0 deepvariant/1.4.0		<pre>pyscenic/0.10.0 pyscenic/0.11.2</pre>	(D)
deepvariant/1.5.0		python/2.7.16	(5)
deepvariant/1.6.0	(D)	python/2.7.17-UCS4	
dejagnu/1.6.3		python/2.7.17	
delly/1.1.6	(D)	python/3.7.3	(D)
demuxlet/20190325 dgmm/10Mar2019		<pre>python/3.8.2 python/3.10.4</pre>	
diamond/0.8.38		python/3.10.14-GCC-4.8.5	
diamond/0.9.31	(D)	python/3.10.14	
dipy/1.7.0		pytorch/1.2.2	
dlang/2.099.0		pytorch/2.2.2-cuda11.8-py3.12	
dmtcp/2.6.0 docbook/4.3		pytorch/2.2.2-cuda12.1-py3.12	(D)
dock/6.9	(D)	qctool/2.0.6 qhull/7.3.2	(D)
double-conversion/3.3.0-gcc-11.2.0	(5)	qhull/8.0.2	(D)
drop2/2019-Nov		qiime/2022.11	
dropest/0.8.6		qrupdate/1.1.2	
dx-toolkit/0.314.0	(5)	qt/5.12.12	
dx-toolkit/0.325.1 ea-utils/1.04.807	(D)	qtltools/1.2 qtltools/1.3	(D)
echoR/0.2.3		qualimap/2.2.1	(0)
eclipse/cpp-2019-06		qupath/0.3.2	
eclipse/java-2019-06		qupath/0.4.3	(D)
edirect/20.1.20230731		rail-rna/0.2.4b	(D)
eigen/3.3.9	(D)	ramble/2020-08-25	
eigen/3.4.0 elastix/5.0.0	(D)	rapids/24.02-cuda12 rapids/24.02-cuda118	
elfutils/0.187		rapids/24.02	(D)
emacs/26.1		raremetal/4.15.1	(D)
emacs/26.3		raremetal2/21Mar2018	
emacs/27.1	(D)	rasqual/2019-11-04	(D)
enformer/jan2023 ensemble/0.1.0		rasterio/1.0.22 raven/1.8.1	
ensemble/0.2.0			
ensemble/0.4.0	(D)	re2c/3.0 reditools/2.0	
ensemble/0.4.0 epa-ng/0.3.8	(D)	re2c/3.0	
epa-ng/0.3.8 ess/18.10.2	(D) (D)	re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6	
epa-ng/0.3.8 ess/18.10.2 exa/10.2		re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6 regenie/1.0.6.9	
epa-ng/0.3.8 ess/18.10.2 exa/10.2 expansionhunter/v3.2.0		re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6 regenie/1.0.6.9 regenie/1.0.7	
epa-ng/0.3.8 ess/18.10.2 exa/10.2	(D)	re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6 regenie/1.0.6.9 regenie/1.0.7	
epa-ng/0.3.8 ess/18.10.2 exa/10.2 expansionhunter/v3.2.0 expansionhunter/v3.2.2		re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6 regenie/1.0.6.9 regenie/1.0.7	
epa-ng/0.3.8 ess/18.10.2 exa/10.2 expansionhunter/v3.2.0 expansionhunter/v3.2.2 expansionhunter/v5.0.0 expansionhunterdenovo/0.8.7 expansionhunterdenovo/0.9.1	(D) (D)	re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6 regenie/1.0.6.9 regenie/2.0.1 regenie/2.0.2 regenie/2.2.1 regenie/2.2.4	
epa-ng/0.3.8 ess/18.10.2 exa/10.2 expansionhunter/v3.2.0 expansionhunter/v3.2.2 expansionhunter/v5.0.0 expansionhunterdenovo/0.8.7 expansionhunterdenovo/0.9.1 expansionhunterdenovo/2019-Sep	(D) (D) (D)	re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6 regenie/1.0.6.9 regenie/2.0.1 regenie/2.0.2 regenie/2.2.1 regenie/2.2.4 regenie/3.0	
epa-ng/0.3.8 ess/18.10.2 exa/10.2 expansionhunter/v3.2.0 expansionhunter/v3.2.2 expansionhunter/v5.0.0 expansionhunterdenovo/0.8.7 expansionhunterdenovo/0.9.1	(D) (D)	re2c/3.0 reditools/2.0 redstone/2.1.0 regenie/1.0.5.6 regenie/1.0.6.9 regenie/2.0.1 regenie/2.0.2 regenie/2.2.1 regenie/2.2.4	(D)

fastenloc/1.0		regenie/3.4.1	
fastenloc/2.0	(D)	regenie/2020-06-24	
fastp/0.20.0	(5)	regtools/0.5.1	
fastp/0.23.2	(D)	relion/3.0.8gcc	
fastq-tools/0.8	(-)	relion/3.0.8gpu	
fastqc/0.11.9	(D)	relion/3.0.8	
fastqtl/gtex_v6p	. ,	relion/3.1.2gpu-dev	
fastqvalidator/0.1.1		relion/3.1.2gpu	
fasttree/2.1.11	(D)	relion/3.1.2	
fastx_toolkit/0.0.13		relion/3.1.3gpu_v	
fbat/V204		relion/3.1.3gpu	
fcgene/1.0.7		relion/4.0.1	
fdupes/2.0.0		relion/5.0-beta-gpu	
feh/3.4		repeatmasker/4.1.1	(D)
ffmpeg/4.4	(D)	reviewer/0.1.1	
fftw/3.3.9	(D)	reviewer/0.2.7	(D)
fgbio/0.8.1		rgt/0.12.1	
fgbio/2.2.1	(D)	ribomap/1.2	
file/5.40		rmats/4.0.2	
finemap/1.3.1		rmats/4.1.0	
finemap/1.4	(D)	rmats/4.1.2	(D)
finestructure/4.1.1		rmblast/2.9.0	
firefox/69.0		rnaeditingindexer/2019-11-19	
firefox/124.0.1	(D)	roary/3.13.0	
fithichip/9.0		root/6.18.02	
fix/1.06.15		root/6.22.2	
flair/1.4		root/6.24.0	
flashpca/2.0		rose/1.2.0	
flex/2.6.4-gcc-11.2.0	(D)	rsem/1.3.1	(D)
flex/2.6.4	(D)	rsem/1.3.3 rserver/2023.03.0	(D)
flexbar/3.5.0 fltk/1.3.3c	(D)	rstudio/1.1.463	(D)
flye/2.9.1		rstudio/1.1.465 rstudio/2022.02.1-461	(D)
fmriprep/20.2.7		rstudio_singularity/3.6.2	
fmriprep/20.2.7	(D)	rstudio_singularity/2023.06.0-421	(D)
fontconfig/2.13.94	(0)	ruby/2.6.3	(D)
fontconfig/2.14.2-gcc-11.2.0	(D)	rust/1.49.0	(0)
forestpmplot/1.0.3	(6)	rust/1.57.0	
freebayes/1.3.2	(D)	rust/1.61.0	(D)
freesurfer/dev-2024-03-12		ruth/2019-08-09	
freesurfer/6.0.0		rv-tdt/2.0	
freesurfer/7.1.0		saige/0.39.2	
freesurfer/7.1.1x		saige/1.1.6	
freesurfer/7.1.1	(D)	saige/1.1.9	
freesurfer/7.2.0		saige/1.3.1	(D)
freesurfer/7.3.2		salmon/0.13.1	
freesurfer/7.4.1		salmon/1.0.0	
freetds/1.2.18		salmon/1.1.0	
freetds/1.4.3	(D)	salmon/1.2.1	
freetype/2.10.0		salmon/1.4.0	(D)
freetype/2.13.0-gcc-11.2.0	(D)	salmonTE/0.4	
fribidi/1.0.5		samblaster/0.1.24	(D)
fsl/6.0.1		samtools/1.6	
fsl/6.0.3		samtools/1.9re	
fsl/6.0.5.2x		samtools/1.9	
fsl/6.0.5.2		samtools/1.11	
fsl/6.0.7.8		samtools/1.12	
fsl/6.0.7.9	(D)	samtools/1.13	
funpack/2.3.2		samtools/1.15.1	
fuse/3.16.2		samtools/1.16	
fusera/0.0.18		samtools/1.17	(D)
fusioncatcher/1.3.3	(D)	sas/9.4	
fusorsv/Jun-27-2019		savvy/1.3.0	
gangstr/2.4.3	(D)	savvy/2.1.0	(D)
palafm01@lc02a28 WGS-iPSC]\$ module load :	samtool	s/1.1/	

[palafm01@lc02a28 WGS-iPSC]\$ module load samtools/1.17
[palafm01@lc02a28 WGS-iPSC]\$ samtools faidx /sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.fa

```
[palafm01@lc02a28 WGS-iPSC]$
```

[palafm01@lc02a28 WGS-iPSC]\$ module load gatk

Using GATK jar /hpc/packages/minerva-centos7/gatk/4.3.0.0/gatk-4.3.0.0/gatk-package-4.3.0.0-local.jar Running:

java -Dsamjdk.use_async_io_read_samtools=false -Dsamjdk.use_async_io_write_samtools=true -Dsamjdk.use_async_io_write_tribble=false -Dsamjdk.compr ession_level=2 -jar /hpc/packages/minerva-centos7/gatk/4.3.0.0/gatk-4.3.0.0/gatk-package-4.3.0.0-local.jar CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.dict

```
INFO
           2024-04-17 07:59:08
                                            CreateSequenceDictionary
******* NOTE: Picard's command line syntax is changing.
****** For more information, please see:
https://github.com/broadinstitute/picard/wiki/Command-Line-Syntax-Transition-For-Users-(Pre-Transition)
******* The command line looks like this in the new syntax:
******
******
                   CreateSequenceDictionary -R /sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.fa -O /sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.dict
*******
07:59:08.438 INFO NativeLibraryLoader - Loading libgkl_compression.so from jar:file:/hpc/packages/minerva-centos7/gatk/4.3.0.0/gatk-4.3.0.0/gatk-pac
kage-4.3.0.0-local.jar!/com/intel/gkl/native/libgkl_compression.so
[Wed Apr 17 07:59:08 EDT 2024] CreateSequenceDictionary OUTPUT=/sc/arion/projects/vascbrain/WGS-iPSC/hg38/hg38.dict REFERENCE=/sc/arion/projects/vasc
brain/WGS-iPSC/hg38/hg38.fa TRUNCATE_NAMES_AT_WHITESPACE=true NUM_SEQUENCES=2147483647 VERBOSITY=INFO QUIET=false VALIDATION_STRINGENCY=STRICT COM
PRESSION_LEVEL=2 MAX_RECORDS_IN_RAM=500000 CREATE_INDEX=false CREATE_MD5_FILE=false GA4GH_CLIENT_SECRETS=client_secrets.json USE_JDK_DEFLATER=false U
SE JDK INFLATER=false
[Wed Apr 17 07:59:18 EDT 2024] Executing as palafm01@lc02a28 on Linux 3.10.0-1160.el7.x86_64 amd64; Java HotSpot(TM) 64-Bit Server VM 1.8.0_211-b12;
Deflater: Intel; Inflater: Intel; Provider GCS is available; Picard version: 4.3.0.0
[Wed Apr 17 07:59:31 EDT 2024] picard.sam.CreateSequenceDictionary done. Elapsed time: 0.38 minutes.
Runtime.totalMemory()=902823936
Tool returned:
Fpalafm01@lc02a28 WGS-iPSCl$
[palafm01@lc02a28 WGS-iPSC]$ wget -P /sc/arion/projects/vascbrain/WGS-iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/
hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf
--2024-04-17 08:00:13-- https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf
Resolving storage.googleapis.com (storage.googleapis.com)... 142.250.81.251, 142.250.65.219, 142.250.65.187, ...
Connecting to storage.googleapis.com (storage.googleapis.com)|142.250.81.251|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 10950827213 (10G) [text/x-vcard]
Saving to: '/sc/arion/projects/vascbrain/WGS-iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf'
100%[=======] 10,950,827,213 102MB/s in 1m 40s
2024-04-17 08:01:53 (104 MB/s) - '/sc/arion/projects/vascbrain/WGS-iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf' saved [10950827213/10950827213]
[palafm01@lc02a28 WGS-iPSC]$ wget -P /sc/arion/projects/vascbrain/WGS-iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/
hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf.idx
--2024-04-17 08:02:30-- https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf.idx
Resolving storage.googleapis.com (storage.googleapis.com)... 142.250.176.219, 142.250.80.27, 142.250.80.123, ...
Connecting to storage.googleapis.com (storage.googleapis.com)|142.250.176.219|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 12480412 (12M) [application/octet-stream]
Saving to: `'/sc/arion/projects/vascbrain/WGS-iPSC/hg38/Homo\_sapiens\_assembly 38. dbsnp138.vcf.idx' in the context of the co
2024-04-17 08:02:30 (65.0 MB/s) - '/sc/arion/projects/vascbrain/WGS-iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf.idx' saved [12480412/12480412]
「palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads FastQC_output MD5
                                                                 raw data
                                                                                     Readme.html results
data
                   ha38
                                         Novogene report raw_data.zip reads
                                                                                                       scripts
[palafm01@lc02a28 WGS-iPSC]$ cd hg38/
[palafm01@lc02a28 hg38]$ ls
                                                                    Homo_sapiens_assembly38.dbsnp138.vcf.idx
ha38.dict ha38.fa.fai
hg38.fa Homo_sapiens_assembly38.dbsnp138.vcf
[palafm01@lc02a28 hg38]$ cd
[palafm01@lc02a28 ~]$
[palafm01@lc02a28 ~]$ data
[palafm01@lc02a28 vascbrain]$ cd WGS-iPSC/
[palafm01@lc02a28 WGS-iPSC]$ pwd
/sc/arion/projects/vascbrain/WGS-iPSC
[palafm01@lc02a28 WGS-iPSC]$ cd
Fpalafm01@lc02a28 ~1$ vim .bashrc
[palafm01@lc02a28 ~]$ source .bashrc
[palafm01@lc02a28 ~]$ wgs
[palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads FastQC_output MD5
                                                                 raw_data
                                                                                     Readme.html results
data
                    hq38
                                         Novogene report raw_data.zip reads
                                                                                                       scripts
[palafm01@lc02a28 WGS-iPSC]$ mkdir results12
```

[palafm01@lc02a28 WGS-iPSC]\$ ls

```
raw_data
                                                       Readme.html results
aligned_reads FastQC_output MD5
                                                                             scripts
        hg38
                          Novogene report raw_data.zip reads
                                                                   results12
[palafm01@lc02a28 WGS-iPSC]$ rm results
rm: cannot remove 'results': Is a directory
[palafm01@lc02a28 WGS-iPSC]$ rm -r results
[palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads FastQC_output MD5
                                                       Readme.html results12
                                          raw data
data
            hg38
                           Novogene report raw_data.zip reads
                                                                   scripts
[palafm01@lc02a28 WGS-iPSC]$ mkdir data12
[palafm01@lc02a28 WGS-iPSC]$ mkdir aligned_reads12
[palafm01@lc02a28 WGS-iPSC]$ rm -r reads
[palafm01@lc02a28 WGS-iPSC]$ rm -r aligned_reads
[palafm01@lc02a28 WGS-iPSC]$ rm -r data
[palafm01@lc02a28 WGS-iPSC]$ ls
aligned_reads12 FastQC_output MD5
                                            raw_data
                                                         Readme.html scripts
            hg38
                            Novogene report raw_data.zip results12
data12
[palafm01@lc02a28 WGS-iPSC]$ module aval
lmod settara
libbsd/0.11.6
                                               libcap/v2
  ANTs/1.9
  ANTs/2.4.2
                                               libcares/1.16.1
                                       (D)
  BGW-TWAS/07192023
                                               libdrm/2.4.102
  BN/2012
                                               libdrm/2.4.107
                                               libdrm/2.4.112
  BaseSpaceCLI/1.1.0
  BaseSpaceCLI/1.5.3
                                       (D)
                                               libdrm/2.4.115-gcc-11.2.0
                                                                              (D)
  BrainNetViewer/1.7
                                               libedit/3.1
  CPAN/5.16.3
                                       (D)
                                               libelf/0.8.2-gcc-11.2.0
  CPAN/5.36.0
                                               libepoxy/1.5.4
  CTPL/0.0.2
                                               libevent/2.1.12-gcc-11.2.0
                                                                              (D)
                                               libexif/0.6.24
  CTPL/0.3.3
                                       (D)
  EDirect/15.5
                                               libfabric/1.11.1
  FastSMC/18Sep2020
                                               libffi/3.0.9
  FoxitReader/2.4.5
                                               libffi/3.3
  G-PhoCS/1.3
                                               libffi/3.4.2
  GWAMA/2.2.2
                                               libffi/3.4.4-gcc-11.2.0
                                                                              (D)
  GenomeAlignmentTools/1.0
                                               libgd/2.3.0
  GraphicsMagick/1.3.36
                                               libgflags/2.2.2
  HiC-Pro/3.1.0
                                               libgit2/1.1.0
  ICU/73.2-gcc-11.2.0
                                               libglew/2.1.0
  Imath/3.1.5
                                               libglm/0.9.9.8
  JasPer/4.0.0-gcc-11.2.0
                                               libglu/9.0.1
  LSFqueue/1.0
                                               libglvnd/1.6.0-gcc-11.2.0
  LeTRS/2.2.1
                                               libgsf/1.14.17
  LibreOffice/6.4.6
                                               libgsf/1.14.49
                                                                              (D)
  LibreOffice/7.4.3.2
                                       (D)
                                               libidn/1.9
  MAESTRO/1.3.1
                                               libimagequant/4.0.0
  MCR/R2017a
                                               libjpeg-turbo/3.0.0-nasm-2.15.05
  MCR/R2017b
                                               libjpeg/v9
  MCR/R2018a
                                               1ibmd/1.0.4
  MCR/R2019b
                                               libmng/2.0.3
  MCR/R2020b
                                       (D)
                                               libmnl/1.0.5
  MsCAVIAR/6May2021
                                               libnet/0.10.11
  NBIA/4.2.1
                                               libnet/1.3
                                                                              (D)
  NVFlare/2.4.0
                                               libnftables/1.0.4
  NiftyFit/29Jun17
                                               libnftnl/1.2.2
  PRScs/4Jun2021
                                               libnl/3.5.0
  PTRC/1.1
                                               libnvidia-container/1.13.4
  ParseBio/1.0.4
                                               libpciaccess/0.16
                                                                              (D)
                                               libpng/1.6.40-gcc-11.2.0
  R/3.5.1t
  R/3.5.3
                                               libpsm-infinipath/3.3.26
  R/3.6.0dev
                                               librsvq/2.50.2
  R/3.6.0
                                               libsigc++/2.0.18
  R/3.6.2
                                               libsigc++/2.10.2
  R/3.6.3
                                               libsigc++/3.0.2
                                                                              (D)
  R/4.0.2
                                               libsodium/1.0.18
  R/4.0.3
                                               libspng/0.7.2
  R/4.0.4-llvm
                                               libtiff/test
  R/4.1.0-cairo
                                               libtiff/3.9.7
  R/4.1.0
                                               libtiff/4.6.0t
                                                                              (D)
                                       (D)
  R/4.2.0
                                               libunwind/1.6.2-gcc-11.2.0
                                               liburcu/v0.14.0-67
  R/4.2.1
  R/4.2.2
                                               liburcu/0.12
```

