Clinical Bioinformatics STP MAHSE Open Day 2016

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Clinical Bioinformatician (Genomics)

- Responsible for analysing and interpreting genomic data and advising other scientists and clinicians to best inform patient care.

- Involved in building the necessary IT infrastructure including appropriate servers, databases and pipelines to analyse the data.

- Leadership role in establishing best-practice for data analysis and interpretation, data storage and governance within their laboratory.

- Communication with multidisciplinary teams including clinical scientists, clinical geneticists, other specialty clinicians and genetic counsellors, and advise colleagues with respect to interpretation of genetic data that will inform patient care also external solution providers

Clinical Bioinformatician (Health Informatics)

- You will advise other healthcare professionals, and lead and develop strategies in the following areas:
  - Data – collection, quality, representation
  - Governance –Security, patient confidentiality
  - Systems design and development, and technologies
  - Data analysis, interpretation and reporting
- Work as a multi-disciplinary team
- Strong communication skills to influence decision-making to ultimately improve the delivery of healthcare.

Bioinformatician (Physical Sciences)

- Combines computer science, statistics, mathematics, and engineering to study and process biological data.

  - creating computer-related interfaces to control specialist medical equipment

  - commissioning (and approving) computer-related interfaces for clinical use

  - ensuring that the equipment and computer-related interfaces are continually fit for purpose

  - constructing software, either to model biological processes, investigations and treatments or to investigate and manipulate data produced by medical devices.

Programme Structure

MSc Clinical Science (Clinical Bioinformatics)

MSc Clinical Sciences (Clinical Bioinformatics)

	Year 1	Year 2	Year 3
	Introduction to Healthcare Science, Professional Practice and Clinical Leadership [20]	Research Methods [10]	
	Clinical Bioinformatics: underpinning knowledge for rotational work based training [40]		
		Genomics	
		Programming [10]	Next Generation Sequencing [10]
		Advanced Clinical Bioinformatics [10]	Information Technology for Advanced Bioinformatics Applications [10]
		Research Project in Clinical Bioinformatics [30]	Whole Systems Molecular Medicine [10]
			Research Project in Clinical Bioinformatics [30]
		Clinical & Scientific Computing	
		Clinical & Scientific Computing for the Physical Sciences 1 [20]	Clinical & Scientific Computing for the Physical Sciences 2 [30]
		Research Project in Clinical Bioinformatics [30]	Research Project in Clinical Bioinformatics [30]
		Health Informatics Science	
		Policy, Strategy and Operational Management [10]	Systems Development and Design [10]
		Co-Production of Health [10]	Information Knowledge Management [20]
		Research Project in Clinical Bioinformatics [30]	Research Project in Clinical Bioinformatics [30]
Credits			
Generic	20	10	0
Division/Theme	40	0	0
Specialism		50	60
Total	60	60	60

Route Map: MSc Clinical Science (Clinical Bioinformatics)

MSc trainees begin by following the generic curriculum, which spans all divisions (blue), together with some theme-specific modules (yellow). In Year 2 of the MSc, trainees specialise (orange) in genomics

Programme members

University of Manchester

- **Andy Brass** – *Programme Co-Director of Clinical Bioinformatics*
- **Ang Davies** – *Programme Co-Director of Clinical Bioinformatics*
- **Andrew Devereau** – *Clinical Lead of Clinical Bioinformatics*
- **Georgina Moulton** – *Pathway Lead Health Informatics*
- **Manoj Mistry & Dawn Coope** – *Lay representatives*
- **Simon Boardman, Kirsty McCaffrey, Natalie Groves, Ian McDonald** – *Student representatives*

University of Liverpool

- **Helen Boston** – *Pathway Lead Medical Physics*
- **Tony Fisher** - Clinical *Lead Medical Physics*
- **Azzam Taktak**
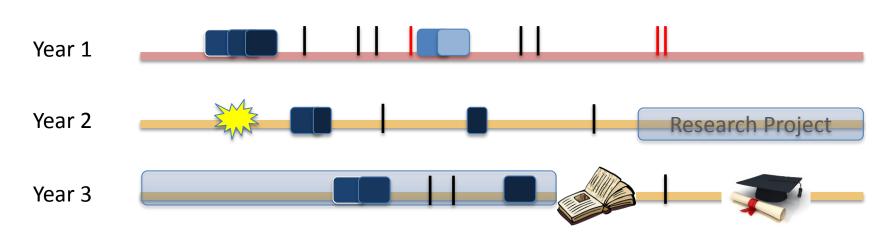
Administrators

- **Lisa McAuliffe** – *Clinical Bioinformatics*

Credit weightings

- **180 credits in total**
  - 120 credits taught
  - 60 credits research project
  - 1 credit = 10 hours study

- **National School stipulates 1 day/week academic work**
  - **Does not** include completion of Online Learning & Assessment tool
  - **Does not** include time in Manchester

Research Projects

- *Analysis of splice-site prediction tools, and optimising their use in a clinical environment.*

- *A tool to detect overlapping copy number variation (CNV) in array hybridisation partners*

- *Implementation of ISO Standard 15189: 2012, quality control procedures and software management systems in a Clinical Bioinformatic analysis pipeline*

- *Development of a pipeline for design and quality control of ad hoc panels for a clinical exome service*

- *Comparison of variant identification by exome sequencing using differing genome reference assemblies.*

- *Development of a Clinical Next Generation Sequencing (NGS) variant database*

MAHSE

Manchester Academy for Healthcare Scientist Education

MANCHESTER 1824
The University of Manchester

NHS

Manchester Metropolitan University

University of Salford MANCHESTER

Curriculum

ACADEMIC

WORKPLACE

NHS

MODERNISING SCIENTIFIC CAREERS

Scientist Training Programme

MSc in CLINICAL SCIENCE

Curriculum

CLINICAL BIOINFORMATICS

2014/15

Modernising Scientific Careers

Science in healthcare ▷ DRIVING A MODERN NHS

NHS

MODERNISING SCIENTIFIC CAREERS

Scientist Training Programme Work Based Training

Learning Guide
CLINICAL BIOINFORMATICS

2014/15

Science in healthcare ▷ DRIVING A MODERN NHS

http://www.networks.nhs.uk/nhs-networks/msc-framework-curricula

Problem-Based Learning

- What is it?
  - It's a way of using case-based scenarios to reinforce content received in traditional lectures
- What are the benefits?
  - To teach students how to work in groups and manage group projects
  - To improve and develop transferable skills of students
  - To develop problem solving skills of students
  - To encourage self-motivation, curiosity and thinking

Further Information

- Contact:

- Angela.davies@manchester.ac.uk (Genomics)

- Clinical.Bioinformatics@manchester.ac.uk

- a.c.fisher@liv.ac.uk (Phy Sci)

- Georgina.moulton@manchester.ac.uk (Health Informatics)

- https://www.healthcareers.nhs.uk/explore-roles/clinical-bioinformatics

- Twitter - @MSCclinbioinf

- Twitter - @HI_Education @HeRC_Farr #datasaveslives

- MOOC (FutureLearn): Clinical Bioinformatics: unlocking genomics in healthcare

- Article: http://www.frontlinegenomics.com/983/front-line-genomics-magazine-issue-three/