UCL SUMMER SCHOOL

NERVE INJURY TREATMENT

Key Information

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<th>Key Information</th>
<th>Details</th>
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<tr>
<td>Module code</td>
<td>ISSU0047</td>
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<tr>
<td>Taught during</td>
<td>Session Two: Monday 22 July - Friday 9 August 2019</td>
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<td>Module workload</td>
<td>45 teaching hours plus approximately 100 study hours</td>
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<td>Module leader</td>
<td>Tom Quick</td>
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<td>Department</td>
<td>Philosophy, Faculty of Arts &amp; Humanities</td>
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<td>Credit</td>
<td>15 UCL credits, 7.5 ECTS, 4 US</td>
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<td>Level</td>
<td>Level 1, first year Undergraduate</td>
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<td>Pre-requisites</td>
<td>One subject in the sciences, preferably Biology, to A level standard or equivalent</td>
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<td>Assessment</td>
<td>On-going peer-peer assessment (5%)</td>
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<td>Presentation (20%)</td>
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<td>SBA (single best answer) (10%)</td>
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<td>Essay (65%)</td>
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Module Overview

Peripheral Nerve Injury is a field of regenerative medicine which is advancing towards a paradigm shift in available therapeutic options. The ability of medicine to manipulate one of the only organ systems which has the capacity in a human to regrow is at the forefront of fields of surgical science, pharmacology, cellular engineering, bioengineering and assistive technologies.

This module offers students the capacity to experience all the current therapeutic options for peripheral nerve injury treatment through a collaboration of the only clinical unit in the world to focus purely on nerve injury and UCL; a recognised world leader in neurobiology and engineering. This exposure will be through lectures and exposure in the clinical environment (clinic, rehabilitation and the operating theatre) to all the basic concepts and theories of improving outcomes after nerve injury.

Week One (Bloomsbury Campus)

- Basic science of nerve injury and regeneration- cellular biology and biomechanics of nerve tissue and tissue bioengineering
- Surgical management of muscle denervation, sensory denervation, neuropathic pain
- Experiential learning in the clinical environment (outpatients)
Week Two (Royal National Orthopaedic Hospital, Stanmore)
- Rehabilitation medicine for nerve injury
- Medical management of neuropathic pain
- Bioengineering the current solutions to nerve injury (enhanced Virtual reality (haptic feedback) Rehabilitation, robotics and integrated assistive technology)
- Experiential learning in the operating theatre

Week Three (Royal National Orthopaedic Hospital, Stanmore)
- Rehabilitation, robotics and integrated assistive technology
- Future options in science and engineering for patients.
- Experiential learning in the operating theatre
- Experiential learning in the engineering lab

Module Aims
This module aims to serve as a grounding in the state of the art of clinical application of current therapeutics in nerve injury through to the potential for science to jump the gap to novel methods to improve patient outcomes. Starting with a series of lectures on the basic science of peripheral neurobiology the module will be accessible to those with at least a GCSE level grasp of biology. This background will then be built upon in the clinical environment to lay bare the methods of assessment of patients with nerve injury pathologies. The current methods of addressing these inpatients will be covered in week two with exposure to the operative and interventional approaches currently in use. The lectures in week two will address the background theory and the medical literature which supports these methods. The third week will open up the horizons of the potential for advanced bionic prosthesis, novel drug and biologic engineering possibilities.

Teaching Methods
This module is based on a skeleton of lectures and seminars, open class and small group discussions, excursions, group work and private study. Reading lists will be available online via the UCL library site. Students will be integrated into the workings of the clinical unit and the research units seeing day to day work from not only the professionals’ points of view but also that of the patient.
This experienced will be fully fleshed out by a micro research projects and from this peer to peer supportive teaching.

Learning Outcomes
Upon successful completion of this module, students will:

- Have gained an appreciation of what effect a nerve injury produces on an individual.
- Have experience of the multidisciplinary approach deployed to investigate, support and treat patients with nerve injury.
- Understand how to assess this nerve injury and what current therapies are possible
- Have gained an appreciation of what engages current scientific endeavor towards decreasing the impact of nerve injury in affected patient.
- Have gained the ability to speculate about the future directions of possible scientific advance and their application and implications.

Please note that this module description is indicative and may be subject to change.
Assessment Methods

- On-going peer-peer assessment (5%)
- 10-minute presentation (20%)
- 30 min SBA (single best answer) (10%)
- 2,500 word essay (65%)

Key Texts

“Surgical Disorders of the Peripheral Nerve” 2nd Ed. R Birch 2011 Springer
ISBN 9781848821088 • 9781848821071

“Nerve Repair” T. Brushart 2011 Oxford University Press
ISBN 0195169905 • 9780195169904