R/4.3.0 R/4.3.3-intel-mkl		liburcu/0.14	(D)
R/4.3.3		libvips/8.10.6 libvips/8.12.2	(D)
ReadZS/1.0.0		libwebp/1.2.3	
Rmath/3.5.3		libxcb-iccm/0.4.1-5	
Rmath/3.6.3	(D)	libxcb-image/0.4.0-2	
Seurat/3.0		libxcb-keysyms/0.4.0	
abc/0.2.2		libxcb-render-util/0.3.9	(5)
adam/0.27.0 adapterremoval/2.3.1		libxcb/1.15 libxinerama/190ct2021	(D)
adfr/1.0		libxkbcommon/1.4.0	
admixtools/7.0.2		libxkbcommon/1.5.0	(D)
admixture/1.3.0		libxml2/2.9.10	(D)
advntr/1.3.3		libxmlsec1/1.2.31	
afni/22.3.03		libxshmfence/1.3.2-gcc-11.2.0	
afni/24.0.05		libxslt/1.1.34	
alphafold/2.2.0		libxtend/0.1.6	
alphafold/2.3.2-singularity		liftover/09-Jul-2019	(D)
alphafold/2.3.2.singularity alphafold/2.3.2	(D)	linuxbrew/2.2.5 llvm-project/8.0.1	(D)
alphamissense/0.0.1	(6)	llvm/10.0.1	
amazon-genomics-cli/1.6.0		llvm/11.1.0	
amazon-genomics-cli]/1.6.0		llvm/13.0.1	
amber/18-tools-18-v100		llvm/14.0.6	
amber/18-tools-18		llvm/16.0.6	(D)
amber/20-tools-20-a100		lofreq/2.1.5	(D)
amber/20-tools-20-v100		longtr/2023-12-01	
amber/20-tools-20 amber/20-tools-21-a100		lopass/2021-07-19	
amber/20-tools-21-v100		lortia/0.9.9 lpsolve/5.5.2.11	
amber/20-tools-21		lsf/10.1	(D)
amber/22-tools-23-a100		lsf_drmaa/1.11re	
amber/22-tools-23-v100	(D)	lsf_drmaa/1.11	(D)
anaconda2/latest		lsgkm/2020-09-09	
anaconda2/2019.03		lz4/1.9.3	
anaconda2/2019.10dev		lz4/1.9.4-gcc-11.2.0	(D)
anaconda2/2019.10	(D)	lzip/1.22	(D)
anaconda3/junk anaconda3/latest		macs/3.0.0b1 mafft/7.505	(D)
anaconda3/2018.12	(D)	magma/2.5.4-ampere	(D)
anaconda3/2019.10	(6)	magma/2.5.4-volta	
anaconda3/2020.11		magma/2.5.4	(D)
anaconda3/2021.5		magma_gwas/1.0.7b	
anaconda3/2022.10		magma_gwas/1.0.8	
anaconda3/2023.09		magma_gwas/1.10	(D)
anaconda3/2024.02		make/4.2	(D)
annotsv/2.2 annotsv/3.0.7	(D)	makehub/1.0.5 mallet/202108	
ant/1.10.9	(D)	manta/1.6.0	
apache-maven/3.6.1		mantra/1.0	
apptainer/1.2.5		marketscan/9.4	
arcashla/0.2.0		matlab/R2012b	
aria2/1.35.0		matlab/R2017a	
arpack-ng/3.8.0		matlab/R2018b	
arrow/0.16.0		matlab/R2019a	
arvados-cli/2.0.3.1 aselux/1.0.2-beta		matlab/R2020b matlab/R2021a	
aspera-connect/3.9.6		matlab/R2021b	
aspera-connect/4.2.4	(D)	matlab/R2022a	(D)
at-spi2-atk/2.38.0	(-)	matlab_runtime/R2019b	(D)
at-spi2-core/2.40.3		megan/6.18.10	(D)
atacprimertool/1.0		meme/5.1.0	
ataqv/1.2.1		meme/5.4.1	
athr/2.0.0		meme/5.5.1	(D)
atk/2.34.1		mesa/20.1.6	(D)
atk/2.36.0 atlas/3.10.3		mesa/22.1.4 mesc/24jun2022	(D)
atool/0.39.0		metabat/2.12.1	
augustus/f748db4		metal/2018-08-28	(D)
autoconf/2.71	(D)	metamaps/2020-12-07	-
autodock/4.2.6		metaphlan/097a52362c79	(D)
autodock_vina/1.1.2		metasoft/2.0.1	
aws-cdk/2.75.1		methpipe/4.1.1	
awscli/latest awscli/1.18.195		methyldackel/0.4.0 micromamba/1.5.3-0	
awscli/2.2.14		migec/1.2.9	
		3 · ·-	

awscli/2.4.0 awscli/2.15.15	(D)	miniforge3/23.3.1-1 minimac4/1.0.2	
axel/2.17.6	(6)	minimac4/1.6	
azcopy/10.15.0		minimap2/2.24	
bam2fastx/1.3.1		miso/0.5.4	
bambamc/0.0.50		mixcr/3.0.13	
bamscale/1.0		mmseqs2/13-45111	
bamsurgeon/2019-10		mmvec/1.0.6	
bamtofastq/1.4.1		model-angelo/0.2.4	
bamtools/2.5.1	(D)	modeller/10.4	
basset/0.1.0	(5)	monai/1.3.0	
bayestyper/1.5		mosdepth/0.3.1	
bazam/1.0.2		mothur/1.43.0	
bazel/0.24.1	(D)	motioncor2/1.4.2	
bazel/0.29.1	(0)	mpfr/4.0.2	
		•	
baze1/2.0.0		mpibzip2/0.6	
bbmap/39.06		mplayer/1.5	
bcel/6.4.1		mpxstreveal/2022-10-19	
bcftools/1.9		mr-mega/0.1.5	
bcftools/1.10.2		mr-mega/0.2	
bcftools/1.12		mricron/1.0.20190902	
bcftools/1.15.1		mrtrix3/3.0_RC4	
bcftools/1.16		mrtrix3/3.0.3	
bcftools/1.17	(D)	mrtrix3/3.0.4	
bcl2fastq/2.20.0p3	(D)	msgsteiner/1.3	
beagle/5.1		msisensor-pro/1.0.a	
bedops/2.4.36	(D)	msisensor/0.6	
bedtools/2.29.2		msodbcsql17/17.6.1.1	
bedtools/2.31.0	(D)	mtag/2017-April	
bfg/1.13.2		mtoolbox/1.2.1	
bgen/1.1.7		mutect/1.1.6	
bgen/2020-03-13	(D)	mutserve/2.0.0-rc12	
binutils/2.38	(3)	mutsig/1.41	
binutils/2.40-gcc-11.2.0	(D)	mysql++/3.3.0	
biogrinder/0.5.3	(6)	mysq1/8.0.20	
biolibc/0.2.3			
bionemo/1.3		namd/2.13-smp-cuda	
	(D)	namd/2.13	
bismark/0.22.3	(D)	namd/2.14-smp-cuda	
bison/3.5		namd/2.14	
blast/2.9.0+		namd/3.0a13-multicore-cuda-A100	
blast/2.13.0+		namd/3.0a13-multicore-cuda-H100	
bolotie/3May2021		namd/3.0a13-multicore-cuda-V100	
bolt/2.3.6		namd/3.0a13-multicore-cuda	
boost/1.60.0c		namd/3.0b3-multicore-cuda-A100	
boost/1.60.0.test		namd/3.0b3-multicore-cuda-V100	
boost/1.69.0.intel		nano/4.2	
boost/1.69.0		nasm/2.15.05	
boost/1.78.0-gcc-11.2.0		nbc/1.1	
boost/1.82.0-gcc-11.2.0		ncboost/1.0.0	
bowtie/1.3.0	(D)	nccl/2.19.4	
bowtie2/2.4.1	(D)	ncdu/1.15.1	
bowtie2/2.4.4		ncurses/6.4-gcc-11.2.0	
boxcli/3.0.0		netcat/1.10	
brainiak/0.11		netpbm/10.79.00	
braker/2.1.6		netsurfp/3.0	
brotli/1.0.9-gcc-11.2.0		nextflow/20.10.0	
bs-cli/1.1.0		nextflow/21.10.6	
bustools/0.40.0		nextflow/22.02.1	
bwtool/2019.09.21		nextflow/22.10.6	
bw_python/0.7.3		ngmerge/0.3	
byacc/23May2021		ngmerge/0.3 ngs-bits/2020_03	
bzip2/1.0.8-gcc-11.2.0	(D)	ngs-sdk/2.11.0	
	(0)	•	
c3d/1.4.0		ninja/1.11.0	
cDNA_Cupcake/19.0.0		nlopt/2.7.1	
cadd/1.6		noddi/1.05	
cairo/1.17.4		nodejs/10.16.3	
cairo/1.17.6-gcc-11.2.0	(D)	nodejs/14.15.1	
capnp/0.8.0		nodejs/14.17.5	
cargs/1.0.3		nodejs/18.16.1-gcc-11.2.0	
ccmpred/0.3.2		nsight-systems/2019.4.2	
ccp4/8.0	(D)	nvtop/1.2.2	
ccpem/1.6.0		ocaml/4.11.1	
cdbfasta/2018.10.05		octave/5.2.0	
lafm01@lc02a28 WGS-iPSC]\$ module	load bwa		

```
[palafm01@lc02a28 WGS-iPSC]$ bwa --help
[main] unrecognized command '--help'
[palafm01@lc02a28 WGS-iPSC]$ bwa
Program: bwa (alignment via Burrows-Wheeler transformation)
Version: 0.7.15-r1140
Contact: Heng Li <lh3@sanger.ac.uk>
Usage: bwg <command> [options]
Command: index
                       index sequences in the FASTA format
        mem
                       BWA-MEM algorithm
        fastmap
                       identify super-maximal exact matches
                      merge overlapping paired ends (EXPERIMENTAL)
        pemerae
                      gapped/ungapped alignment
        aln
         samse
                       generate alignment (single ended)
        sampe
                       generate alignment (paired ended)
                      BWA-SW for long queries
        bwasw
                      manage indices in shared memory
        shm
        fa2pac
                       convert FASTA to PAC format
                      generate BWT from PAC
        pac2bwt
        pac2bwtgen
                      alternative algorithm for generating BWT
        bwtupdate
                      update .bwt to the new format
                      generate SA from BWT and Occ
        bwt2sa
Note: To use BWA, you need to first index the genome with `bwa index'.
      There are three alignment algorithms in BWA: `mem', `bwasw', and
      `aln/samse/sampe'. If you are not sure which to use, try `bwa mem'
      first. Please `man ./bwa.1' for the manual.
「palafm01@lc02a28 WGS-iPSC]$ cd scripts/
[palafm01@lc02a28 scripts]$ ls
[palafm01@lc02a28 scripts]$ touch variant_calling.sh
[palafm01@lc02a28 scripts]$ vim variant_calling.sh
[palafm01@lc02a28 scripts]$ bsub < variant_calling.sh</pre>
Job <124354105> is submitted to queue <premium>.
[palafm01@lc02a28 scripts]$ myjobs
bash: myjobs: command not found
[palafm01@lc02a28 scripts]$ jobs
[palafm01@lc02a28 scripts]$ bjobs
      JOBID
                  USER
                          JOB_NAME
                                     STAT
                                                QUEUE FROM_HOST
                                                                    EXEC_HOST SUBMIT_TIME
                                                                                              START_TIME TIME_LEFT
                              CAD12
   124354105
              palafm01
                                       RUN
                                              premium lc02a28.ch
                                                                     lc02e16 Apr 17 08:21 Apr 17 08:21
                                                                                                              5:33 L
   124353955 palafm01
                          /bin/bash
                                       RUN interactiv li03c03.ch
                                                                    4*lc02a28 Apr 17 07:17 Apr 17 07:17
                                                                                                              0:29 1
[palafm01@lc02a28 scripts]$ User defined signal 2
[palafm01@li03c03 WGS-iPSC]$ bjobs
No unfinished job found
[palafm01@li03c03 WGS-iPSC]$ ls
aligned_reads12 data12 FastQC_output hg38 MD5 Novogene report raw_data raw_data.zip Readme.html results12 scripts
[palafm01@li03c03 WGS-iPSC]$ cd results12/
[palafm01@li03c03 results12]$ ls
[palafm01@li03c03 results12]$ ls
Fpalafm01@li03c03 results127$ cd ...
[palafm01@li03c03 WGS-iPSC]$ ls
aligned_reads12 data12 FastQC_output hg38 MD5 Novogene report raw_data raw_data.zip Readme.html results12 scripts
[palafm01@li03c03 WGS-iPSC]$ cd aligned_reads12/
[palafm01@li03c03 aligned_reads12]$ ls
[palafm01@li03c03 aligned_reads12]$ cd
[palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ wgs
-bash: was: command not found
[palafm01@li03c03 ~]$ wgs
-bash: wgs: command not found
[palafm01@li03c03 ~]$ vim .bash
.bash_history .bash_logout .bash_profile .bashrc
[palafm01@li03c03 ~]$ vim .bashrc
「palafm01@li03c03 ~]$ wqs
-bash: wgs: command not found
[palafm01@li03c03 ~]$ data
[palafm01@li03c03 vascbrain]$ ls
A5002 A5007 A5012 C7002 C7006 create_fastq_key.R
                                                                    multiqc_general_stats.txt N2002 N2006 P6002 P6006 P6011
                                                                                                                                       pipeline_trac
        report.html
```

multiqc_report.html

N2003 N2007 P6003 P6008 pilot

pipeline_trac

A5004 A5009 BioMe C7003 C7007 create_rapid_structure.py

e.txt.1 sample_fastq_table.tsv

```
A5006 A5010 C7001 C7004 C7009 FileZilla_3.66.5_win64-setup.exe N2001
                                                                                              N2004 N2008 P6004 P6009 pilot_data pipeline_trac
e.txt.2 WGS-iPSC
[palafm01@li03c03 vascbrain]$ cd
[palafm01@li03c03 ~]$ ls
「palafm01@li03c03 ~]$ vim .bashrc
[palafm01@li03c03 ~]$ data
[palafm01@li03c03 vascbrain]$ ls
A5002 A5007 A5012 C7002 C7006 create_fastq_key.R
                                                                    multiqc_general_stats.txt N2002 N2006 P6002 P6006 P6011
                                                                                                                                      pipeline_trac
e.txt report.html
                               work
A5004 A5009 BioMe C7003 C7007 create_rapid_structure.py
                                                                    multiqc_report.html
                                                                                              N2003 N2007
                                                                                                            P6003
                                                                                                                  P6008 pilot
                                                                                                                                      pipeline_trac
e.txt.1 sample_fastq_table.tsv
A5006 A5010 C7001 C7004 C7009 FileZilla_3.66.5_win64-setup.exe N2001
                                                                                              N2004 N2008 P6004 P6009 pilot_data pipeline_trac
e.txt.2 WGS-iPSC
[palafm01@li03c03 vascbrain]$ mv WGS-iPSC WGS_iPSC
[palafm01@li03c03 vascbrain]$ ls
                                                                    multiqc_general_stats.txt N2002 N2006 P6002 P6006 P6011
A5002 A5007 A5012 C7002 C7006 create_fastq_key.R
                                                                                                                                      pipeline_trac
e.txt
       report.html
                               work
A5004 A5009 BioMe C7003 C7007 create_rapid_structure.py
                                                                                              N2003 N2007
                                                                    multiqc_report.html
                                                                                                            P6003
                                                                                                                  P6008 pilot
                                                                                                                                      pipeline_trac
e.txt.1 sample_fastq_table.tsv
A5006 A5010 C7001 C7004 C7009 FileZilla_3.66.5_win64-setup.exe N2001
                                                                                              N2004 N2008 P6004 P6009 pilot_data pipeline_trac
e.txt.2 WGS_iPSC
[palafm01@li03c03 vascbrain]$ wgs
-bash: wgs: command not found
[palafm01@li03c03 vascbrain]$ cd
[palafm01@li03c03 ~]$ source .bashrc
[palafm01@li03c03 ~]$ wgs
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads12 data12 FastQC_output hg38 MD5 Novogene report raw_data raw_data.zip Readme.html results12 scripts
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ cat *.stderr
/local/JOBS/1713356512.124354105.shell: line 12: call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices work
flow: command not found
Skipping '/sc/arion/projects/vascbrain/WGS-iPSC/raw_data/P732912/SRR062634_1.filt.fastq.gz' which didn't exist, or couldn't be read
Skipping '/sc/arion/projects/vascbrain/WGS-iPSC/raw_data/P732912/SRR062634_2.filt.fastq.gz' which didn't exist, or couldn't be read
[bwa_index] Pack FASTA... 20.44 sec
[bwa_index] Construct BWT for the packed sequence...
[BWTIncCreate] textLength=6418572210, availableWord=463634060
[BWTIncConstructFromPacked] 10 iterations done. 99999986 characters processed.
[BWTIncConstructFromPacked] 20 iterations done. 199999986 characters processed.
[BWTIncConstructFromPacked] 30 iterations done. 299999986 characters processed.
[BWTIncConstructFromPacked] 40 iterations done. 399999986 characters processed.
[BWTIncConstructFromPacked] 50 iterations done. 499999986 characters processed.
[BWTIncConstructFromPacked] 60 iterations done. 599999986 characters processed.
[BWTIncConstructFromPacked] 70 iterations done. 699999986 characters processed.
[BWTIncConstructFromPacked] 80 iterations done. 799999986 characters processed.
[BWTIncConstructFromPacked] 90 iterations done. 899999986 characters processed.
[BWTIncConstructFromPacked] 100 iterations done. 999999986 characters processed.
[BWTIncConstructFromPacked] 110 iterations done. 1099999986 characters processed.
[BWTIncConstructFromPacked] 120 iterations done. 1199999986 characters processed.
[BWTIncConstructFromPacked] 130 iterations done. 1299999986 characters processed.
[BWTIncConstructFromPacked] 140 iterations done. 1399999986 characters processed.
[BWTIncConstructFromPacked] 150 iterations done. 1499999986 characters processed.
[BWTIncConstructFromPacked] 160 iterations done. 1599999986 characters processed.
[BWTIncConstructFromPacked] 170 iterations done. 1699999986 characters processed.
[BWTIncConstructFromPacked] 180 iterations done. 1799999986 characters processed.
[BWTIncConstructFromPacked] 190 iterations done. 1899999986 characters processed.
[BWTIncConstructFromPacked] 200 iterations done. 1999999986 characters processed.
[BWTIncConstructFromPacked] 210 iterations done. 2099999986 characters processed.
[BWTIncConstructFromPacked] 220 iterations done. 2199999986 characters processed.
[BWTIncConstructFromPacked] 230 iterations done. 2299999986 characters processed.
[BWTIncConstructFromPacked] 240 iterations done. 2399999986 characters processed.
[BWTIncConstructFromPacked] 250 iterations done. 2499999986 characters processed.
[BWTIncConstructFromPacked] 260 iterations done. 2599999986 characters processed.
[BWTIncConstructFromPacked] 270 iterations done. 2699999986 characters processed.
[BWTIncConstructFromPacked] 280 iterations done. 2799999986 characters processed.
[BWTIncConstructFromPacked] 290 iterations done. 2899999986 characters processed.
[BWTIncConstructFromPacked] 300 iterations done. 2999999986 characters processed.
[BWTIncConstructFromPacked] 310 iterations done. 3099999986 characters processed.
[BWTIncConstructFromPacked] 320 iterations done. 3199999986 characters processed.
[BWTIncConstructFromPacked] 330 iterations done. 3299999986 characters processed.
[BWTIncConstructFromPacked] 340 iterations done. 3399999986 characters processed.
[BWTIncConstructFromPacked] 350 iterations done. 3499999986 characters processed.
[BWTIncConstructFromPacked] 360 iterations done. 3599999986 characters processed.
```

