



Genomics Core Facility

What we do

Parasitology - Worms, are you there?

Screening for specific nematoda parasites in primates. Researchers from Veterinary university Brno (Dept. of Parasitology) and Czech Academy of Science (Institute of Vertebrate Biology) collected in central Africa gorilla, bonobo and human fecal samples. In cooperation with CF Genomics they employed NGS based metagenomic method for analysis of several DNA markers. This method involves PCR amplification of marker sequences (16S for bacteria, 18S, ITS and Cytochrome C oxidase for eukaryota), sample barcoding (up to 384 samples) and sequencing on Illumina MiSeq.

Inherited cancer - Unwanted heritage

Screening for disease associated genes in families with high incidence of early-onset cancer. Researchers from CEITEC Medical genomics are currently running a project that aims to identify possible causative genes in families suspected of hereditary (hematology) cancer. In this case whole exome sequencing of both affected and unaffected family members was selected and found genetic variants are analyzed in conjunction with pedigree.

Cancer cells - Evolution in real time

Ultrasensitive screening for subclonal somatic variants. Researchers from CEITEC Medical genomics in cooperation with CF Genomics established method for detecting subclonal mutations in TP53 gene. Impaired function of the TP53 gene has huge negative impact on the prognosis of Chronic lymphocytic leukemia (CLL). Deep sequencing using massively parallel sequencers is currently the only available method to screen whole gene for mutations present in only a very small fraction of tumor cells. It is important to monitor mutated subclones as they may have different response to therapy and may become refractory to immuno-chemotherapy.

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PCR lab

We have capacity to allow users perform many simultaneous experiments.



Illumina MiSeq

One of our sequencers, can be used for almost all NGS experiments, for others we have Illumina NextSeq or Oxford Nanopore MINION.



QuantStudio 12k

We operate several qPCR instruments including ThermoFisher QuantStudio 12k, Roche LightCycler 480 or Qiagen RotorGene Q5.



QuantStudio 12k

Most of our instrumentation is 384-well compatible.

Services and Methodologies Provided

We will help you with experiments involving any SERVICE or METHODOLOGY listed below. For NGS we can help you with library preparation and sequencing or in special cases (standardized applications) we can prepare the libraries from your samples ourselves. If you are interested in DNA microarrays we can prepare your DNA or RNA samples for aCGH and Gene Expression microarrays or you can just use the scanner. You can also use software and hardware installed in core facility to analyze microarray or NGS data.

- NextGen Sequencing on Illumina NextSeq and MiSeq and Oxford Nanopore MinION
- DNA microarrays – Agilent or any compatible glass slide microarrays
- Capillary sequencing, real-time qPCR

Equipment

- Illumina NextSeq
- Illumina MiSeq
- Agilent SureScan

Contact and Location

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