

Students Summer Program

Proteomics Core Lab Facility
Hamad Bin Khalifa University (HBKU)

Hands-on Training on Biomarker Discovery Technologies: OLINK and SENGENICS



Olink



sengenics
THE Functional Proteomics Company

1. Training Overview:

OLINK technology: Protein Biomarker Discovery

Olink technology provides high-multiplex immunoassays using a Proximity Extension Assay (PEA) technology capable of measuring 92 biomarker proteins across 88 samples simultaneously using only 1 µl of plasma, serum, saliva, or CSF. Olink offer 13 different panels, targeting a total of 1200 established and/or exploratory human biomarkers panels: cardio-metabolomic, cardiovascular, metabolism, inflammation, immune response, neurology and neuro-exploratory, oncology, organ damage, and cell regulation/development. Each panel is focused on a disease or key biological process.

Sengenics technology: Auto-antibody Biomarker Discovery

Sengenics technology is based on the detection and identification of novel auto-antibodies in plasma or serum using KREX protein array technology. Protein arrays made with the KREX technology are characterized by correct folded proteins that ensure high specificity, reproductivity, and sensitivity. Sengenics services offers 3 different panels and also the possibility of making custom panels. The main panel is the Immunome Discovery Array, which contains up to 1600 human proteins including kinases, signaling molecules, cytokines, interleukins, chemokines, neurological, and cancer antigens. Autoantibody binding is detected and quantified using a Cy3-labelled anti-human IgG and Cy5-labelled anti-human IgM polyclonal antibodies. Signals are recorded using a microarray scanner at 10µm resolution. The output from the microarray scanner (a raw .tiff image file) is extracted using GenePix Pro 7 software and analyzed using Sengenics data processing pipeline.

2. Teaching Methods:

- Lecture.
- Hands-on training.

3. Outcomes:

Run plasma or serum samples using Olink and/or Sengenics proteomics analysis*.

*BCL2 certificate is mandatory prior to training.

4. Assessment:

At the end of the training, each student must provide a laboratory report with a summary, introduction, material & methods, results, and discussion/conclusion.

5. Training mentor:

- Dr. Houari Abdesselem

6. Laboratory Supervisors:

- Dr. Houari Abdesselem
- Ms. Ilham Bensmail

7. Location:

The proposed training will be performed at the HBKU Proteomics Core Lab Facility.

HBKU Research Complex Building 2, 1st Floor, Segment 5, Lab 1115D.

8. Training Schedule:

OLINK- Target 96: 2 students

Day 1-2	Day 3-4	Day 5
<p>9am: Olink Scientific Overview / Introduction and protocol run-through.</p> <p>10am: check lab and set-up + Incubation step (Operators A, B and B).</p> <p>12:30pm Break</p>	<p>9am Extension step (Operators A, B & C)</p> <p>11am Detection step (Operators A and B)</p> <p>12:30pm Break</p>	<p>9am Detection step (operator C)</p> <p>12:30pm Break</p>

<p>2pm: Practice Data Analysis (Real Time PCR Software + Olink NPX Manager), Q&A</p> <p>4pm: End of Day</p>	<p>2pm: Practice Data Analysis (Real Time PCR Software + Olink NPX Manager), Q&A</p> <p>4pm: End of Day</p>	<p>2pm: Data Analysis, Q&A</p> <p>4pm: End of Day</p>
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SENGENICS 1600 Autoantibodies: 2 students

Days 1-2	Days 3-4	Days 5
<p>9am</p> <ul style="list-style-type: none"> • Sengenics Scientific Overview/Introduction Sengenics KREX • Immunome Protein Array - Autoantibody <p>11am-4pm* Autoantibody Assay Protocol Set-Up</p> <ul style="list-style-type: none"> • Assay Preparation: before starting an autoantibody assay • Sample dilution • Overnight Sample incubation <p>*(Include 1 hour break)</p>	<p>9am - 4pm*</p> <ul style="list-style-type: none"> • Sample Washing • Secondary antibody incubation and washing • Scanning of arrays • Practice Data Analysis + Q&A <p>*(Include 1 hour break)</p>	<p>9am - 4 pm *</p> <ul style="list-style-type: none"> • Scanning of arrays • Data Analysis, Q&A <p>*(Include 1 hour break)</p>

9. Target:

Undergraduate Students on 3rd year.

10. Equipment:

- Fluidigm Biomark HD
- Fluidigm IFC controler
- Agilent Scanner
- Thermocycler system
- Centrifuge
- BCL2 safety cabinet
- Shaker
- Pipettes and Multichannel Pipettes
- Vortex

11. Samples:

Plasma or serum samples

12. Reagents & Consumables:

OLINK:

- Olink 96 Target Kit- 92 proteins μ
- Olink IFC chips
- 96 well plates, adhesive plate seals, reservoirs, microcentrifuge tubes, gloves, 10,100,1000 μ l tips, 15 ml tubes, Milli-Q water, etc.

Sengenics:

- iOme Sengenics auto-antibodies Discovery slides.
- Cy3 secondary antibodies (Rabbit anti human IgG), BSA, 10XPBS, triton 100X, Glycine, Milli-Q water, microcentrifuge tubes, gloves, 10,100,1000 μ l tips, Alu foil, slides holder, slide rack, etc.