[BWTIncConstructFromPacked] 370 iterations done. 3699999986 characters processed.

```
[BWTIncConstructFromPacked] 380 iterations done. 3799999986 characters processed.
[BWTIncConstructFromPacked] 390 iterations done. 3899999986 characters processed.
[BWTIncConstructFromPacked] 400 iterations done. 3999999986 characters processed.
[BWTIncConstructFromPacked] 410 iterations done. 4099999986 characters processed.
[BWTIncConstructFromPacked] 420 iterations done. 4199999986 characters processed.
[BWTIncConstructFromPacked] 430 iterations done. 4299999986 characters processed.
[BWTIncConstructFromPacked] 440 iterations done. 4399999986 characters processed.
[BWTIncConstructFromPacked] 450 iterations done. 4499999986 characters processed.
[BWTIncConstructFromPacked] 460 iterations done. 4599999986 characters processed.
[BWTIncConstructFromPacked] 470 iterations done. 4699999986 characters processed.
[BWTIncConstructFromPacked] 480 iterations done. 4799999986 characters processed.
[BWTIncConstructFromPacked] 490 iterations done. 4899999986 characters processed.
[BWTIncConstructFromPacked] 500 iterations done. 4999999986 characters processed.
[BWTIncConstructFromPacked] 510 iterations done. 5099999986 characters processed.
[BWTIncConstructFromPacked] 520 iterations done. 5199999986 characters processed.
[BWTIncConstructFromPacked] 530 iterations done. 5299999986 characters processed.
[BWTIncConstructFromPacked] 540 iterations done. 5399999986 characters processed.
[BWTIncConstructFromPacked] 550 iterations done. 5499999986 characters processed.
[BWTIncConstructFromPacked] 560 iterations done. 5599999986 characters processed.
[BWTIncConstructFromPacked] 570 iterations done. 5699999986 characters processed.
[BWTIncConstructFromPacked] 580 iterations done. 5798165394 characters processed.
[BWTIncConstructFromPacked] 590 iterations done. 5886412978 characters processed.
[BWTIncConstructFromPacked] 600 iterations done. 5964843650 characters processed.
[BWTIncConstructFromPacked] 610 iterations done. 6034549010 characters processed.
[BWTIncConstructFromPacked] 620 iterations done. 6096499330 characters processed.
[BWTIncConstructFromPacked] 630 iterations done. 6151556914 characters processed.
[BWTIncConstructFromPacked] 640 iterations done. 6200488210 characters processed.
[BWTIncConstructFromPacked] 650 iterations done. 6243974434 characters processed.
[BWTIncConstructFromPacked] 660 iterations done. 6282621122 characters processed.
[BWTIncConstructFromPacked] 670 iterations done. 6316966322 characters processed.
[BWTIncConstructFromPacked] 680 iterations done. 6347488418 characters processed.
[BWTIncConstructFromPacked] 690 iterations done. 6374612482 characters processed.
[BWTIncConstructFromPacked] 700 iterations done. 6398716386 characters processed.
[BWTIncConstructFromPacked] 710 iterations done. 6418572210 characters processed.
[bwa_index] 2644.70 seconds elapse.
[bwa_index] Update BWT... [palafm01@li03c03 scripts]$ less 124354105.stdout
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ rm variant_calling.sh
[palafm01@li03c03 scripts]$ touch variant_calling_v2.sh
[palafm01@li03c03 scripts]$ vim variant_calling_v2.sh
[palafm01@li03c03 scripts]$ mv variant_calling_v2.sh variant_calling.sh
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads12 data12 FastQC_output hg38 MD5 Novogene report raw_data raw_data.zip Readme.html results12 scripts
[palafm01@li03c03 WGS_iPSC]$ cd data12/
[palafm01@li03c03 data12]$ ls
[palafm01@li03c03 data12]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ mkdir data aligned_reads results
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads aligned_reads12 data data12 FastQC_output hg38 MD5 Novogene report raw_data raw_data.zip Readme.html results results12 scr
[palafm01@li03c03 WGS_iPSC]$ rm -r data12/
[palafm01@li03c03 WGS_iPSC]$ rm -r results12/
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads aligned_reads12 data FastQC_output hg38 MD5 Novogene report raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ rm -r Novogene\ report/
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads1 aligned_reads12 data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ rm -r aligned_reads12/
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd data
[palafm01@li03c03 data]$ ls
[palafm01@li03c03 data]$ cd
「palafm01@li03c03 ~]$ wqs
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd FastQC_output/
[palafm01@li03c03 FastQC_output]$ ls
P732912\_FDSW220142847-1r\_HYMM2DSX2\_L1\_1\_fastqc.html \\ P732912\_FDSW220142847-1r\_HYMM2DSX2\_L1\_2\_fastqc.zip \\ P931263\_FDSW220142848-1r\_HYMM2DSX2\_L1\_2\_fastqc.zip \\ P931263\_FDSW22014284-1r\_HYMM2DSX2\_L1\_2\_fastqc.zip \\ P931263\_FDSW22014284-1r\_HYM2DSX2\_FDSW22014284-1r\_HYM2DSX2\_FDSW22014284-1r\_HYM2DSX2\_FDSW22014284-1r\_HY
tac.html
P732912_FDSW220142847-1r_HYMM2DSX2_L1_1_fastqc.zip P931263_FDSW220142848-1r_HYMM2DSX2_L1_1_fastqc.html P931263_FDSW220142848-1r_HYMM2DSX2_L1_2_fas
```

```
tac.zip
Fpalafm01@li03c03 Fast0C_output]$ cd ...
[palafm01@li03c03 WGS_iPSC]$ ls
alianed_reads data FastOC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd raw_data
Fpalafm01@li03c03 raw datal$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@li03c03 raw_data]$ cd P732912/
[palafm01@li03c03 P732912]$ ls
MD5.txt P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P732912]$ ls
MD5.txt P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.qz P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.qz
Граlafm01@li03c03 P7329127$ lss
-bash: lss: command not found
[palafm01@li03c03 P732912]$ ls -l
total 47246689
-rw-r---- 1 palafm01 vascbrain
                                                       162 May 26 2022 MD5.txt
-rw-r---- 1 palafm01 vascbrain 23948553718 May 25 2022 P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz
-rw-r---- 1 palafm01 vascbrain 24432028934 May 25 2022 P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P732912]$ ls
MD5.txt P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P732912]$ ls -s
total 47246689
         1 MD5.txt 23387264 P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz 23859424 P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
Fnalafm01@li03c03 P732912]$ ls
MD5.txt P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P732912]$ ls -sh
total 46G
512 MD5.txt 23G P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz 23G P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P732912]$ mv P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
Fnalafm01@li03c03 P732912l$ ls
MD5.txt P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.qz
[palafm01@li03c03\ P732912]\$\ mv\ P732912\_FDSW220142847-1r\_HYMM2DSX2\_L1\_2.fq.gz\ P732912\_FDSW220142847_1r\_HYMM2DSX2\_L1\_2.fq.gz\ P732912\_FDSW220142847_1r\_HYMP2DSX2\_L1\_2.fq.gz\ P732912\_FDSW220142847_1r\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_HYMP2DSX2\_H
[palafm01@li03c03 P732912]$ ls
MD5.txt P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz
[palafm01@li03c03 P732912]$ cd ..
Fpalafm01@li03c03 raw datal$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@li03c03 raw_data]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastOC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ bsub < variant_calling.sh</pre>
Job <124439081> is submitted to queue premium>.
[palafm01@li03c03 scripts]$ bjobs
         JOBID
                          USER
                                      JOB NAME
                                                      STAT
                                                                    OUEUE FROM HOST
                                                                                                EXEC_HOST SUBMIT_TIME
                                                                                                                                      START_TIME TIME_LEFT
    124439081 palafm01 * looks okay PEND
                                                                 premium li03c03.ch
                                                                                                                Apr 17 17:35
[palafm01@li03c03 scripts]$ bjobs
                         USER
                                                                    OUEUE FROM HOST
                                                                                                EXEC_HOST SUBMIT_TIME
                                                                                                                                     START TIME TIME LEFT
         JOBID
                                      JOB_NAME STAT
    124439081
                   palafm01 * looks okay
                                                                 premium li03c03.ch
                                                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                                       RUN
                                                                                                                                                           5:52 L
「palafm01@li03c03 scripts]$ bjobs
                                      JOB_NAME
                                                                    QUEUE FROM_HOST
                                                                                                EXEC_HOST
                                                                                                               SUBMIT_TIME
                                                                                                                                      START_TIME TIME_LEFT
         JOBID
                          USER
                                                      STAT
    124439081
                   palafm01 * looks okay
                                                       RUN
                                                                 premium li03c03.ch
                                                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                                                                           5:47 L
[palafm01@li03c03 scripts]$ bjobs
                                                                    QUEUE FROM_HOST
                                                                                                EXEC_HOST
                                                                                                               SUBMIT_TIME
         JOBID
                         USER
                                      JOB NAME
                                                      STAT
                                                                                                                                      START TIME TIME LEFT
    124439081 palafm01 * looks okay
                                                                 premium li03c03.ch
                                                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                       RUN
                                                                                                                                                           5:45 L
「palafm01@li03c03 scripts]$ bjobs
                         USER
                                      JOB_NAME
                                                      STAT
                                                                    QUEUE FROM_HOST
                                                                                                EXEC_HOST SUBMIT_TIME
                                                                                                                                     START_TIME TIME_LEFT
         JOBID
                   palafm01 * looks okay
    124439081
                                                                 premium li03c03.ch
                                                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                                      RUN
                                                                                                                                                         5:30 L
[palafm01@li03c03 scripts]$ bjobs
                                                                                                EXEC_HOST
                                                                                                                                     START_TIME TIME_LEFT
         JOBID
                          USER
                                      JOB NAME
                                                      STAT
                                                                    OUEUE FROM HOST
                                                                                                               SUBMIT TIME
    124439081
                   palafm01 * looks okay
                                                       RUN
                                                                 premium li03c03.ch
                                                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                                                                           5:17 L
[palafm01@li03c03 scripts]$ bjobs
         JOBID
                          USER
                                      JOB_NAME
                                                      STAT
                                                                    QUEUE FROM_HOST
                                                                                                EXEC_HOST SUBMIT_TIME
                                                                                                                                     START_TIME TIME_LEFT
    124439081
                   palafm01 * looks okay
                                                       RUN
                                                                 premium li03c03.ch
                                                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                                                                          4:43 L
[palafm01@li03c03 scripts]$ bjobs
         JOBID
                         USER
                                      JOB_NAME
                                                      STAT
                                                                    QUEUE FROM_HOST
                                                                                                EXEC_HOST
                                                                                                                SUBMIT_TIME
                                                                                                                                      START_TIME TIME_LEFT
                   palafm01 * looks okay
    124439081
                                                       RUN
                                                                 premium li03c03.ch
                                                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                                                                           4:43 L
[palafm01@li03c03 scripts]$ bjobs
         10RTD
                          USER
                                      JOB NAME STAT
                                                                    QUEUE FROM_HOST
                                                                                               EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
```

```
124439081 palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:43 I
[palafm01@li03c03 scripts]$ bjobs
                USER JOB NAME
                                    STAT
                                              OUEUE FROM HOST
                                                                 EXEC HOST SUBMIT TIME START TIME TIME LEFT
      JOBID
  124439081
             palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:43 L
[palafm01@li03c03 scripts]$ bjobs
      JOBID
                 USER
                          JOB_NAME
                                     STAT
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST
                                                                            SUBMIT_TIME
                                                                                           START_TIME TIME_LEFT
  124439081 palafm01 * looks okay
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:43 L
                                     RUN
[palafm01@li03c03 scripts]$ bjobs
     JOBID
             USER
                         JOB_NAME
                                    STAT
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST SUBMIT_TIME
                                                                                          START_TIME TIME_LEFT
  124439081 palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                        4:43 L
[palafm01@li03c03 scripts]$ bjobs
      JOBID
                 USER
                          JOB_NAME
                                    STAT
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST SUBMIT_TIME
                                                                                          START_TIME TIME_LEFT
  124439081
             palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:43 I
[palafm01@li03c03 scripts]$ bjobs
      JOBID
                USER
                        JOB_NAME
                                    STAT
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST
                                                                            SUBMIT_TIME
                                                                                           START_TIME TIME_LEFT
  124439081 palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:43 L
[palafm01@li03c03 scripts]$ bjobs
                                              QUEUE FROM_HOST
                                    STAT
                                                                 EXEC_HOST SUBMIT_TIME
                                                                                          START_TIME TIME_LEFT
     JOBID
             USER JOB_NAME
  124439081 palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                        4:43 L
[palafm01@li03c03 scripts]$ bjobs
                                                                 EXEC_HOST
      JOBID
                 USER
                          JOB NAME
                                     STAT
                                              OUEUE FROM HOST
                                                                            SUBMIT_TIME
                                                                                          START_TIME TIME_LEFT
  124439081 palafm01 * looks okay
                                                                   lc02a08 Apr 17 17:35 Apr 17 17:35
                                     RUN
                                            premium li03c03.ch
                                                                                                        4:43 I
[palafm01@li03c03 scripts]$ bjobs
                 USER
                         JOB_NAME
                                              OUEUE FROM HOST
                                                                 EXEC_HOST SUBMIT_TIME
      JOBID
                                    STAT
                                                                                          START_TIME TIME_LEFT
  124439081
             palafm01 * looks okay
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                     RUN
                                                                                                         4:43 L
Fpalafm01@li03c03 scriptsl$ biobs
                 USER
                        JOB_NAME
                                     STAT
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST
                                                                            SUBMIT_TIME
                                                                                           START_TIME TIME_LEFT
      JOBID
  124439081 palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:43 L
[palafm01@li03c03 scripts]$ bjobs
                                                                 EXEC_HOST SUBMIT_TIME
      JOBID USER
                         JOB_NAME
                                    STAT
                                              OUEUE FROM HOST
                                                                                          START_TIME TIME_LEFT
  124439081 palafm01 * looks okay
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                     RUN
                                                                                                         4:43 L
[palafm01@li03c03 scripts]$ bjobs
      JOBID
                USER
                         JOB_NAME
                                    STAT
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
  124439081 palafm01 * looks okay
                                            premium li03c03.ch
                                                                  lc02g08 Apr 17 17:35 Apr 17 17:35
                                     RUN
                                                                                                        4:43 L
[palafm01@li03c03 scripts]$ bjobs
      JOBID
                 USER
                                                                 EXEC_HOST
                                                                           SUBMIT_TIME
                                                                                          START_TIME TIME_LEFT
                         JOB NAME
                                    STAT
                                              OUEUE FROM HOST
  124439081 palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:43 L
[palafm01@li03c03 scripts]$ bjobs
      JOBID
                 USER
                          JOB_NAME STAT
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST SUBMIT_TIME
                                                                                          START_TIME TIME_LEFT
  124439081 palafm01 * looks okay
                                     RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:20 L
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ ls-l
-bash: ls-l: command not found
[palafm01@li03c03 scripts]$ cd
[palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ vim .bashrc
[palafm01@li03c03 ~]$ source .bashrc
[palafm01@li03c03 ~]$ bjobs
                                              QUEUE FROM_HOST
                                                                 EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
      JOBID USER JOB NAME STAT
  124439081 palafm01 * looks okay
                                    RUN
                                            premium li03c03.ch
                                                                   lc02g08 Apr 17 17:35 Apr 17 17:35
                                                                                                         4:14 L
[palafm01@li03c03 ~]$ ls
[palafm01@li03c03 ~]$ wgs
「palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd aligned_reads/
Fpalafm01@li03c03 alianed readsl$ ls
[palafm01@li03c03 aligned_reads]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd data
[palafm01@li03c03 data]$ ls
[palafm01@li03c03 data]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd results/
Fpalafm01@li03c03 results]$ ls
[palafm01@li03c03 results]$ cd ...
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ lss
-rw-r---- 1 palafm01 vascbrain 6.4K Apr 17 09:06 124354105.stderr
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 17 17:35 .
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 .
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 09:06 124354105.stdout
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 17:35 variant_calling.sh
[palafm01@li03c03 scripts]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd hg38/
```

```
[palafm01@li03c03 hg387$ ls
hg38.dict hg38.fa hg38.fa.amb hg38.fa.ann hg38.fa.bwt hg38.fa.fa hg38.fa.pac Homo_sapiens_assembly38.dbsnp138.vcf Homo_sapiens_assembly38.db
snp138.vcf.idx
[palafm01@li03c03 hg38]$ lss
total 17G
-rw-r---- 1 palafm01 vascbrain 11G Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf
-rw-r---- 1 palafm01 vascbrain 3.1G Jan 16 2014 hg38.fa
-rw-r---- 1 palafm01 vascbrain 1.5G Apr 17 09:06 hg38.fa.bwt
-rw-r---- 1 palafm01 vascbrain 1.5G Apr 17 08:22 hg38.fa.pac
-rw-r---- 1 palafm01 vascbrain 12M Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf.idx
-rw-r---- 1 palafm01 vascbrain 59K Apr 17 07:59 hg38.dict
-rw-r---- 1 palafm01 vascbrain 22K Apr 17 08:22 hg38.fa.ann
-rw-r---- 1 palafm01 vascbrain 21K Apr 17 08:22 hg38.fa.amb
-rw-r---- 1 palafm01 vascbrain 19K Apr 17 07:57 hg38.fa.fai
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 17 09:06
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 ...
[palafm01@li03c03 hg38]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ cat variant_calling.sh
UB -J CAD12step1
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # # call germline variants in a human WGS paired end reads # # #
# # # 2 X 100bp following GATK4 best practices workflow # # #
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script
   # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
\# [1] update raw data file name by replacing - for \_
   # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
   # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
# [] rename script from .sh to .lsf?
   # going to test without making this change
# [] express instead of premium queue?
   # for fast turnaround, premium is default
# error and output
   # BSUB -oo %J.stdout
   # BSUB -eo %J.stderr
       # or
   #BSUB -o %J.stdout
   #BSUB -e %J.stderr
module load samtools/1.17
module load aatk
module load fastac
module load bwa
# # directories
# /sc/arion/projects/vascbrain/WGS_iPSC/
# # update reads value for each sample
# # CAD12:
```

