Translational Medicine: From Bench to Beside

Summer Session II, 2018
Tuesday June 12 – Friday June 29
Location: Stockholm
3 Credits

Major Disciplines: Pre-medicine / Health Science

Related Disciplines: Biology, Neuroscience, Biomedicine / Biotechnology

Prerequisite(s): One year of biology and one year of chemistry at university level.

Course Instructors: TBA

DIS Science & Health contacts
Lisbeth Borbye, Program Director, lbo@dis.dk
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Stephanie Clemente, Project Manager, scl@dis.dk, Tel: +45 3376 5477

Course Description
This course provides students with insight into state-of-the-art research and research application in the medical field. Students will interact with practitioners, medical researchers and other scientists, who specialize in research in selected acute and chronic diseases. The emphasis is the dynamic relationship between laboratory research and bedside application with the purpose of providing optimal patient therapies. Students will learn how research results guide clinical therapies, and vice versa. Doctors and scientists will provide real-life examples of translational medicine practices and give students exposure to analyzing and developing diagnostic tools and treatment protocols.

During field studies and study tours students will observe the process of translational research as performed by clinicians and scientists at hospitals and biomedical research institutions. In addition, they will learn about the healthcare systems and translational medicine approaches in Sweden and the UK.

Expected Learning Outcomes
Upon successful completion of this course, students will be able to:

- Describe features of selected human diseases and explain the abnormal human biology underlying these diseases
- Differentiate between clinical and laboratory diagnostics and understand the connection
- Describe common diagnostic tools and treatment strategies and explain how these are developed and implemented
- Analyze and interpret translational case studies leading to real-life new therapies
- Reflect on the importance of translational medicine and implications to both clinical practice and scientific advancement
- Describe future trends in the field of translational medicine

Teaching Methods
Classes may contain a mixture of lecture-based teaching, discussions, critical analysis of readings and research) and group exercises. Students are expected to engage actively in class-room discussions, oral presentations, group work and exercises. In addition to these classes, students will travel on short and long study tours and to field studies (see below).

Evaluation and Grading
To be eligible for a passing grade in this class all of the assigned work must be completed. Late assignments will be accepted, but the grade for the paper will be reduced by half a letter/day.

The factors influencing the final grade and the proportional importance of each factor is shown below:
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<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Participation</td>
<td>10%</td>
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<tr>
<td>Test</td>
<td>10%</td>
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<tr>
<td>Study tour assignment</td>
<td>20%</td>
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<tr>
<td>Patient case studies</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
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**Participation Metrics**
- Attendance
- Level of preparation and ability to answer questions asked in class
- Involvement in class and group discussions
- Level of individual contribution to discussions and in presentations

**Expectations of Students & Code of Conduct**
- Laptops may be used for note-taking, fact-checking, or assignment in the classroom, but only when indicated by the instructor. At all other times laptops and electronic devices should be put away during class time.
- Reading must be done prior to the class session; a huge part of the class is dependent on discussions in class.
- Students need to be present and participating to receive full credit. The final grade will be affected by unexcused absences and lack of participation. Remember to be in class on time!
- Classroom etiquette includes being respectful of other opinions, listening to others and entering a dialogue in a constructive manner.
- Students are expected to ask relevant questions in regards to the material covered.

**Policies**
- **Disability and Resource concerns:** Any student who has a need for accommodation based on the impact of a disability should contact Mark Peters (mpe@disstockholm.se) to coordinate this. In order to receive accommodations, students should inform the instructor of approved DIS accommodations within the first two weeks of classes.

- **Attendance:** Students are expected to attend all DIS classes when scheduled. If multiple classes are missed the Office of Academic Support will be notified and will follow-up to make sure, that all is well. Absences will jeopardize grades and academic standing at DIS. Allowances will be made in cases of illness, but in the case of multiple absences a doctor’s note is required.

