Clinical Neuroscience

Reading and assessment

Dr Helen Cassaday (5 sessions)

- For supporting materials (eg pdf files of key references) please be sure you have access to psychology ‘class-share’ (if not see Alexia Melling: tel 15321, room 203, e-mail axm@psychology.nottingham.ac.uk).

- The general learning objectives of each lecture will relate to the likely kinds of exam question. Questions from past exams on the relevant topics are given with the references listed by session below, to guide your reading and remind you of the required depth.

- Look at past papers to find further sample questions, but don’t be distracted by questions on topics that we do not cover this year. From 2004, papers have the new format with Section C seen questions (to be set by the class). That is the format that we use this year too.

- There will be handouts of the slides (based on estimated numbers). These will also be available in class-share.

- For good 2.1 - 1st answers, you need to go beyond the material covered in the lectures with further reading and understanding. This reading should usually include recent research published in journal articles.

- Suggested reading is given below but you are free to direct your reading around the subjects covered in the lectures. Use Web-based searches for up-to-date findings, but always read some of the older references first so you know the relevant background.

- Understanding and detailed knowledge will be required for success in the exam, but the exam questions are usually general. They invite you to present an argument supported with evidence of your choosing. They are not intended to catch you out.

- Ask questions in lectures at any time. You can also see me afterwards in my ‘office hour’ (Mondays 4-5 pm).

- Please do not send e-mails. I will not be able to answer them. You can also use the class-share ‘Questions’ file (in Clinical Neuroscience folder) – just write your question there.

READING

Journal articles should all be available either electronically or in the George Green or Greenfield Medical libraries. Some older articles are available on short loan. The librarians have also made duplicates of some over-used references (again these should be on short loan).

The majority of the suggested articles are already available in pdf references folder available on class-share, and you can add to this when you find references of interest.

1. Behavioural Memory and the Hippocampus


Matching task variants as tests of working memory:


Role of hippocampus and other structures in working memory:


Alternative non-spatial tests:


*Example questions:*

Is there any good evidence for non-spatial theories of hippocampal function?
Does the hippocampus have the same functions in rat and human?

2. Bio-associative Models

Conditioning and addiction:

Conditioned immune reactions:

Example questions:
What does Pavlovian conditioned responding have to do with physiology and pharmacology?
Consider the role of associative learning in EITHER (a) drug addiction OR (b) immune reactions.
“The fact that Pavlovian conditioning involves simple reflexive behaviour has led many people to dismiss it as unimportant.” Discuss.
3. Animal Models of Depression


**Stress-based models:**

**Stress and hippocampal neurogenesis:**

**Alternative model:**

**Genetic approaches:**
Gingrich, J.A. and Hen, R. (2001). Dissecting the role of the serotonin system in neuropsychiatric disorders using knockout mice. *Psychopharmacology*, **155**, 1-10. [shows serotonergic system likely to be involved in a variety of disorders, some clinically associated with depression.]

*Example questions:*
How should we decide whether animal models of depression are useful? 

Compare and contrast two animal models of depression.

4. Animal Models of Schizophrenia


OR


Latent inhibition:


Pre-pulse inhibition:


Developmental models:


Role of hippocampus in cognitive impairments:

*Example questions:*

‘Animal models of depression have been quite successful, but it makes no sense to try to investigate schizophrenia in the rat.’ Discuss.

*How should we decide whether animal models of schizophrenia are useful?*

**5. Seminar**

Approaches to understanding disorder

Advantages and disadvantages of different approaches and methods

Group work to prepare 10 min presentation to critique general approaches (e.g., animal modelling) or techniques (e.g., fMRI)

**Human work:**

- Psychiatric or neurological groups
- Post-mortem studies
- fMRI (brain scanning)
- Human psychopharmacology (drug studies)
- Twin studies

**Animal work:**

- Behavioural neuroscience (lesion studies)
- Psychopharmacology (drug studies)
- Brain micro-injections
- Dialysis (to measure neurotransmitters in vivo)
- Targeted gene deletion

*Example questions:*

*How can techniques in psychopharmacology and behavioural neuroscience advance our understanding of psychological and psychiatric disorders?*

*Illustrate the importance of convergent evidence in the study of clinical neuroscience.*

**THERE WILL BE A METHODOLOGICAL QUESTION ON THE EXAM**