TranslationManchester
Informatics Training Scheme

2023 Launch Workshop

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Introductions

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Translational Research Manager at Translation Manchester

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Lecturer in Health Data Sciences and Academic Lead for the Informatics Training Scheme

Workshop programme

1. Introduction to Translation Manchester (Alessandro)
2. Introduction to the Informatic Training Scheme (Lijing)
3. Overview of the courses and units on offer (Mudassar)
4. Q and A (All panel)

Please use the Chat function to submit your questions at any point during the presentations.

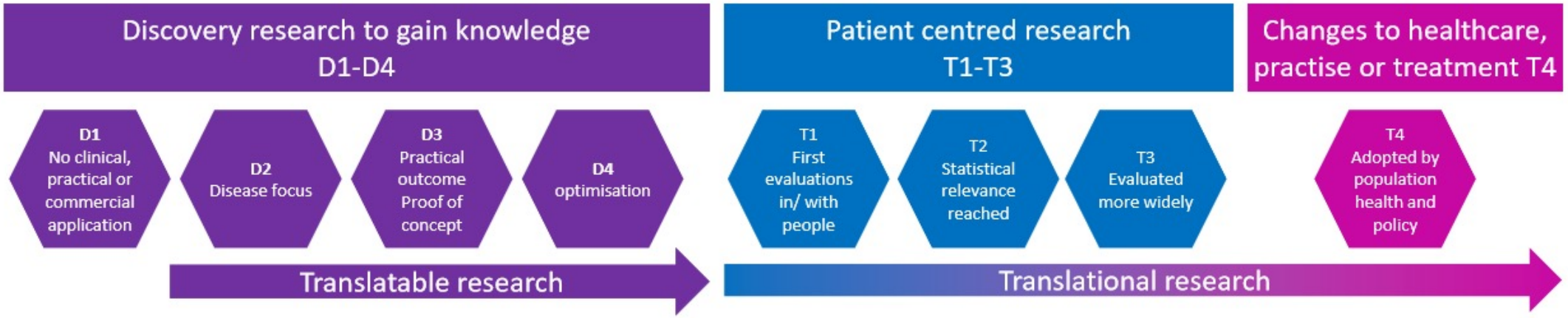
TranslationManchester

- **Translational research** is the process by which basic scientific research is translated into patient focused research that improves healthcare and wellbeing within society.

- **Translation Manchester** facilitates and supports the progression of scientific discoveries towards the delivery of improved healthcare.

- Translation Manchester is funded by a **Wellcome Trust Translational Partnership Award (TPA).**

Translational Pathway



D1: Pure basic research to gain knowledge

D2:disease-related or oriented/ strategic research: To obtain new insight or a starting point for diagnosis, treatment or prevention.

D3: when the initial outcome of D2 research has been identified and its link to the disease has been confirmed

D4: when the target from D3 is manipulated to confirm disease association.

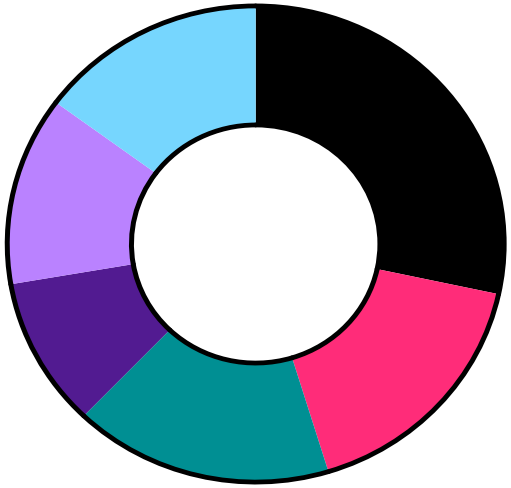
T1: when a new method or treatment is first validated in humans

T2: when a statistically relevant number of events demonstrate the efficacy of the new approach

T3: when the new approach is being tested more generally

T4: translating findings to population health

TranslationManchester



- 28% Funding for proof of concept studies and/or IP development
- 17% Bioinformatician/biostatistician support
- 17% Access to clinical samples
- 13% Access to technical expertise
- 10% Coordinator/clinical trials manager
- 15% Other

