IMMUNOLOGY 520

ELECTIVE TUTORIAL IN IMMUNOLOGY

De'Broski R. Herbert Ph.D.

FALL 2016
Elective Tutorials in Immunology. IMM 520

Course Director:
De'Broski R. Herbert Ph.D.
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Course Faculty: Members of the Immunology Graduate Group
Time of Course: Fall
Place: To be arranged by individual faculty
Number of students per tutorial: One. If a faculty member wishes to mentor more than one student, please contact the course director.

Pre-requisites: Immunology 506. Exceptions can be made for equivalent courses, but require the student to meet with the course director first.

Credit: 1 credit

Course Description:
This tutorial course is designed to provide students with an in-depth knowledge of a specific branch of Immunology. This knowledge will be obtained by mentored reading, and subsequent discussion with the faculty mentor during meetings that usually last for one hour and occur weekly. The tutorial can be used to enable students to become more deeply acquainted with the literature related to their thesis projects, or to expand on a topic that the student found interesting in one of their basic courses.

The course is an immunology elective and is, therefore, open to all Immunology Graduate Group students. It is also open as an elective to BGS students that meet the pre-requisites.

The grade will be based on the mentor's assessment of the student, on a written paper on the subject studied (5 to 10 typewritten pages), and on an oral presentation of the paper (15 to 20 minutes) date TBD.

PLEASE SEND YOUR FACULTY SELECTIONS TO:
De'Broski R. Herbert: debroski@vet.upenn.edu
Hydar Ali, Ph.D.
Associate Professor,
Department of Pathology, School of Dental Medicine,
University of Pennsylvania,
240 South 40th Street, (346 Levy Building)
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http://www.med.upenn.edu/immun/ali.shtml

Tutorial Topic:
Mast cells in host defense and pseudo-allergic reactions

References:


Tutorial topics:
1) Novel models of early lymphoid development
2) What turns on the V(D)J recombinase?

References

**Topic 1**


**Topic 2**

Tutorial topics:
1) Immune mediating mechanisms at the endothelial level
2) Tissue intrinsic mechanisms regulating neuroinflammation.

References

Topic 1


Topic 2


**Yair Argon, Ph.D.**  
Professor of Pathology and Laboratory Medicine  
816B Abramson Cancer Research building  
Telephone 267-246-5131.  
EMAIL: yargon@mail.med.upenn.edu

**Tutorial topics:**  
1) Regulation of B cell differentiation by the unfolded protein response  
2) Proteasome inhibition in the treatment of multiple myeloma

**References**

**Topic 1**


**Topic 2**


Michael P. Cancro  
Professor of Pathology and Laboratory Medicine  
284 John Morgan Building  
Perelman School of Medicine at the University of Pennsylvania  
3620 Hamilton Walk  
Philadelphia, PA 19104-6082  
EMAIL: cancro@mail.med.upenn.edu

Tutorial topics:  
1) Age-associated changes in lymphocyte dynamics, selection, and function.  
2) Emerging concepts in B cell selection and tolerance.

References

Topic 1


Topic 2


Claudio G. Giraudo, Ph.D.
The Children's Hospital of Philadelphia
Abramson Research Center, Room 816C
Philadelphia, PA 19104
Office: 267-425 –2124
Fax: 267-426-5165
Lab: 215-590-7302
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Tutorial topics:
1- Divergence of exocytic pathways for cytokines secretion in T-cells
2- Lipid membrane organization as a modulator of the T-cell response.

References

Topic 1


Topic 2


Quann E., Merino E., Furuta T., and Huse M. (2009) Localized Diacylglycerol drives the polarization of the microtubule organizing center in T Cells

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Project 1) ILC’s control host metabolism and immunity with ease!
The goal will be to cover the importance of the newest discovery within the immunology field.

Nuocytes represent a new innate effector leukocyte that mediates Type 2 immunity

Unique and redundant functions of NKp46+ ILC3s in models of intestinal inflammation.
Song C, Lee JS, Gilfillan S, Robinette ML, Newberry RD, Stappenbeck TS, Mack M, Cell M, Colonna M.

Activated type 2 innate lymphoid cells regulate beige fat biogenesis.
Lee MW, Odegaard JI, Mukundan L, Qiu Y, Molofsky AB, Nussbaum JC, Yun K, Locksley RM, Chawla A.

Project 2) M2 macrophages: is there anything that they don’t do?
The goal will be to cover the importance of type 2 macrophage polarization as one of the most important paradigm shifts within the immunology field.

CD301b+ Mononuclear Phagocytes Maintain Positive Energy Balance through Secretion of Resistin-like Molecule Alpha.
Kumamoto Y, Camporez JP, Jurczak MJ, Shanabrough M, Horvath T, Shulman GI, Iwasaki A.

Functional polarization of tumour-associated macrophages by tumour-derived lactic acid.

