USF Genomics Program

USF Genomics Core (Genomics Equipment Core)

Located on the 3rd floor of IDRB. The ~3000 sq. ft. BSL2 laboratory space

❖ Next-Gen Sequencers and Single-Cell System

Illumina - MiSeq System

12 – 15 million reads (v2)

22 – 25 million reads (v3)

Read Length:
2 x 75; 150; 250; 300
$950 - $1,600

NextSeq 550 System

~ 130 million reads (Mid)

~ 400 million reads (High)

Read Length:
2 x 75; 150; 300; or 1 x 75
$1,500 - $5,000

10x Chromium SC

Cell: 500 – 10,000
~3,000 genes per cell (medium)

USF GENOMICS CORE FACILITIES AND RESOURCES

❖ Instrumentation for Library-prep and Quantifications

Agilent 2200

Agilent 4200

TapeStation / Bioanalyzer

Roche LightCycler 96 System

M220 Focused-ultrasonicator

Qubit® 4 Fluorometer

❖ Instrumentation for Cell Culture

- ✓ **Class II Biosafety Cabinets x 4**
- ✓ **O2/CO2 3 Gas Incubators x 4**
- ✓ **Microscopes x 3**
- ✓ **Centrifuge x 3**
- ✓ **Refrigerators 4°C, -20°C and -80°C freezers**
- ✓ **Liquid nitrogen tank cell storage -120°C**

USF Genomics Program

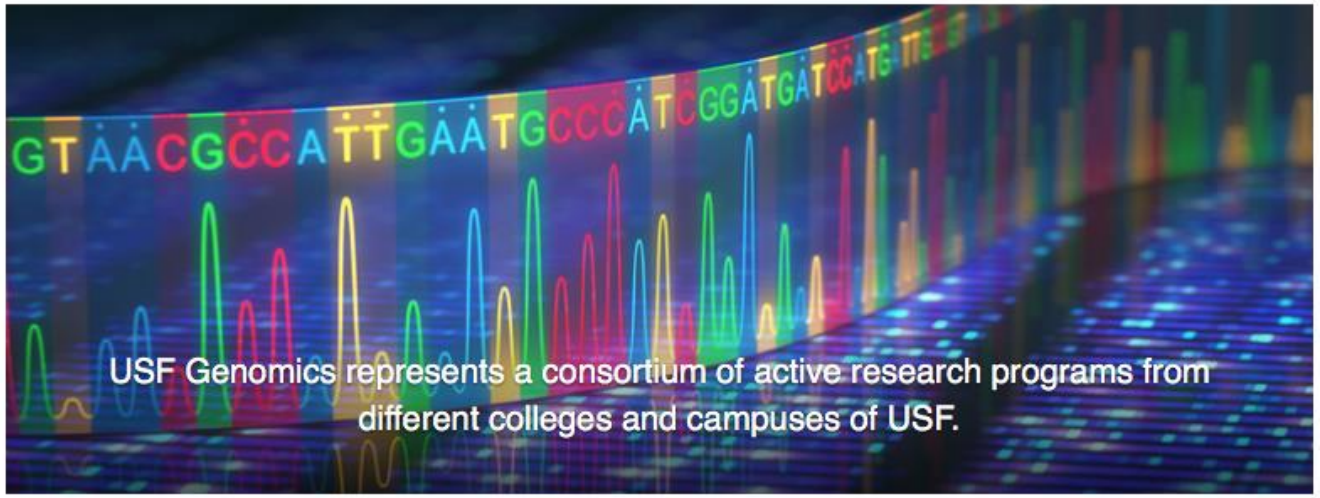
USF Genomics Equipment Core (Genomics Core)

Policies and Procedures

1) All USF faculty, staff, and students who wish to use the USF Genomics Equipment Core must take the USF Genomics Training Course (Laboratory): RNA-seq Illumina Sequencing Workshop.
2) Labor for sample preparation and analysis will not be provided by the USF Genomics Equipment Core, and thus all users must be trained in standard procedures. A core staff member will be available during an appointment with the USF Genomics Equipment Core to assist as necessary.

USF Genomics

Home
Researchers
Grants
Degree Programs
Undergraduate Opportunities
Annual Symposium
College of Arts and Sciences News
Genomics Training
Request Services



About USF Genomics

Our projects integrate modern genomic approaches to understand and help develop solutions for some of the major challenges affecting global health and especially our Florida community. USF Genomics research projects are naturally interdisciplinary with studies that cross many boundaries of traditional scientific fields, integrating bioscience

Upcoming Events

USF Genomics Program - Microbiome Analysis Training - November 6-8, 2019

USF Genomics Annual Symposium: Personal Genomics - November 15, 2019

Home
Researchers
Grants
Degree Programs
Undergraduate Opportunities
Annual Symposium
College of Arts and Sciences News
Genomics Training
Request Services

USF Genomics Program Training

The USF Genomics Program offers three of training workshops, the RNA-seq Illumina Sequencing Laboratory Workshop, the RNA-seq Data Analysis Computational Workshop, and the Microbiome Analysis Training. The RNA-seq workshops are offered three times a year in February, May, and September. The first Microbiome Analysis Training will be offered in November 2019. These workshops are open to all in the USF community. The RNA-seq Illumnia Sequencing Laboratory Workshop is required for access to use the USF Genomics Equipment Core (more information here).

