

Course and contact information:

Course: BMSC 8210, Genes to Cells

Semester: Fall 2020

Time: Monday, Tuesday, Wednesday, 8:30 AM-10:00 AM

Location: Online (WebEx - <https://gwu.webex.com/gwu/j.php?MTID=m9f6c6b1b91e298a9409cba1ff9e78f2f>)

Meeting access code: 120 414 2851

Instructors:**COURSE DIRECTOR:** Jyoti K Jaiswal, Ph.D.; Children's National Hospital, 111 Michigan Av NW, Suite M5720; Phone: 202-476-6456; E-mail: jkjaiswal@cnmc.org; **Remote Office Hours:** Based on student request**CO-DIRECTOR:** Edward Seto, Ph.D.; Science and Engineering Building, Suite 8800; Phone: 202-994-3156; E-mail: seto@gwu.edu; **Remote Office Hours:** Based on student request

Contact Information				
Instructors	Address	Phone	Preferred email	GWU email
Jyoti K Jaiswal, Ph.D., Course Director*, #	CN Suite 5721	202-476-6456	jkjaiswal@cnmc.org	jkjaiswal@gwu.edu
Edward Seto, Ph.D., Co-Director	SEB Suite8800	202-994-3156	seto@gwu.edu	seto@gwu.edu
Colleen Kennedy, IBS Program Manager	Ross Hall 561	202-994-2179	gwibs.gwu.edu	ckennedy@gwu.edu
Conrad Russell Cruz, MD, Ph.D.		202-476-2046	cracruz@email.gwu.edu	cracruz@email.gwu.edu
Hiroki Morizono, Ph.D.*	CN Suite5710	202-476-4862	hmorizono@cnmc.org	hiroki@gwu.edu
Inhee Chung, Ph.D.	Ross 537A	202-994-6112	inheec@gwu.edu	inheec@email.gwu.edu
Jason Triplett, Ph.D.#	CN Suite 7632	202-476-3985	JTriplett@cnmc.org	jtriplett@gwu.edu
James Novak, Ph.D. *	CN Suite 5718	202-476-6135	JNovak@cnmc.org	jsnovak@gwu.edu
Ljuba Caldovic, Ph.D.*	CN Suite 5720 (M,T,F); Ross 561 (W,T)	202-476-5819	LCaldovic@cnmc.org	ljubica@gwu.edu
Yi-Wen Chen, DVM, Ph.D.*	CN Suite 5719	202-476-6025	ychen@cnmc.org	ywchen@gwu.edu

* Center for Genetic Medicine Research / #Center for Neuroscience Research, Children's National Hospital (CN)

Course prerequisites: Core curriculum for IBS Doctoral Program with knowledge of the basic concepts in cell and molecular biology and reading primary scientific literature.**Learning outcomes:** As a result of completing this course, students will be able to

1. Apply the fundamentals of cellular genetics and gene regulation to real-world knowledge.
2. Be able to link how mutations effecting protein structure, may change in its cellular functions.
3. Develop the aptitude to analyze primary scientific data and evaluate scientific papers.
4. Learn the skills to controlled cell and molecular biology experiments to test relevant hypotheses.

Week-by-week schedule of topics to be presented and scheduling of assignment and examinations

The lectures will present concepts concerning replication and regulation of gene expression, protein and cell structure, and functions, which will involve didactic session and discussion of relevant scientific papers.

BMSC 8210: Genes to Cells FALL 2020 (Online; Time 8:30 AM to 10:00 AM)			
Class #	Date	Topic	Instructor
<u>Class 1</u>	Mon, Aug 31	Brief course introduction; Introduction to select molecular and biochemical techniques	Directors; Ljuba Caldovic
<u>Class 2</u>	Tue, Sep 1	Chapter 4, 5: DNA, chromosomes, genomes; DNA replication, repair and recombination	Edward Seto
<u>Class 3</u>	Wed, Sep 2	Chapter 1, 2: Cells and Genome; Cell Chemistry and Bioenergetics	Edward Seto
Sept 7: Labor Day (No Class)			
<u>Class 4</u>	Tue, Sept 8	Chapter 6: How cells read the genome from DNA to protein	Yi-Wen Chen
<u>Class 5</u>	Wed, Sept 9	Chapter 7: Control of gene expression	Yi-Wen Chen
Handout Assignment 1: Due September 14th (Graded by Sept 21st)			
<u>Class 6</u>	Mon, Sept 14	Chapter 1: Protein structure and evolution,	Ljuba Caldovic
<u>Class 7</u>	Tue, Sept 15	Chapter 2: Protein domains, Chapter 3: Oligomers	Ljuba Caldovic
<u>Class 8</u>	Wed, Sept 16	Chapter 4: Protein Interactions In vivo	Ljuba Caldovic
<u>Class 9</u>	Mon, Sept 21	Chapter 5: How enzymes work, Chapter 10: Multienzyme Complexes	Hiroki Morizono
<u>Class 10</u>	Tue, Sept 22	Chapter 6: Protein flexibility and dynamics	Hiroki Morizono
<u>Class 11</u>	Wed, Sept. 23	Chapter 8: How proteins transmit signals	Inhee Chung
Take home Mid-term Exam: Due September 28th (Graded by Oct 5th)			
<u>Class 12</u>	Mon, Sept 28	Chapter 10: Membrane Structure, Chapter 11: Membrane transport of small	Jyoti Jaiswal
<u>Class 13</u>	Tue, Sept 29	Chapter 12: Intracellular compartments and protein sorting	Jyoti Jaiswal
<u>Class 14</u>	Wed, Sept 30	Chapter 13: Intracellular membrane traffic	Jyoti Jaiswal
<u>Class 15</u>	Mon, Oct 5	Chapter 14: Energy conversion: mitochondria	Jyoti Jaiswal
<u>Class 16</u>	Tue, Oct 6	Chapter 19: Cell junctions and the extracellular matrix	James Novak
Handout Assignment 2: Due October 12th (Graded by Oct 19th)			
<u>Class 17</u>	Wed, Oct 7	Chapter 17: The cell cycle	Conrad R. Cruz
<u>Class 18</u>	Mon, Oct 12	Chapter 18: Apoptosis	Conrad R. Cruz
<u>Class 19</u>	Tue, Oct 13	Chapter 16: The cytoskeleton	Jason Triplett
<u>Class 20</u>	Wed, Oct 14	Chapter 7: How proteins make things move	Jason Triplett
Take home Final Exam: Due October 20th (Graded by Oct 27th)			
Class Format:	First part: Lecture based upon assigned chapters; Second part: Paper discussions		
Text Books:	Alberts et al., 2015. Molecular Biology of the Cell, 6th edition (Garland Publishing) Williamson, M., 2012. How Proteins Work (Garland Publishing)		

