

USEFUL BASH ONE-LINERS

... and useful Bash features

FILES...

```
echo "Hello World" > file
```

Write text to file

```
echo "Hello Mars" >>file
```

Append text to file

```
>file
```

Truncate file (DANGER!)

```
while read -r x y z _; do  
    echo $x $y $z  
done <file
```

Loop over first three
fields in file

HEREDOC

```
cat <<EOF >file
```

This HEREDOC will have
\$variables substituted
EOF

```
Cat <<"EOF" >file
```

This HEREDOC will be used
\$verbatim
EOF

PROCESS MANAGEMENT

program &

jobs

fg 1

[Ctrl+Z]

bg 1

SORTING

```
export LC_ALL=C
```

Locale configuration
changes sorting *sigh*

```
sort -k 1,1 -k2,2n file
```

E.g., sort BED file (better
use bedtools sort with
genome/FAI file)

```
sort -u file
```

Remove duplicate lines from
file

```
sort file | uniq -c
```

Print lines without
duplicates, with count

WORKING WITH (TAB) DELIMITED FILES

```
cut -f 1-2,5-
```

Select fields from TSV file

```
cut -d ',' -f 1-2,5-
```

Select fields from CSV file

```
qstat | grep jobname \  
| cut -d ' ' -f 1 \  
| xargs qdel
```

Delete all jobs with the given job name from SGE queue (see also xargs on later slide)

COMMAND SUBSTITUTION

- Read from/write into bash commands

```
cat <(grep pattern in) >out
```

```
cat FILE | tee >(grep pattern >out2) >out1
```

- Use result of bash result in variable

```
for x in $(find /src -name foo.txt); do echo $x; done
```

VARIABLE SUBSTITUTION

- Trim endings

```
var=file.vcf.gz  
echo ${var%.vcf.gz} # => "file"
```

- Perform string replacement

```
var=foo.bar  
echo ${var/i/o}    # => "fio.bar"  
echo ${var//i/o}   # => "fii.bar"
```

- Use default values

```
threads=${threads:4}
```


RENAME STRINGS IN MULTIPLE FILES

- Rename `string_old` in `string_new` in all files in `/path`

```
find /path -type f -exec sed -i 's/string_old/string_new/g' {} \;
```

- Example:

```
#Create the files
mkdir tmp_dir
echo 'acgt' > tmp_dir/file1
echo 'acgt' > tmp_dir/file2
#Edit the files
find tmp_dir -type f -exec sed -i 's/acgt/ACGT/g' {} \;
cat tmp_dir/*
```

XARGS, I LIKE

- Read command line parts from stdin

```
find . -name 'pattern.' | xargs grep PATTERN
```

KILL ALL CHROME PROCESSES

- Read command line parts from stdin

```
for p in $(ps -A | grep chrom | awk '{print $1}');  
do kill -9 $p; done
```

IN-PLACE SEARCH AND REPLACE

- If you like Perl:

```
perl -p -i -e 's/needle/pin/g' haystack.txt
```

- If you prefer sed:

```
sed -i -e 's/needle/pin/g' haystack.txt
```

THE UNOFFICIAL BASH STRICT MODE

```
#!/bin/bash  
set -euo pipefail  
IFS=$'\n\t'
```

<http://redsymbol.net/articles/unofficial-bash-strict-mode/>

LESS

Large files can be easily viewed with less

```
$ less <filename>
```

The options -N and -S are useful to display files with many columns: -S suppresses linebreaks, and -N adds rownumbers:

```
$ less -NS <file_with_lots_of_rows_and_cols>
```