RNA-seq Illumina Sequencing Laboratory Workshop

RNA-seq Data Analysis Computational Workshop

RNA-seq Workshop Registration

Microbiome Analysis Training Workshop

Hands-on Microbiome Training

Microbiome Analysis Training

Methods and Experimental Design: Considerations for Microbiome Studies

Microbiome Analysis Training Registration

USF GENOMICS CORE FACILITIES AND RESOURCES

❖ Genomics Training Courses

RNA Sequencing Workshops

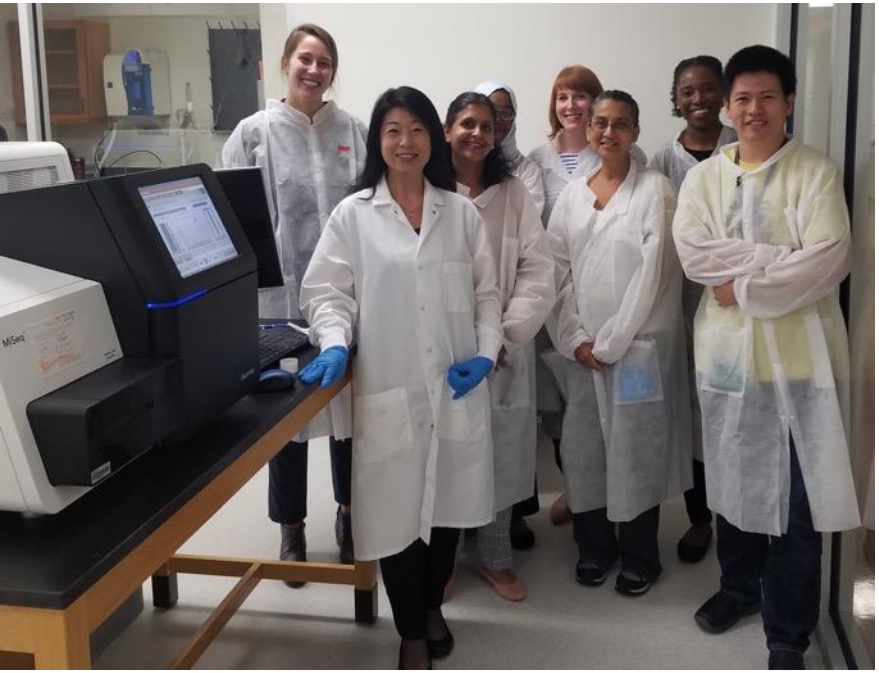
Laboratory Workshop – RNA-seq Library Preparation

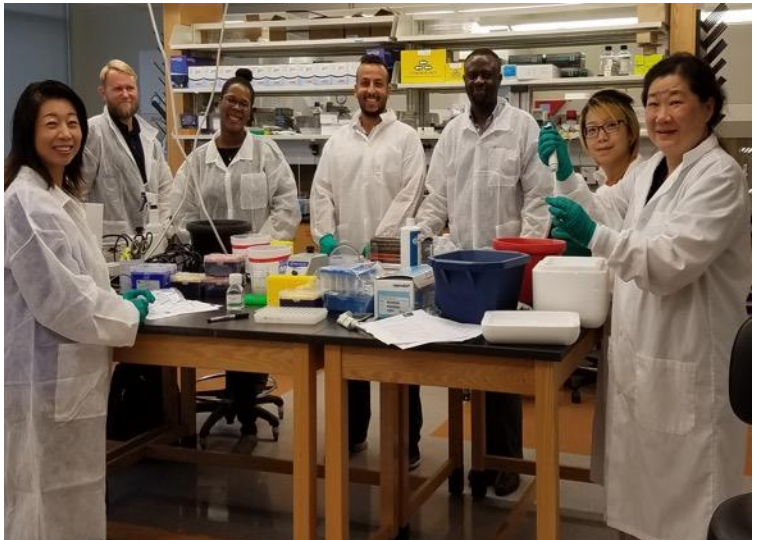
Three Sessions 2019
5th February 11 – 14
6th May 6 – 9
7th September 9 – 12

