I. Course Information for Year 2021

Autoimmunity (1 credit) [Mon / Wed / Fri 10:40-11:30 am]
Number: VME 6505
Semester: Fall, Module 3, November 1 – December 8th
Room: Communicore CG-56

II. General Information

Dr. Cuong Nguyen, Course Coordinator:
University of Florida, College of Veterinary Medicine
Office location & office hours: VAB V3-152, 9 AM – 12 PM Thursday
Office phone number: 352-294-4180 E-mail: nguyenc@ufl.edu

Dr. Clayton Mathews
University of Florida, College of Medicine
Office location: Room J597
Office phone number: 352-273-9269 E-mail: Clayton.Mathews@pathology.ufl.edu

Dr. Laurence Morel
University of Florida, College of Medicine
Office location: Room D6-18
Office phone number: 352.273.5638 E-mail: morel@pathology.ufl.edu

Teaching Assistant: None

III. Course Description

Course goals/ Educational goals of the course: Gain an understanding of the immunological process in some of the major autoimmune diseases. The course is designed to provide basic and advanced information via didactic teaching and literature review. Based on the information, students will learn to design experiments to address specific hypothesis. During the course, the students will learn to communicate and articulate scientific information among their peers.

Course objectives: This course will utilize 1/3 didactic lectures, 1/3 review of current literature with seminal findings in the field, and 1/3 Team Experimental Design (TED) in which class will divided into groups to design experiments to approve or disapprove a specific hypothesis. Literature discussion and TED will be driven by student participation.

V. Course Materials

Reading material will be provided to the class in PDF format via eLearning / Canvas. Students will be expected to read assigned reading and be prepared to discuss papers or participate in TED for each session. In general, four autoimmune diseases will be covered in class (**Sjögren's syndrome, Type 1 Diabetes, Systemic Lupus Erythematosus**, **Coeliac Disease).** For each disease topic, the first lecture will be dedicated to didactic lecture by the instructor. The next lecture will include literature discussion.   And the third lecture will be TED.

Course schedule (5 weeks, 13 sessions of 50 minutes):

Please note that the class must begin promptly at 10:40am each day because there is a

lot of material to cover. Any students presenting slides for a given session should arrive sufficiently early to load slides on the computer. The instructor will be present at least 10 minutes before each session to accommodate this process.

Week 1:

- Session 1 – Wed 10/30/2019 (Nguyen lecture)
    - General background on **Sjögren's syndrome**.

- Session 2 – Fri 11/01/2019 (Literature discussion – student led)

Research Papers:

1. Transfer of human serum IgG to nonobese diabetic Igmu null mice reveals a role for autoantibodies in the loss of secretory function of exocrine tissues in Sjögren's syndrome. Robinson CP, Brayer J, Yamachika S, Esch TR, Peck AB, Stewart CA, Peen E, Jonsson R, Humphreys-Beher MG. Proc Natl Acad Sci U S A. 1998 Jun 23;95(13):7538-43.

2. Parasympathetic innervation maintains epithelial progenitor cells during salivary organogenesis. Knox SM, Lombaert IM, Reed X, Vitale-Cross L, Gutkind JS, Hoffman MP. Science. 2010 Sep 24;329(5999):1645-7

- Session 3 – Mon 11/04/2019. (TED discussion). **Design specific experiment to test this hypothesis "*pathogenic anti-M3R-secreting B cells infiltrating the salivary glands of Sjögren's represent a unique B cell population with a limited oligoclonal B cell receptor repertoire and targets the secreted and membrane-bound anti-M3R autoantibodies using antibodies with anti-idiotypic activities is a practical and specific therapeutic intervention".***

Week 2:

- Session 4 – Wed 11/06/2019 (Mathews lecture)
    - General background on **Type 1 Diabetes**

- Session 5 – Fri 11/08/2019 (Literature discussion – student led)

Papers:

1. Genetic Variants Predisposing Most Strongly to Type 1 Diabetes Diagnosed Under Age 7 Years Lie Near Candidate Genes That Function in the Immune System and in Pancreatic β-Cells. Inshaw JRJ, Cutler AJ, Crouch DJM, Wicker LS, Todd JA. Diabetes Care. 2019 Sep 26

2. The impact of proinflammatory cytokines on the β-cell regulatory landscape provides insights into the genetics of type 1 diabetes. Mireia Ramos-Rodríguez et al. Nat Genet 51, 1588–1595 (2019)