LESS

seqid	source	type	start	end	score	strand	phase	ID	gene_id	transcript_id	gene_type	gene_status	gene_name	transcript_type	transcript_status	transcr
ipt_name	level	havana_gene	Parent	havana_transcript				exon_number	exon_id	on	tag	protein_id	ccdsid	length	mean_length	
chr1	HAVANA	gene	11869	14412	NA	+	NA	gene1	ENSG000000223972.4	ENSG000000223972.4	pseudogene	KNOWN	DDX11L1	pseudogene	KNOWN	DDX11L1 2
chr1	OTTHUMG00000000961.2	character(0)	NA	NA	NA	+	NA	character(0)	character(0)	NA	NA	2543	2543			
chr1	HAVANA	transcript	11869	14409	NA	+	NA	transcript1	ENSG000000223972.4	ENST000000456328.2	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN	DDX11L1 2
chr1	KNOWN	DDX11L1-002	2	OTTHUMG00000000961.2	gene1	OTTHUMT000000362751.1	NA	NA	character(0)	character(0)	NA	NA	2540	2318.75		
chr1	HAVANA	exon	11869	12227	NA	+	NA	exon1	ENSG000000223972.4	ENST000000456328.2	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN	DDX11L1
-002	2	OTTHUMG00000000961.2	transcript1	OTTHUMT000000362751.1	1	1	ENSE000002234944.1	character(0)	character(0)	NA	NA	1654	1224			
chr1	NA	intron	12228	12612	NA	+	NA	intron1	ENSG000000223972.4	ENST000000456328.2	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN	DDX11L1
-002	2	OTTHUMG00000000961.2	transcript1	OTTHUMT000000362751.1	1	1	ENSE000002234944.1	character(0)	character(0)	NA	NA	882	983.833333333333			
chr1	HAVANA	exon	12613	12721	NA	+	NA	exon2	ENSG000000223972.4	ENST000000456328.2	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN	DDX11L1
-002	2	OTTHUMG00000000961.2	transcript1	OTTHUMT000000362751.1	2	2	ENSE000003582793.1	character(0)	character(0)	NA	NA	1654	1224			
chr1	NA	intron	12722	13220	NA	+	NA	intron2	ENSG000000223972.4	ENST000000456328.2	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN	DDX11L1
-002	2	OTTHUMG00000000961.2	transcript1	OTTHUMT000000362751.1	2	2	ENSE000003582793.1	character(0)	character(0)	NA	NA	882	983.833333333333			
chr1	HAVANA	exon	13221	14409	NA	+	NA	exon3	ENSG000000223972.4	ENST000000456328.2	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN	DDX11L1
-002	2	OTTHUMG00000000961.2	transcript1	OTTHUMT000000362751.1	3	3	ENSE000002312635.1	character(0)	character(0)	NA	NA	1654	1224			
chr1	ENSEMBL	transcript	11872	14412	NA	+	NA	transcript2	ENSG000000223972.4	ENST000000515242.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed		
_pseudogene	KNOWN	DDX11L1-201	3	OTTHUMG00000000961.2	gene1	NA	NA	NA	character(0)	character(0)	NA	NA	2540	2318.75		
chr1	ENSEMBL	exon	11872	12227	NA	+	NA	exon4	ENSG000000223972.4	ENST000000515242.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-201	3	OTTHUMG00000000961.2	transcript2	NA	1	ENSE000002234632.1	character(0)	character(0)	NA	NA	1650	1224		
chr1	NA	intron	12228	12612	NA	+	NA	intron3	ENSG000000223972.4	ENST000000515242.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-201	3	OTTHUMG00000000961.2	transcript2	NA	1	ENSE000002234632.1	character(0)	character(0)	NA	NA	886	983.833333333333		
chr1	ENSEMBL	exon	12613	12721	NA	+	NA	exon5	ENSG000000223972.4	ENST000000515242.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-201	3	OTTHUMG00000000961.2	transcript2	NA	2	ENSE000003608237.1	character(0)	character(0)	NA	NA	1650	1224		
chr1	NA	intron	12722	13224	NA	+	NA	intron4	ENSG000000223972.4	ENST000000515242.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-201	3	OTTHUMG00000000961.2	transcript2	NA	2	ENSE000003608237.1	character(0)	character(0)	NA	NA	886	983.833333333333		