/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912

```
# # CAD63:
# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
# # download reference files to folder and unzip #########
 \begin{tabular}{ll} # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz \\ \end{tabular} 
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa
# # create ref dict file before running haplotype caller #########
# gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict
# # download known sites files for BQSR from GATK resource bundle #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assemb
ly38.dbsnp138.vcf
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp
138.vcf.idx
# STEP 1: QC - Run fastac
# -----
echo "STEP 1: QC - Run fastqc"
fastqc ${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz -o ${reads}/
fastqc ${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o ${reads}/
echo "STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?"
# No trimming required if quality looks okay
[palafm01@li03c03 scripts]$ cd ../raw_data
[palafm01@li03c03 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@li03c03 raw_data]$ cd P732912/
[palafm01@li03c03 P732912]$ ls
L1_1.fq.gz P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P732912]$ ls
                                                P732912_FDSW220142847_1r_HYMM2DSX2_L1_1_fastqc.zip P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fast
ac.html P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
P732912_FDSW220142847_1r_HYMM2DSX2_L1_1_fastqc.html P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
                                                                                                P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fast
[palafm01@li03c03 P732912]$ bjobs
No unfinished job found
[palafm01@li03c03 P732912]$ ls
MD5.txt
                                                P732912 FDSW220142847 1r HYMM2DSX2 L1 1 fastac.zip P732912 FDSW220142847 1r HYMM2DSX2 L1 2 fast
qc.html P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
P732912_FDSW220142847_1r_HYMM2DSX2_L1_1_fastqc.html P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
                                                                                                P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fast
[palafm01@li03c03 P732912]$ cd ../../scripts/
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ lss
```

```
-rw-r---- 1 palafm01 vascbrain 9.9K Apr 17 19:25 124439081.stdout
-rw-r---- 1 palafm01 vascbrain 6.4K Apr 17 09:06 124354105.stderr
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 17 19:25 .
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 .
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 09:06 124354105.stdout
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 17:35 variant_calling.sh
-rw-r---- 1 palafm01 vascbrain 2.8K Apr 17 19:25 124439081.stderr
[palafm01@li03c03 scripts]$ cat 124439081.stdout
Sender: LSF System <lsfadmin@lc02g08>
Subject: Job 124439081: <UB -J CAD12step1;#BSUB -P acc_vascbrain;#BSUB -g premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusage[mem=4000];#BSUB -oo %J.std
out;#BSUB -eo %J.stderr;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best p
and update this script; # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing -
for _; # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847
-1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf?; # going to test without making
ies;# /sc/arion/projects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P7
32912;# # CADG3:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P9312G3; ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; known_sites="/
sc/arion/projects/vascbrain/WGS\_iPSC/hg38/Homo\_sapiens\_assembly 38. dbsnp138.vcf"; a ligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/hg38/Homo\_sapiens\_assembly 38. dbsnp138.vcf"; a ligned\_reads="/sc/arion/wGS\_iPSC/hg38/Homo\_sapiens\_assembly 38. dbsnp138.vcf"; a ligned\_read
 reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/wGS_iPSC/results"; data="/sc/arion/wG
scbrain/WGS_iPSC/data"; ########### Prep files (RUN ONLY ONCE) ############################### # # make ref folder;# mkdir hg38; # # download refere
nce files to folder and unzip ########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZi
ps/hg38.fa.gz;# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller #########;#
 samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller #########; # gatk Creat
eSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known s
ites files for BQSR from GATK resource bundle #########;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomi
cs-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.goo
############; # ------; # STEP 1: QC - Run fastqc ;# ------; echo "STEP 1: QC - Run fastqc"; fastqc ${reads}/P732912_
FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz -o ${reads}/;fastqc ${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o ${reads}/; echo "STEP 1: fastqc R
ESULT - No trimming required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> in cluster <chimera> Done
Job <UB -J CAD12step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusage[mem=4000];#BSUB -oo %J.stdout;#BSUB -eo %J.std
err;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best practices workflow #
##; # v2 code updates: #################################; # [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this scr
          # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing - for _;
732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf?; # going to test without making this change; # [] ex
; # error and output ;
                                  # BSUB -oo %J.stdout;
                                                                   # BSUB -eo %J.stderr;
                                                                                                         # or;
                                                                                                                     #BSUB -o %J.stdout; #BSUB -e %J.stderr; # requirements:
ects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912;# # CAD63:;# #
 scbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"; aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"; reads="/sc/arion/pr
ojects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/dat
a"; ########### Prep files (RUN ONLY ONCE) ################; # # make ref folder;# mkdir hg38; # # download reference files to folder
and unzip ########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz; # gunz
ip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller #########; # samtools faidx /sc/
arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller #########; # gatk CreateSequenceDictionary
R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known sites files for BQSR
from GATK resource bundle ##########;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resou
rces/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics
# -----; # STEP 1: QC - Run fastqc ;# ------; echo "STEP 1: QC - Run fastqc"; fastqc ${reads}/P732912_FDSW220142847_1r_HYM
M2DSX2_L1_1.fq.gz -o ${reads}/; fastqc ${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o ${reads}/; echo "STEP 1: fastqc RESULT - No trimming
required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> was submitted from host <1i03c03.chimera.hpc.mssm.edu> by u
ser <palafm01> in cluster <chimera> at Wed Apr 17 17:35:30 2024
Job was executed on host(s) <lc02g08>, in queue remium>, as user <palafm01> in cluster <chimera> at Wed Apr 17 17:35:37 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Wed Apr 17 17:35:37 2024
Terminated at Wed Apr 17 19:25:55 2024
Results reported at Wed Apr 17 19:25:55 2024
Your job looked like:
# LSBATCH: User input
UB -J CAD12step1
```

UB -J CAD12step1

#BSUB -P acc_vascbrain

#BSUB -q premium

#BSUB -n 1

#BSUB -W 6:00

total 67K

```
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # # call germline variants in a human WGS paired end reads # # #
# # # 2 X 100bp following GATK4 best practices workflow # # #
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script
   # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
# [1] update raw data file name by replacing - for _
   # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
   # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
# [] rename script from .sh to .lsf?
   # going to test without making this change
# [] express instead of premium queue?
   # for fast turnaround, premium is default
# error and output
   # BSUB -oo %J.stdout
   # BSUB -eo %J.stderr
      # or
   #BSUB -o %J.stdout
   #BSUB -e %J.stderr
module load samtools/1.17
module load gatk
module load fastqc
module load bwa
# # directories
# /sc/arion/projects/vascbrain/WGS_iPSC/
(... more ...)
Successfully completed.
Resource usage summary:
   CPU time :
                                            6594.62 sec.
   Max Memory :
                                            306 MB
   Average Memory :
                                           217.97 MB
   Total Requested Memory :
                                           4000.00 MB
   Delta Memory :
                                           3694.00 MB
   Max Swap :
   Max Processes :
   Max Threads :
                                           17
   Run time :
                                           6618 sec.
   Turnaround time :
                                           6625 sec.
The output (if any) follows:
STEP 1: QC - Run fastqc
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?
PS:
```

Read file <124439081.stderr> for stderr output of this job.

「palafm01@li03c03 scripts]\$ cat 124439081.std 124439081.stderr 124439081.stdout [palafm01@li03c03 scripts]\$ cat 124439081.stderr /local/JOBS/1713389730.124439081.shell: line 1: UB: command not found Started analysis of P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 5% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 10% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 15% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 20% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz Approx 25% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 30% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz Approx 35% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 40% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz Approx 45% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 50% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 60% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 65% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 70% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 75% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 80% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 85% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 90% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Approx 95% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz Started analysis of P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 5% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 10% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 15% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 20% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 25% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 30% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 35% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz Approx 40% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 45% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 50% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 55% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz Approx 60% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 65% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz Approx 70% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 75% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz Approx 80% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 85% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz Approx 90% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz Approx 95% complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz [palafm01@li03c03 scripts]\$ ls 124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout variant_calling.sh [palafm01@li03c03 scripts]\$ cat 124439081.stdout Sender: LSF System <lsfadmin@lc02g08>

Subject: Job 124439081: <UB -J CAD12step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusage[mem=4000];#BSUB -oo %J.std out;#BSUB -eo %J.stderr;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best p ractices workflow # # #; # v2 code updates: ################################### ; # [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script; # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing for _; # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847 -1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf? ; # going to test without making ############################# # error and output ; # BSUB -oo %J.stdout; # BSUB -eo %J.stderr; # or; #BSUB -o %J.stdout; #BSUB -e %J.stder ies;# /sc/arion/projects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P7 32912;# # CADG3:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; known_sites="/ sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"; aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"; reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/wfS_iPSC/results"; data="/sc/arion/wf scbrain/WGS_iPSC/data"; ############# Prep files (RUN ONLY ONCE) ################################ # # make ref folder;# mkdir hg38; # # download refere nce files to folder and unzip ########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZi ps/hg38.fa.gz;# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller #########;# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller #########; # gatk Creat eSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known s ites files for BQSR from GATK resource bundle #########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hq38/ https://storage.googleapis.com/genomi cs-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.goo #############################; # -------; # STEP 1: QC - Run fastqc ;# -------; echo "STEP 1: QC - Run fastqc"; fastqc \${reads}/P732912_ FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz -o \${reads}/;fastqc \${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz -o \${reads}/; echo "STEP 1: fastqc R ESULT - No trimming required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> in cluster <chimera> Done

```
# [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing - for _;
732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf?; # going to test without making this change; # [] ex
; # error and output ; # BSUB -oo %J.stdout; # BSUB -eo %J.stderr; # or; #BSUB -o %J.stdout; #BSUB -e %J.stderr; # requirements:
ects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912;# # CAD63:;# #
 /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; known_sites="/sc/arion/wGS_iPSC/hg38/hg38.fa"; known_site
scbrain/WGS\_iPSC/hg38/Homo\_sapiens\_assembly38.dbsnp138.vcf"; a ligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads"; reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads"; reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned\_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned_reads="/sc/arion/projects/vascbrain/WGS\_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads="/sc/arion/wgs_iPSC/aligned_reads
ojects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/dat
a"; ########## Prep files (RUN ONLY ONCE) ###################; # # make ref folder;# mkdir hg38; # # download reference files to folder
and unzip ########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz; # gunz
ip /sc/arion/projects/vascbrain/WGS_iPSC/hq38/hq38.fa.qz; # # index ref - .fai file before running haplotype caller #########; # samtools faidx /sc/
arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller #########; # gatk CreateSequenceDictionary
R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known sites files for BQSR
from GATK resource bundle #########; wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resou
rces/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics
# -----;# STEP 1: QC - Run fastqc;# ------; echo "STEP 1: QC - Run fastqc"; fastqc ${reads}/P732912_FDSW220142847_1r_HYM
M2DSX2_L1_1.fq.gz -o ${reads}/; fastqc ${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o ${reads}/; echo "STEP 1: fastqc RESULT - No trimming
required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> was submitted from host <li03c03.chimera.hpc.mssm.edu> by u
ser <palafm01> in cluster <chimera> at Wed Apr 17 17:35:30 2024
Job was executed on host(s) <lc02g08>, in queue premium>, as user qpalafm01> in cluster <chimera> at Wed Apr 17 17:35:37 2024
</hpc/users/palafm01> was used as the home directory.
 </sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Wed Apr 17 17:35:37 2024
Terminated at Wed Apr 17 19:25:55 2024
Results reported at Wed Apr 17 19:25:55 2024
Your job looked like:
 _____
# LSBATCH: User input
UB -J CAD12step1
#BSUB -P acc_vascbrain
#BSUB -a premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # # call germline variants in a human WGS paired end reads # # #
# # # 2 X 100bp following GATK4 best practices workflow # # #
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script
       # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
# [1] update raw data file name by replacing - for _
       # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
       # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
# [] rename script from .sh to .lsf?
       # going to test without making this change
# [] express instead of premium queue?
       # for fast turnaround, premium is default
# error and output
      # BSUB -oo %J.stdout
       # BSUB -eo %J.stderr
             # or
       #BSUB -o %J.stdout
       #BSUB -e %J.stderr
```

module load samtools/1.17

```
module load aatk
module load fastqc
module load bwa
# # directories
# /sc/arion/projects/vascbrain/WGS_iPSC/
(... more ...)
Successfully completed.
Resource usage summary:
      CPU time :
                                                                                 6594.62 sec.
      Max Memory :
                                                                                 306 MR
                                                                                 217.97 MB
      Average Memory :
      Total Requested Memory :
                                                                                 4000.00 MB
      Delta Memory :
                                                                                 3694.00 MB
      Max Swap :
                                                                                 6
      Max Processes :
      Max Threads :
                                                                                 17
                                                                                 6618 sec.
      Run time :
      Turnaround time :
                                                                                 6625 sec.
The output (if any) follows:
STEP 1: QC - Run fastqc
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?
PS:
Read file <124439081.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ lss
total 67K
-rw-r---- 1 palafm01 vascbrain 9.9K Apr 17 19:25 124439081.stdout
-rw-r---- 1 palafm01 vascbrain 6.4K Apr 17 09:06 124354105.stderr
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 17 19:25
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 .
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 09:06 124354105.stdout
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 17:35 variant_calling.sh
 -rw-r---- 1 palafm01 vascbrain 2.8K Apr 17 19:25 124439081.stderr
[palafm01@li03c03 scripts]$ cd ../raw_data
[palafm01@li03c03 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
Fpalafm01@li03c03 raw datal$ cd P732912/
[palafm01@li03c03 P732912]$ ls
                                                                                       P732912_FDSW220142847_1r_HYMM2DSX2_L1_1_fastqc.zip P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fast
MD5.txt
qc.html P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
P732912 FDSW220142847 1r HYMM2DSX2 L1 2 fast
qc.zip
[palafm01@li03c03 P732912]$ lss
-rw-r---- 1 palafm01 vascbrain 23G May 25 2022 P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
-rw-r---- 1 palafm01 vascbrain 23G May 25 2022 P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
-rw-r---- 1 palafm01 vascbrain 677K Apr 17 19:25 P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fastqc.zip
-rw-r---- 1 palafm01 vascbrain 675K Apr 17 18:30 P732912_FDSW220142847_1r_HYMM2DSX2_L1_1_fastqc.zip
-rw-r---- 1 palafm01 vascbrain 239K Apr 17 19:25 P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fastqc.html
-rw-r---- 1 palafm01 vascbrain 237K Apr 17 18:30 P732912_FDSW220142847_1r_HYMM2DSX2_L1_1_fastqc.html
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 17 19:25
drwxr-s--- 4 palafm01 vascbrain 4.0K Apr 17 06:47
-rw-r---- 1 palafm01 vascbrain 162 May 26 2022 MD5.txt
[palafm01@li03c03 P732912]$ ls
                                                                                       P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fastqc.html
MD5.txt
P732912\_FDSW220142847\_1r\_HYMM2DSX2\_L1\_1\_fastqc.zip \\ P732912\_FDSW220142847\_1r\_HYMM2DSX2\_L1\_2.fq.gz \\ P732912\_FDSW220142847\_1r\_HYM2DSX2\_L1\_2.fq.gz \\ P732912\_FDSW220142847\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HYM2DSX2\_1r\_HY
P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
[palafm01@li03c03 P732912]$ pwd
/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912
```

```
[palafm01@li03c03 P732912]$ ls
                                                P732912_FDSW220142847_1r_HYMM2DSX2_L1_2_fastqc.html
P732912_FDSW220142847_1r_HYMM2DSX2_L1_1_fastqc.zip P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
[palafm01@li03c03 P732912]$ wgs
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd raw_data
[palafm01@li03c03 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@li03c03 raw_data]$ cd P931263/
[palafm01@li03c03 P931263]$ ls
MD5.txt P931263_FDSW220142848-1r_HYMM2DSX2_L1_1.fq.gz P931263_FDSW220142848-1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P931263]$ mv P931263_FDSW220142848-1r_HYMM2DSX2_L1_1.fq.gz P931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz
[palafm01@li03c03 P931263]$ mv P931263_FDSW220142848-1r_HYMM2DSX2_L1_2.fq.gz P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P931263]$ ls
MD5.txt P931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz
[palafm01@li03c03 P931263]$ cd ..
[palafm01@li03c03 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@li03c03 raw_data]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ bsub < variant_calling.sh
Job <124669344> is submitted to queue premium>.
[palafm01@li03c03 scripts]$ mkdir CAD12_std
[palafm01@li03c03 scripts]$ ls
124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout CAD12_std variant_calling.sh
[palafm01@li03c03 scripts]$ mv *.stderr CAD12_std/
[palafm01@li03c03 scripts]$ ls
124354105.stdout 124439081.stdout CAD12_std variant_calling.sh
[palafm01@li03c03 scripts]$ mv *.stdout CAD12_std/
Fpalafm01@li03c03 scriptsl$ ls
CAD12_std variant_calling.sh
[palafm01@li03c03 scripts]$ mkdir CAD63_std
[palafm01@li03c03 scripts]$ ls
CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ chmod 750 variant_calling.sh
[palafm01@li03c03 scripts]$ ls
CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cd
[palafm01@li03c03 ~]$ wgs
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd raw_data
[palafm01@li03c03 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
「palafm01@li03c03 raw data]$ cd P732912/
[palafm01@li03c03 P732912]$ ls
MD5.txt
                                                P732912 FDSW220142847 1r HYMM2DSX2 L1 2 fastac.html
P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
Граlafm01@li03c03 P732912T$ cd ...
[palafm01@li03c03 raw_data]$ ls
P732912 P931263 Rawdata_Readme.pdf
[palafm01@li03c03 raw_data]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ bsub < variant_calling.sh</pre>
Job <124675700> is submitted to queue opremium>.
[palafm01@li03c03 scripts]$ myjobs
-bash: myjobs: command not found
[palafm01@li03c03 scripts]$ bjobs
                         JOB_NAME STAT
      10RTD
                 USER
                                            QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
```

```
palafm01 CAD12step2
                                              premium li03c03.ch
   124675700
                                       RUN
                                                                      lc02c15 Apr 18 06:05 Apr 18 06:05
                                                                                                              6:01
              palafm01 * looks okay
                                              premium li03c03.ch
                                                                      lc01e30 Apr 18 05:41 Apr 18 05:41
   124669344
                                       RUN
                                                                                                             5:36 L
[palafm01@li03c03 scripts]$ bjobs
                           JOB_NAME
                                      STAT
                                                QUEUE FROM_HOST
                                                                    EXEC_HOST SUBMIT_TIME
                                                                                              START_TIME TIME_LEFT
       JOBID
                  USER
              palafm01
                                              premium li03c03.ch
   124675700
                         CAD12step2
                                       RUN
                                                                      lc02c15 Apr 18 06:05 Apr 18 06:05
                                                                                                             5:45 L
   124669344
              palafm01 * looks okay
                                       RUN
                                              premium li03c03.ch
                                                                      lc01e30 Apr 18 05:41 Apr 18 05:41
                                                                                                             5:22 L
[palafm01@li03c03 scripts]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
Fpalafm01@li03c03 scriptsl$ cd CAD12 std/
[palafm01@li03c03 CAD12_std]$ ls
124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout
[palafm01@li03c03 CAD12_std]$ lss
total 66K
-rw-r---- 1 palafm01 vascbrain 9.9K Apr 17 19:25 124439081.stdout
-rw-r---- 1 palafm01 vascbrain 6.4K Apr 17 09:06 124354105.stderr
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 05:42 .
drwxr-s--- 4 palafm01 vascbrain 4.0K Apr 18 06:05 .
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 09:06 124354105.stdout
-rw-r---- 1 palafm01 vascbrain 2.8K Apr 17 19:25 124439081.stderr
[palafm01@li03c03 CAD12_std]$ cat 124439081.stdout
Sender: LSF System <lsfadmin@lc02g08>
```

