CPD MODULE: Models of Neurodegenerative Diseases

Module Handbook

Contents

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CPD module Aims and Objectives

This module will introduce you to the following aspects and topics of models of neurodegenerative diseases from the scientific laboratory angle:

- Ethics of animal models
- Zebrafish
- Rodent
- Large animals

We will not only look at the similarities and differences or strengths and weaknesses of these different models but they will also be shown in context of various neurodegenerative diseases that you should be familiar with including PD, MND, MS and AD.

You will learn about:

- Multiple model systems used to mirror neurodegenerative diseases
- Pros and Cons of the various models
- Ethics of animals in research

Learning Outcomes

We are basing the learning outcomes under the SCQF regime and each learning outcome (LO) falls into one of five characteristics:

1. knowledge and understanding (mainly subject based);
2. practice (applied knowledge and understanding);
3. generic cognitive skills (e.g. evaluation, critical analysis);
4. communication, numeracy and IT skills; and
5. autonomy, accountability and working with others.

Upon completion of this module the student should be able to:

- Demonstrate critical understanding of multiple models of neurodegenerative diseases, with respect to the scientific and clinical settings (LO 1, 4)

- Understand and compare the strengths and weaknesses of these various models (LO 1-5)

- Evaluate, criticise and appraise the literature around this topic (LO 4 & 5)

- Communicate and engage with the course's concepts and principles with others out with their own field (LO 4 & 5)

- Evaluate, criticise and communicate with others various justifications for the use of animals in research (LO 4 & 5)

	Topics

1	General Module introduction and Ethics:
	   1. Welcome and Hello
	   2. Ethical and Legal considerations of animals in research

2	Non-mammalian animal models: 1. Zebrafish models and tools

3	Small mammalian models of ND part 1:
	   1. Mini-Quiz-1
	   2. AD models

4	Small mammalian models of ND part 2:
	   1. MND
	   2. Mini-Quiz-2
	   3. MS

5	Small models part 3 and large animal modelling
	   1. PD
	   2. Mini-Quiz-3
	   3. Large animal modelling

6	Useful tools for analysing models
	   1. Basic pathological quantification
	   2. Introduction to e-phys
	   3. Behavioural testing
	   4. Mini-Quiz 4

Assessment for this Module

You will find embedded throughout the sections little mini quizzes. It is expected that you will take these quizzes in their appropriate place as you progress through the module.

It is important that you gain a pass mark of 70% for each quiz and you will only have two attempts allowed at each quiz.

Please don't just try and pass all the quizzes without engaging with the material as you will significantly lose out on the rich array of material that has been made available to you at great expense to our time and effort.

If you do fail a mini quiz more than twice then do not panic, you will need to contact the CPD administrator Catherine Renton (see contact details above) to deal with any issues that may have arisen and to make sure that you have engaged with and understood all of the material fully.

Recommended Reading

Each lecture will contain specific references. Interacting with lecture materials is vital for developing your understanding of the literature supporting each area. Students are not expected to read every reference given but should focus on specific areas of interest and read about those areas in much greater depth. Please do remember the reference list at the end of every paper.

The majority of papers should be available as pdfs online via the University of Edinburgh library (electronic journals) and/or PubMed