Computational Workshop – RNA-seq Data Analysis

Three Sessions 2019
5th February 15 – 20
6th May 10 – 15
7th September 13 – 18

Laboratory Workshop – RNA Sequencing





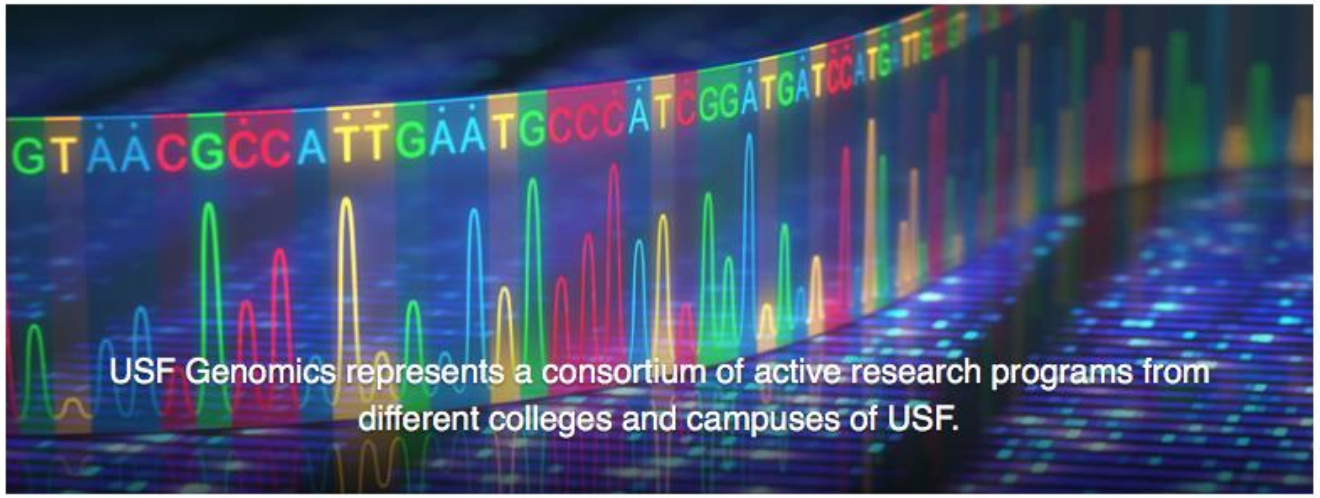
USF Genomics Equipment Core (Genomics Core)

Services:

- Whole-Genome Sequencing
- RNA Sequencing
- Gene Expression Profiling
- 16S rRNA Sequencing
- Metagenomics Sequencing
- Targeted Gene Sequencing
- Targeted Gene Expression Profiling
- miRNA & Small RNA Analysis
- Single-Cell Sequencing
- DNA, RNA Quantification

USF Genomics

Home
Researchers
Grants
Degree Programs
Undergraduate Opportunities
Annual Symposium
College of Arts and Sciences News
Genomics Training
Request Services



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Home
Researchers
Grants
Degree Programs
Undergraduate Opportunities
Annual Symposium
College of Arts and Sciences News
Genomics Training
Request Services

Request Services

The USF Genomics Program has the capability to assist with both sample sequencing and computational analysis for research projects at USF.

USF Genomics Core

USF Genomics Hub

Grant Resources

Equipment for NextGen Sequencing:

- Illumina - NextSeq-500
- Illumina - MiSeq System
- 10X GENOMICS- Single Cell Instrument - Chromium Controller

Instrumentation for library-prep and quality-assurance:

- Agilent - TapeStation 2200, TapeStation 4200 (DNA and RNA quality assessment)
- Invitrogen Qubit 2.0 fluorometer (DNA and RNA sample quantification)
- Roche - LightCycler 96 Real-time PCR Instrument (DNA library quantification)
- Covaris - M220 Focused Sonicator (DNA fragmentation)

More Information

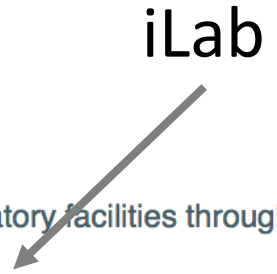
USF Genomics Core Policies and Procedures