Required textbooks and/or other materials and recommended readings:

Author	Title	Edition
Alberts et al., 2015	Molecular Biology of the Cell	6 th Edition
Williamson, M. 2012	How Proteins Work	1 st Edition

Assignments

Take home assignments will be given on two occasions during the course and will be due as indicated in the week-by-week schedule. It should be received by the instructor by 5:00pm with 10% score deducted per day for late return.

Assignment	Description	Total Points
Assignment 1	Based on Classes 4 and 5	10
Assignment 2	Scientific writing	10

Grading

- Take home Midterm exam (20%),
- Assignments (20%),
- Take home Final exam (20%)
- Paper discussion and class participation (40%)

The midterm and final will be take-home exams consisting of questions (short answer essays or problems) based on the lectures and should be turned by 5:00pm via email (jkjaiswal@cnmc.org; seto@gwu.edu). Each question will be scored from 10 points, minus 10% per day for late return.

NOTE: IN ACCORD WITH UNIVERSITY POLICY, THE FINAL EXAM WILL BE GIVEN DURING THE FINAL EXAM PERIOD AND NOT THE LAST WEEK OF THE SEMESTER.

University policies

Use of Electronic Course Materials and Class Recordings

Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study. Electronic course materials and recorded class sessions should not be shared or used for non-course related purposes unless express permission has been granted by the instructor. Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct. Please contact the instructor if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions. Please contact Disability Support Services at disabilitysupport.gwu.edu if you have questions or need assistance in accessing electronic course materials.

Academic Integrity Code

Academic Integrity is an integral part of the educational process, and GW takes these matters very seriously. Violations of academic integrity occur when students fail to cite research sources properly, engage in unauthorized collaboration, falsify data, and in other ways outlined in the Code of Academic Integrity. Students accused of academic integrity violations should contact the Office of Academic Integrity to learn more about their rights and options in the process. Outcomes can range from failure of assignment to expulsion from the University, including a transcript notation. The Office of Academic Integrity maintains a permanent record of the violation.

More information is available from the Office of Academic Integrity at studentconduct.gwu.edu/academic-integrity. The University's "Guide of Academic Integrity in Online Learning Environments" is available at studentconduct.gwu.edu/guide-academic-integrity-online-learning-environments. Contact information: rights@gwu.edu or 202-994-6757.

University policy on observance of religious holidays

In accordance with University policy, students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. For details and policy, see "Religious Holidays" at provost.gwu.edu/policies-procedures-and-guidelines

Support for students outside the classroom

Virtual academic support

A full range of academic support is offered virtually in fall 2020. See coronavirus.gwu.edu/top-faqs for updates.

Tutoring and course review sessions are offered through Academic Commons in an online format. See academiccommons.gwu.edu/tutoring

Writing and research consultations are available online. See academiccommons.gwu.edu/writing-research-help

Coaching, offered through the Office of Student Success, is available in a virtual format. See studentsuccess.gwu.edu/academic-program-support

Academic Commons offers several short videos addressing different virtual learning strategies for the unique circumstances of the fall 2020 semester. See academiccommons.gwu.edu/study-skills. They also offer a variety of live virtual workshops to equip students with the tools they need to succeed in a virtual environment. See tinyurl.com/gw-virtual-learning

Writing Center

GW's Writing Center cultivates confident writers in the University community by facilitating collaborative, critical, and inclusive conversations at all stages of the writing process. Working alongside peer mentors, writers develop strategies to write independently in academic and public settings. Appointments can be booked online. See gwu.mywconline.

Academic Commons

Academic Commons provides tutoring and other academic support resources to students in many courses. Students can schedule virtual one-on-one appointments or attend virtual drop-in sessions. Students may schedule an appointment, review the tutoring schedule, access other academic support resources, or obtain assistance at academiccommons.gwu.edu.

Disability Support Services (DSS) 202-994-8250

Any student who may need an accommodation based on the potential impact of a disability should contact Disability Support Services to establish eligibility and to coordinate reasonable accommodations.

disabilitysupport.gwu.edu

Counseling and Psychological Services 202-994-5300

GW's Colonial Health Center offers counseling and psychological services, supporting mental health and personal development by collaborating directly with students to overcome challenges and difficulties that may interfere with academic, emotional, and personal success. healthcenter.gwu.edu/counseling-and-psychological-services

Safety and Security

- In an emergency: call GWPD 202-994-6111 or 911
- For situation-specific actions: review the Emergency Response Handbook at safety.gwu.edu/emergency-response-handbook
- In an active violence situation: Get Out, Hide Out, or Take Out. See go.gwu.edu/shooterpret
- Stay informed: safety.gwu.edu/stay-informed