DISCOVERY

LOST IN TRANSLATION

INNOVATION

TranslationManchester

Tackling the Bioinformatics Bottleneck

TranslationManchester
Bioinformatics Expertise

www.translation.manchester.ac.uk

Bioinformatics Drop-in Sessions & Request Bioinformatics Expertise

Online Resource: Training opportunities / Learning Repositories

Informatics Training Scheme (ITS)

wellcome

Bioinformatics Drop-in Sessions

- **Bi-weekly** availability at UoM Biology, Medicine and Health, led by Leo Zeef from Bioinformatics Core Facility and Lijing Lin from Translation Manchester.
- No prebooking required
- Tap into our vast bioinformatics expertise:
  - Navigating data analysis challenges
  - Troubleshooting code issues
  - Identifying optimal models for data analysis
  - Developing comprehensive analysis plans
  - Gaining expert insights to interpret your results
  - Designing effective experimental designs
  - Implementing statistical methods in bioinformatics
  - Analysing high-throughput sequencing data
  - Integrating multi-omics data for comprehensive analysis
  - Harnessing the power of public datasets
  - Presentation, plotting, publishing guidance

📍 Location: Michael Smith Building, B1083 ⏰ Next drop-in session: 20 July 4 - 5pm

Request Bioinformatics Expertise

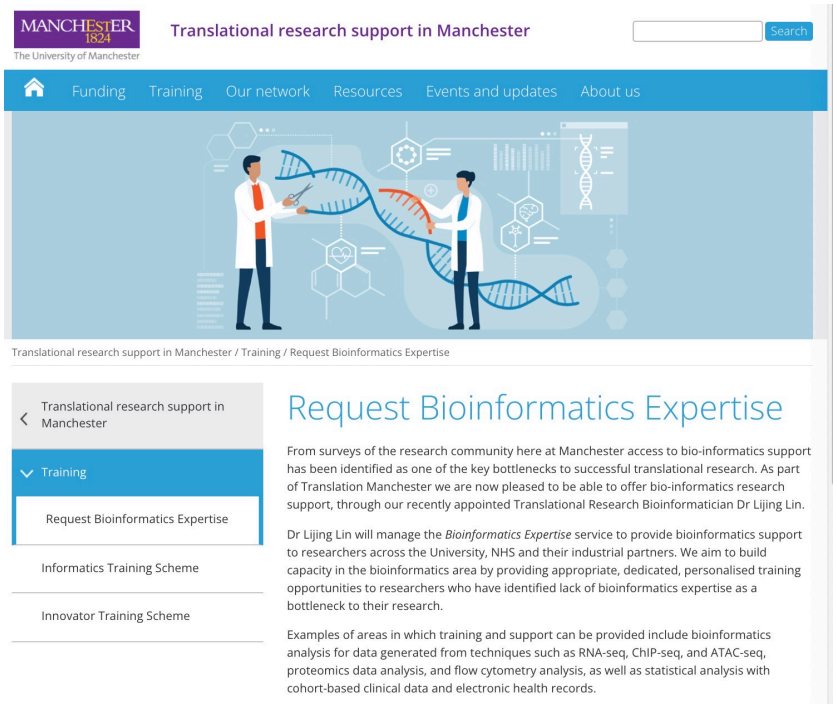
- Focus on training/support
- Aim to build the capacity and help researchers across the University to carry out their **own independent analysis**

How to apply

- Visit

  https://www.translation.manchester.ac.uk/training/request-bioinformatics-expertise/

- Fill in the application form providing details of research project and requirements in advance and return to translation@Manchester.ac.uk
- We assess the needs and arrange for an initial discussion, and
  - signpost relevant training
  - provide materials
  - arrange further discussions/follow-up support if needed.



Training opportunities

https://www.translation.manchester.ac.uk/2022/03/15/bioinformatics-training-availability-overview-2022/

BioinformaticsTraining 2023 .XLSX

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B30 | 17 - 21 July 2023 (Appl. by May 15, 2023)