USF Genomics Core Service Agreement

Sample Submission Sheet

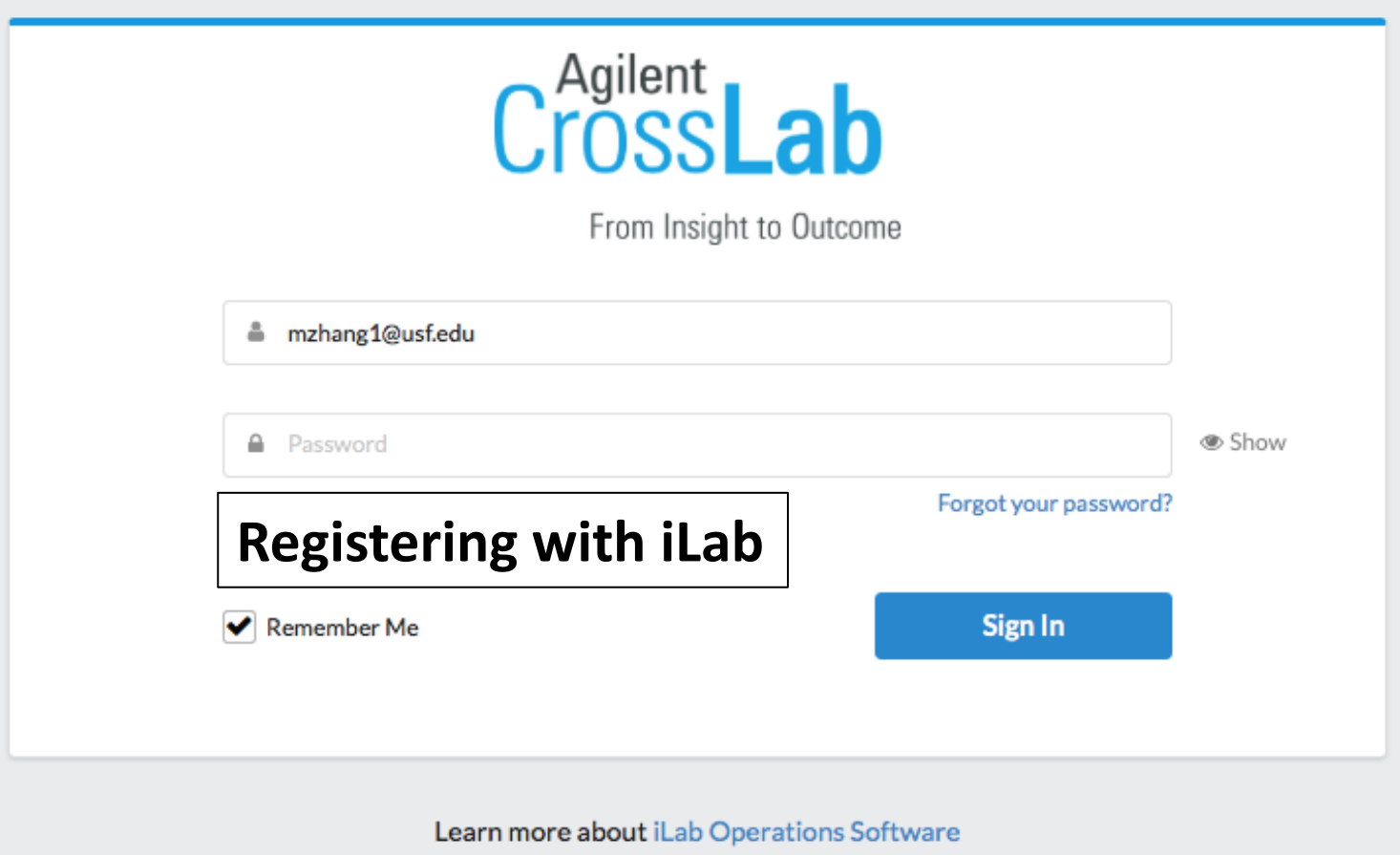
USF Genomics Core Rate Sheet

RNAseq Protocols



Certified Users can submit work requests to the USF Genomics Core laboratory facilities through iLab: https://my.ilabsolutions.com/service_center/show_external/5175

iLab Operation Software



1) Accessing the URL by the USF Genomics Core
2) Click 'Register', bring you to the first step of the Registration
3) Verify the CAPTCHA requirement, agree to iLab's privacy and policies.

Genomics Core

About Our Core

UNIVERSITY OF SOUTH FLORIDA

Overview of Services

The USF Genomics Program is a consortium of active research programs from across the USF System united by the goal of harnessing the immense power of genomics research to develop innovative solutions to complex problems from health to ecology.

USF Genomics Equipment Core

The USF Genomics Equipment Core is a NextGen Sequencing laboratory facility which consolidates resources and expertise to provide genomics laboratory training from library preparation to Next-Generation Sequencing. Certified users may reserve time in the USF Genomics Equipment Core to perform sample preparation, library prep, quality assessment, and sequencing. Completion of the USF Genomics RNAseq Laboratory Training is required to become a certified user of the core. The core offers assistance with experimental design, troubleshooting, and data analysis, but does not offer labor for these services.

Equipment Services:

- Illumina – NextSeq-550
- Illumina – MiSeq System
- 10X Genomics – Single Cell Instrument – Chromium Controller
- Agilent – TapeStation 2200, TapeStation 4150 (DNA and RNA quality assessment)
- Invitrogen Qubit 2.0 fluorometer (DNA and RNA sample quantification)
- Roche – LightCycler 96 Real-time PCR Instrument (DNA library quantification)
- Covaris – M220 Focused Sonicator (DNA fragmentation)

Consulting Services* (offered for both laboratory and data-analysis, depending on project needs):

- Experimental design
- Grant-writing support
- Sequencing cost and budgeting
- Sequencing methods
- Sample preparation
- Troubleshooting

* No billing for overall consulting time less than two hours.

USF Omics Hub

The USF Omics Hub is the computational branch of the USF Genomics Core. The Hub consists of PhD-level computational biology consultants for genomics research projects. These consultants run Mac, Linux and Windows workstations and have access to USF's High-Performance Computing (HPC) cluster and a variety of both proprietary and open-source, command-line based analysis software. Data analyzed by the Hub are securely stored on a new HIPAA-compliant component of USF's HPC cluster. HPC infrastructure and hardware supporting USF Genomics and the USF Genomics Core Facility is managed by the USF Department of Research Computing.

The members of the USF Genomics Hub are also the instructors for the USF Genomics RNAseq Data Analysis Training. This hands-on workshop reviews theoretical and practical concepts related to RNA sequencing analysis, enabling participants to perform these analyses independently.

The consultants of the Hub are available for project-planning, periodic consultation and training, as well as longer-term collaboration on funded projects.

Data Analysis Computational Services*:

- RNAseq Data Analysis
- Microbiome Data Analysis
- Whole-genome sequencing Data Analysis
- Epigenomic Data Analysis
- Phylogenetics

Genomics Core

Request Services

UNIVERSITY OF SOUTH FLORIDA

▼Project Requests

Sort manually | Add a Service Project Template

USF Genomics Omics Hub Consultation Request (USF Omics Hub) — initiate request

Please initiate this request to consult and/or collaborate with the Core and USF Omics Hub on project-planning, sequencing, and/or data analysis.

