Introduction

2005

Professor Stuart Bunt

Course Locations

- Lectures Mon 9 am Fox L Th. Arts
- Lectures Wednesday 11 am Social Sciences LR1 (lecture room 1)
- Practical Labs ANHB dept. Mon.11-1
- Those with clashes with one of the labs or lectures to fill in a “clash form” indicating the nature of the clash. Pharmacology students leave early or use iLectures

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 Portsky
- 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 Alzheimer’s, 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 "Emperors 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?

Labs

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