	A	B	C	D
21			**Recent training courses**	
22		**July**		
23	Bioinformat NEW	10 July -- 14 July 2023	Functions, signatures and biomarkers	BSI
24	Bioinformatics	10 - 14 July 2023	Hands-on Data Analysis for Metabolic Profiling	Imperial College London
25	R	(3 sessions) 12 - 14 July 2023 (booking not op	Core Statistics using R (ONLINE LIVE TRAINING)	Cambridge
26	Bioinformati NEW	14 -- 17 July 2023 (Appl. by 30 May)	Health Data Research UK-Roche Summer School (single-cell imaging ana	HDR UK
27	Python	25 - 28 July 2023 (4 half days)	Introduction to Python	Babraham Institute
28	AI & ML	31st July 2023	10X single cell RNA Seq Data Analysis	Babraham Institute
29	AI & ML	18 July 2023	An Introduction to Machine Learning for Biologists	Babraham Institute
30	AI & ML	17 - 21 July 2023 (Appl. by May 15, 2023)	ELLIS Summer School on Probabilistic Machine Learning	ELLIS Cambridge Unit
31		**August**		
32	Bioinformatics/Pythor	Two weeks from 7 August 2023	Command-line omics, Linux and Python	BSI
33	Bioinformatics	Two weeks from 21 August 2023	Glasgow Bioinformatics Summer School 2023	University of Glasgow
34	AI & ML	24 Aug 2023	An Introduction to Machine Learning for Biologists	Babraham Institute
35		**September**		
36	Python/Bioinformatics	18 - 22 Sep 2023	Single cell RNA-seq analysis using Python	EMBL/EBI
37	Python	19 - 22 Sep 2023	Introduction to Python - Virtual Classroom	RSS
38	R	19 - 22 Sep 2023	Programming in R - Virtual Classroom	RSS
39	R/Stats	27 - 28 Sep 2023	Introduction to Bayesian Analysis using Stan - Virtual Classroom	RSS
40	R	5 - 12 Dec 2023	Advanced Programming in R (VIRTUAL CLASSROOM))	RSS
41	Statistics	Mon 09 Oct - Fri 01 Dec 2023 Weekly	Introduction to Statistics for Health Care Research	Oxford University
42	Statistics	11 - 12 Oct 2023	Bayesian Meta-Analysis - Virtual Classroom	RSS
43	Statistics	4 - 15Oct 2023	Survival Analysis	RSS
44	Python	13 - 16 November 2023	Intermediate Python - Virtual Classroom	RSS

https://www.translation.manchester.ac.uk/2022/05/31/bioinformatics-training-collection/

Self-learning materials

A Collection of Bioinformatics Learning/Training Materials

Preface

1. Here is a curated list of **bioinformatics learning/training materials**, which are:

- from university & institution training courses (preferably with a GitHub/GitLab repository), or
- shared via an online registry, e.g ELIXIR's TeSS, GOBLET portal, OER commons etc; and
- free to use and relatively sufficient for self-learning.

2. We broadly organize the materials into five main categories of bioinformatics skills. Click the links below for more detailed lists in each category, including some brief notes to the courses.

Any contribution to this list is highly appreciated.

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TranslationManchester

Informatics Training Scheme

TranslationManchester
Informatics Training Scheme

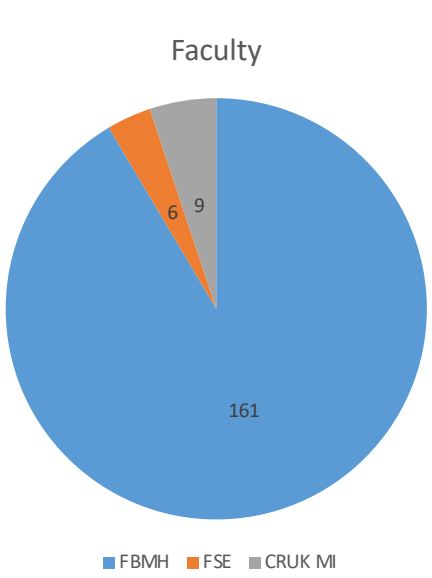
- This scheme has been established to provide researchers with **informatics training and skills** which they can apply to their research projects.
- Successful applicants will be offered a place on the scheme and the teaching fees will be covered by Translational Manchester.
- Places on the scheme are funded per unit, each applicants can apply for a maximum of two units.