Initial USF Genomics Equipment Core Service Request (USF Genomics Equipment Core) — initiate request

Please intiate this request for access to our Core facility **if you have completed the laboratory portion** of our USF Genomics RNAseq workshop. This form is **required** for all Core users.

- If you have not yet completed the training and you are gathering information for a future project, please submit a Hub consultation-request so that we can assess your needs.
-
- For more general inquiries (such as Facilities and Resources information for grant applications, etc.), please email usfgenomics@usf.edu.

Library Prep and QC Request (USF Genomics Equipment Core) — initiate request

Please indicate this request to perform library prep and quality control checks on samples

Sample Quantification Request (USF Genomics Equipment Core) — initiate request

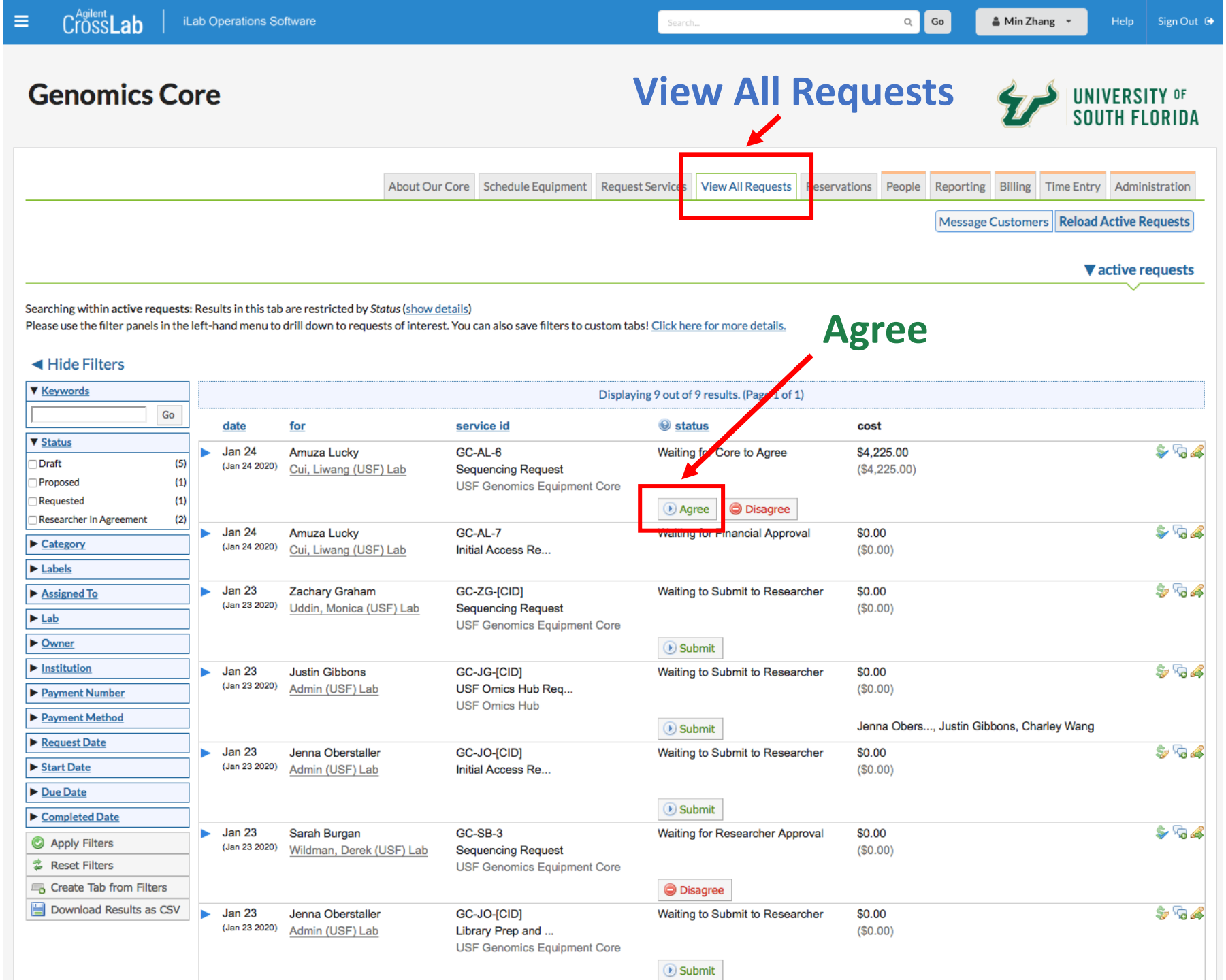
Please indicate this request to use the USF Genomics Core lab for sample preparation

