HKU Med
LKS Faculty of Medicine
Centre for PanorOmic Sciences
香港大學泛組學科研中心

Genomics Core

Service Portfolio

About Genomics Core

The Genomics Core, formerly part of the Genome Research Centre and Centre for Genomic Sciences, has been a reputable academic core facility since 2002. In August 2019, it was subsumed under the Centre for PanorOmic Sciences (CPOS) within the Li Ka Shing Faculty of Medicine (HKUMed).

Being the largest team at CPOS, the Genomics Core currently has about 30 lab technicians and service scientists. With the expertise in genomics research and state-of-the-art instruments, the Core offers a wide range of services with excellent service support.

Mission and Vision

Our goal is to accelerate world-class medical research at HKUMed by offering professional and accessible technical support.

At the Genomics Core, we maintain stringent quality control on every project. We strictly monitor every lab procedure and provide rigorous training to our technical staff.

We highly value feedback from our users and actively seek to meet and exceed their expectations. Additionally, we continuously stay abreast of the latest technological advancements in the field of genomics. This enables us to bring cutting-edge technologies and methodologies to your fingertips, ensuring that you have access to the most up-to-date tools for your research endeavours.

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Single Cell (10X Genomics)

10X Genomics technology is a microfluidic-based single cell encapsulation system. It is mainly used for single cell RNA-Seq (scRNA-Seq), and can also perform VDJ profiling, cell surface protein expression detection, CRISPR screening and ATACseq on single cells or single nuclei.

Applications

- scRNA-Seq (3' or 5' end)
- Multiplexed scRNA-Seq
- Immune profiling
- Cell surface protein detection
- CRISPR screening
- snATAC-Seq

Our latest Single Cell Gene Expression Flex assay enables gene expression profiling of fixed cells in a multiplexed fashion, thereby offering the lowest cost for single cell sequencing.

Apart from scRNA-Seq, our Core is also actively exploring spatial transcriptomics solutions in response to the rising trend in the field.

Our service package includes single cell encapsulation, library construction, and next generation sequencing by our NovaSeq 6000 system. Optional Cell Ranger analysis is also available from the Bioinformatics Core.

Chromium iX

Contact: singlecell10x.cpos@hku.hk

Single Cell (Mission Bio)

Mission Bio enables targeted DNA sequencing in 5,000 to 10,000 cells. It can detect single-nucleotide variations (SNV), indels, copy number variations (CNV), etc., at the single-cell level. A range of pre-designed panels are available, covering genes in hematologic malignancies and solid tumors. Panels are also customizable for greater flexibility.

Tapestri

Panels

- Acute Myeloid Leukemia
- Chronic Lymphocytic Leukemia
- Myeloid
- Acute Lymphoblastic Leukemia
- Chronic Myeloid Leukemia
- Tumor hotspot

...and more!

In the two-step microfluidic workflow, single cells are first barcoded one by one, and then undergo targeted multiplex PCR to generate libraries for next generation sequencing. We will take care from single cell encapsulation to NovaSeq 6000 sequencing for you. Bioinformatics analysis is available depending on your project needs.

Sequencing

Contact: mbsinglecell.cpos@hku.hk

Next Generation Sequencing

At CPOS, we offer next-generation sequencing using Illumina systems to meet your research needs. Our centre is equipped with two NovaSeq 6000 instruments, which provide high throughput capabilities of up to 3Tb raw data per run. This ensures efficient and cost-effective sequencing with a low per Gb price. Additionally, we have the MiSeq instrument available, which is ideal for applications requiring longer read lengths of up to 2 x 300bp.

With our advanced Illumina sequencing systems, we are dedicated to providing you with accurate and reliable sequencing results for your research projects.

NovaSeq 6000

MiSeq

C T G A

Next Generation

Contact: nextgenseq.cpos@hku.hk

We provide a comprehensive range of services to support your research projects. Our offerings include project consultation, library construction, sequencing, and optional data analysis through our Bioinformatics Core.

