NST 1B Experimental Psychology
Practical 1

Introduction to Neurobiology
(and general introduction to the practical course)

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Thu 7/Fri 8 October 2004
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On the web…

www.psychol.cam.ac.uk

- General information and course booklets (→ Undergraduate Teaching)
- Timetables and handouts (→ Teaching Resources)
- Exam information (with past papers) (→ Teaching Resources → Examination Detail)

pobox.com/~rudolf/psychology

- My handouts/slides (also linked from main page)
About the practical course

- ‘Real’ practicals

- Practical reports; assessment (~10% of the course)

- Statistics practicals (boo, hiss)

- Statistics and experimental design in the exams. Compulsory; numerical stats (no choice of question), and experimental design (with choice of question).
Two handouts:
• *Introduction to Neurobiology* (for today)
• *Statistics booklet*
  • don’t panic! Boring, maybe, but not scary.
  • about the statistics course…
  • learning experimental design… as you go, plus booklet sections 1 & 9
  • correction (p1): stats practical 2 is on *Wed 1 Dec*, not Fri 1 Dec
  • please read section 1 (Background) before the first stats practical. Note that *wavy line* bits can be skipped!
  • *bring booklet/calculator* /data along
<table>
<thead>
<tr>
<th>Ion</th>
<th>Internal concentration</th>
<th>External concentration</th>
<th>Valence (z)</th>
<th>Equilibrium potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na⁺</td>
<td>15 mM</td>
<td>150 mM</td>
<td>+1</td>
<td>+62 mV</td>
</tr>
<tr>
<td>K⁺</td>
<td>150 mM</td>
<td>5.5 mM</td>
<td>+1</td>
<td>-89 mV</td>
</tr>
<tr>
<td>Cl⁻</td>
<td>9 mM</td>
<td>125 mM</td>
<td>-1</td>
<td>-71 mV</td>
</tr>
<tr>
<td>Ca²⁺</td>
<td>10⁻⁴ mM</td>
<td>1 mM</td>
<td>+2</td>
<td>+124 mV</td>
</tr>
</tbody>
</table>
terminal branch of axon

incoming action potential

calcium influx via voltage-gated ion channels

vesicles full of transmitter fuse with presynaptic membrane, releasing transmitter into synaptic cleft

receptors on postsynaptic membrane

dendritic spine
Weak synapse

Strong synapse

"When an axon of cell A is near enough to excite cell B, or repeatedly or consistently takes part in firing it, some growth process or metabolic change takes place in one or both cells such that A's efficiency, as one of the cells firing B, is increased."

Hebb, 1949