Sequencing Request (USF Genomics Equipment Core) — initiate request

Please indicate this request to perform sequencing

▼Service list

Sort manually | Add a Service Template


Agilent CrossLab
iLab Operations Software
Search...
Go
Min Zhang
Help
Sign Out
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View All Requests
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About Our Core
Schedule Equipment
Request Services
View All Requests
Reservations
People
Reporting
Billing
Time Entry
Administration
Message Customers
Reload Active Requests
active requests
Searching within active requests: Results in this tab are restricted by Status (show details)
Please use the filter panels in the left-hand menu to drill down to requests of interest. You can also save filters to custom tabs! Click here for more details.
Agree
Hide Filters
Keywords
Go
Status
Draft (5)
Proposed (1)
Requested (1)
Researcher In Agreement (2)
Category
Labels
Assigned To
Lab
Owner
Institution
Payment Number
Payment Method
Request Date
Start Date
Due Date
Completed Date
Apply Filters
Reset Filters
Create Tab from Filters
Download Results as CSV
Displaying 9 out of 9 results. (Page 1 of 1)
date
for
service id
status
cost
Jan 24 (Jan 24 2020)
Amuza Lucky
Cui, Liwang (USF) Lab
GC-AL-6
Sequencing Request
USF Genomics Equipment Core
Waiting for Core to Agree
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($4,225.00)
Agree
Disagree
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Cui, Liwang (USF) Lab
GC-AL-7
Initial Access Re...
Waiting for Financial Approval
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($0.00)
Jan 23 (Jan 23 2020)
Zachary Graham
Uddin, Monica (USF) Lab
GC-ZG-[CID]
Sequencing Request
USF Genomics Equipment Core
Waiting to Submit to Researcher
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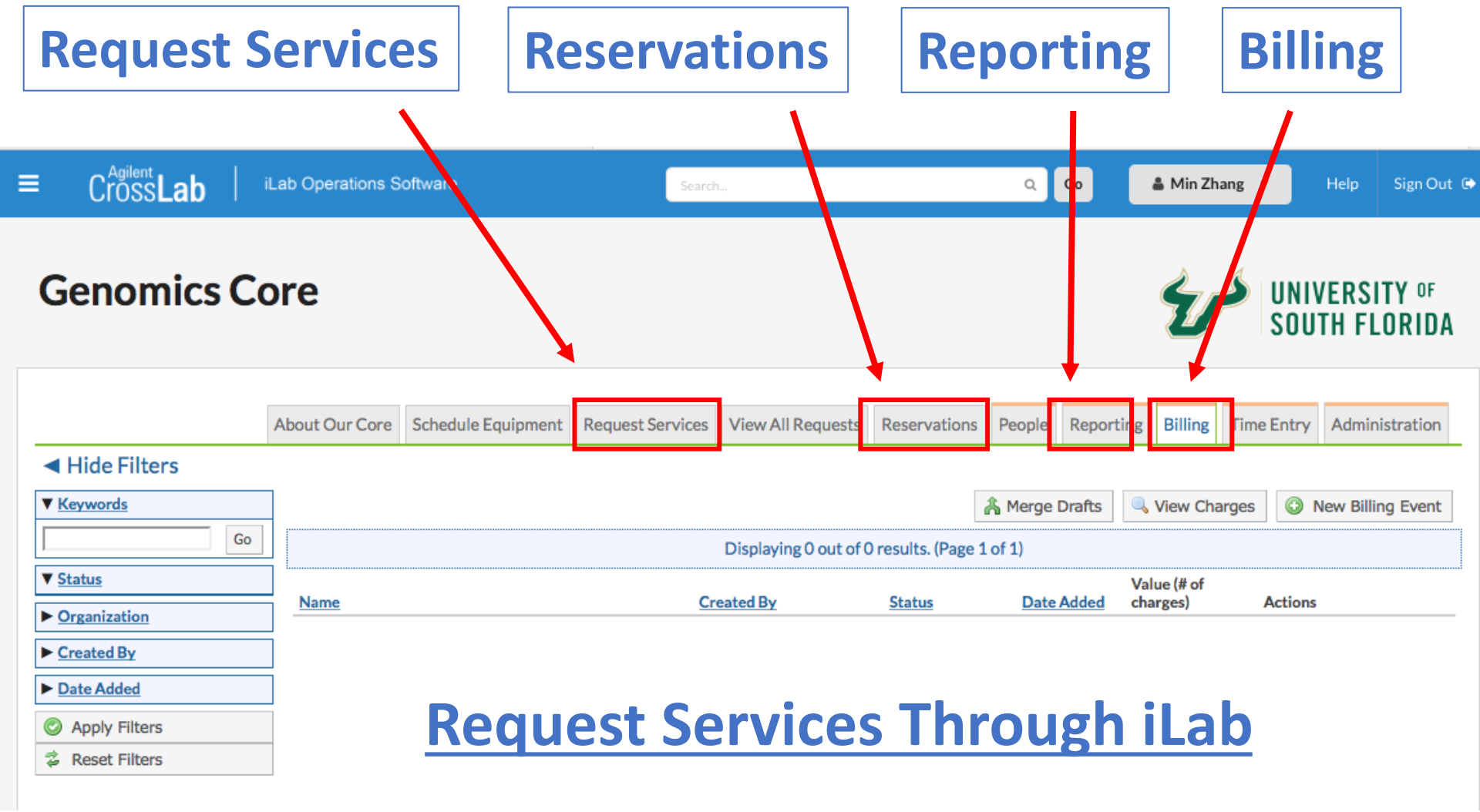
($0.00)
Submit
Jan 23 (Jan 23 2020)
Justin Gibbons
Admin (USF) Lab
GC-JG-[CID]
USF Omics Hub Req...
USF Omics Hub
Waiting to Submit to Researcher
$0.00
($0.00)
Submit
Jenna Obers..., Justin Gibbons, Charley Wang
Jan 23 (Jan 23 2020)
Jenna Oberstaller
Admin (USF) Lab
GC-JO-[CID]
Initial Access Re...
Waiting to Submit to Researcher
$0.00
($0.00)
Submit
Jan 23 (Jan 23 2020)
Sarah Burgan
Wildman, Derek (USF) Lab
GC-SB-3
Sequencing Request
USF Genomics Equipment Core
Waiting for Researcher Approval
$0.00
($0.00)
Disagree
Jan 23 (Jan 23 2020)
Jenna Oberstaller
Admin (USF) Lab
GC-JO-[CID]
Library Prep and ...
USF Genomics Equipment Core
Waiting to Submit to Researcher
$0.00
($0.00)
Submit



