

# Bioinformatics Support

Dr Simon Cockell

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# Bioinformatics Support Unit

- Data analysis for life science
  - Collaboration
  - Analysis as a service
  - Training
- 7 members of staff
  - Mostly experienced, post-doctoral level bioinformaticians
- >50 papers published in last 5 years
- Collaborate on grants worth over £50m

# The Bioinformatics Support Unit



Dr Simon Cockell  
Director



Dr Sirintra Nakjang  
NICR ESO



Robert Stones  
Core Facility ESO



Andrew Skelton  
MRG ESO



John Casement  
Core Facility Technician



Dr Graham Smith  
ICM ESO



Dr Rachel Queen  
NUSCU ESO

Academic Lead – Prof Anil Wipat

# Bioinformatics Analysis

- Sequencing
  - Whole genome sequencing
  - Whole exome sequencing
  - RNA-Seq
  - ChIP-Seq
  - and many more...
- Microarrays
  - Expression
  - Methylation
  - Genotyping
- Proteomics
- Flow/Mass Cytometry



# Bioinformatics Training

- Short courses run regularly
- Introduction to Practical Bioinformatics (2 days)
  - Linux command line
  - Scripting with BASH
  - R and Bioconductor
- RNA-Seq Analysis (1 day)
  - Alignment-free Quantification
  - Analysis using R
- Other courses being planned (DNA variation analysis, ChIP-Seq analysis, etc)
- <http://bsu.ncl.ac.uk/support/courses>

# Elucidating Pathways of Steatohepatitis

- 4 year H2020 award
- Multi-omics data from core patient cohort
- RNA-Seq
- Methylation (Illumina EPIC arrays)
- Data integration and multi-omics analysis
  - eQTL
  - mQTL



# Psoriasis Stratification to Optimise Relevant Therapy

- MRC Stratified Medicine award
- Large cohort RNA-Seq
- Investigating drug response
  - Range of biologic treatments of psoriasis
- Systems biology modelling of drug response



# Metatranscriptomics on oral biofilms

- Industrially-funded oral microbiome investigation
- Meta RNA-Seq from 18 samples
  - Effect of treatment on oral biofilms
- Analysis of DEGs within individual species
- Leading to cross-species functional analysis
- Also – annotating uncharacterised reads



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