chr1	ENSEMBL	exon	13225	14412	NA	+	NA	exon6	ENSG000000223972.4	ENST000000515242.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-201	3	OTTHUMG00000000961.2	transcript2	NA	3	ENSE000002306041.1	character(0)	character(0)	NA	NA	1650	1224		
chr1	ENSEMBL	transcript	11874	14409	NA	+	NA	transcript3	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed		
_pseudogene	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	gene1	NA	NA	NA	character(0)	character(0)	NA	NA	2535	2318.75		
chr1	ENSEMBL	exon	11874	12227	NA	+	NA	exon7	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	transcript3	NA	1	ENSE000002269724.1	character(0)	character(0)	NA	NA	1479	1224		
chr1	NA	intron	12228	12594	NA	+	NA	intron5	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	transcript3	NA	1	ENSE000002269724.1	character(0)	character(0)	NA	NA	1050	983.833333333333		
chr1	ENSEMBL	exon	12595	12721	NA	+	NA	exon8	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	transcript3	NA	2	ENSE000002270865.1	character(0)	character(0)	NA	NA	1479	1224		
chr1	NA	intron	12722	13402	NA	+	NA	intron6	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	transcript3	NA	2	ENSE000002270865.1	character(0)	character(0)	NA	NA	1050	983.833333333333		
chr1	ENSEMBL	exon	13403	13655	NA	+	NA	exon9	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	transcript3	NA	3	ENSE000002216795.1	character(0)	character(0)	NA	NA	1479	1224		
chr1	NA	intron	13656	13660	NA	+	NA	intron7	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	transcript3	NA	3	ENSE000002216795.1	character(0)	character(0)	NA	NA	1050	983.833333333333		
chr1	ENSEMBL	exon	13661	14409	NA	+	NA	exon10	ENSG000000223972.4	ENST000000518655.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-202	3	OTTHUMG00000000961.2	transcript3	NA	4	ENSE000002303382.1	character(0)	character(0)	NA	NA	1479	1224		
chr1	HAVANA	transcript	12010	13670	NA	+	NA	transcript4	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed		
_pseudogene	KNOWN	DDX11L1-001	2	OTTHUMG00000000961.2	gene1	OTTHUMT00000002844.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
chr1	HAVANA	exon	12010	12057	NA	+	NA	exon11	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-001	2	OTTHUMG00000000961.2	transcript4	OTTHUMT00000002844.2	1	ENSE000001948541.1	character(0)	character(0)	NA	NA	NA	NA		
A	NA	intron	12058	12178	NA	+	NA	intron8	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-001	2	OTTHUMG00000000961.2	transcript4	OTTHUMT00000002844.2	1	ENSE000001948541.1	character(0)	character(0)	NA	NA	NA	NA		
A	NA	intron	12179	12227	NA	+	NA	exon12	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	HAVANA	exon	12179	12227	NA	+	NA	exon12	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-001	2	OTTHUMG00000000961.2	transcript4	OTTHUMT00000002844.2	2	ENSE000001671638.2	character(0)	character(0)	NA	NA	NA	NA		
A	NA	intron	12228	12612	NA	+	NA	intron9	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	KNOWN	DDX11L1-001	2	OTTHUMG00000000961.2	transcript4	OTTHUMT00000002844.2	2	ENSE000001671638.2	character(0)	character(0)	NA	NA	NA	NA		
A	NA	intron	12612	12697	NA	+	NA	exon13	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		
chr1	HAVANA	exon	12613	12697	NA	+	NA	exon13	ENSG000000223972.4	ENST000000450305.2	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudogene		