Request Services Through iLab

iLab Certified User Training

How to Submit a Sequencing Service Request:

Sequencing Service Request

genomics@usf.edu

- Initial contact us through website
- Submit Sample Sheet
- Quotation makes, Sign Agreement
- Schedule Working Date

Library Prep Sequencing (DIY) 4 ~ 5 Days

- Quantification of Sample by TapeStation
- Library Preparation
- Library Quantification by qPCR
- Sequencing Run

Data Report Invoice

- Sequencing QC
- Send Summary Report
- Send FASTQ Data Download Link
- Send Invoice

What We Can Provide:

- **Consultation**

Experimental design, Sample preparation, Method, Reagent kit, Troubleshooting

- **Genomics Training Courses**
- **Sequencing Services**
- **Grant-writing Support**
- **Collaboration**

Sequencing Kits We Recommend to Use:

Illumina Library-Prep Kits and Indexes Would be Recommended

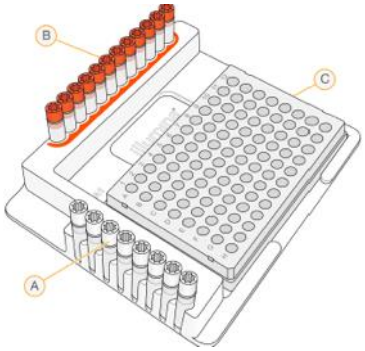
Sequencing Data QC,
Index Distribution QC,
FASTQ Data Generation

→ **Illumina BaseSpace Sequence HUB**

❖RNA Sequencing:

TruSeq® Stranded mRNA Library Prep
(48 Samples) 20020594

❖16S rRNA Sequencing:



Index PCR: Nextera XT Index kit (2 Primers N7xx, S5xx) from the Index Kit

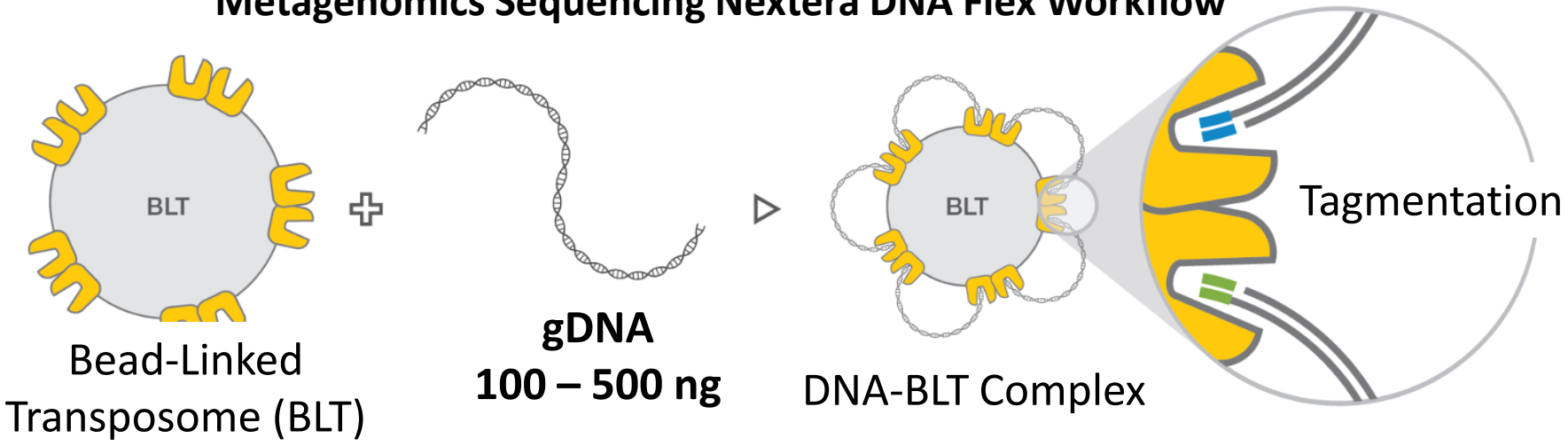
Amplicon PCR: 16S Amplicon PCR Primers (Forward, Reverse)

2x KAPA HiFi HotStart ReadyMix

❖Metagenomics Sequencing

Nextera DNA Flex Library Prep Kit, Nextera DNA CD Indexes (24 Indexes, 24 Samples)