Subject: Job 124439081: <UB -J CAD12step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusage[mem=4000];#BSUB -oo %J.std out;#BSUB -eo %J.stderr;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best p and update this script; # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing for _; # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847 -1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf? ; # going to test without making # BSUB -oo %J.stdout; # BSUB -eo %J.stderr; # or: #BSUB -o %J.stdout; ies;# /sc/arion/projects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P7 32912;# # CAD63:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; known_sites="/ sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"; aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"; $reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; \\ data="/sc/arion/projects/vascbrain/WGS_iPSC/results"; \\ data="/sc/arion/p$ scbrain/WGS_iPSC/data"; ############# Prep files (RUN ONLY ONCE) ############################### # # make ref folder;# mkdir hg38; # # download refere nce files to folder and unzip ########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZi ps/hg38.fa.gz;# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller #########;# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller #########; # gatk Creat eSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known s ites files for BQSR from GATK resource bundle #########;# wqet -P /sc/arion/projects/vascbrain/WGS_iPSC/hq38/ https://storage.googleapis.com/genomi cs-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.goo #############################; # -------; # STEP 1: QC - Run fastqc ;# -------; echo "STEP 1: QC - Run fastqc"; fastqc \${reads}/P732912_ FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz -o \${reads}/;fastqc \${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.qz -o \${reads}/; echo "STEP 1: fastqc R ESULT - No trimming required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> in cluster <chimera> Done

Job <UB -J CAD12step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusage[mem=4000];#BSUB -oo %J.stdout;#BSUB -eo %J.std err;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best practices workflow # ##; # v2 code updates: #################################; # [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this scr # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing - for _; q.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf?; # going to test without making this change; # [] ex ; # error and output ; # BSUB -oo %J.stdout; # BSUB -eo %J.stderr; # or; #BSUB -o %J.stdout; #BSUB -e %J.stderr; # requirements: ects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912;# # CAD63:;# # $/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; \ ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; \ known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; \ known_sites="/sc/arion/projects/vascbrain/wgs_iPSC/hg38/hg38.fa"; \ known_sites="/sc/arion$ scbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"; aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"; reads="/sc/arion/pr ojects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/dat a"; ########## Prep files (RUN ONLY ONCE) ################; # # make ref folder;# mkdir hg38; # # download reference files to folder ip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller #########; # samtools faidx /sc/ arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller #########; # gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known sites files for BQSR from GATK resource bundle #########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resou rces/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics # -----;# STEP 1: QC - Run fastqc ;# ------; echo "STEP 1: QC - Run fastqc"; fastqc \${reads}/P732912_FDSW220142847_1r_HYM M2DSX2_L1_1.fq.gz -o \${reads}/; fastqc \${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o \${reads}/; echo "STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> was submitted from host <li03c03.chimera.hpc.mssm.edu> by u ser <palafm01> in cluster <chimera> at Wed Apr 17 17:35:30 2024 Job was executed on host(s) <lc02g08>, in queue remium>, as user <palafm01> in cluster <chimera> at Wed Apr 17 17:35:37 2024

</hpc/users/palafm01> was used as the home directory.

Started at Wed Apr 17 17:35:37 2024 Terminated at Wed Apr 17 19:25:55 2024

</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.

```
Your job looked like:
-----
# LSBATCH: User input
UB -J CAD12step1
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # # call germline variants in a human WGS paired end reads # # #
# # # 2 X 100bp following GATK4 best practices workflow # # #
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script
        # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
# [1] update raw data file name by replacing - for _
        # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
         \texttt{\# [done] P732912\_FDSW220142847-1r\_HYMM2DSX2\_L1\_2.fq.gz now P732912\_FDSW220142847\_1r\_HYMM2DSX2\_L1\_2.fq.gz } \\ \texttt{properties of the properties of the prop
# [] rename script from .sh to .lsf?
        # going to test without making this change
# [] express instead of premium queue?
        \ensuremath{\text{\#}} for fast turnaround, premium is default
# error and output
        # BSUB -oo %J.stdout
        # BSUB -eo %J.stderr
               # or
        #BSUB -o %J.stdout
        #BSUB -e %J.stderr
module load samtools/1.17
module load gatk
module load fastac
module load bwa
# # directories
# /sc/arion/projects/vascbrain/WGS_iPSC/
(... more ...)
Successfully completed.
Resource usage summary:
        CPU time :
                                                                                                   6594.62 sec.
        Max Memory :
                                                                                                   306 MB
        Average Memory :
                                                                                                   217.97 MB
        Total Requested Memory :
                                                                                                   4000.00 MB
        Delta Memory :
                                                                                                   3694.00 MB
        Max Swap :
                                                                                                   6
        Max Processes :
        Max Threads :
                                                                                                  17
        Run time :
                                                                                                   6618 sec.
        Turnaround time :
                                                                                                   6625 sec.
```

The output (if any) follows:

```
STEP 1: QC - Run fastqc
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?
```

PS:

Read file <124439081.stderr> for stderr output of this job.

[palafm01@li03c03 CAD12_std]\$ myjobs -bash: myjobs: command not found [palafm01@li03c03 CAD12_std]\$ bjobs JOBID USER JOB_NAME STAT QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME 124675700 palafm01 CAD12step2 RUN premium li03c03.ch lc02c15 Apr 18 06:05 Apr 18 06:05 124669344 palafm01 * looks okay RUN premium li03c03.ch lc01e30 Apr 18 05:41 Apr 18 05:41 [palafm01@li03c03 CAD12_std]\$ bjobs No unfinished job found Fpalafm01@li03c03 CAD12 stdl\$ ls 124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout [palafm01@li03c03 CAD12_std]\$ lss -rw-r---- 1 palafm01 vascbrain 9.9K Apr 17 19:25 124439081.stdout -rw-r---- 1 palafm01 vascbrain 6.4K Apr 17 09:06 124354105.stderr drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 05:42 drwxr-s--- 4 palafm01 vascbrain 4.0K Apr 18 07:31 . -rw-r---- 1 palafm01 vascbrain 3.5K Apr 17 09:06 124354105.stdout -rw-r---- 1 palafm01 vascbrain 2.8K Apr 17 19:25 124439081.stderr

[palafm01@li03c03 CAD12_std]\$ cat 124439081.stdout

Sender: LSF System <lsfadmin@lc02g08>

Subject: Job 124439081: <UB -J CAD12step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusage[mem=4000];#BSUB -oo %J.std out;#BSUB -eo %J.stderr;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best p and update this script; # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing -# [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847 -1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf? ; # going to test without making ####################; # error and output; # BSUB -oo %J.stdout; # BSUB -eo %J.stderr; # or; #BSUB -o %J.stdout; ies;# /sc/arion/projects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P7 32912;# # CADG3:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"; known_sites="/ sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"; aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"; reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/wGS_iPSC/results"; data="/sc/a nce files to folder and unzip ########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZi ps/hg38.fa.gz;# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller ##########;# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hq38/hq38.fa; # # create ref dict file before running haplotype caller #########; # gatk Creat eSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known s ites files for BQSR from GATK resource bundle #########;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomi cs-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.goo #############################; # ------; # STEP 1: QC - Run fastqc ;# ------; echo "STEP 1: QC - Run fastqc"; fastqc \${reads}/P732912_ FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz -o \${reads}/;fastqc \${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o \${reads}/; echo "STEP 1: fastqc R ESULT - No trimming required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> in cluster <chimera> Done

START TIME TIME LEFT

5:42 L

5:19 I

Job <UB -J CAD12step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusaqe[mem=4000];#BSUB -oo %J.stdout;#BSUB -eo %J.std err;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best practices workflow # ##; # v2 code updates: #################################; # [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this scr # [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing - for _; 732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.f q.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [] rename script from .sh to .lsf? ; # going to test without making this change; # [] ex ; # error and output ; # BSUB -oo %J.stdout; # BSUB -eo %J.stderr; # or; #BSUB -o %J.stdout; #BSUB -e %J.stderr; # requirements: ects/vascbrain/WGS_iPSC/; # # update reads value for each sample;# # CAD12:;# # /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912;# # CAD63:;# # scbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"; aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"; reads="/sc/arion/pr ojects/vascbrain/WGS_iPSC/raw_data/P732912"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/dat a"; ########### Prep files (RUN ONLY ONCE) ##################; # # make ref folder;# mkdir hg38; # # download reference files to folder and unzip ########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz;# gunz ip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller #########;# samtools faidx /sc/ arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller #########; # gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known sites files for BQSR from GATK resource bundle ##################### wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resou rces/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics

```
-public-data/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf.idx; ########### VARIANT CALLING STEPS ##################################;
 # -----;# STEP 1: QC - Run fastqc ;# ------; echo "STEP 1: QC - Run fastqc"; fastqc ${reads}/P732912_FDSW220142847_1r_HYM
M2DSX2_L1_1.fq.gz -o ${reads}/; fastqc ${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o ${reads}/; echo "STEP 1: fastqc RESULT - No trimming
required if quality looks okay. is it ok?"; # No trimming required if quality looks okay> was submitted from host <1i03c03.chimera.hpc.mssm.edu> by u
ser <palafm01> in cluster <chimera> at Wed Apr 17 17:35:30 2024
Job was executed on host(s) <lc02g08>, in queue premium>, as user <palafm01> in cluster <chimera> at Wed Apr 17 17:35:37 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Wed Apr 17 17:35:37 2024
Terminated at Wed Apr 17 19:25:55 2024
Results reported at Wed Apr 17 19:25:55 2024
Your job looked like:
_____
# LSBATCH: User input
UB -J CAD12step1
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # # call germline variants in a human WGS paired end reads # # #
# # # 2 X 100bp following GATK4 best practices workflow # # #
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script
   \# [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
# [1] update raw data file name by replacing - for _
   # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_1.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
   # [done] P732912_FDSW220142847-1r_HYMM2DSX2_L1_2.fq.gz now P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
# [] rename script from .sh to .lsf?
   # going to test without making this change
# [] express instead of premium queue?
   # for fast turnaround, premium is default
# error and output
   # BSUB -oo %J.stdout
   # BSUB -eo %J.stderr
      # or
   #RSUR -o %1.stdout
   #BSUB -e %J.stderr
module load samtools/1.17
module load gatk
module load fastqc
module load bwa
# # directories
# /sc/arion/projects/vascbrain/WGS_iPSC/
(... more ...)
_____
Successfully completed.
Resource usage summary:
   CPU time :
                                           6594.62 sec.
                                           306 MR
   Max Memory :
```

```
Total Requested Memory :
                                                4000.00 MB
   Delta Memory :
                                                3694.00 MB
   Max Swap :
   Max Processes :
                                                6
   Max Threads :
                                                17
                                                6618 sec.
    Run time :
   Turnaround time :
                                                6625 sec.
The output (if any) follows:
STEP 1: QC - Run fastqc
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
Analysis complete for P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?
PS:
Read file <124439081.stderr> for stderr output of this job.
Fpalafm01@li03c03 CAD12 stdl$ cd ...
[palafm01@li03c03 scripts]$ ls
124669344.stderr 124669344.stdout 124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ lss
total 68K
-rw-r---- 1 palafm01 vascbrain 9.7K Apr 18 07:31 124669344.stdout
-rw-r---- 1 palafm01 vascbrain 6.0K Apr 18 06:44 124675700.stderr
drwxr-s--- 4 palafm01 vascbrain 4.0K Apr 18 07:31
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 05:42 CAD12_std
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 05:42 CAD63_std
-rwxr-x--- 1 palafm01 vascbrain 3.7K Apr 18 06:05 variant_calling.sh
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 18 06:44 124675700.stdout
-rw-r---- 1 palafm01 vascbrain 2.8K Apr 18 07:31 124669344.stderr
[palafm01@li03c03 scripts]$ cat
۸(
[palafm01@li03c03 scripts]$ 124675700.stdout
-bash: 124675700.stdout: command not found
[palafm01@li03c03 scripts]$ cat 124675700.stdout
Sender: LSF System <lsfadmin@lc02c15>
Subject: Job 124675700: <CAD12step2> in cluster <chimera> Exited
Job <CAD12step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 06:05:13 2024
Job was executed on host(s) <lc02c15>, in queue remium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 06:05:16 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 06:05:16 2024
Terminated at Thu Apr 18 06:44:00 2024
Results reported at Thu Apr 18 06:44:00 2024
Your job looked like:
-----
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD12step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
# code undates:
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
# [1] update raw data file name by replacing - for _
    # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
   # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
   # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz
    # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz
```

217.97 MB

Average Memory :

```
module load gatk
module load fastqc
module load bwa
# # update reads dir for specific sample
#CAD12: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912
#CAD63: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
# # download reference files to folder and unzip #########
 \begin{tabular}{ll} # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz \\ \end{tabular} 
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
(... more ...)
 -----
TERM_MEMLIMIT: job killed after reaching LSF memory usage limit.
Exited with exit code 130.
Resource usage summary:
     CPU time :
                                                                   2312.83 sec.
                                                                   4000 MB
     Max Memory :
     Average Memory :
                                                                   1135.49 MR
     Total Requested Memory :
                                                                   4000.00 MB
     Delta Memory :
                                                                   0.00 MB
     Max Swap :
                                                                   2 MR
     Max Processes :
                                                                   6
     Max Threads :
     Run time :
                                                                   2323 sec.
     Turnaround time :
                                                                   2327 sec.
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
PS:
Read file <124675700.stderr> for stderr output of this job.
Fpalafm01@li03c03 scriptsl$ ls
124669344.stderr 124669344.stdout 124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cat 124669344.stdout
Sender: LSF System <lsfadmin@lc01e30>
Subject: Job 124669344: <UB -J CAD63step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusage[mem=4000];#BSUB -oo %J.std
out;#BSUB -eo %J.stderr;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best p
and update this script [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing - for _;
       # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz;
                                                                                                                                                                         # [done] P931263 FDSW2201
dule load samtools/1.17; module load gatk; module load fastqc; module load bwa; # # update reads dir for specific sample; # # CAD12: /sc/arion/projects/v
ascbrain/WGS_iPSC/raw_data/P732912;# # CAD63: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/
w_data/P931263"; ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa";known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assemb
ly38.dbsnp138.vcf";aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads";results="/sc/arion/projects/vascbrain/WGS_iPSC/results";data="
/sc/arion/projects/vascbrain/WGS_iPSC/data"; ########## Prep files (RUN ONLY ONCE) #########################; # # make ref folder;# mkdir hg38
; # # download reference files to folder and unzip #########;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/
goldenPath/hg38/bigZips/hg38.fa.qz;# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.qz; # # index ref - .fai file before running haplotype
 caller #########; samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller ###
```

requirements:

module load samtools/1.17

########;# gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known sites files for BQSR from GATK resource bundle #########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage. googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38 / https://storage.googleapis.com/genomics-public-data/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf.idx; ########## VARIANT CALLING STEPS astqc \${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz -o \${reads}/;# fastqc \${reads}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o \${reads} /; fastqc ${\text{p931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz -o }{\text{cads}/;fastqc }$-o {\text{p931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz -o }$-o {\text{posterior}}$}$ s}/; echo "STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?";# No trimming required if quality looks okay> in cluster <c himera> Done

Job <UB -J CAD63step1;#BSUB -P acc_vascbrain;#BSUB -q premium;#BSUB -n 1;#BSUB -W 6:00;#BSUB -R rusaqe[mem=4000];#BSUB -oo %J.stdout;#BSUB -eo %J.std err;#BSUB -L /bin/bash; # # # call germline variants in a human WGS paired end reads # # #;# # # 2 X 100bp following GATK4 best practices workflow # ipt [done] bashrc alias did not work with WGS-iPSC, so - must be a problem; # [1] update raw data file name by replacing - for _; # [done] P73291 2_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz; # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz; # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L $1_1.fq.gz$; # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz; # requirements: #################################; module load samtools/1 .17; module load gatk; module load fastqc; module load bwa; # # update reads dir for specific sample; # # CAD12: /sc/arion/projects/vascbrain/WGS_iPSC/ra w_data/P732912;# # CAD63: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263; reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"; ref ="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa";known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf";a $ligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"; results="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vascbrain/WGS_iPSC/results"; data="/sc/arion/projects/vasc$ ence files to folder and unzip #########; # wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZ ips/hg38.fa.gz;# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz; # # index ref - .fai file before running haplotype caller ##########; # samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa; # # create ref dict file before running haplotype caller ##########; gatk Crea teSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict; # # download known sites files for BQSR from GATK resource bundle #########; wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genom ics-public-data/resources/broad/hg38/v0/Homo_sapiens_assembly38.dbsnp138.vcf;# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.go $12_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz -o \$\{reads\}/; \# fastqc \$\{reads\}/P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz -o \$\{reads\}/P732912_FDSW220142847_1r_HYMADSX2_L1_2.fq.gz -o \$\{reads\}/P732912_FDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220142847_1r_HYMADSX2_TDSW220147_1r_HYMADSX2_TDSW220147_1r_HYMADSX2_TDSW220147_1r_HYMADSX2_TDSW220147_1r_HYMADSX2_TDSW220147_1r_HYMADSX2_TDSW220147_1r_HYMA$ $931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz - o {reads}/; fastqc {reads}/P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz - o {reads}/; echo "STEP 1: formula formula$ astqc RESULT - No trimming required if quality looks okay. is it ok?";# No trimming required if quality looks okay> was submitted from host <1i03c03. chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 05:41:43 2024

Job was executed on host(s) <lc01e30>, in queue remium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 05:41:46 2024 </hpc/users/palafm01> was used as the home directory.

</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.