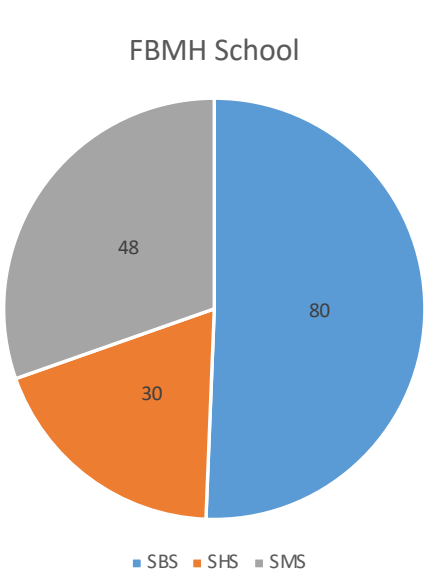
	2019	2020	2021	2022
Units on offer	16	24	27	32
Awardees	25	46	48	51
Total number of places awarded	42	71	76	88

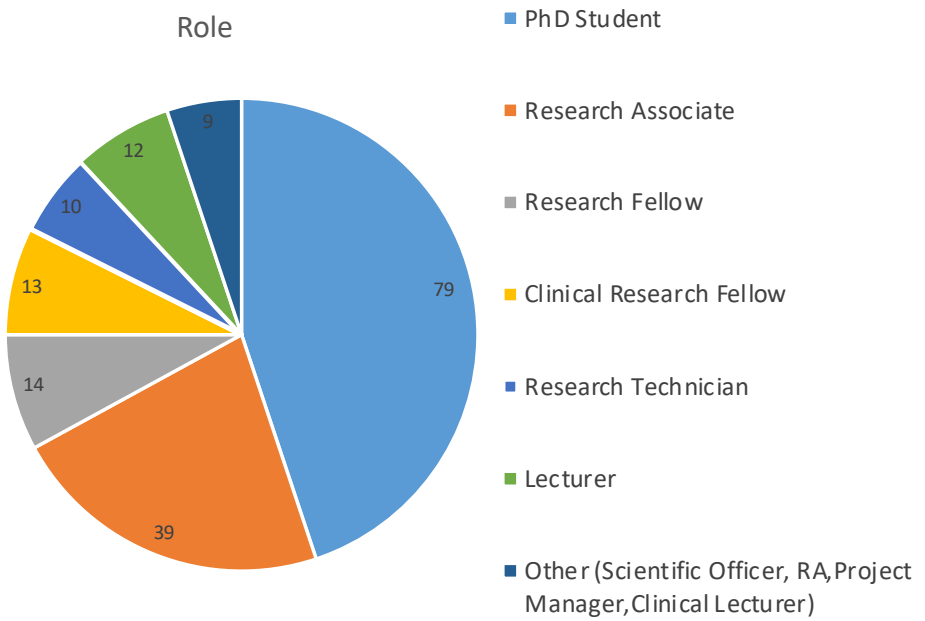
Eligibility

- UoM students (PhD) and Staff (including honorary positions)
- PhD course or contract extending beyond end date of selected units
- Involved in projects with translational relevance

Applicants distribution the past 4 years:







How do I apply?

1. **Visit:** https://www.translation.manchester.ac.uk/training/informatics-training/

2. Read the scheme **Terms and Conditions (link here)**

3. Use the brochure (link here) to select **up to two units**

4. Complete and submit the online application form (**includes support statement**)
   - Application deadline **5pm August 4th, 2023**
5. At the end of your training, you will be asked to complete an end of training report.

TranslationManchester

Informatics Training Scheme 2023

What happens next?

- We will review applications and offer places based on the criteria and course capacity / demand
- Where possible you will be enrolled on your chosen units, or alternative courses will be offered
- Translation Manchester will automatically enrol you as student at the University
- University admissions team will send you offer letter and instructions to register on our programme
- You will need to complete the registration shortly after receiving the offer letter- this will involve **right to study** and **criminal record checks** (University standard procedure for students)

How do you select successful applicants?

1. Please provide a brief outline of the research project that this training is intended to support *(word limit 150).*

2. Which translational research skills are you seeking to gain or develop from the course(s) and how will these skills be implemented in your research to enable progression along the translational pipeline *(word limit 150)?*
Would these new skills be immediately beneficial to a project or data set that you are working on now?

3. Please provide a statement of support from your Supervisor/Manager/Head of Group *(word limit 150).*

Please include a short statement as to how the applicant's attendance on this course will support and progress translational research activity in your wider department/group/lab.

This field is not needed if the applicant is Fellow or above

- Relevance to translational research.
- Potential for progression in the translational pathway.
- Support statement from PI.
- Courses capacity

Courses and Units

Dr Mudassar Iqbal
Lecturer in Health Data Sciences and Academic Lead for the Informatics Training Scheme

MSc Bioinformatics and Systems Biology (SBS)

Programme director: **Dr David Talavera & Dr Jean-Marc Schwartz**

This course aims to:

- provide a biological background to the data types of genomics, proteomics and metabolomics;
- develop the computational and analytical understanding necessary as a platform for processing biological data;
- demonstrate applications and worked examples in the fields of bioinformatics and systems biology, integrating with student involvement through project work.

