Second Generation Sequencing: Lab Methods and Data Analysis

22-26 October 2012, Barcelona

PRELIMINARY SCHEDULE

Monday October 22

Morning	Theoretical	Introduction sequencing technologies	HH
		Introduction to genomic library preparation: insert size, GC bias, quality control	HH, MM
	Practical / lab	Preparation of a genomic library I: fragmentation, end repair, A-tailing, adapter ligation	MM
	Lunch	(13:30-14:30)	
Afternoon	Practical / lab	Preparation of a genomic library II: size selection, set up PCR amplification	MM
	Practical / comp	Read data filtering	AM

17:00-18:00 Public Lecture

Simon HEATH - Centre Nacional d'Anàlisi Genòmica (CNAG), Barcelona
Analysis of whole genome bisulfite sequence data

Ramon y Cajal Room (Inner Square, PRBB Building)

Tuesday October 23

Morning	Practical / lab	Preparation of a genomic library III: Bioanalyzer quality control	MM
	Theoretical	De novo genome sequencing: Concepts, data requirements	HH, JD, AM
	Practical / comp	Assembling genomes and interpreting genome assemblies	AM, DD
	Lunch	(13:00-14:00)	
Afternoon	Theoretical	Introduction to mRNA seq protocol, quality control, biases, directionality	HH, IG
	Practical / lab	mRNA seq I: Isolation of poly A+ RNA, fragmentation, reverse transcription	IG

17:00-18:00 Public Lecture

Miguel Ángel PEINADO
Institut de Medicina Predictiva i Personalitzada del Càncer (IMPPC), Badalona ES
Epigenetics speaks up for silent DNA

Ramon y Cajal Room (Inner Square, PRBB Building)

Wednesday October 24

Morning	Practical / lab	mRNA seq II: end repair, A-tailing, adapter ligation, set up PCR amplification	IG
	Practical / comp	Assessment of transcript coverage, identification of differentially expressed genes	DD, MH
	Lunch	(13:00-14:00)	
Afternoon	Theoretical	Chipseq: introduction to the protocol and quality control	HH, MM
	Practical / lab	mRNA seq III: Bioanalyser.	MM
		Chipseq I: end-repair, adapter ligation, size selection, set up PCR	MM

17:00-18:00 Public Lecture

Miguel PÉREZ-ENCISO
Universitat Autònoma de Barcelona, Barcelona
Livestock Population genomics with NGS data

Charles Darwin Room (Inner Square, PRBB Building)

Thursday October 25

Morning	Practical / lab	Chipseq II: run and discuss Chip-Seq bioanalyser	HH, MM
	Theoretical	Chip seq peak calling: introduction	DD
	Practical / comp	Peak calling and data interpretation	DD
	Lunch	(13:00-14:00)	
Afternoon	Theoretical	Introduction to exome sequencing: experimental approaches and data analysis	AF, MH, SB
	Practical / comp	Exome selection quality control	MH, SB

17:00-18:00 Public Lecture

Tomàs MARQUES-BONET
Institut de Biologia Evolutiva (UPF-CSIC), Universitat Pompeu Fabra, Barcelona
Lessons from the great ape genome diversity project

Charles Darwin Room (Inner Square, PRBB Building)

Friday October 26

Morning	Practical / comp	SNP and indel calling in exome data	SB
		Calling of structural variants in genomic data	JD
	Wrap-up of the course, feedback to the course instructors		