Cancer Genomics & Developmental Biology and
Medisch Genetisch Centrum zuid-west Nederland
special course
7th edition

Next generation sequencing (NGS) data analysis

University Medical Center Utrecht, August 28–30, 2013

Jeroen Laros, Wilfred van IJcken, Judith Boer, Johan den Dunnen

This course aims at PhD students, postdocs, and senior researchers who are interested in, planning, or already working with next-generation sequencing. We welcome researchers from both the genomics and bioinformatics fields. Currently available technologies as well as hardware and software solutions will be presented and discussed. The focus of the course will be on the data and ways to analyse these.
Registration link: http://www.medgencentre.nl/

Wednesday, August 28

09:00 Welcome coffee and sign-in: location – room T.B.A.

1. The technologies, their output, and technology-related problems (Vondelzaal STR.3.108)
chair: Wilfred van IJcken (EMC Rotterdam)

09:30 Introduction to Next-Generation Sequencing – Edwin Cuppen (Hubrecht Utrecht)
10:00 Roche 454 / Ion Torrent – Harry Cuppens (KU Leuven)
10:30 Coffee break
11:00 Illumina Genome Analyzer – Wilfred van IJcken (EMC Rotterdam)
11:30 ABI SOLiD – Edwin Cuppen (UMC Utrecht)
12:00 Future developments: single molecule sequencing – Wilfred van IJcken (EMC Rotterdam)
12:30 Lunch

2. General Data Analysis (Vondelzaal STR.3.108)
chair: Jeroen Laros (LUMC Leiden)

13:20 NBIC BioAssist NGS platform – Hailiang Mei (LUMC Leiden & NBIC)
13:30 Alignment methods – Martijn Vermaat (LUMC Leiden & NBIC)
14:00 Combining tools into a pipeline – Jeroen Laros (LUMC Leiden)
14:30 Variant calling using GATK – Ies Nijman (UMC Utrecht)
15:00 Coffee break
15:30 De Novo assembly – Erwin Datema (KeyGene)
16:00 Data visualization – Rutger Brouwer (EMC Rotterdam & NBIC)
16:30 End of Day 1

Thursday, August 29

3. Things to Know and Specific Applications I (Vondelzaal STR.3.108)

chair: Judith Boer (EMC Rotterdam & LUMC Leiden)

09:00 Think before you start – Judith Boer (EMC Rotterdam & LUMC Leiden)
09:30 QC issues – Peter-Bram 't Hoen (LUMC Leiden)
10:00 Statistics for NGS – Renee Menezes (VUMC Amsterdam)
10:30 Coffee break
11:00 ChIP-seq – Hendrik Marks (RU Nijmegen)
11:30 DNA methylation – Arjen Brinkman (RU Nijmegen)
12:00 RNA expression profiling – Peter-Bram 't Hoen (LUMC Leiden)

Lunch 12:30 – 13:30

Computer Practicals: (room STR.2.106 and STR.2.112)

13:30 Introduction to Galaxy – Rutger Brouwer (EMC Rotterdam & NBIC), Frank Sleutels (EMC Rotterdam) and Leon Mei (LUMC Leiden & NBIC)
15:00 Coffee break
15:30 Exome sequencing data analysis using Galaxy – Martijn Vermaat (LUMC Leiden & NBIC) and Jeroen Laros (LUMC Leiden & NBIC)

17:00 End of Day 2

Friday, August 30

4. Specific applications II (Vondelzaal STR.3.108)

chair: Sacha van Hijum (NIZO food research, CMBI bacterial genomics, Nijmegen)

09:00 Metagenomics – Sacha van Hijum (NIZO food research, CMBI bacterial genomics, Nijmegen)
09:30 Exome sequencing in a diagnostic setting – Christian Gilissen (UMCN Nijmegen)
10:00 De Novo assembly applications – Dick de Ridder (TU Delft)
10:30 Coffee break
11:00 Structural variation analysis using NGS data – Victor Guryev (ERIBA Groningen)
11:30 General discussion

Lunch 12:00 – 13:00

Computer Practicals: CLCbio (STR.2.106) and Interpreting NGS exome data (STR.2.112)

CLCbio – Bela Tiwari and Leif Schauser (CLCbio)
Interpreting NGS exome data – Christian Gilissen (UMCN Nijmegen)

13:00 30 participants Interpreting NGS exome data (PC room 1), 30 participants CLCbio (PC room 2)
14:30 Coffee break
15:00 30 participants CLCbio (PC room 2), 30 participants Interpreting NGS exome data (PC room 1)

16:30 End of Day 3 – Please return evaluation forms and badges