DNA Services

- Whole genome sequencing
- Exome sequencing
- Targeted sequencing
- Amplicon sequencing
- Metagenomics
- ChIP-Seq
- Methylation sequencing
- 16S rRNA sequencing

RNA Services

- PolyA+ mRNA sequencing
- Ribosome-depleted RNA-Seq
- Small RNA sequencing
- miRNA-Seq

Sequencing Only

- From 20Gb per project
- From 2 x 50bp to 2 x 300bp
- As fast as 1 week

Additionally, our sequencing-only service offers flexible options to fulfil the sequencing needs of your NGS project, from 20Gb to multiple S4 lanes. We accept individual or pre-pooled libraries for sequencing on Illumina platforms. Our strict quality control throughout the process ensures accurate and reliable sequencing outcomes. For libraries that pass QC, we can generate the sequencing data as fast as one week.

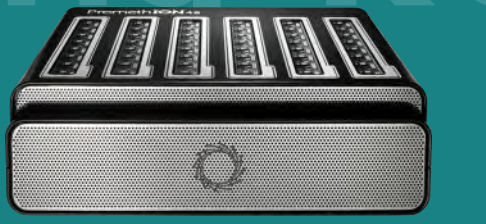
As part of our commitment to excellence, we have participated in several proficiency tests administered by the College of American Pathologists since 2021. We are proud to report that we have achieved full marks in every test since then, demonstrating our consistent dedication to accuracy and precision in our services.

Contact: nextgenseq.cpos@hku.hk

Nanopore Sequencing

Nanopore sequencing is newly introduced technology at our Centre in 2024. It is a cutting-edge third-generation sequencing platform renowned for its ability to perform high-throughput sequencing of DNA or RNA samples. It operates by utilizing nanopores to capture library molecules and measuring the disruption of electric current, which accurately translates into DNA or RNA sequences. It supports a wide range of read lengths, from short to ultra-long reads, providing flexibility for diverse research needs.

Long Read



PromethION

We have access to the PromethION 24 Sequencer. This Nanopore sequencing device offers high-throughput capabilities, allowing for the simultaneous processing of 24 flow cells. Depending on the sample and library type, each PromethION flow cell can generate up to approximately 100Gb of raw data per run. This exceptional throughput makes it the ideal choice for large genome sequencing projects.

Contact: thirdgenseq.cpos@hku.hk

MinION

We also have MinION available at our Genomics Core. This portable device enables real-time sequencing of DNA fragments. Each MinION flow cell can generate approximately 20Gb of raw data, making it an ideal choice for sequencing bacterial genomes, amplicons, and multiplexing for a small number of samples.

Our full-service package includes sample QC, library preparation and sequencing. If you require Bioinformatics analysis service, please contact us for discussion.

Applications

- Whole genome sequencing
- Microbial genome sequencing

PacBio Sequencing

PacBio sequencing is a high throughout, third-generation sequencing platform that utilizes zero-mode waveguides (ZMWs) to capture the real-time incorporation of nucleotides by DNA polymerase. We have access to the Sequel IIe and Revio machines, providing a wide range of sequencing output options to meet various requirements.

Contact: thirdgenseq.cpos@hku.hk

iScan Genotyping & Methylation Analysis

The Illumina iScan system is an advanced genomic analysis platform that facilitates high-throughput and multiplex microarrays, enabling researchers to simultaneously analyze thousands of genetic markers. The iScan system supports a broad range of genomic applications, including genotyping and methylation studies, while also being compatible with FFPE samples. It offers a wide selection of customizable array designs to meet specific throughput needs and research goals.

Our Core provides comprehensive services, from DNA extraction to sample processing, beadchip hybridization, scanning and data QC. With Illumina's free Genome Studio software, researchers can analyze and interpret genomic data generated from iScan microarrays with ease.

iScan

Applications

- Whole genome SNP genotyping
- Whole genome methylation analysis
- Whole genome CNV analysis
- Custom SNP genotyping

Contact: iscan.cpos@hku.hk

Nucleic Acids Fragment Analysis

The Fragment Analyzer is a sophisticated analytical instrument that revolutionizes DNA and RNA analysis.

With its advanced technology and precise measurements, the Fragment Analyzer allows researchers to accurately assess the fragment size and integrity of nucleic acids for a wide range of applications, e.g. NGS library QC and RNA sample QC.