Started at Thu Apr 18 05:41:46 2024

Terminated at Thu Apr 18 07:31:03 2024

Results reported at Thu Apr 18 07:31:03 2024

Your job looked like:

```
_____
# LSBATCH: User input
UB -J CAD63step1
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#RSUR -L /bin/bash
# # # call germline variants in a human WGS paired end reads # # #
# # # 2 X 100bp following GATK4 best practices workflow # # #
```

- # [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script [done] bashrc alias did not work with WGS-iPSC, so must be a problem
- # [1] update raw data file name by replacing for _
 - # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
 - # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
 - # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz
 - # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz

module load samtools/1.17 module load gatk module load fastqc

```
# # update reads dir for specific sample
# # CAD12: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912
# # CAD63: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known\_sites="/sc/arion/projects/vascbrain/WGS\_iPSC/hg38/Homo\_sapiens\_assembly38.dbsnp138.vcf"
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
(... more ...)
Successfully completed.
Resource usage summary:
    CPU time :
                                                6536.46 sec.
   Max Memory :
                                                299 MB
    Average Memory :
                                               215.74 MB
    Total Requested Memory :
                                               4000.00 MB
    Delta Memory :
                                               3701.00 MB
   Max Swan :
   Max Processes :
                                               6
   Max Threads :
                                               17
    Run time :
                                               6557 sec.
    Turnaround time :
                                               6560 sec.
The output (if any) follows:
STEP 1: QC - Run fastqc
Analysis complete for P931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz
Analysis complete for P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.qz
STEP 1: fastqc RESULT - No trimming required if quality looks okay. is it ok?
PS:
Read file <124669344.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ touch variant_calling.sh
[palafm01@li03c03 scripts]$ ls
124669344.stderr 124669344.stdout 124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ bsub < variant_calling.sh</pre>
Job <124703558> is submitted to queue <premium>.
[palafm01@li03c03 scripts]$ less 124669344.stdout
[palafm01@li03c03 scripts]$ mv 124669344.stdout CAD63_std/
[palafm01@li03c03 scripts]$ ls
124669344.stderr 124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cd CAD63_std/
[palafm01@li03c03 CAD63_std]$ ls
124669344.stdout
[palafm01@li03c03 CAD63_std]$ cd ..
[palafm01@li03c03 scripts]$ ls
124669344.stderr 124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ mv 124669344.stderr CAD63_std/
Fpalafm01@li03c03 scriptsl$ ls
124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cat 124675700.stdout
Sender: LSF System <lsfadmin@lc02c15>
Subject: Job 124675700: <CAD12step2> in cluster <chimera> Exited
Job <CAD12step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 06:05:13 2024
Job was executed on host(s) <lc02c15>, in queue premium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 06:05:16 2024
</hpc/users/palafm01> was used as the home directory.
```

</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.

```
Terminated at Thu Apr 18 06:44:00 2024
Results reported at Thu Apr 18 06:44:00 2024
Your job looked like:
-----
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD12step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
# code updates:
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
# [1] update raw data file name by replacing - for _
   # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.gz
   # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
   # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz
   # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz
# requirements:
module load samtools/1.17
module load gatk
module load fastqc
module load bwa
# # update reads dir for specific sample
#CAD12: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912
#CAD63: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hq38/Homo_sapiens_assembly38.dbsnp138.vcf"
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
_____
TERM_MEMLIMIT: job killed after reaching LSF memory usage limit.
Exited with exit code 130.
Resource usage summary:
   CPU time :
                                             2312.83 sec.
                                             4000 MB
   Max Memory :
   Average Memory :
                                             1135.49 MB
   Total Requested Memory :
                                             4000.00 MB
   Delta Memory :
                                             0.00 MR
   Max Swap :
                                             2 MB
   Max Processes :
                                             6
   Max Threads :
                                             8
```

2323 sec.

Run time :

Started at Thu Apr 18 06:05:16 2024

```
2327 sec.
   Turnground time :
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
PS:
Read file <124675700.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ bsub < variant_calling.sh</pre>
Job <124704501> is submitted to queue remium>.
[palafm01@li03c03 scripts]$ bjobs
                                               QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
      10RTD
             USER
                        JOB NAME STAT
   124704501 palafm01 CAD63step2 RUN premium li03c03.ch
                                                                    lc02c11 Apr 18 07:52 Apr 18 07:52
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout 124703558.stderr 124703558.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ lss
-rw-r---- 1 palafm01 vascbrain 6.0K Apr 18 06:44 124675700.stderr
-rwxr-x--- 1 palafm01 vascbrain 4.2K Apr 18 07:52 variant_calling.sh
drwxr-s--- 4 palafm01 vascbrain 4.0K Apr 18 07:52
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 .
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 05:42 CAD12_std
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 07:50 CAD63_std
-rw-r---- 1 palafm01 vascbrain 3.6K Apr 18 07:52 124703558.stdout
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 18 06:44 124675700.stdout
-rw-r---- 1 palafm01 vascbrain 875 Apr 18 07:52 124703558.stderr
[palafm01@li03c03 scripts]$ less 124703558.stdout
[palafm01@li03c03 scripts]$ mv 124703558.stdout CAD12_std/
[palafm01@li03c03 scripts]$ cat 124703558.stderr
[bwa_index] Pack FASTA... 19.38 sec
[bwa_index] Construct BWT for the packed sequence...
[BWTIncCreate] textLength=6418572210, availableWord=463634060
[BWTIncConstructFromPacked] 10 iterations done. 99999986 characters processed.
[BWTIncConstructFromPacked] 20 iterations done. 199999986 characters processed.
[BWTIncConstructFromPacked] 30 iterations done. 299999986 characters processed.
[BWTIncConstructFromPacked] 40 iterations done. 399999986 characters processed.
[BWTIncConstructFromPacked] 50 iterations done. 499999986 characters processed.
[BWTIncConstructFromPacked] 60 iterations done. 599999986 characters processed.
BWTIncConstructFromPacked(): Can't read from /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.pac: Unexpected end of file
[bwt_restore_sa] fail to open file '/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.sa' : No such file or directory
[palafm01@li03c03 scripts]$ bjobs
      JOBID
                 USER
                          JOB_NAME STAT
                                               QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
                                    RUN premium li03c03.ch
   124704501 palafm01 CAD63step2
                                                                  lc02c11 Apr 18 07:52 Apr 18 07:52
                                                                                                           5:54 L
[palafm01@li03c03 scripts]$ bjobs
                          JOB NAME STAT
                                             QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
      JOBID
                  USER
   124704501
             palafm01
                                            premium li03c03.ch
                                                                    lc02c11 Apr 18 07:52 Apr 18 07:52
                         CAD63step2
                                      RUN
[palafm01@li03c03 scripts]$ cd
[palafm01@li03c03 ~]$ wgs
[palafm01@li03c03 WGS_iPSC]$ cd aligned_reads/
[palafm01@li03c03 aligned_reads]$ ls
P732912.paired.sam
[palafm01@li03c03 aligned_reads]$ rm P732912.paired.sam
[palafm01@li03c03 aligned_reads]$ ls
[palafm01@li03c03 aligned_reads]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
「palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout 124703558.stderr CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cat
^С
[palafm01@li03c03 scripts]$ cat 124703558.stderr
[bwa_index] Pack FASTA... 19.38 sec
[bwa_index] Construct BWT for the packed sequence...
[BWTIncCreate] textLength=6418572210, availableWord=463634060
[BWTIncConstructFromPacked] 10 iterations done. 99999986 characters processed.
[BWTIncConstructFromPacked] 20 iterations done. 199999986 characters processed.
[BWTIncConstructFromPacked] 30 iterations done. 299999986 characters processed.
[BWTIncConstructFromPacked] 40 iterations done. 399999986 characters processed.
```

 $[{\tt BWTIncConstructFromPacked}] \ \ 50 \ \ iterations \ \ done. \ \ 499999986 \ \ characters \ \ processed.$

```
[BWTIncConstructFromPacked] 60 iterations done. 599999986 characters processed.
BWTIncConstructFromPacked(): Can't read from /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.pac: Unexpected end of file
[bwt_restore_sa] fail to open file '/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.sa' : No such file or directory
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout 124703558.stderr CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cd CAD12_std/
Fpalafm01@li03c03 CAD12 stdl$ ls
124354105.stderr 124354105.stdout 124439081.stderr 124439081.stdout 124703558.stdout
Fpalafm01@li03c03 CAD12 stdl$ cd ...
[palafm01@li03c03 scripts]$ mv *588.stderr CAD12_std/
mv: cannot stat '*588.stderr': No such file or directory
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout 124703558.stderr CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ mv 124703558.stderr CAD12_std/
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ bsub < variant_calling.sh</pre>
Job <124712019> is submitted to queue premium>.
[palafm01@li03c03 scripts]$ myjobs
-bash: myjobs: command not found
[palafm01@li03c03 scripts]$ myjobs
-bash: myjobs: command not found
[palafm01@li03c03 scripts]$ bjobs
                        JOB_NAME STAT
                                              QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME
      JOBID
                 USER
                                                                                           START TIME TIME LEFT
  124704501 palafm01 CAD63step2
                                     RUN premium li03c03.ch
                                                                 lc02c11 Apr 18 07:52 Apr 18 07:52
                                                                                                       5:32 I
  124712019 palafm01 CAD12step2 PEND premium li03c03.ch
                                                                            Apr 18 08:20
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout 124704501.stderr 124704501.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ bjobs
                 USER
                          JOB_NAME STAT
                                              QUEUE FROM_HOST
                                                                  EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
      JOBID
   124712019 palafm01 CAD12step2 RUN premium li03c03.ch
                                                                   lc02c11 Apr 18 08:20 Apr 18 08:20 5:59 L
[palafm01@li03c03 scripts]$ cat 124704501.stdout
Sender: LSF System <lsfadmin@lc02c11>
Subject: Job 124704501: <CAD63step2> in cluster <chimera> Done
Job <CAD63step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 07:52:38 2024
Job was executed on host(s) <lc02c11>, in queue remium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 07:52:42 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 07:52:42 2024
Terminated at Thu Apr 18 08:20:33 2024
Results reported at Thu Apr 18 08:20:33 2024
Your job looked like:
______
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD63step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#RSUR -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=16000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
# # call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
   # [1] changed minerva dir name from WGS-iPSC to WGS iPSC because alias did not work
   # [2] updated raw data filenames by replacing - with _ chr
module load samtools/1.17
module load aatk
module load fastqc
module load bwa
# # update reads dir for specific sample
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
# consistent dir's between samples
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
```

```
known\_sites = "/sc/arion/projects/vascbrain/WGS\_iPSC/hg38/Homo\_sapiens\_assembly38.dbsnp138.vcf" \\
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa
# # create ref dict file before running haplotype caller #########
# gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict
# # download known sites files for BQSR from GATK resource bundle #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assemb
ly38.dbsnp138.vcf
(... more ...)
-----
Successfully completed.
Resource usage summary:
   CPU time :
                                               1664.58 sec.
   Max Memory :
                                               1772 MB
                                               947.84 MB
   Average Memory :
    Total Requested Memory :
                                              16000.00 MB
   Delta Memory :
                                              14228.00 MB
   Max Swap :
   Max Processes :
                                               6
   Max Threads :
                                               7
    Run time :
                                               1670 sec.
    Turnaround time :
                                               1675 sec.
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
STEP 2: read alignment to ref genome hg38 complete!
PS:
Read file <124704501.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ cat 124704501.stderr
[bwa_index] Pack FASTA... 19.60 sec
[bwa_index] Construct BWT for the packed sequence...
[BWTIncCreate] textLength=6418572210, availableWord=463634060
[BWTIncConstructFromPacked] 10 iterations done. 99999986 characters processed.
[BWTIncConstructFromPacked] 20 iterations done. 199999986 characters processed.
[BWTIncConstructFromPacked] 30 iterations done. 299999986 characters processed.
[BWTIncConstructFromPacked] 40 iterations done. 399999986 characters processed.
[BWTIncConstructFromPacked] 50 iterations done. 499999986 characters processed.
[BWTIncConstructFromPacked] 60 iterations done. 599999986 characters processed.
\verb|[BWTIncConstructFromPacked]| 70 iterations done. 699999986 characters processed.
[BWTIncConstructFromPacked] 80 iterations done. 799999986 characters processed.
[BWTIncConstructFromPacked] 90 iterations done. 899999986 characters processed.
[BWTIncConstructFromPacked] 100 iterations done. 999999986 characters processed.
[BWTIncConstructFromPacked] 110 iterations done. 1099999986 characters processed.
[BWTIncConstructFromPacked] 120 iterations done. 1199999986 characters processed.
[BWTIncConstructFromPacked] 130 iterations done. 1299999986 characters processed.
```

[BWTIncConstructFromPacked] 140 iterations done. 1399999986 characters processed. [BWTIncConstructFromPacked] 150 iterations done. 1499999986 characters processed. [BWTIncConstructFromPacked] 160 iterations done. 1599999986 characters processed. [BWTIncConstructFromPacked] 170 iterations done. 1699999986 characters processed. [BWTIncConstructFromPacked] 180 iterations done. 1799999986 characters processed. [BWTIncConstructFromPacked] 190 iterations done. 1899999986 characters processed. [BWTIncConstructFromPacked] 200 iterations done. 1999999986 characters processed.

```
[BWTIncConstructFromPacked] 210 iterations done. 2099999986 characters processed.
[BWTIncConstructFromPacked] 220 iterations done. 2199999986 characters processed.
[BWTIncConstructFromPacked] 230 iterations done. 2299999986 characters processed.
[BWTIncConstructFromPacked] 240 iterations done. 2399999986 characters processed.
[BWTIncConstructFromPacked] 250 iterations done. 2499999986 characters processed.
[BWTIncConstructFromPacked] 260 iterations done. 2599999986 characters processed.
[BWTIncConstructFromPacked] 270 iterations done. 2699999986 characters processed.
[BWTIncConstructFromPacked] 280 iterations done. 2799999986 characters processed.
[BWTIncConstructFromPacked] 290 iterations done. 2899999986 characters processed.
[BWTIncConstructFromPacked] 300 iterations done. 2999999986 characters processed.
[BWTIncConstructFromPacked] 310 iterations done. 3099999986 characters processed.
[BWTIncConstructFromPacked] 320 iterations done. 3199999986 characters processed.
[BWTIncConstructFromPacked] 330 iterations done. 3299999986 characters processed.
[BWTIncConstructFromPacked] 340 iterations done. 3399999986 characters processed.
[BWTIncConstructFromPacked] 350 iterations done. 3499999986 characters processed.
[BWTIncConstructFromPacked] 360 iterations done. 3599999986 characters processed.
[BWTIncConstructFromPacked] 370 iterations done. 3699999986 characters processed.
[BWTIncConstructFromPacked] 380 iterations done. 3799999986 characters processed.
[BWTIncConstructFromPacked] 390 iterations done. 3899999986 characters processed.
[BWTIncConstructFromPacked] 400 iterations done. 3999999986 characters processed.
[BWTIncConstructFromPacked] 410 iterations done. 4099999986 characters processed.
[BWTIncConstructFromPacked] 420 iterations done. 4199999986 characters processed.
[BWTIncConstructFromPacked] 430 iterations done. 4299999986 characters processed.
[BWTIncConstructFromPacked] 440 iterations done. 4399999986 characters processed.
[BWTIncConstructFromPacked] 450 iterations done. 4499999986 characters processed.
[BWTIncConstructFromPacked] 460 iterations done. 4599999986 characters processed.
[BWTIncConstructFromPacked] 470 iterations done. 4699999986 characters processed.
[BWTIncConstructFromPacked] 480 iterations done. 4799999986 characters processed.
[BWTIncConstructFromPacked] 490 iterations done. 4899999986 characters processed.
[BWTIncConstructFromPacked] 500 iterations done. 4999999986 characters processed.
BWTIncConstructFromPacked(): Can't read from /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.pac: Unexpected end of file
[bwt_restore_sa] fail to open file '/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.sa' : No such file or directory
[palafm01@li03c03 scripts]$ bjobs
      JOBID USER JOB_NAME STAT QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
   124712019 palafm01 CAD12step2 RUN premium li03c03.ch lc02c11 Apr 18 08:20 Apr 18 08:20
[palafm01@li03c03 scripts]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd aligned_reads/
[palafm01@li03c03 aligned_reads]$ ls
P931263.paired.sam
[palafm01@li03c03 aligned_reads]$ rm P931263.paired.sam
[palafm01@li03c03 aligned_reads]$ bjobs
  JOBID USER JOB_NAME STAT QUEUE FROM_HOST 124712019 palafm01 CAD12step2 RUN premium li03c03.ch
                                               QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
                                                                   lc02c11 Apr 18 08:20 Apr 18 08:20
                                                                                                           5:55 I
[palafm01@li03c03 aligned_reads]$ ls
[palafm01@li03c03 aligned_reads]$ ls
[palafm01@li03c03 aligned_reads]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout 124704501.stderr 124704501.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cat 124704501.stdout
Sender: LSF System <lsfadmin@lc02c11>
Subject: Job 124704501: <CAD63step2> in cluster <chimera> Done
Job <CAD63step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 07:52:38 2024
Job was executed on host(s) <lc02c11>, in queue remium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 07:52:42 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 07:52:42 2024
Terminated at Thu Apr 18 08:20:33 2024
Results reported at Thu Apr 18 08:20:33 2024
Your job looked like:
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD63step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=16000]
```

```
#RSUR -oo %1.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
# code undates:
   # [1] changed minerva dir name from WGS-iPSC to WGS_iPSC because alias did not work
   # [2] updated raw data filenames by replacing - with _ chr
module load samtools/1.17
module load gatk
module load fastqc
module load bwa
# # update reads dir for specific sample
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
# consistent dir's between samples
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known\_sites = "/sc/arion/projects/vascbrain/WGS\_iPSC/hg38/Homo\_sapiens\_assembly38.dbsnp138.vcf" \\
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hq38
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa
# # create ref dict file before running haplotype caller #########
# gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict
# # download known sites files for BOSR from GATK resource bundle #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assemb
ly38.dbsnp138.vcf
(... more ...)
_____
Successfully completed.
Resource usage summary:
   CPU time :
                                              1664 58 sec.
                                              1772 MB
   Max Memory :
   Average Memory :
                                              947.84 MB
                                              16000.00 MB
   Total Requested Memory :
                                              14228.00 MB
   Delta Memory :
   Max Swap :
   Max Processes :
                                              6
   Max Threads :
                                              1670 sec.
   Run time :
   Turnaround time :
                                              1675 sec.
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
STEP 2: read alignment to ref genome hg38 complete!
PS:
Read file <124704501.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout 124704501.stderr 124704501.stdout CAD12_std CAD63_std variant_calling.sh
```