- **Academic Honesty: Plagiarism and Violating the Rules of an Assignment**
  DIS expects that students abide by the highest standards of intellectual honesty in all academic work. DIS assumes that all students do their own work and credit all work or thought by others. Academic dishonesty will result in a final course grade of ‘F’ and can result in dismissal. The students’ home universities will be notified. In such cases, DIS reserves the right to request that written student assignments be turned in electronically for subjection to plagiarism detection software. See the Academic Handbook for more information, or ask your instructor if you have questions.

**Summer Study Tour**
Study tour is an integral part of the course. The classroom is “on the road” and theory presented in the classroom is applied in the field. Students will travel with classmates and DIS faculty/staff on one study tours. Students are expected to
- participate in all activities
- engage in discussions, ask questions, and contribute to achieving the learning objectives
• be respectful to the destination/location, the speakers, DIS staff, and fellow classmates
• represent self, home university and DIS in a positive light

While on a program study tour DIS will provide hostel/hotel accommodation, transportation to/from the destination(s), approx. 2 meals per day and entrances, guides, and visits relevant to your area of study or the destination. You will receive a more detailed itinerary prior to departure.

Travel policies:
You are required to travel with your group to the destination. If you have to deviate from the group travel plans, you need approval from the program director and the study tours office.

Study Tour:
UK (London and Oxford); Monday June 18 – Friday June 22

Textbook and readings
- Principles of Translational Science in Medicine. From Bench to Bedside, 2nd ed. Martin Wehling (2015) – selected chapters will be announced on Canvas prior to classes.
- Additional readings will be announced (and potentially posted) on Canvas prior to classes.

Canvas
Canvas is a web-based system that allows students to access course resources and communicate with classmates and faculty. To access Canvas, go to the DIS homepage and click the ‘Canvas’ link on the bottom of the website, or go to: https://canvas.disabroad.org/login/canvas. Students can also download the Canvas App (By: Instructure) on iPhone and Android mobile smart phones.
## Draft Course Schedule Summer 2018

*Tentative Subject to Change*

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<tr>
<th>Date</th>
<th>Lecture #</th>
<th>Lecture Topics</th>
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| **Week I** |           | **Location**: DIS-Stockholm  
**Tuesday June 12 – Friday June 15** |
|            |           | Please Pick up textbooks before class  
**Textbook Pick up, Time & Location**: TBA |
| Lecture 1  | 2 hr      | Introduction  
History of Medical science and Translational medicine, where are we and where are we going |
| Lecture 2  | 1.5 hr    | Human physiology: anatomy and general disease mechanisms |
| Lecture 3  | 1.5 hr    | Clinical practice – How is health care organized |
|            | 1 hr      | **Study Tour Orientation** |
| Lecture 4  | 1.5 hr    | Tools in Translational Medicine - OMICS |
| Lecture 5  | 1.5 hr    | Tools in Translational Medicine- Imaging and Biobanking |
| Lecture 6  | 1.5 hr    | Drug Discovery, Clinical trials, regulation and ethics |
|            | 45 min    | **Test 1** |
| Lecture 7  | 1.5 hr    | Introduction to the Vascular Biology and Cardiovascular Medicine |
| Lecture 8  | 3-4 hr    | Patient Case Demonstration and/or Field Study Visit |
| **Week II**: | | **Study Tour to UK (London and Oxford): June 18-June 22** |
| Lecture 9  | 1.5 hr    | Cardiovascular Disease from an extracellular matrix perspective |
| Lecture 10 | 2.5 hr    | Heart failure and Acute myocardial infarction  
Mesenchymal stem cells as treatment of cardiovascular disease |
| Lecture 11 | 1 hr      | Cardiovascular Patient Case |
| Lecture 12 | 1.5 hr    | Introduction to Brain tumors |
| Lecture 13 | 1.5 hr    | Brain tumor treatment, now and in the future |
| Lecture 14 | 2 hr      | Study Tour Assignment Presentations |
| Lecture 15 | 2-4 hr    | Field Study Visit |
| **Thurs Jun 28** | Lecture 16 | 2-3 hr  
Translational Medicine Lecture  
Wrap Up of course |
| **Fri Jun 29**  | Lecture 16 | 2 hr  
Cumulative Final Exam |