Introduction

2004

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Course Locations

• Lectures Mon 11 am
  Woolnough L. Th. Geography and Geology
• Lectures Wednesday 9 am
  Woolnough L. Th. Geography and Geology
• Practical Labs ANHB dept. Fri. 2-4
• Those with clashes with one of the labs or lectures to fill in a “clash form” indicating the nature of the clash.
The Web Site

• Please e-mail me with comments or any errors
• Will be used for communication
• Timetables/handouts/lecture notes/exam details etc.

Books

• It is impossible to do the practical component without some sort of text book
• Recommended texts are:
  • The human brain (an introduction to its functional anatomy) by John Nolte Published by Mosby, now in 5th edition OR
  • Neuroanatomy an Illustrated Colour Text by A R Crossman and D Neary (Churchill Livingstone)
• Many other neuroanatomy textbooks are suitable, however many are more orientated towards medical rather than science courses. A list is provided in the course handbook
Alternative books

• Look for these second hand
  – Neurobiology by Shepherd
  – Neuroanatomy, basic and clinical by Fitzgerald
  – Neuroanatomy for Medical Students by Wilkinson
  – Neuroanatomy by Snell
  – Basic Clinical Neuroanatomy by Young & Young
  – and many others……..

Different sorts of Books (see handbook for details)

• Photo atlases
  – A colour atlas of the brain and spinal cord by England and Wakely
  – (out of print)
• Drawing Books
  – A colouring book of the brain
  – Neuroanatomy, a functional atlas, by Poritsky
• Atlases
  – Neuroanatomy, an atlas of structures, sections and systems by Haines
  – The human brain in photographs and diagrams by Nolte and Angevine
• Neuroscience (as opposed to neuroanatomy) texts
  – Neuroscience, an illustrated guide, by Barker
  – Fundamental neuroscience by Zigmond et al is a 3rd yr book
  – so is Principles of neuroscience by Kandel, Shwarz and Jessel
  – (they are also both huge and scary!)
The learning contract

- Please read this
- If you wish to amend it please e-mail me, I will then put this to the class
- Essentially you need to accept your own responsibility for learning
- Lectures are only the start
- Lecture notes are only there to emphasise the main points.

Aims of the Course

- To gain a basic vocabulary in neuroanatomy
- To learn the basic “geography” of the CNS
- To have an internal concept of the way the CNS is laid out (tested in practicals)
- To have an overview of the way this structure is related to function
- To prepare you for third year neuroscience courses
- To interest you in neuroscience
- To contribute as a “scientifically” educated citizen to debates about neuroscience issues
Exams

- Formative (to help you learn and should match the objectives)
- Summative (to measure your ability, a hurdle to pass)
- All exams have some of both aspects but the in course assessments will only count a small amount towards your final mark, they are formative.
- The final exam gives you your mark, it is used to allow you in to further units, it is summative.

Examination Format

- In course assessment
  - MCQs/Self marking practical exam 5% of mark
  - Week 8
- Final Exam
  - MCQs, short questions, diagrams to label
  - Short Essays from a wide choice
  - Practical exam, specimens labelled 1-3
  - Questions WILL be about function as well as structure and names.
Why study neuroscience?

- One of the last “scientific frontiers”
- Wonders of a live “thinking” organism
- Understanding ourselves
- Clinical problems such as Alzheimers, Schizophrenia, depression
- Social problems, violence, suicide, addiction

The History of Neuroscience

- Originally thought of as a syncytium, a continuous fused network
- Golgi and Cajal found ways to stain single cells and showed that the “web” could be analysed
- Specific labels and tracers have transformed the way we do neuroanatomy
Scientific/philosophical issues

- What is a “soul”?
- Is the “mind” a machine?
- If the “mind” is a machine do we have free will?
- What does this mean for concepts such as good and evil?
- If there is no such thing as a ‘bad’ machine, how does this affect punishment issues?
- Is the brain understandable by a brain?

Studying the very complex

The behaviour of complex systems, is very hard to predict (chaos theory, weather prediction etc.)

Reductionism may not help, destroying the very thing you are trying to study
Studying the very small

- At the quantum level, behaviour is unpredictable, remote observations can be linked.
- Does this affect cells and molecules (linkage between observation and behaviour at the quantum level, Roger Penrose and the “Emperor’s Mind”)
- No proof that it does?

Clinical and Scientific problems

- Alzheimer’s Disease
- Bovine Spongiform Encephalitis (‘Mad cow disease’)
- Depression
- Suicide
- Schizophrenia
- Addiction
- Stroke
- Spinal injury
- What is memory?
- How do we see?
- Why do we sleep?
- Why can’t our CNS regenerate?
- How do we “grow a brain”?
- How do nerve fibres know where to go?
- How did we evolve?
Human Neurobiology 910.217

Labs

- In the Anatomy and Human Biology Dept.
- Please wear a white coat (allowance made week 1 ONLY)
- Please wear name badges (allowance made week 1 ONLY)
- Basic instruments needed
- A text book