[palafm01@li03c03 scripts]\$ mv 124704501.stdout CAD63_std/

```
[palafm01@li03c03 scripts]$ mv 124704501.stderr CAD63_std/
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cat *700.stderr
[bwa_index] Pack FASTA... 19.51 sec
[bwa_index] Construct BWT for the packed sequence...
[BWTIncCreate] textLength=6418572210, availableWord=463634060
[BWTIncConstructFromPacked] 10 iterations done. 99999986 characters processed.
[BWTIncConstructFromPacked] 20 iterations done. 199999986 characters processed.
[BWTIncConstructFromPacked] 30 iterations done. 299999986 characters processed.
[BWTIncConstructFromPacked] 40 iterations done. 399999986 characters processed.
[BWTIncConstructFromPacked] 50 iterations done. 499999986 characters processed.
[BWTIncConstructFromPacked] 60 iterations done. 599999986 characters processed.
[BWTIncConstructFromPacked] 70 iterations done. 699999986 characters processed.
[BWTIncConstructFromPacked] 80 iterations done. 799999986 characters processed.
\hbox{\tt [BWTIncConstructFromPacked] 90 iterations done. 899999986 characters processed.}
[BWTIncConstructFromPacked] 100 iterations done. 999999986 characters processed.
[BWTIncConstructFromPacked] 110 iterations done. 1099999986 characters processed.
[BWTIncConstructFromPacked] 120 iterations done. 1199999986 characters processed.
[BWTIncConstructFromPacked] 130 iterations done. 1299999986 characters processed.
[BWTIncConstructFromPacked] 140 iterations done. 1399999986 characters processed.
[BWTIncConstructFromPacked] 150 iterations done. 1499999986 characters processed.
[BWTIncConstructFromPacked] 160 iterations done. 1599999986 characters processed.
[BWTIncConstructFromPacked] 170 iterations done. 1699999986 characters processed.
[BWTIncConstructFromPacked] 180 iterations done. 1799999986 characters processed.
[BWTIncConstructFromPacked] 190 iterations done. 1899999986 characters processed.
[BWTIncConstructFromPacked] 200 iterations done. 1999999986 characters processed.
[BWTIncConstructFromPacked] 210 iterations done. 2099999986 characters processed.
[BWTIncConstructFromPacked] 220 iterations done. 2199999986 characters processed.
[BWTIncConstructFromPacked] 230 iterations done. 2299999986 characters processed.
[BWTIncConstructFromPacked] 240 iterations done. 2399999986 characters processed.
[BWTIncConstructFromPacked] 250 iterations done. 2499999986 characters processed.
[BWTIncConstructFromPacked] 260 iterations done. 2599999986 characters processed.
[BWTIncConstructFromPacked] 270 iterations done. 2699999986 characters processed.
[BWTIncConstructFromPacked] 280 iterations done. 2799999986 characters processed.
[BWTIncConstructFromPacked] 290 iterations done. 2899999986 characters processed.
[BWTIncConstructFromPacked] 300 iterations done. 2999999986 characters processed.
[BWTIncConstructFromPacked] 310 iterations done. 3099999986 characters processed.
[BWTIncConstructFromPacked] 320 iterations done. 3199999986 characters processed.
[BWTIncConstructFromPacked] 330 iterations done. 3299999986 characters processed.
[BWTIncConstructFromPacked] 340 iterations done. 3399999986 characters processed.
[BWTIncConstructFromPacked] 350 iterations done. 3499999986 characters processed.
[BWTIncConstructFromPacked] 360 iterations done. 3599999986 characters processed.
[BWTIncConstructFromPacked] 370 iterations done. 3699999986 characters processed.
[BWTIncConstructFromPacked] 380 iterations done. 3799999986 characters processed.
[BWTIncConstructFromPacked] 390 iterations done. 3899999986 characters processed.
[BWTIncConstructFromPacked] 400 iterations done. 3999999986 characters processed.
[BWTIncConstructFromPacked] 410 iterations done. 4099999986 characters processed.
[BWTIncConstructFromPacked] 420 iterations done. 4199999986 characters processed.
[BWTIncConstructFromPacked] 430 iterations done. 4299999986 characters processed.
[BWTIncConstructFromPacked] 440 iterations done. 4399999986 characters processed.
[BWTIncConstructFromPacked] 450 iterations done. 4499999986 characters processed.
[BWTIncConstructFromPacked] 460 iterations done. 4599999986 characters processed.
[BWTIncConstructFromPacked] 470 iterations done. 4699999986 characters processed.
[BWTIncConstructFromPacked] 480 iterations done. 4799999986 characters processed.
[BWTIncConstructFromPacked] 490 iterations done. 4899999986 characters processed.
[BWTIncConstructFromPacked] 500 iterations done. 4999999986 characters processed.
[BWTIncConstructFromPacked] 510 iterations done. 5099999986 characters processed.
[BWTIncConstructFromPacked] 520 iterations done. 5199999986 characters processed.
[BWTIncConstructFromPacked] 530 iterations done. 5299999986 characters processed.
[BWTIncConstructFromPacked] 540 iterations done. 5399999986 characters processed.
[BWTIncConstructFromPacked] 550 iterations done. 5499999986 characters processed.
[BWTIncConstructFromPacked] 560 iterations done. 5599999986 characters processed.
[BWTIncConstructFromPacked] 570 iterations done. 5699999986 characters processed.
[BWTIncConstructFromPacked] 580 iterations done. 5798165394 characters processed.
[BWTIncConstructFromPacked] 590 iterations done. 5886412978 characters processed.
[BWTIncConstructFromPacked] 600 iterations done. 5964843650 characters processed.
[BWTIncConstructFromPacked] 610 iterations done. 6034549010 characters processed.
[BWTIncConstructFromPacked] 620 iterations done. 6096499330 characters processed.
[BWTIncConstructFromPacked] 630 iterations done. 6151556914 characters processed.
[BWTIncConstructFromPacked] 640 iterations done. 6200488210 characters processed.
[BWTIncConstructFromPacked] 650 iterations done. 6243974434 characters processed.
[BWTIncConstructFromPacked] 660 iterations done. 6282621122 characters processed.
[BWTIncConstructFromPacked] 670 iterations done. 6316966322 characters processed.
[BWTIncConstructFromPacked] 680 iterations done. 6347488418 characters processed.
[BWTIncConstructFromPacked] 690 iterations done. 6374612482 characters processed.
```

```
[BWTIncConstructFromPacked] 700 iterations done. 6398716386 characters processed.
[BWTIncConstructFromPacked] 710 iterations done. 6418572210 characters processed.
[bwa_index] 2277.74 seconds elapse.
[bwa_index] Update BWT... /local/JOBS/1713434713.124675700.shell: line 87: 254274 Killed
                                                                                                      bwa index ${ref}
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ lss
total 67K
-rw-r---- 1 palafm01 vascbrain 6.0K Apr 18 06:44 124675700.stderr
-rwxr-x--- 1 palafm01 vascbrain 4.2K Apr 18 08:20 variant_calling.sh
drwxr-s--- 4 palafm01 vascbrain 4.0K Apr 18 08:25
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 .
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 08:19 CAD12_std
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 08:25 CAD63_std
-rw-r---- 1 palafm01 vascbrain 3.5K Apr 18 06:44 124675700.stdout
[palafm01@li03c03 scripts]$ cat *700.stdout
Sender: LSF System <lsfadmin@lc02c15>
Subject: Job 124675700: <CAD12step2> in cluster <chimera> Exited
Job <CAD12step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 06:05:13 2024
Job was executed on host(s) <lc02c15>, in queue premium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 06:05:16 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 06:05:16 2024
Terminated at Thu Apr 18 06:44:00 2024
Results reported at Thu Apr 18 06:44:00 2024
Your job looked like:
_____
# LSBATCH: User input
#!/hin/hash
#BSUB -J CAD12step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=4000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
# code updates:
# [1] change minerva dir name from WGS-iPSC to WGS_iPSC and update this script [done] bashrc alias did not work with WGS-iPSC, so - must be a problem
\# [1] update raw data file name by replacing - for \_
   # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_1.fq.qz
   # [done] P732912_FDSW220142847_1r_HYMM2DSX2_L1_2.fq.gz
    # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_1.fq.gz
    # [done] P931263_FDSW220142848_1r_HYMM2DSX2_L1_2.fq.gz
# requirements:
module load samtools/1.17
module load aatk
module load fastqc
module load bwa
# # update reads dir for specific sample
#CAD12: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912
#CAD63: /sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263
reads="/sc/arion/projects/vascbrain/WGS iPSC/raw data/P732912"
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/grion/projects/vaschrain/WGS iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
```

```
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
(... more ...)
_____
TERM_MEMLIMIT: job killed after reaching LSF memory usage limit.
Exited with exit code 130.
Resource usage summary:
   CPU time :
                                            2312.83 sec.
   Max Memory :
                                            4000 MB
   Average Memory :
                                            1135.49 MB
   Total Requested Memory :
                                            4000.00 MB
   Delta Memory :
                                            0.00 MB
   Max Swap :
                                            2 MB
   Max Processes :
   Max Threads :
   Run time :
                                            2323 sec.
   Turnaround time :
                                            2327 sec.
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
PS:
Read file <124675700.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ ls
124675700.stderr 124675700.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ mv *700.std* CAD12_std/
[palafm01@li03c03 scripts]$ ls
CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ bjobs
     JOBID USER JOB_NAME STAT QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
   124712019 palafm01 CAD12step2 RUN premium li03c03.ch
                                                             lc02c11 Apr 18 08:20 Apr 18 08:20
                                                                                                  5:53 L
[palafm01@li03c03 scripts]$ ls
CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd aligned_reads/
[palafm01@li03c03 aligned_reads]$ ls
[palafm01@li03c03 aligned_reads]$ bjobs
                                          QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
      JOBID
                USER JOB_NAME STAT
   124712019 palafm01 CAD12step2
                                                             lc02c11 Apr 18 08:20 Apr 18 08:20
                                  RUN
                                          premium li03c03.ch
[palafm01@li03c03 aligned_reads]$ bjobs
                                          QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
      JOBID USER JOB_NAME STAT
  124712019 palafm01 CAD12step2 RUN
                                          premium li03c03.ch lc02c11 Apr 18 08:20 Apr 18 08:20
                                                                                                  5:49 L
[palafm01@li03c03 aligned_reads]$ bjobs
    JOBID USER JOB_NAME STAT
                                           QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
   124712019 palafm01 CAD12step2
                                        premium li03c03.ch lc02c11 Apr 18 08:20 Apr 18 08:20 5:40 L
                                  RUN
[palafm01@li03c03 aligned_reads]$ bjobs
      JOBID
                USER JOB_NAME STAT
                                           QUEUE FROM_HOST EXEC_HOST SUBMIT_TIME START_TIME TIME_LEFT
   124712019 palafm01 CAD12step2 RUN
                                                             lc02c11 Apr 18 08:20 Apr 18 08:20
                                          premium li03c03.ch
[palafm01@li03c03 aligned_reads]$
[palafm01@li03c03 aligned_reads]$ bjobs
```

```
OUFUE FROM HOST
                                                                  EXEC_HOST SUBMIT_TIME
                                                                                            START TIME TIME LEFT
       10RTD
                  USFR
                           JOB NAME STAT
   124712019 palafm01 CAD12step2
                                     RUN
                                             premium li03c03.ch
                                                                    lc02c11 Apr 18 08:20 Apr 18 08:20
                                                                                                            5:39 L
[palafm01@li03c03 aligned_reads]$ bjobs
No unfinished job found
[palafm01@li03c03 aligned_reads]$ ls
P732912.paired.sam
[palafm01@li03c03 aligned_reads]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastQC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124712019.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cat *out
Sender: LSF System <lsfadmin@lc02c11>
Subject: Job 124712019: <CAD12step2> in cluster <chimera> Done
Job <CAD12step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 08:20:21 2024
Job was executed on host(s) <lc02c11>, in queue remium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 08:20:27 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 08:20:27 2024
Terminated at Thu Apr 18 09:10:30 2024
Results reported at Thu Apr 18 09:10:30 2024
Your job looked like:
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD12step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=16000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
# code updates:
   \# [1] changed minerva dir name from WGS-iPSC to WGS_iPSC because alias did not work
   # [2] updated raw data filenames by replacing - with _ chr
module load samtools/1.17
module load gatk
module load fastqc
module load bwa
# # update reads dir for specific sample
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
# consistent dir's between samples
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known\_sites="/sc/arion/projects/vascbrain/WGS\_iPSC/hg38/Homo\_sapiens\_assembly 38.dbsnp138.vcf" \\
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hq38
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa
# # create ref dict file before running haplotype caller #########
# gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict
```

```
# # download known sites files for BQSR from GATK resource bundle #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assemb
ly38.dbsnp138.vcf
(... more ...)
  .....
Successfully completed.
Resource usage summary:
    CPU time :
                                                2994.12 sec.
   Max Memory :
                                                4597 MB
   Average Memory :
                                                2041.25 MB
    Total Requested Memory :
                                               16000.00 MB
   Delta Memory :
                                               11403.00 MB
   Max Swap :
                                               2 MR
   Max Processes :
   Max Threads :
   Run time :
                                               3003 sec.
    Turnaround time :
                                                3009 sec.
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
[bwt_gen] Finished constructing BWT in 710 iterations.
STEP 2: read alignment to ref genome hg38 complete!
PS:
Read file <124712019.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124712019.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ cd *err
-bash: cd: 124712019.stderr: Not a directory
[palafm01@li03c03 scripts]$ cat *eff
cat: *eff: No such file or directory
[palafm01@li03c03 scripts]$ cat *err
[bwa_index] Pack FASTA... 19.40 sec
[bwa_index] Construct BWT for the packed sequence...
[BWTIncCreate] textLength=6418572210, availableWord=463634060
[BWTIncConstructFromPacked] 10 iterations done. 99999986 characters processed.
[BWTIncConstructFromPacked] 20 iterations done. 199999986 characters processed.
[BWTIncConstructFromPacked] 30 iterations done. 299999986 characters processed.
\hbox{\tt [BWTIncConstructFromPacked] 40 iterations done. 399999986 characters processed.}
[BWTIncConstructFromPacked] 50 iterations done. 499999986 characters processed.
[BWTIncConstructFromPacked] 60 iterations done. 599999986 characters processed.
[BWTIncConstructFromPacked] 70 iterations done. 699999986 characters processed.
[BWTIncConstructFromPacked] 80 iterations done. 799999986 characters processed.
[BWTIncConstructFromPacked] 90 iterations done. 899999986 characters processed.
[BWTIncConstructFromPacked] 100 iterations done. 999999986 characters processed.
[BWTIncConstructFromPacked] 110 iterations done. 1099999986 characters processed.
[BWTIncConstructFromPacked] 120 iterations done. 1199999986 characters processed.
[BWTIncConstructFromPacked] 130 iterations done. 1299999986 characters processed.
[BWTIncConstructFromPacked] 140 iterations done. 1399999986 characters processed.
[BWTIncConstructFromPacked] 150 iterations done. 1499999986 characters processed.
[BWTIncConstructFromPacked] 160 iterations done. 1599999986 characters processed.
[BWTIncConstructFromPacked] 170 iterations done. 1699999986 characters processed.
[BWTIncConstructFromPacked] 180 iterations done. 1799999986 characters processed.
[BWTIncConstructFromPacked] 190 iterations done. 1899999986 characters processed.
[BWTIncConstructFromPacked] 200 iterations done. 1999999986 characters processed.
[BWTIncConstructFromPacked] 210 iterations done. 2099999986 characters processed.
[BWTIncConstructFromPacked] 220 iterations done. 2199999986 characters processed.
```