3. Kracht, M., van Lummel, M., Nikolic, T. et al. Autoimmunity against a defective ribosomal insulin gene product in type 1 diabetes. Nat Med 23, 501–507 (2017) doi:10.1038/nm.4289

- Session 6 – Mon 11/11/2019- No Class (Holiday)

Week 3:

- Session 7 – Wed 11/13/2019. (TED discussion). **Design specific experiments to test this hypothesize *"The Target Tissue Plays an Essential Pathogenic Role in Autoimmunity".***

- Session 8 – Fri 11/15/2019 – (Morel Lecture)
   - General background on **Systemic Lupus Erythematosus**

- Session 9 - Mon 11/18/2019 (Literature discussion – student led)

Review (not to be discussed in class, but to provide background for the paper discussion and the experimental design session):

1.   Lupus Sci Med. 2019 Aug 13;6(1):e000270. doi: 10.1136/lupus-2018-000270. eCollection 2019. Interferon pathway in SLE: one key to unlocking the mystery of the disease. Rönnblom L, Leonard D.

Basic science paper

1. Chromatin-IgG complexes activate B cells by dual engagement of IgM and Toll-like receptors. Leadbetter EA, Rifkin IR, Hohlbaum AM, Beaudette BC, Shlomchik MJ, Marshak-Rothstein A. Nature. 2002 Apr 11;416(6881):603-7.

Clinical research papers

1.   Lupus Sci Med. 2018 Nov 26;5(1):e000284. doi: 10.1136/lupus-2018-000284. eCollection 2018. Anifrolumab effects on rash and arthritis: impact of the type I interferon gene signature in the phase IIb MUSE study in patients with systemic lupus erythematosus. Merrill JT, Furie R, Werth VP, Khamashta M, Drappa J, Wang L, Illei G, Tummala R.

2.   Lupus Sci Med. 2018 Nov 22;5(1):e000286. doi: 10.1136/lupus-2018-000286. eCollection 2018. Type I interferon receptor blockade with anifrolumab corrects innate and adaptive immune perturbations of SLE.Casey KA1, Guo X, Smith MA, Wang S, Sinibaldi D, Sanjuan MA, Wang L, Illei GG5, White WI.

Week 4:

- Session 10 – Wed 11/20/2019. (TED discussion). **Experimental design:**
  Select a cell type that is affected by type 1 IFN from Fig 4 in the Ronnblom review. You have access to a lupus mouse model and its non-autoimmune control, and/or to PBMCs from lupus patients and healthy controls. Design experiments to characterize:
  - how this cell type is impacted by high levels of type 1 IFN
  - how these cells stimulated by type 1 IFN may contribute to lupus pathogenesis
  - how these cells may respond to anifrolumab

- Session 11 – Fri 11/22/2019 (Nguyen Lecture)
   - General background on **Celiac Disease**
   - Background reading: Coeliac disease. Lebwohl B, Sanders DS, Green PHR. Lancet. 2018 Jan 6;391(10115):70-81. doi:10.1016/S0140-6736(17)31796-8. Epub 2017 Jul 28. Review.

- Session 12 – Mon 11/25/2019 – (Guest speaker)- Parisa Rashidi, PhD, Assistant Professor, University of Florida, Intelligent Health Lab: "*Machine learning and patient care*"

Week 5:

- Session 13 – Wed 11/27/2019-**No Class** (Thanksgiving)

- Session 14 – Fri 11/29/2019-**No Class** (Thanksgiving)

- Session 15 – Mon 12/02/2019- (Literature discussion – student led)

Research papers:

1. Disease-driving CD4+ T cell clonotypes persist for decades in celiac disease. Risnes LF, Christophersen A, Dahal-Koirala S, Neumann RS, Sandve GK, Sarna VK, Lundin KE, Qiao SW, Sollid LM. J Clin Invest. 2018 Jun 1;128(6):2642-2650.

