

Run your MarSeq / 10X library at WIS Sandbox Unit

Your MarSeq / 10X library is ready, you wish to sequence it,

you may acquired a single-use Illumina kit:

NextSeq® 500/550 High Output Kit V2 (75 cycles) - Illumina cat. #FC-404-2005

from DB company:

Sigal Kohl – Kima, M.Sc. | Customer Support

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Website: www.danyel.co.il

You will receive four components labeled with color-coded indicators:

NS500 output flow cell [kept at 4°C] - NS500 buffer cartridge [kept at rt]

Hybridization buffer & NS500 high output reagents [kept both at 20°C]

1. Booking instrument

Users wishing to use the NextSeq sequencers should coordinate NextSeq training with **Muriel Chemla**, muriel.chemla@weizmann.ac.il.

A basic training / guidance is necessary even if the user is experienced.

The user should be able to provide the following information:

1. UserID of the User.
2. UserID of the PI.
3. A SusanC user. This can be requested from Irit Orr, Irit.Orr@weizmann.ac.il.
4. Library type (how was it prepared).
5. Format of illumina parameters required - Rd1, Rd2, i5, i7.

Few guidelines:

Trained users who wish to reserve the Nextseq can select either Nextseq#1 (500) or Nextseq#2 (550) under 'Advanced Sequencing Technologies (Sandbox). There are no difference between the two sequencers.

If you do not plan to use your sequencing slot, please be considerate and cancel your slot on time. Others might need it.

Never start a run after 8 pm..

Please note: the user is responsible for the quality of his library and his sequencing results. The Sandbox unit will not be held responsible for any decrease in yield due to sequence biases, low complexity regions or other problems in the library. If you have any questions, you are welcome to contact us or Danyel Biotech (Illumina representatives) directly

It is recommended to run libraries at working hours in case you'll need assistance and to bring a Smartphone to communicate pictures for trouble-shooting

2. Sequencing workflow

You will have to:

- 1- Prepare your kit for the run
- 2- Denature and dilute library to loading concentration
- 3- Set up the run on Illumina BaseSpace.
- 4- Run NextSeq instrument.
- 5- 5-Once the run had started log on to in to the SusanC server.

The day of the run you may bring at Sandbox room:

a-Your pooled library

Prepare at least 10µl of pooled library to 2nM/ 4nM final concentration confirmed with Qubit test. [pool prep.xlsx doc.]

b-The four components of your Illumina kit

c- A sample sheet [Appendix1]

2-1 Prepare your kit for the run

Thaw the kit ~1 hour before run by placing reagents cartridge and hybridization buffer in tape water and inspect it carefully

Keep flow cell closed [light sensitive] at rt for at least 30 minutes before run, then unwrap and inspect it.

Keep empty boxes to know lot number in cases you'll need refund from Illumina.

2-2 Denature library and dilute it to loading concentration

Denatured library and diluted it to loading concentration

[NextSeq500 sample prep doc.]

Check all leftovers – make sure that the volume is what you expect to avoid mistakes [NaOH: 40µl, Tris: 40µl, 20pMLib: 800µl, Final Lib: 70µl.

2-3 Login to Illumina BaseSpace:

www.basespace.illumina.com


[Appendix 2]

2-4-Save and begin your run

he NextSeq instrument you booked is in Levine room 203

Make sure that precedent run is completed and there are no notifications on the machine. If there are any do not proceed, alert

the staff. It is recommended to take a picture of the notification before moving on to the next screen

The status icon in the screen top-right corner must be 

[Appendix 3]

2-5-Log on the SusanC server

Once the run had started log on to the SusanC website:

<http://ngs.weizmann.ac.il/>

in order to define it within the time the run is active to be able to retrieve your sequencing data. This is critical, once the run is finished, the user will receive an email with a link to his data. For more information about the NextSeq workflow:

<http://susanc.weizmann.ac.il/ngs/howto.html>

[Appendix 1]

Prepare sample sheet file with sample names for each barcode used, using the following headings: for MarSeq

Sample ID	rd1 barcode	rd1 name	rd2 name	rd2 barcode	i7 barcode	i7 name	i5 barcode	i5 name	userid
DV_1WT			v3_gr1A1	CTATTCTG					louisem

For 10x [excell file]

You can submit and test sample sheet in SusanC site in advance.

[Appendix 2]

File preparation on BaseSpace

Login to Illumina BaseSpace: www.basespace.illumina.com

Click the “PREP” tab at the top

Select: Manual Prep

1- Biological Samples

Biological Samples

Click “+Create” to insert a sample

Sample ID	}	Not important just type names for your reference
Name		
Species		
Project		
Nucleic acid: RNA		

You will need to create a project (just type a name), click to select it & click “Confirm”


Click “⇒Prep Libraries” at bottom right

Prep Libraries

Kit: TruSeqLT (the default selection) for MarSeq lib, TruSeq HT for 10x lib


Plate ID: insert any name

Pool Libraries

Select your sample & drag it into one of the wells on the right hand side 

OR just click on “⌂ Auto Prep”

Click “⇒Pool Libraries”

Drag your pool  to where it says “Drag your samples here”

Type a “Pool ID” (can be any relevant name)

Click “⇒Plan Run”

Plan Run (this part is important!)

Select Instrument: NextSeq

Enter: Name (a relevant name)

Paired end

Read 1 Cycles: 75

Read 2 Cycles: 15

Leave the rest of the options blank

Click “⇒Sequence”

Your parameters are saved, start setting up the NextSeq machine & login on the machine to retrieve these parameters.

[Appendix 3]

To save the run:

From the software interface, select **Manage instrument**

System configuration/ BaseSpace configuration:

Select one option- *It is recommended to choose either a or c.*

- a. BaseSpace, output folder Z:/ – If you have a BaseSpace account and would like to monitor your run through BaseSpace
- b. BaseSpace onsite – If you are interested in saving the run only on the BaseSpace cloud. CHOOSING THIS OPTION WILL NOT SAVE THE RUN ON THE SERVER.
- c. Standalone instrument, output folder Z:/ - If you don't have a BaseSpace account and would like to configure your run on the machine.

To begin the run:

In the Home screen, select **Sequence**. You will be prompted to log in to your BaseSpace account.

After proper inspection, load the new flow cell

Empty and reload the spent reagent container located under the instrument.

Load the buffer cartridge and reagent cartridge after loading all 1.3ml of final denatured & diluted sample into well #10 – [*pipette slowly onto the side of the well to avoid bubbles*]

Review run parameters and automatic check results

Select **Start**

Monitor the run from tab from a networked computer using Sequencing Analysis Viewer

Empty boxes should be placed next to the elevator.

Used Nextseq cartridges should be emptied and placed in the recycle box

You are responsible to collect your data when the run is finished.

If you are running the Nextseq on the weekend, coordinate with the person registered after you so no data will be lost.