gff3v19.tsv

LESS-NS

1	seqid	source	type	start	end	score	strand	phase	ID	gene_id	transcript_id	gene_type	gene_status	gene_name	transcript_type	transcript_status
2	chr1	HAVANA	gene	11869	14412	NA	+	NA	gene1	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	pseudogene	KNOWN
3	chr1	HAVANA	transcript	11869	14409	NA	+	NA	transcript1	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN
4	chr1	HAVANA	exon	11869	12227	NA	+	NA	exon1	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN
5	chr1	NA	intron	12228	12612	NA	+	NA	intron1	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN
6	chr1	HAVANA	exon	12613	12721	NA	+	NA	exon2	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN
7	chr1	NA	intron	12722	13220	NA	+	NA	intron2	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN
8	chr1	HAVANA	exon	13221	14409	NA	+	NA	exon3	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	processed_transcript	KNOWN
9	chr1	ENSEMBL	transcript	11872	14412	NA	+	NA	transcript2	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
10	chr1	ENSEMBL	exon	11872	12227	NA	+	NA	exon4	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
11	chr1	NA	intron	12228	12612	NA	+	NA	intron3	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
12	chr1	ENSEMBL	exon	12613	12721	NA	+	NA	exon5	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
13	chr1	NA	intron	12722	13224	NA	+	NA	intron4	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
14	chr1	ENSEMBL	exon	13225	14412	NA	+	NA	exon6	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
15	chr1	ENSEMBL	transcript	11874	14409	NA	+	NA	transcript3	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
16	chr1	ENSEMBL	exon	11874	12227	NA	+	NA	exon7	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
17	chr1	NA	intron	12228	12594	NA	+	NA	intron5	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
18	chr1	ENSEMBL	exon	12595	12721	NA	+	NA	exon8	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
19	chr1	NA	intron	12722	13402	NA	+	NA	intron6	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
20	chr1	ENSEMBL	exon	13403	13655	NA	+	NA	exon9	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
21	chr1	NA	intron	13656	13660	NA	+	NA	intron7	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
22	chr1	ENSEMBL	exon	13661	14409	NA	+	NA	exon10	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
23	chr1	HAVANA	transcript	12010	13670	NA	+	NA	transcript4	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
24	chr1	HAVANA	exon	12010	12057	NA	+	NA	exon11	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
25	chr1	NA	intron	12058	12178	NA	+	NA	intron8	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
26	chr1	HAVANA	exon	12179	12227	NA	+	NA	exon12	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
27	chr1	NA	intron	12228	12612	NA	+	NA	intron9	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
28	chr1	HAVANA	exon	12613	12697	NA	+	NA	exon13	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
29	chr1	NA	intron	12698	12974	NA	+	NA	intron10	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
30	chr1	HAVANA	exon	12975	13052	NA	+	NA	exon14	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
31	chr1	NA	intron	13053	13220	NA	+	NA	intron11	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
32	chr1	HAVANA	exon	13221	13374	NA	+	NA	exon15	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
33	chr1	NA	intron	13375	13452	NA	+	NA	intron12	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
34	chr1	HAVANA	exon	13453	13670	NA	+	NA	exon16	ENSG00000223972.4	ENSG00000223972.4	pseudogene	KNOWN	DDX11L1	transcribed_unprocessed_pseudog	KNOWN
35	chr1	HAVANA	gene	14363	29806	NA	-	NA	gene2	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	pseudogene	KNOWN
36	chr1	ENSEMBL	transcript	14363	24886	NA	-	NA	transcript5	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
37	chr1	ENSEMBL	exon	14363	14829	NA	-	NA	exon17	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
38	chr1	NA	intron	14830	14969	NA	-	NA	intron13	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
39	chr1	ENSEMBL	exon	14970	15038	NA	-	NA	exon18	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
40	chr1	NA	intron	15039	16853	NA	-	NA	intron14	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
41	chr1	ENSEMBL	exon	16854	17055	NA	-	NA	exon19	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
42	chr1	NA	intron	17056	17232	NA	-	NA	intron15	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
43	chr1	ENSEMBL	exon	17233	17364	NA	-	NA	exon20	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
44	chr1	NA	intron	17365	17497	NA	-	NA	intron16	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
45	chr1	ENSEMBL	exon	17498	17594	NA	-	NA	exon21	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
46	chr1	NA	intron	17595	17605	NA	-	NA	intron17	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
47	chr1	ENSEMBL	exon	17606	17742	NA	-	NA	exon22	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
48	chr1	NA	intron	17743	17914	NA	-	NA	intron18	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
49	chr1	ENSEMBL	exon	17915	18061	NA	-	NA	exon23	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
50	chr1	NA	intron	18062	18267	NA	-	NA	intron19	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
51	chr1	ENSEMBL	exon	18268	18369	NA	-	NA	exon24	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
52	chr1	NA	intron	18370	24733	NA	-	NA	intron20	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
53	chr1	ENSEMBL	exon	24734	24886	NA	-	NA	exon25	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
54	chr1	ENSEMBL	transcript	14363	29370	NA	-	NA	transcript6	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
55	chr1	ENSEMBL	exon	14363	14829	NA	-	NA	exon26	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
56	chr1	NA	intron	14830	14969	NA	-	NA	intron21	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
57	chr1	ENSEMBL	exon	14970	15038	NA	-	NA	exon27	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
58	chr1	NA	intron	15039	15795	NA	-	NA	intron22	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
59	chr1	ENSEMBL	exon	15796	15901	NA	-	NA	exon28	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN
60	chr1	NA	intron	15902	15903	NA	-	NA	intron23	ENSG00000227232.4	ENSG00000227232.4	pseudogene	KNOWN	WASH7P	unprocessed_pseudogene	KNOWN