[BWTIncConstructFromPacked] 230 iterations done. 2299999986 characters processed. [BWTIncConstructFromPacked] 240 iterations done. 2399999986 characters processed. [BWTIncConstructFromPacked] 250 iterations done. 2499999986 characters processed. [BWTIncConstructFromPacked] 260 iterations done. 2599999986 characters processed. [BWTIncConstructFromPacked] 270 iterations done. 2699999986 characters processed. [BWTIncConstructFromPacked] 280 iterations done. 2799999986 characters processed. [BWTIncConstructFromPacked] 290 iterations done. 2899999986 characters processed. [BWTIncConstructFromPacked] 300 iterations done. 2999999986 characters processed. [BWTIncConstructFromPacked] 310 iterations done. 3199999986 characters processed. [BWTIncConstructFromPacked] 320 iterations done. 3199999986 characters processed. [BWTIncConstructFromPacked] 330 iterations done. 3299999986 characters processed.

```
[BWTIncConstructFromPacked] 340 iterations done. 3399999986 characters processed.
[BWTIncConstructFromPacked] 350 iterations done. 3499999986 characters processed.
[BWTIncConstructFromPacked] 360 iterations done. 3599999986 characters processed.
[BWTIncConstructFromPacked] 370 iterations done. 3699999986 characters processed.
[BWTIncConstructFromPacked] 380 iterations done. 3799999986 characters processed.
[BWTIncConstructFromPacked] 390 iterations done. 3899999986 characters processed.
[BWTIncConstructFromPacked] 400 iterations done. 3999999986 characters processed.
[BWTIncConstructFromPacked] 410 iterations done. 4099999986 characters processed.
[BWTIncConstructFromPacked] 420 iterations done. 4199999986 characters processed.
[BWTIncConstructFromPacked] 430 iterations done. 4299999986 characters processed.
[BWTIncConstructFromPacked] 440 iterations done. 4399999986 characters processed.
[BWTIncConstructFromPacked] 450 iterations done. 4499999986 characters processed.
[BWTIncConstructFromPacked] 460 iterations done. 4599999986 characters processed.
[BWTIncConstructFromPacked] 470 iterations done. 4699999986 characters processed.
[BWTIncConstructFromPacked] 480 iterations done. 4799999986 characters processed.
[BWTIncConstructFromPacked] 490 iterations done. 4899999986 characters processed.
[BWTIncConstructFromPacked] 500 iterations done. 4999999986 characters processed.
[BWTIncConstructFromPacked] 510 iterations done. 5099999986 characters processed.
[BWTIncConstructFromPacked] 520 iterations done. 5199999986 characters processed.
[BWTIncConstructFromPacked] 530 iterations done. 5299999986 characters processed.
[BWTIncConstructFromPacked] 540 iterations done. 5399999986 characters processed.
[BWTIncConstructFromPacked] 550 iterations done. 5499999986 characters processed.
[BWTIncConstructFromPacked] 560 iterations done. 5599999986 characters processed.
[BWTIncConstructFromPacked] 570 iterations done. 5699999986 characters processed.
[BWTIncConstructFromPacked] 580 iterations done. 5798165394 characters processed.
[BWTIncConstructFromPacked] 590 iterations done. 5886412978 characters processed.
[BWTIncConstructFromPacked] 600 iterations done. 5964843650 characters processed.
[BWTIncConstructFromPacked] 610 iterations done. 6034549010 characters processed.
[BWTIncConstructFromPacked] 620 iterations done. 6096499330 characters processed.
[BWTIncConstructFromPacked] 630 iterations done. 6151556914 characters processed.
[BWTIncConstructFromPacked] 640 iterations done. 6200488210 characters processed.
[BWTIncConstructFromPacked] 650 iterations done. 6243974434 characters processed.
[BWTIncConstructFromPacked] 660 iterations done. 6282621122 characters processed.
[BWTIncConstructFromPacked] 670 iterations done. 6316966322 characters processed.
[BWTIncConstructFromPacked] 680 iterations done. 6347488418 characters processed.
[BWTIncConstructFromPacked] 690 iterations done. 6374612482 characters processed.
[BWTIncConstructFromPacked] 700 iterations done. 6398716386 characters processed.
[BWTIncConstructFromPacked] 710 iterations done. 6418572210 characters processed.
[bwa_index] 2166.76 seconds elapse.
[bwa_index] Update BWT... 12.84 sec
[bwa_index] Pack forward-only FASTA... 11.77 sec
[bwa_index] Construct SA from BWT and Occ... 776.19 sec
[main] Version: 0.7.15-r1140
[main] CMD: bwa index /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa
[main] Real time: 2997.501 sec; CPU: 2986.970 sec
[M::bwa_idx_load_from_disk] read 0 ALT contigs
[W::bseq_read] the 2nd file has fewer sequences.
[W::bseq_read] the 2nd file has fewer sequences.
[M::process] read 4 sequences (707 bp)...
[M::mem_pestat] # candidate unique pairs for (FF, FR, RF, RR): (0, 0, 0, 0)
[M::mem_pestat] skip orientation FF as there are not enough pairs
[M::mem_pestat] skip orientation FR as there are not enough pairs
[M::mem_pestat] skip orientation RF as there are not enough pairs
[M::mem_pestat] skip orientation RR as there are not enough pairs
[mem_sam_pe] paired reads have different names: "ANw|Ż?Sloam?<?nX???<??Ï??⊦ "М", "?д"
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124712019.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ vim variant_calling.sh
[palafm01@li03c03 scripts]$ bsub < variant_calling.sh</pre>
Job <124745367> is submitted to queue premium>.
[palafm01@li03c03 scripts]$ bjobs
      JOBID
              USER
                         JOB_NAME STAT
                                              OUEUE FROM HOST EXEC HOST SUBMIT TIME
                                                                                               START TIME TIME LEFT
                         CAD63step2 PEND premium li03c03.ch
   124745367 palafm01
                                                                               Apr 18 10:22
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124712019.stdout CAD12_std CAD63_std variant_calling.sh
[palafm01@li03c03 scripts]$ wgs
[palafm01@li03c03 WGS_iPSC]$ ls
aligned_reads data FastOC_output hg38 MD5 raw_data raw_data.zip Readme.html results scripts
[palafm01@li03c03 WGS_iPSC]$ cd aligned_reads/
[palafm01@li03c03 aligned_reads]$ lss
total 33K
-rw-r---- 1 palafm01 vascbrain 17K Apr 18 09:10 P732912.paired.sam
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 09:10 .
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 .
[palafm01@li03c03 aligned_reads]$ samtools view P732912.paired.sam | less
```

```
-bash: samtools: command not found
[palafm01@li03c03 aligned_reads]$ samtools view P732912.paired.sam | less
-bash: samtools: command not found
[palafm01@li03c03 aligned_reads]$
[palafm01@li03c03 aligned_reads]$ lss
total 33K
-rw-r---- 1 palafm01 vascbrain 17K Apr 18 09:10 P732912.paired.sam
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 09:10 .
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 .
[palafm01@li03c03 aligned_reads]$ less P732912.paired.sam
[palafm01@li03c03 aligned_reads]$ samtools view P732912.paired.sam | less
-bash: samtools: command not found
[palafm01@li03c03 aligned_reads]$ less P732912.paired.sam
[palafm01@li03c03 aligned_reads]$ samtools flagstat P732912.paired.sam
-bash: samtools: command not found
[palafm01@li03c03 aligned_reads]$ module load samtools
[palafm01@li03c03 aligned_reads]$ samtools --version
samtools 1.17
Using htslib 1.17
Copyright (C) 2023 Genome Research Ltd.
Samtools compilation details:
    Features:
                   build=configure curses=yes
    CC:
                    gcc
    CPPFLAGS:
   CFL AGS:
                   -Wall -g -02
    LDFLAGS:
   HTSDIR:
                   htslib-1.17
   LIBS:
   CURSES_LIB:
                   -lncursesw
HTSlib compilation details:
    Features:
                   build=configure libcurl=yes S3=yes GCS=yes libdeflate=no lzma=yes bzip2=yes plugins=no htscodecs=1.4.0
    cc:
    CPPFLAGS:
    CFLAGS:
                   -Wall -g -O2 -fvisibility=hidden
   LDFLAGS:
                   -fvisibility=hidden
HTSlib URL scheme handlers present:
   built-in: preload, data, file
    S3 Multipart Upload:
                                s3w, s3w+https, s3w+http
    Amazon S3: s3+https, s3+http, s3
    Google Cloud Storage:
                                gs+http, gs+https, gs
    libcurl:
               imaps, pop3, http, gopher, sftp, ftps, imap, smtp, smtps, rtsp, scp, ftp, telnet, ldap, https, ldaps, tftp, pop3s, dict
    crypt4gh-needed:
                        crypt4gh
   mem:
                mem
[palafm01@li03c03 aligned_reads]$ ls
P732912.paired.sam
[palafm01@li03c03 aligned_reads]$ samtools flagstat P732912.paired.sam
0 + 0 in total (QC-passed reads + QC-failed reads)
0 + 0 primary
0 + 0 secondary
0 + 0 supplementary
0 + 0 duplicates
0 + 0 primary duplicates
0 + 0 mapped (N/A : N/A)
0 + 0 primary mapped (N/A : N/A)
0 + 0 paired in sequencing
0 + 0 \text{ read1}
0 + 0 \text{ read2}
0 + 0 properly paired (N/A : N/A)
0 + 0 with itself and mate mapped
0 + 0 singletons (N/A : N/A)
0 + 0 with mate mapped to a different chr
0 + 0 with mate mapped to a different chr (mapQ>=5)
[palafm01@li03c03 aligned_reads]$ samtools view P732912.paired.sam | less
[palafm01@li03c03 aligned_reads]$ ls
P732912.paired.sam P931263.paired.sam
[palafm01@li03c03 aligned_reads]$ bjobs
No unfinished job found
[palafm01@li03c03 aligned_reads]$ ls
P732912.paired.sam P931263.paired.sam
[palafm01@li03c03 aligned_reads]$ lss
total 65K
-rw-r---- 1 palafm01 vascbrain 17K Apr 18 11:13 P931263.paired.sam
-rw-r---- 1 palafm01 vascbrain 17K Apr 18 09:10 P732912.paired.sam
```

```
drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 11:13 .
drwxr-s--- 10 palafm01 vascbrain 4.0K Apr 17 17:23 ...
[palafm01@li03c03 aligned_reads]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd
[palafm01@li03c03 ~]$ wgs
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124712019.stdout 124745367.stderr 124745367.stdout CAD12_std CAD63_std variant_calling.sh
Fpalafm01@li03c03 scriptsl$ cat *.stout
cat: *.stout: No such file or directory
[palafm01@li03c03 scripts]$ cat *.stdout
Sender: LSF System <lsfadmin@lc02c11>
Subject: Job 124712019: <CAD12step2> in cluster <chimera> Done
Job <CAD12step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 08:20:21 2024
Job was executed on host(s) <lc02c11>, in queue premium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 08:20:27 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 08:20:27 2024
Terminated at Thu Apr 18 09:10:30 2024
Results reported at Thu Apr 18 09:10:30 2024
Your job looked like:
   ----
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD12step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#RSUR -W 6:00
#BSUB -R rusage[mem=16000]
#BSUB -oo %1.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
# code updates:
    # [1] changed minerva dir name from WGS-iPSC to WGS_iPSC because alias did not work
   \# [2] updated raw data filenames by replacing - with \_ chr
module load samtools/1.17
module load gatk
module load fastqc
module load bwa
# # update reads dir for specific sample
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
# consistent dir's between samples
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa
# # create ref dict file before running haplotype caller #########
# gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict
# # download known sites files for BQSR from GATK resource bundle #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assemb
```

```
ly38.dbsnp138.vcf
(... more ...)
 _____
Successfully completed.
Resource usage summary:
   CPU time :
                                              2994.12 sec.
   Max Memory :
                                              4597 MB
   Average Memory :
                                              2041.25 MB
   Total Requested Memory :
                                              16000.00 MB
   Delta Memory :
                                              11403.00 MB
   Max Swap :
                                              2 MB
   Max Processes :
   Max Threads :
                                              5
                                              3003 sec.
   Run time :
   Turnaround time :
                                              3009 sec.
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
[bwt_gen] Finished constructing BWT in 710 iterations.
STEP 2: read alignment to ref genome hg38 complete!
PS:
Read file <124712019.stderr> for stderr output of this job.
Sender: LSF System <lsfadmin@lc02c11>
Subject: Job 124745367: <CAD63step2> in cluster <chimera> Done
Job <CAD63step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 10:22:56 2024
Job was executed on host(s) <lc02c11>, in queue epremium>, as user <palafm01> in cluster <chimera> at Thu Apr 18 10:23:01 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 10:23:01 2024
Terminated at Thu Apr 18 11:13:35 2024
Results reported at Thu Apr 18 11:13:35 2024
Your job looked like:
______
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD63step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=16000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
   # [1] changed minerva dir name from WGS-iPSC to WGS_iPSC because alias did not work
   \# [2] updated raw data filenames by replacing - with \_ chr
module load samtools/1.17
module load aatk
module load fastqc
module load bwa
# # update reads dir for specific sample
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
# consistent dir's between samples
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"
```

aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"

results="/sc/arion/projects/vascbrain/WGS_iPSC/results" data="/sc/arion/projects/vascbrain/WGS_iPSC/data"

hg38.fa.pac hg38.dict

```
# # make ref folder
# mkdir ha38
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
# # index ref - .fai file before running haplotype caller #########
# samtools faidx /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa
# # create ref dict file before running haplotype caller #########
# gatk CreateSequenceDictionary R=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa 0=/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.dict
# # download known sites files for BQSR from GATK resource bundle #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://storage.googleapis.com/genomics-public-data/resources/broad/hg38/v0/Homo_sapiens_assemb
ly38.dbsnp138.vcf
(... more ...)
Successfully completed.
Resource usage summary:
   CPU time :
                                               3017.70 sec.
   Max Memory :
                                               4597 MB
                                               2037.33 MB
   Average Memory :
   Total Requested Memory :
                                               16000.00 MB
                                              11403.00 MB
   Delta Memory :
   Max Swap :
   Max Processes :
                                              5
   Max Threads :
   Run time :
                                              3033 sec.
   Turnaround time :
                                               3039 sec.
The output (if any) follows:
STEP 2: Map to reference using BWA-MEM
[bwt_gen] Finished constructing BWT in 710 iterations.
STEP 2: read alignment to ref genome hg38 complete!
PS:
Read file <124745367.stderr> for stderr output of this job.
[palafm01@li03c03 scripts]$ cd hg38
-bash: cd: ha38: No such file or directory
[palafm01@li03c03 scripts]$ cd ..
[palafm01@li03c03 WGS_iPSC]$ cd hg38
[palafm01@li03c03 hg38]$ ls
hg38.dict hg38.fa.amb hg38.fa.bwt hg38.fa.pac Homo_sapiens_assembly38.dbsnp138.vcf
         hg38.fa.ann hg38.fa.fai hg38.fa.sa Homo_sapiens_assembly38.dbsnp138.vcf.idx
[palafm01@li03c03 hg38]$ ls -lh
total 19G
-rw-r---- 1 palafm01 vascbrain 59K Apr 17 07:59 hg38.dict
-rw-r---- 1 palafm01 vascbrain 3.1G Jan 16 2014 hg38.fa
-rw-r---- 1 palafm01 vascbrain 21K Apr 18 11:00 hg38.fa.amb
-rw-r---- 1 palafm01 vascbrain 22K Apr 18 11:00 hg38.fa.ann
-rw-r---- 1 palafm01 vascbrain 3.0G Apr 18 11:00 hg38.fa.bwt
-rw-r---- 1 palafm01 vascbrain 19K Apr 17 07:57 hg38.fa.fai
-rw-r---- 1 palafm01 vascbrain 766M Apr 18 11:00 hg38.fa.pac
-rw-r---- 1 palafm01 vascbrain 1.5G Apr 18 11:13 hg38.fa.sa
-rw-r---- 1 palafm01 vascbrain 11G Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf
-rw-r---- 1 palafm01 vascbrain 12M Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf.idx
[palafm01@li03c03 hg38]$ man ls
[palafm01@li03c03 hg38]$ ls -c
hg38.fa.sa hg38.fa.bwt
                                                    hq38.fa.fai
hg38.fa.amb Homo_sapiens_assembly38.dbsnp138.vcf.idx hg38.fa
hg38.fa.ann Homo_sapiens_assembly38.dbsnp138.vcf
```

```
[palafm01@li03c03 hg38]$ ls -lch
total 19G
-rw-r---- 1 palafm01 vascbrain 59K Apr 17 07:59 hg38.dict
-rw-r---- 1 palafm01 vascbrain 3.1G Apr 17 07:47 hg38.fa
-rw-r---- 1 palafm01 vascbrain 21K Apr 18 11:00 hg38.fa.amb
-rw-r---- 1 palafm01 vascbrain 22K Apr 18 11:00 hg38.fa.ann
-rw-r---- 1 palafm01 vascbrain 3.0G Apr 18 11:00 hg38.fa.bwt
-rw-r---- 1 palafm01 vascbrain 19K Apr 17 07:57 hg38.fa.fai
-rw-r---- 1 palafm01 vascbrain 766M Apr 18 11:00 hg38.fa.pac
-rw-r---- 1 palafm01 vascbrain 1.5G Apr 18 11:13 hg38.fa.sa
-rw-r---- 1 palafm01 vascbrain 11G Apr 17 08:01 Homo_sapiens_assembly38.dbsnp138.vcf
-rw-r---- 1 palafm01 vascbrain 12M Apr 17 08:02 Homo_sapiens_assembly38.dbsnp138.vcf.idx
[palafm01@li03c03 hg38]$ man ls
[palafm01@li03c03 hg38]$ ls -ht
hg38.fa.sa hg38.fa.pac hg38.fa.fai
                                                                  hg38.fa
hg38.fa.amb hg38.fa.bwt Homo_sapiens_assembly38.dbsnp138.vcf.idx
hg38.fa.ann hg38.dict Homo_sapiens_assembly38.dbsnp138.vcf
[palafm01@li03c03 hg38]$ ls -lsht
1.5G -rw-r---- 1 palafm01 vascbrain 1.5G Apr 18 11:13 hg38.fa.sa
 32K -rw-r---- 1 palafm01 vascbrain 21K Apr 18 11:00 hg38.fa.amb
 32K -rw-r---- 1 palafm01 vascbrain 22K Apr 18 11:00 hg38.fa.ann
766M -rw-r---- 1 palafm01 vascbrain 766M Apr 18 11:00 hg38.fa.pac
3.0G -rw-r---- 1 palafm01 vascbrain 3.0G Apr 18 11:00 hg38.fa.bwt
 64K -rw-r---- 1 palafm01 vascbrain 59K Apr 17 07:59 hg38.dict
 32K -rw-r---- 1 palafm01 vascbrain 19K Apr 17 07:57 hg38.fa.fai
 12M -rw-r---- 1 palafm01 vascbrain 12M Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf.idx
 11G -rw-r---- 1 palafm01 vascbrain 11G Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf
3.1G -rw-r---- 1 palafm01 vascbrain 3.1G Jan 16 2014 hg38.fa
[palafm01@li03c03 hg38]$
[palafm01@li03c03 hg38]$ cd
[palafm01@li03c03 ~]$ vim .bashrc
[palafm01@li03c03 ~]$ source .bashrc
[palafm01@li03c03 ~]$ wgs
[palafm01@li03c03 WGS_iPSC]$ cd scripts/
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124745367.stderr CAD12_std variant_calling.sh
124712019.stdout 124745367.stdout CAD63_std
[palafm01@li03c03 scripts]$ sh
sh-4.2$ ^C
sh-4.2$ ^C
sh-4.2$ ^C
sh-4.2$ :q
sh: :q: command not found
sh-4.2$ quit
sh: quit: command not found
sh-4.2$ quit()
> ^C
sh-4.2$ ^C
sh-4.2$ ^C
sh-4.2$ exit
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124745367.stderr CAD12_std variant_calling.sh
124712019.stdout 124745367.stdout CAD63_std
「palafm01@li03c03 scripts]$ pwd
/sc/arion/projects/vascbrain/WGS_iPSC/scripts
[palafm01@li03c03 scripts]$ out
-bash: out: command not found
[palafm01@li03c03 scripts]$ cd
[palafm01@li03c03 ~]$ vim .bashrc
[palafm01@li03c03 ~]$ source .bashrc
[palafm01@li03c03 ~]$ out
[palafm01@li03c03 scripts]$ ls
124712019.stderr 124745367.stderr CAD12_std variant_calling.sh
124712019.stdout 124745367.stdout CAD63_std
[palafm01@li03c03 scripts]$ wgs
[palafm01@li03c03 WGS_iPSC]$ cd hq38
[palafm01@li03c03 hg38]$ ls
hg38.fa.amb hg38.fa.bwt hg38.fa.pac Homo_sapiens_assembly38.dbsnp138.vcf
hg38.fa hg38.fa.ann hg38.fa.fai hg38.fa.sa Homo_sapiens_assembly38.dbsnp138.vcf.idx
[palafm01@li03c03 hg38]$ lst
total 19G
1.5G -rw-r---- 1 palafm01 vascbrain 1.5G Apr 18 11:13 hg38.fa.sa
 32K -rw-r---- 1 palafm01 vascbrain 21K Apr 18 11:00 hg38.fa.amb
```

```
766M -rw-r---- 1 palafm01 vascbrain 766M Apr 18 11:00 hg38.fa.pac
3.0G -rw-r---- 1 palafm01 vascbrain 3.0G Apr 18 11:00 hg38.fa.bwt
 64K -rw-r---- 1 palafm01 vascbrain 59K Apr 17 07:59 hg38.dict
 32K -rw-r---- 1 palafm01 vascbrain 19K Apr 17 07:57 hg38.fa.fai
 12M -rw-r---- 1 palafm01 vascbrain 12M Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf.idx
11G -rw-r---- 1 palafm01 vascbrain 11G Jul 21 2016 Homo_sapiens_assembly38.dbsnp138.vcf
3.1G -rw-r---- 1 palafm01 vascbrain 3.1G Jan 16 2014 hg38.fa
[palafm01@li03c03 hg38]$ out
[palafm01@li03c03 scripts]$ lst
total 98K
512 -rw-r---- 1 palafm01 vascbrain 3.7K Apr 18 11:13 124745367.stdout
32K -rw-r---- 1 palafm01 vascbrain 7.4K Apr 18 11:13 124745367.stderr
32K -rwxr-x--- 1 palafm01 vascbrain 4.2K Apr 18 10:22 variant_calling.sh
512 -rw-r---- 1 palafm01 vascbrain 3.7K Apr 18 09:10 124712019.stdout
32K -rw-r---- 1 palafm01 vascbrain 6.8K Apr 18 09:10 124712019.stderr
512 drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 08:26 CAD12_std
512 drwxr-s--- 2 palafm01 vascbrain 4.0K Apr 18 08:25 CAD63_std
[palafm01@li03c03 scripts]$ cat 124745367.stdout
Sender: LSF System <lsfadmin@lc02c11>
Subject: Job 124745367: <CAD63step2> in cluster <chimera> Done
Job <CAD63step2> was submitted from host <li03c03.chimera.hpc.mssm.edu> by user <palafm01> in cluster <chimera> at Thu Apr 18 10:22:56 2024
</hpc/users/palafm01> was used as the home directory.
</sc/arion/projects/vascbrain/WGS_iPSC/scripts> was used as the working directory.
Started at Thu Apr 18 10:23:01 2024
Terminated at Thu Apr 18 11:13:35 2024
Results reported at Thu Apr 18 11:13:35 2024
Your job looked like:
 _____
# LSBATCH: User input
#!/bin/bash
#BSUB -J CAD63step2
#BSUB -P acc_vascbrain
#BSUB -q premium
#BSUB -n 1
#BSUB -W 6:00
#BSUB -R rusage[mem=16000]
#BSUB -oo %J.stdout
#BSUB -eo %J.stderr
#BSUB -L /bin/bash
# # call germline variants in a human WGS paired end reads 2 X 100bp following GATK4 best practices workflow
# code updates:
   # [1] changed minerva dir name from WGS-iPSC to WGS_iPSC because alias did not work
   # [2] updated raw data filenames by replacing - with _ chr
module load samtools/1.17
module load aatk
module load fastac
module load bwa
# # update reads dir for specific sample
#reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P732912"
reads="/sc/arion/projects/vascbrain/WGS_iPSC/raw_data/P931263"
# consistent dir's between samples
ref="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa"
known_sites="/sc/arion/projects/vascbrain/WGS_iPSC/hg38/Homo_sapiens_assembly38.dbsnp138.vcf"
aligned_reads="/sc/arion/projects/vascbrain/WGS_iPSC/aligned_reads"
results="/sc/arion/projects/vascbrain/WGS_iPSC/results"
data="/sc/arion/projects/vascbrain/WGS_iPSC/data"
# # make ref folder
# mkdir hg38
# # download reference files to folder and unzip #########
# wget -P /sc/arion/projects/vascbrain/WGS_iPSC/hg38/ https://hgdownload.soe.ucsc.edu/goldenPath/hg38/bigZips/hg38.fa.gz
# gunzip /sc/arion/projects/vascbrain/WGS_iPSC/hg38/hg38.fa.gz
```

32K -rw-r---- 1 palafm01 vascbrain 22K Apr 18 11:00 hg38.fa.ann