The taught part of the course runs from September to December and consists of 60 credits delivered from four 15-credit units, all of which are open to application in this scheme.

Units on Offer	Unit Code	Start Date	End Date	Difficulty level
Programming Skills	BIOL60201	25/9/23	15/12/23	●
Bioinformatics	BIOL60791	25/9/23	15/12/23	●
Statistics & Experimental Design	BIOL65161	25/9/23	08/12/23	●●
Computational Approaches to Biology	BIOL66021	25/9/23	15/12/23	●●

PG Cert Clinical Bioinformatics (SHS)

Programme director: **Dr Michael Cornell**

Course overview

Our fully-online PGCert is a practical, clinically-focused course aimed at providing the necessary skills to produce high quality bioinformatic workflows to analyse and interpret clinical genomic data.

Studying units such as next generation sequencing and an introduction to programming, you'll extend your knowledge of critical methods of genomic analysis.

Units on Offer	Unit Code	Start Date	End Date	Difficulty level
Introduction to Clinical Bioinformatics	IIDS60100	May 24	August 24	●●
Introduction to Health Informatics	IIDS60110	04/09/23	12/11/23	●●
Introduction to Programming	IIDS60120	20/11/23	16/02/24	●●
Introduction to Next-Generation Sequencing	IIDS60130	26/02/24	17/05/24	●

1

Introduction to clinical bioinformatics

- Provide background knowledge of human genomics with particular emphasis to the clinical setting
- Application of next generation sequencing technologies in the clinic
- Introduction of basic next generation sequencing and how resulting genomic data is analysed

2

Introduction to health informatics

- Health informatics and the influence on the delivery of healthcare
- The electronic patient record and the importance of coding healthcare delivery consultations
- The human and organisational factors that are considered when introducing informatics solutions

3

Introduction to programming

- Introduction to programming
- Safe and effective software development practice
- Develop practical programming skills

4

Introduction to next-generation sequencing

- Extend your knowledge of the wide range of bioinformatics pipelines, tools and resources
- How these tools are used by clinical bioinformaticians to support patient-centred care, diagnosis and treatment
- Look at the ethical and confidentiality issues that arise with such sensitive data

Master of Public Health (SHS)

Programme director: **Professor Arpana Verma**

This course meets the training needs of health professionals around the world who are interested in a career in public health or those seeking new skills in this area.

Here, 6 units have been selected for inclusion in the scheme.

Units on Offer	Unit Code	Start Date	End Date	Difficulty level
Fundamentals of Epidemiology	POPH60991	02/10/23	20/05/24	🟢🟡
Digital Public Health	POPH65022	05/02/24	20/05/24	🟢🟡
Implementation Science	POPH64551	02/10/23	15/01/24	🟢
Practical Statistics for Population Health	POPH60982	07/02/23	24/04/23	🟡
Applied Epidemiology	POPH60112	05/02/24	20/05/24	🟡🔴
Qualitative Research Methods	POPH63121	02/10/23	-15/01/24	🟡

Unfacilitated Self-paced Courses

Research Methods

Programme director: **Frances Hooley**

5 CREDITS

Units on Offer	Unit Code	Start Date	Difficulty level
Introduction to Statistics	RM1-STAT		●
Introduction to Python Programming	RM2-PHYT		●
Introduction to Machine Learning	RM3-MLEA		●

Massive Open Online Courses (MOOCs)

Programme director: **Professor Andy Brass**

The courses are freely accessible online.

Please notify us via email, or in the form, if you register for a MOOC course, you do not need to be awarded a place on the scheme to register and take part in these free courses. You will be asked to complete the end of the training feedback report.