This powerful tool offers unparalleled sensitivity and reproducibility, making it an essential asset for molecular biology laboratories.

Fragment Analyzer

Features

- Suitable for DNA and RNA sample QC
- Excellent resolution
- Carryover-free
- Short turnaround time
- Easy-to-read report
- Affordable price

Contact: fragmentanalyzer.cpos@hku.hk

Nucleic Acids Extraction

At our facility, we are equipped with two automated nucleic acids extraction systems, QIAsymphony SP and QIAcube Connect, powered by QIAGEN. These advanced systems ensure efficient and rapid extraction of DNA and/or RNA from your precious clinical samples, including blood, swabs, stool, tissues and cells.

QIAsymphony SP

Sample Types

- Whole blood
- Buffy coat / Serum / Plasma
- Stool
- Saliva
- Bacterial culture or lysate
- Cells
- Frozen / FFPE tissue

A comprehensive QC report with qualitative and quantitative data is delivered alongside with the extracted materials. These purified nucleic acids are ready for immediate use in a variety of downstream applications such as iScan genotyping, Sanger DNA sequencing and Next Generation Sequencing. Our high standard and trustworthy extraction service ensure reliable and consistent result for research and projects.

QIAcube Connect

Contact: extract.cpos@hku.hk

Sanger DNA Sequencing & GeneScan Fragment Analysis

Despite its long history, Sanger sequencing is still considered the "gold standard" for DNA sequencing, thanks to its high accuracy, long-read capabilities (up to 1,000 bp), fast and cost-effective nature. It can be used to validate NGS data, verify and detect methylation, identify variants and plasmid sequences, etc.

3730xl DNA Analyzer

For our Sanger DNA sequencing service, we accept template-primer premixes for full service at competitive pricing and fast turnaround time as short as 1 working day. Complimentary reruns and troubleshooting services are also available under certain conditions.

Drop-off Locations

- CPOS Reception Counter, 6/F, HKJCBIR, 5 Sassoon Road
- 6/F Lift Lobby, Laboratory Block, 21 Sassoon Road
- 7/F Lift Lobby, Block T, Queen Mary Hospital
- 6/F General Office, Kadoorie Biological Sciences Building

= Sample collection box

We also provide GeneScan Fragment Analysis service, which enables genotyping, gene expression analysis, and detection of genetic mutations.

Sample collection boxes are placed at convenient locations around the HKU campus. Our daily cut-off time is 3pm on working days.

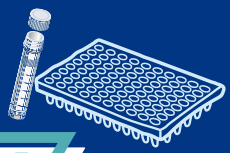
Contact: sangerseq.cpos@hku.hk

Oligo Ordering

As a fundamental part of molecular research, we understand your need for high quality oligonucleotides (oligos) and other synthetic DNA or RNA products. CPOS has been partnering with the leading supplier of oligo products, Integrated DNA Technologies (IDT), for over a decade.

We serve as an academic partner to centralize ordering logistics, shipments, and invoicing for our users. By ordering through us, you can enjoy attractive pricing and free ambient shipment within HKU campus. Our daily consolidated shipments from IDT's Singapore facility allows fast turnaround for your orders. Feel free to also chat with us about any potential purchases for your projects, we are here to help.

You can be assured that your orders will be well taken care of, so you can stay focused on your experiments without worrying their whereabouts. In case of any problems, our colleagues at the hotline is always ready to assist you. Wish you a delightful oligo purchase experience!



Available products

- Custom DNA/RNA oligos
- Genes and gene fragments
- CRISPR enzymes and gRNAs
- qPCR probes and reagents
- NGS adapters, primers and probes
- NGS library prep kits

Contact: oligo.cpos@hku.hk

Service Survey

At CPOS, we strive to constantly improve and provide the best support to researchers like you. Your feedback is invaluable to us in our ongoing efforts to enhance our services.

Please take a moment to complete a brief survey by scanning the QR code below. Your insights will help us understand your needs better and tailor our services to meet your expectations more effectively.

We greatly appreciate your time and contribution to this survey. Thank you for your continued partnership and support.

UNRAVELLING THE UNKNOWNS

https://cpos.hku.hk

enquiry.cpos@hku.hk