2. Randomized feeding intervention in infants at high risk for celiac disease. Vriezinga SL, Auricchio R, Bravi E, Castillejo G, Chmielewska A, Crespo Escobar P, Kolaček S, Koletzko S, Korponay-Szabo IR, Mummert E, Polanco I, Putter H, Ribes-Koninckx C, Shamir R, Szajewska H, Werkstetter K, Greco L, Gyimesi J, Hartman C, Hogen Esch C, Hopman E, Ivarsson A, Koltai T, Koning F, Martinez-Ojinaga E, te Marvelde C, Pavic A, Romanos J, Stoopman E, Villanacci V, Wijmenga C, Troncone R, Mearin ML. N Engl J Med. 2014 Oct 2;371(14):1304-15

- Session 16 – Wed 12/04/2019 - (TED Discussion). **Design a novel therapeutic strategy to either prevent and/or treat celiac disease*.***

VI. Evaluation/ Grading/ Testing:

Grades will be based on class attendance, participation, and presentations. Students will assign selected articles from the scientific literature. The assignment of figures/tables in the selected articles to the student before the class is random and chosen by instructor. For the Performance and Knowledge of Subject Area criterion, each paper assignment will include a list of 5-10 key concepts that must be covered. The student's ability to explain these concepts and answer questions from the group will be assessed by the instructor. For TED discussion, each team will need to arrange their individual group meeting prior to class to discuss among the team members. Each group will select a group leader to share the proposed experiments to the class. Grade will be based on the rationale, thoughtfulness, and completeness of the experiments for the entire team.

50%	**Performance & Knowledge of Subject Area**
50%	**Participation and Attendance**
A	**94 - 100**
A	**93.9 - 90**
B+	**89.9 - 87**
B	**86.9 - 83**
B	**82.9 - 80**
C+	**79.9 - 77**
C	**76.9 - 73**

C	72.9 - 70
D+	69.9 - 67
D	66.9 - 63
D	62.9 - 60
E	59.9 - 0

For more information on grades and grading policies, please visit:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Attendance Policy

Class attendance is mandatory. Excused absences follow the criteria of the UF Graduate Catalog (e.g., illness, serious family emergency, military obligations, religious holidays), and should be communicated to the instructor prior to the missed class day when possible. The UF Graduate Catalog is available at http://gradcatalog.ufl.edu/.

Students must still inform the instructor of unexcused absences. A single unexcused absence will have no effect on the course grade, but the student will be expected to read and understand course material for the missed session. A second unexcused absence will result in a letter grade reduction (e.g. A becomes B). Each subsequent unexcused absence results in another letter grade reduction. Regardless of attendance, students are responsible for all material presented in class and meeting the scheduled due dates for class assignments. Personal issues with respect to class attendance or fulfillment of course requirements will be handled on an individual basis.

https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx
Writing assignments will require independent thought and proper citation of sources. This is a link to a video on citing sources and avoiding plagiarism (Dr. Martin Simpson, UF) http://mediasite.video.ufl.edu/mediasite/Viewer/?peid=adaa44500eaf460a84f238e6b9a558f91d This is a link to a website on avoiding plagiarism http://web.uflib.ufl.edu/msl/subjects/Physics/StudentPlagiarism.html This is a link to APA formatting http://owl.english.purdue.edu/owl/resource/560/01/

Online course evaluations

Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evalautions.ufl.edu.

UF Counseling Services

Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include: UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services. Career Resource Center, Reitz Union, 392-1601, career and job search services.
Many students experience test anxiety and other stress related problems. "A Self Help Guide for Students" is available through the Counseling Center (301 Peabody Hall, 392-1575) and at their web site: http://www.counsel.ufl.edu/

Honesty Policy

All students registered at the University of Florida have agreed to comply with the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University." In addition, on all work submitted for credit the following pledge is either required or implied: "On my honor I have neither given nor received unauthorized aid in doing this assignment." If you witness any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php

Accommodation for Students with Disabilities

Students who will require a classroom accommodation for a disability must contact the Dean of Students Office of Disability Resources, in Peabody 202 (phone: 352-392-1261). Please see the University of Florida Disability Resources website for more information at: http://www.dso.ufl.edu/drc/. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Dean of Students Office of Disability Resources will work with the instructor to accommodate the student.
If comfortable, please also contact the instructor directly after registering for this course so we can ensure accommodations are met in a timely manner.

Software Use

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Class demeanor

This is an advanced course and the environment will be one of open communication and scholarly discussion. It is expected that participants exercise professionalism and judgment when using electronic devices. Participants should arrive on time and be prepared to begin at the scheduled hour. Tardiness will be reflected in the attendance category of grading. Every effort should be made to notify the instructor of planned absences, tardiness or early exit from course meetings.