

Edinburgh Imaging

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Translational Imaging and Clinical Trials

Semester 2 / January

10 Credits

Each Course is composed of Modules & Activities.

Modules:

Experimental Imaging	IMSc	NI4R
Surrogate Outcomes Stroke	IMSc	NI4R
Surrogate Outcomes: Schizophrenia	IMSc	NI4R
Other translational methods	IMSc	NI4R
Quality and bias in animal research	IMSc	NI4R

Each Module is composed of Lectures, Reading Lists, MCQ self-assessments, & Discussion Boards.

These Modules are taught on the following Programmes, or are incorporated into blended Courses which teach students enrolled outwith the Edinburgh Imaging Academy:

- NI4R - Neuroimaging for Research programme
- IMSc - Imaging programme

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Modules:

Experimental Imaging:

Overview
Applications

Surrogate Outcomes Stroke:

Introduction and example from stroke: part A
Introduction and example from stroke: part B

Surrogate Outcomes: Schizophrenia:

Surrogate outcomes in Schizophrenia

Other translational methods:

Translational MR – the challenge of SNR

Quality and bias in animal research:

Critical thinking – introduction

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Experimental Imaging

Lecture 1

Title: Overview

Description: Overview of preclinical imaging

Author(s): Dr. Maurits Jansen

Learning Objectives

- Understand differences between small animal and human imaging
- Know how MR experiments are performed in animals
- Understand applications of cardiac cine MR in animals

Lecture 2

Title: Applications

Description: Recent applications & techniques

Author(s): Dr. Maurits Jansen

Learning Objectives

- Know what is meant by cell tracking
- Describe examples of experimental imaging
- Describe the term molecular imaging
- Describe manganese enhanced MR

Surrogate Outcomes Stroke

Lecture 1

Title: Introduction and example from stroke: part A

Description: Pitfalls and potential benefits of imaging as a surrogate outcome in treatment trials

Author(s): Prof. Joanna Wardlaw

Learning Objectives

- Outline characteristics of a perfect imaging surrogate for stroke trials
- Discuss limitations of DWI imaging as a surrogate outcome in stroke in relation to these characteristics

Lecture 2

Title: Introduction and example from stroke: part B

Description: Pitfalls and potential benefits of imaging as a surrogate outcome in treatment trials

Author(s): Prof. Joanna Wardlaw

Learning Objectives

- Discuss other advantages and limitations of DWI/PWI mismatch for patient selection in stroke trials
- Outline how practicalities can limit the use of imaging in acute stroke trials

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Surrogate Outcomes: Schizophrenia

Lecture 1

Title: Surrogate outcomes in Schizophrenia

Description: Pitfalls & potential of neuroimaging as a surrogate outcome in schizophrenia

Author(s): Prof Stephen Lawrie

Editor(s): Dr Andrew Farrall

Learning Objectives

Name common imaging techniques used to investigate schizophrenia

- Discuss key Edinburgh High Risk Study outcomes
- List potentials and pitfalls of imaging research in schizophrenia
- Describe advantages and disadvantages of multi-centre imaging
- Know why parallel computing is important

Other translational methods

Lecture 1

Title: Translational MR - the challenge of SNR

Description: Review of what is different between human and animal MR

Author(s): Prof Ian Marshall

Editor(s): Dr Andrew Farrall

Learning Objectives

On completion of this lecture, you should be able to:

- Discuss special challenges of imaging small research animals
- Describe why the signal-to-noise ratio (SNR) is an issue
- Explain what can be done to achieve sufficient SNR

Quality and bias in animal research

Lecture 1

Title: Critical thinking - introduction

Description: Pitfalls & problems in translational medicine: what we have learned from stroke drug trials

Author(s): Prof Malcolm MacLeod

Editor(s): Dr Andrew Farrall

Learning Objectives

- Describe methods for critically appraising & evaluating literature with a view to translational research
- Distinguish between association & causation
- List biases which affect interpretation & translation of animal research
- List benefits of meta-analysis
- Describe clinical trial design optimisation based on review of available literature