Units on Offer	Unit Code
Clinical Bioinformatics: Unlocking Genomics in Healthcare	MOOC1
AI for Healthcare: Equipping the Workforce for Digital Transformation	MOOC2

Making the right choice: Overlapping content in multiple courses

MSc Bioinformatics & Systems biology

- Programming Skills
- Bioinformatics
- Statistics & Experimental Design
- Computational Approaches to Biology

Research Methods

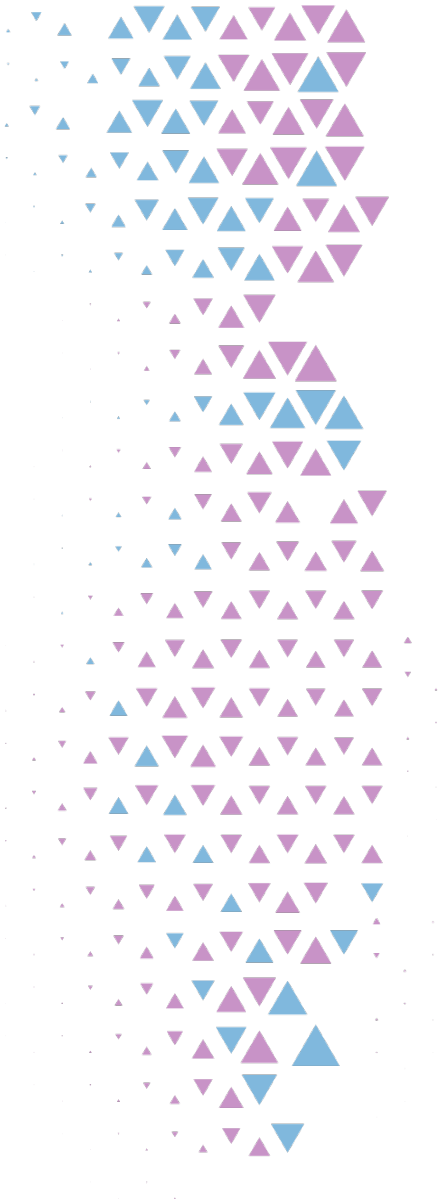
- Introduction to Statistics
- Introduction to Python Programming

PGCert Clinical Bioinformatics

- Intro to Clinical Bioinformatics
- Introduction to Programming
- Introduction to Health Informatics
- Introduction to Next Generation Sequencing

Q and A

Please use the chat function to submit your questions



FAQs -- Units

- How do I choose the unit that are most relevant to me?
- Are previous coding/informatics skills required?
- To what extent is RNAseq analysis covered? (Tutorial)
- Are there specific R based courses for cytof datasets?
- Which course(s) would you recommend to someone with basic knowledge in R programming and proteomics data? I would like to become more comfortable with using R and applying it to large scale proteomics data.

Q from previous information workshops

- I am planning to generate some multi-omics data. Shall I wait to join the scheme after the data are generated?

- For individual units in a course, is it **required** to take the preceding 'basic' units e.g. do I need to take "Bioinformatics" unit in order to qualify for the "Computational Approaches to Biology" unit within the MSc Bioinformatics and Systems Biology course?

- Could you please let me know what are the major differences between *Self-paced course Introduction to Statistics* and *Statistics & Experimental Design BIOL65161* in terms of the course material? I was wondering whether the BIOL65161 is a more in-depth course or they cover the same material? And if the BIOL65161 is a higher-level course, would it be possible to complete the unit at a more flexible pace?

- I am not inexperienced in Stats but would like to expand my experience and skillsets in experimental design. Will the *Statistics & Experimental Design* be good fit for me?

FAQs - Admission/Admin

- Modality: synchronous or asynchronous?
- Will I be asked to provide feedback at the end of my participation in the scheme?
- Will there be any face-to-face tutorial/workshops/practicals or lectures held on campus that I am expected to attend?
- Is this open to final year PhD students?
- How are the teaching fees associated with my place on the scheme paid?
- My supervisor is on annual leave and won't be able to provide a statement of support before the application deadline. Can I still apply?
- How many places are available on each on the units?
- If I am offered and accept a place on the scheme, what happens next?
- If there are no places available on the units I apply for, can you offer me a place on a related unit that still has places available?
- My current contract ends during the teaching period of the unit I am interested in, can I still apply?
- Considering there are no formal assessment requirements for this scheme, how will the assessment be carried out?
- Will there be purely online sessions?
- Would I benefit from having these skills formally acknowledged by these qualifications on my CV?

FAQs – Admission/Admin

- When does teaching start on each on these units?
- How is the decision made on who to offer places to?
- When can I expect to hear the outcome of my application?
- Do I have to take part in the assessments?
- Do I have to take part in the online group discussion forms?
- How do I access the online course?
- Do I need to submit an application to take part in the MOOCs?
- How much time do I need to commit to the training?
- Can I apply for more than one unit within a single course?

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wellcome