OPAL is a first-of-its-kind lab in Canada and one-stop-shop for the complete analyses of microbial, plant and animal samples for the agriculture and agri-food sectors.

**Our Mission**

To **create, discover, understand and deploy** new genetic variation and traits to benefit the agriculture and agri-food sectors.

**Our Goals**

To **lower costs and increase the value** of the services received by stakeholders, and to encourage enhanced scientific collaboration.

**Our Purpose**

OPAL provides state-of-the-art genomics, phenomics and bioinformatics services, combined with the latest imaging and precision agriculture technologies - to deliver crystal clear analyses for the agriculture and agri-food sectors.

**GLOBAL INSTITUTE FOR FOOD SECURITY**

Growing science for life

Nutrien - a Founding Partner

**UNIVERSITY OF SASKATCHEWAN**

We are open for business.

Learn more about the OPAL at opal.gifs.ca

Email: opalinfo@gifs.ca
OUR CAPABILITIES

GENOMICS PLATFORMS

**Oxford Nanopore PromethION**
- RNA/DNA analysis directly and in real time
- Long read generation, 75-100 Gb of Data
- High throughput

**Oxford Nanopore GridION**
- RNA/DNA analysis directly and in real time
- Long read generation 5-10 Tb of data
- Lower throughput

**Illumina NovaSeq**
- Short read generation (high throughput)
- 2 x 300 bp max read length
- 40B maximum reads per run

**Illumina MiSeq**
- Short read generation (low throughput)
- 2 x 300 bp max read length
- 25M maximum reads per run

**ABI QuantStudio 12K Flex†**
- Real Time and Digital PCR
- Genotyping and Genomic profiling
- qPCR-based Gene Expression profiling

**ABI 3730xl Sanger†**
- Sanger sequencing and marker genotyping in 96 and 384 well format

**Oxford Nanopore MinION**
- RNA/DNA analysis directly and in real time
- Long read generation 5-10 Tb of data
- Lowest throughput

**Illumina iScan**
- High throughput high density SNP arrays for genotyping

PHENOMICS PLATFORMS

**Digital phenotyping**
- Unmanned Aerial Vehicles (UAV) - drones, fixed wing
- Ground support vehicle for UAV transport and operation
- In-field platforms for high resolution imaging

**Sensor technology**
- Multi-spectral
- High spatial resolution RGB
- Thermal imaging

**Flow Cytometry**
Microbial, plant, animal reproductive analyses

**Library Preparation**
- DNA Library prep
- RNA
- Hi-C library, RipTide kits
- More

† Available in six months

COMPUTATIONAL INFORMATICS

**Data acquisition and analysis**
- Large data storage (2PB) and compute (3TB RAM/GPU)
- LIM download

**Bioinformatics**
- Genome assembly and annotation, transcriptomics and epigenomics
- Genome visualization tools

**PlotVision (Phenoinformatics Services)**
- Image data processing pipeline and machine learning feature resolution

**Association Genetics**
- Linkage Analysis and GWAS, quantitative traits (QTL)