

# Next-Generation Sequencing Education Facility at the FGCZ

Since 2008, the Functional Genomics Center Zurich (FGCZ) has been supporting the research community of Zurich in sequencing study design, data generation on most available NGS platforms, as well as data analysis and interpretation. Recently the FGCZ established the NGS Education Facility with the aim of educating young researchers in the basic procedures for the generation and interpretation of NGS data.

## Portfolio of NGS technologies

Next-generation sequencing (NGS) technologies have revolutionized many fields in biology and are changing the practice of medicine. As a joint state-of-the-art research and training facility of the ETH and the University of Zurich, the FGCZ offers several different four-day course with hands-on practicals. The aim is to help scientists interested in NGS technologies to gain a better understanding of the techniques available and their applications.

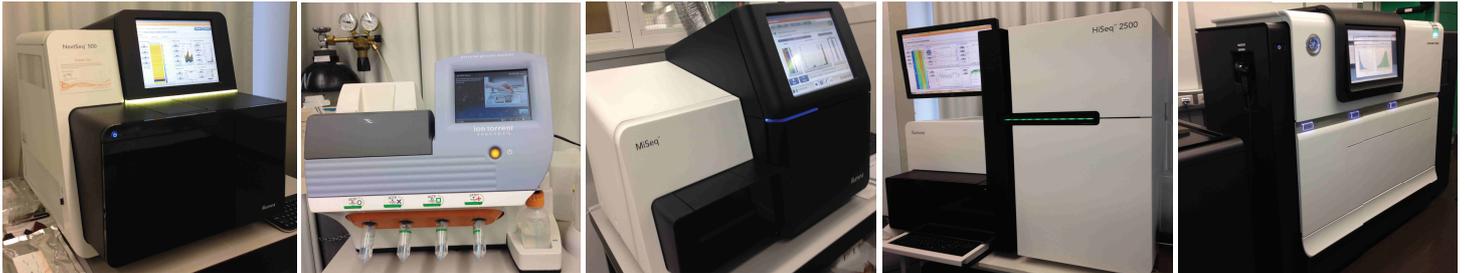


Figure 1. NGS equipment at FGCZ

Since 2012 the FGCZ established the NGS Education Facility with the aim to educate young researchers in the basic procedures for the generation and interpretation of NGS data.

Our main goals are:

- Discuss different procedures for sample processing and sequencing strategies
- Provide hands-on experience on the library generation and sequencing procedures
- Familiarise trainees with the equipment operation, data generation and basic data analysis
- Help researchers make informed choices of sequencing and data analysis strategies
- Promote the scientific and technological advancement in genomics
- Introduce the technology portfolio of the FGCZ to the research community
- Enhance career aspects of trainees

## Course information

The course practicals consist of a library preparation followed by a sequencing run on a bench top sequencer, together with an introduction to the analyses of the resulting data and some exercises. The FGCZ offers two types of NGS courses, a DNA and a RNA sequencing course, which differ mainly in the library preparation and data analysis-exercise part. The lectures cover existing and upcoming NGS technologies, their applications and the principles of downstream data analysis. The currently available NGS platforms include Ion Torrent, Illumina, PacBio RS and Oxford Nanopore. The data analysis part starts off from the raw reads, as generated by the instrument, and covers pre-processing, alignment, variant calling and several quality control checkpoints. The hands-on sessions for data analysis does neither require a pre-existing knowledge of Unix nor the command line environment. By the end of the course participants should be able to make informed decisions about which technology and workflow to apply to solve specific research questions.



Figure 2. NGS practical course

### General course program

- Overview of the different NGS platforms and their applications
- Principles of various library preparations
- Complete library preparation
- Sequencing with a bench top sequencer
- Discussion on the technical quality of the sequencing results
- Introduction to NGS data analysis



Figure 2. NGS practical course

## More information on our NGS courses

More detailed information in regards to the course types and dates can be found under the following link:

<http://www.fgcz.ch/education/ngscourses>

• • • [www.fgcz.ch](http://www.fgcz.ch)

• • • [ngs.courses@fgcz.ethz.ch](mailto:ngs.courses@fgcz.ethz.ch)