Local macrophage proliferation, rather than recruitment from the blood, is a signature of TH2 inflammation.
Jenkins SJ, Ruckerl D, Cook PC, Jones LH, Finkelman FD, van Rooijen N, MacDonald AS, Allen JE.
Tutorial topics:
1) Regulation of whole body metabolism by the innate immune system
2) Regulation of the metabolic status of the host by the microbiota

References

Topic 1:


Topic 2:


Topics:
1. Original antigenic sin
2. Antigenic drift of influenza viruses

References

Topic 1

Li et al. (2013) Immune history shapes specificity of pandemic H1N1 influenza antibody responses. JEM 210:1493.


Topic 2


Taku Kambayashi, M.D., Ph.D.
Associate Professor
University of Pennsylvania
288 JMB, 3620 Hamilton Walk
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Lab:   (215) 573-9260
Office: (215) 746-7610

Topics available on request.
Director, HIV-1 Immunopathogenesis Laboratory
Associate Professor, Immunology Program
The Wistar Institute
3601 Spruce Street
Philadelphia, PA 19104-4268
Tel. 215-898-9143 (Office)
   215-898-3934 (Lab)
Fax. 215-573-7008 (Office)
   215-573-9272 (Lab)
e-mail: montaner@mail.wistar.upenn.edu

Tutorial Topic:
AIDS Immunopathology & anti-HIV-specific responses

References:


Jonni S. Moore, Ph.D.
Associate Professor of Pathology and Laboratory Medicine
203 John Morgan Bldg
Telephone: 215-898-6853
EMAIL: moorej@mail.med.upenn.edu

Tutorial Topic:
Basic and Novel Flow cytometric applications in research immunology

References:


Paula Oliver, Ph.D.
Associate Professor
University of Pennsylvania
Children's Hospital of Philadelphia
816F ARC
3615 Civic Center Blvd.
Office: 267-426-2839
paulao@mail.med.upenn.edu

Topics available on request.
Paige Porrett, M.D., Ph.D.
Instructor in Surgery
Hospital of the University of Pennsylvania
3400 Spruce Street, One Founders Pavilion
Telephone 215-662-7453.
EMAIL: paige.porrett@uphs.upenn.edu

Tutorial topics:
1) Modulation of allospecific T cell priming and memory development by immunosuppressive agents.
2) Development of cellular and humoral memory during fetomaternal tolerance.

References

Topic 1


Williams MA, Tynzni AJ, and Bevan MJ. Interleukin-2 signals during priming are required for secondary expansion of CD8+ memory T cells.

Topic 2


Daniel J. Powell Jr., Ph.D.
Research Associate Professor
Ovarian Cancer Research Center
Dept of Path & Lab Medicine, Perelman SOM
University of Pennsylvania
3400 Civic Center Blvd, Bldg 421
Smilow CTR, Rm 08-103
Philadelphia, PA 19104-5156
Ph: (215) 573-4783

Tutorial topics:
1. Adoptive transfer of antigen specific T cells for cancer.
2. The role of Treg cells in cancer progression and therapy

References:

Topic 1


Topic 2


Tutorial topics:
1) Inflammasomes and other cell-intrinsic defenses against bacterial infection
2) Communication between innate immune cells to ensure robust defense against pathogens

References:

**Topic 1:**


**Topic 2:**

Ablasser *et al.* Cell intrinsic immunity spreads to bystander cells via the intercellular transfer of cGAMP. *Nature.* 2013. 503:530-4.

IL-1R signaling enables bystander cells to overcome bacterial blockade of host protein synthesis. *PNAS.* 2015. 112:7557-62
Tutorial topics:
1. Regulation of Mucosal Tolerance
2. Regulation of T cells by glycans

References

Topic 1


Topic 2


Oriol Sunyer  
3800 Spruce Street  
School of Veterinary Medicine  
Philadelphia, PA 19104  
Email: sunyer@vet.upenn.edu

Tutorial topics:  
1. Evolution of mucosal immune responses  
2. Unconventional roles of B cells

References:

Topic 1:


Topic 2:


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Tutorial topics:
1) Aberrant cytokine signaling pathways in lymphoid malignancies
2) Gene promoter DNA methylation in T lymphocytes

References:


Tutorial Topic: Developing new Vaccine technologies - translational studies.

The DNA Vaccine platform has been studied and advanced for over 20 years. It is considered an important platform as it brings the full power of molecular biology to the development of the next generation of vaccines for infectious diseases and cancers. [1-3]. However, clinical development lagged significantly compared to small animal studies. However, recently combination of improvements have changed to outlook for this platform. Currently there is renewed interest in this as well as other non live vaccine approaches.

The goal of this course module will be to develop an understanding of the critical issues in DNA technology vaccine and immune therapeutic development as a tool to understand the process and practice of vaccine development from animals to the clinic in general.

References:


Tutorial Topic: 
Virus encoded Type I interferon antagonists.

Many if not all viruses encode type I interferon (IFN) antagonist proteins. These proteins act on many steps of IFN induction, IFN signaling or IFN induced antiviral activities and in doing so can confer high virulence and extended organ tropism.

References:


Tutorial topics:
1) Epigenetic mechanisms of effector gene regulation in T lymphocytes
2) Transcriptional control of IL2 gene expression

References

Topic 1:


Topic 2: