# MS913-10 Translational Biomedical Research & Diagnostics

## 24/25

**Department**
> Warwick Medical School

**Level**
> Taught Postgraduate Level

**Module leader**
> Robert Dallmann

**Credit value**
> 10

**Module duration**
> 8 weeks

**Assessment**
> 100% coursework

**Study location**
> University of Warwick main campus, Coventry

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# Description

## Introductory description

Translational medicine lies at the interface between basic research (understand the mechanisms of disease development) and pre and clinical research, aiming to assess the efficiency and safety of new treatments for patients. This collaborative discipline is essential to translating scientific discoveries into new diagnostics tools and treatments that improve patient health/care. The module intends to provide students with an advanced knowledge of the technologies and approaches used in translational medical science, in particular in the fields of precision medicine and diagnostics; and an understanding of key preclinical and clinical science principles underpinning prevention, diagnosis and stratification of disease.

The module will provide advanced knowledge of cutting-edge scientific techniques and their applications, and the understanding of the ethical concepts and regulations essential for translational medical research. The sessions (lectures, seminars and tutorials) will be delivered by experts academics, clinical academics and members of the Innovation Hub at UHCW, members of the PathLake centre of excellence and the Institute of Precision Diagnostics and Translational Medicine and external academics from UKHSA's Rosalind Franklin Laboratory. Students will be assessed by a 3,000-word impact case study in a particular topic of translational medicine, demonstrating their understanding of translational biomedicine and the associated ethics and regulations.

# Module aims

The module aims to:
i) provide advanced understanding of new technologies and methodologies in the field of translational medicine to enable translation of discovery science; and
ii) train students into the ethics and regulations around the use animal models, clinical research and the understanding of the phases of the transitional pathways (i.e.; transition between basic science, preclinical and clinical studies).

# Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module content will focus on innovative technologies and methologies in translational medicine, which are developing rapidly. Sessions and topics will be revised periodically for the module to remain up-to-date , but the syllabus will include approaches that will foster and generate interdisciplinary research in translational medicine. This will include tissue engineering and regenerative technologies, biomaterials; digital pathology and artificial intelligence applications for precision diagnostics; analytical devices and biomarker development for early disease diagnosis. Students will also receive training in the concepts underlining P4 systems medicine, UKRI legal framework covering the use of human organs and tissues, animal ethics and other ethical issues related to translational research including informed consent, confidentiality and data protection.

# Learning outcomes

By the end of the module, students should be able to:

- Demonstrate advanced knowledge of technologies and methodologies in translational medical science
- Critically appraise, interpret data and analyse research findings in various translational medicine topics
- Demonstrate advanced knowledge of translational research ethics and regulations

# Indicative reading list

Due to the nature of this module, most reading material will be in the form of reviews or primary articles. These will regularly change to reflect the most up to date discoveries. Therefore, details of reading material will be given to students during the lectures/tutorials and other activities.

# Interdisciplinary

The module will allow students to learn techniques that are multidisciplinary in nature in order to answer problems in biomedical research or healthcare.

# Subject specific skills

1. Acquire current knowledge and awareness of techniques, methodologies and approaches in translational medicine
2. Ability to criticallly appraise current technologies to answer biomedical questions and translate basic science to preclinical and clinical research;
3. Understand the multi and interdisciplinary aspects of translational research
4. Knowledge of translational medicine framework

# Transferable skills

1. Apply appropriate methodologies and techniques to solve a problem
2. Adapt to the constant and rapid evolution of biomedical techniques
   3.Understand and appraise the necessity for continuous professional development in a field that is developing rapidly
3. Demonstrate interdisciplinary knowledge

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# Study

## Study time

| Type | Required |
|---|---|
| Lectures | 9 sessions of 3 hours (27%) |
| Seminars | 5 sessions of 1 hour (5%) |
| Online learning (independent) | 3 sessions of 1 hour (3%) |
| Private study | 25 hours (25%) |
| Assessment | 40 hours (40%) |
| Total | 100 hours |

## Private study description

Students will use their private study time to prepare for the sessions ( if required by the session leads) and/or study additional materials (e.g.; articles and/or solving problems and analysing data set) after the session.
Students will dedicate the remaining of their study time to the preparation and the submission of their formative assessments (see assessment time)

## Costs

No further costs have been identified for this module.

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# Assessment

You do not need to pass all assessment components to pass the module.

## Assessment group A1

| Assessment component | Weighting | Study time | Eligible for self-certification |
|---|---|---|---|
| Translational Medicine-Impact Case | 100% | 40 hours | Yes (extension) |

3,000- words impact case to demonstrate advanced understanding of complex scientific concepts in a chosen translational medicine field or technique, and their added value and impact and ethical considerations.

**Reassessment component is the same**

### Feedback on assessment

Standardized rubrics will be used to mark and provide feedback (including individualized feedback) on the impact case. The impact case will be marked and the module lead will moderate marks and feedback. Feedback throughout the module and after assessment will be available to students on request. Every student who fails an element of assessment will be offered an appointment with the Module Lead for face-to-face feedback.

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# Availability

# Courses

This module is Core for:

- Year 1 of TMDA-B91Z Postgraduate Taught Interdisciplinary Biomedical Research