Metagenomics Sequencing Nextera DNA Flex Workflow

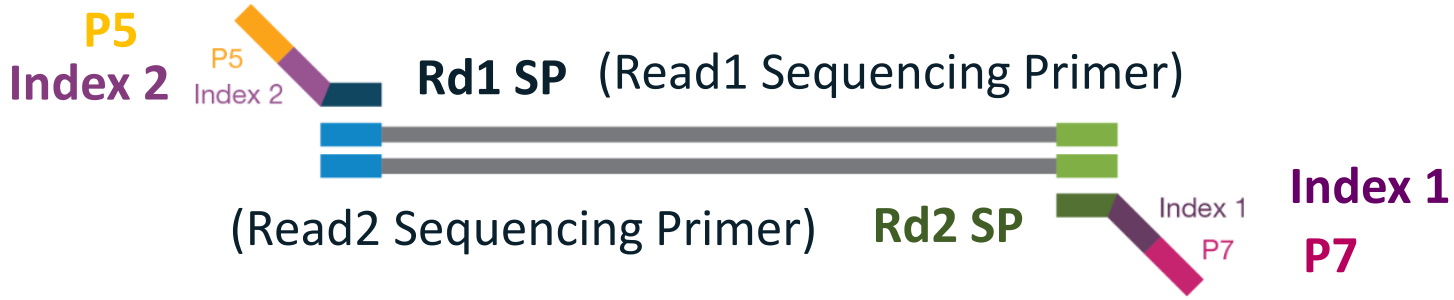


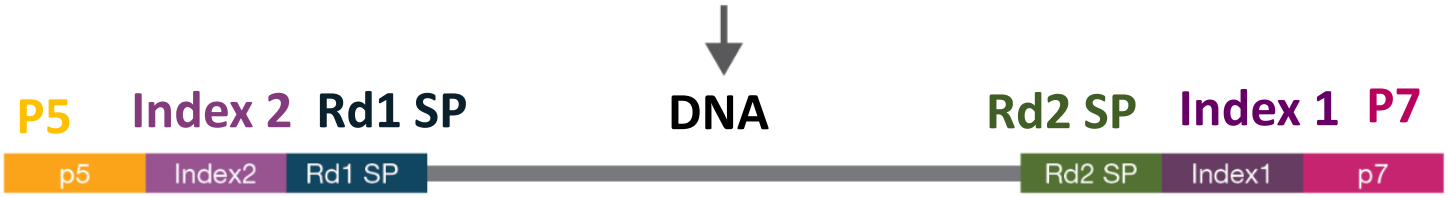
Bead-Linked Transposome (BLT)

gDNA
100 – 500 ng

DNA-BLT Complex

PCR amplification





Sequencing-ready fragment (~600 bp)

NextSeq 500/550 High Output Kit v2.5 (300 cycles)

❖ Grant-writing Support and Collaboration

We Can Help You:

- ✓ Providing support letter and core facilities/resources
- ✓ Estimates the cost
- ✓ Preliminary data generation
- ✓ Find the collaborators

USF GENOMICS CORE FACILITIES AND RESOURCES

Laboratory: The USF Genomics Core laboratory facilities are on the 3rd floor of the Interdisciplinary Research Building (IDRB) in the USF Research Park. The ~3000 sq. ft. of laboratory space is equipped for cell biological and molecular biological experiments. The USF Genomics Core facility offers/encourages one-on-one consultation with a team of experienced bench and computational scientists on experimental design, sample preparation and data analysis for USF researchers.

The USF Genomics Core laboratory facilities house the following instrumentation:

Next-Gen Sequencers:
1. Illumina - NextSeq-550
2. Illumina - Miseq
3. Single Cell RNA-seq instrument - 10x Chromium

Instrumentation for library-prep and quality-assurance:
1. Covaris M220 - DNA fragmentation
2. Agilent TapeStation 2200 - DNA and RNA quality assessment
3. Roche LightCycler 96 qPCR System – DNA library quantification
4. Invitrogen Qubit 2.0 fluorometer – DNA and RNA sample quantitation
5. Bio-Red thermal cycler - PCR
6. Bench top centrifuges, heat blocks, vortexers

Instrumentation for cell culture:
1. Class II Biosafety Cabinets x 3
2. O_2/CO_2 Incubators x 4
3. Microscopes x 3
4. Centrifuges x 3
5. Refrigerators 4°C, -20°C and -80°C freezers
6. Liquid nitrogen tank cell storage -120°C

Computational: The USF Genomics Core computational facilities are on the 4th floor of the IDRB and comprise a 1400 sq. ft. Genomics Core computational consultants run many Mac, Linux and Dell workstations and have access to USF's High-Performance Computing (HPC) cluster and a variety of both proprietary and open-source, command-line based analysis software. Data generated from the Core sequencers, as well as any data to be analyzed by the Core, are securely stored on HIPAA-compliant architecture of USF's HPC cluster. HPC infrastructure and hardware supporting USF Genomics and the USF Genomics Core Facility is managed by the USF Department of Research Computing.

USF Genomics Program

USF Genomics Core (Genomics Equipment Core)

Thanks!