BIOM555 - REGULATION OF THE GENOME: SPRING 2019

**Lectures:**
Austrian Auditorium, CRB: Tuesdays/Thursdays: 9:00 am – 10:30 am

**Small Group Discussions:** January 24 through April 26

**A:** Thursdays 11am - 12pm (Session 1: BRB 701 by Natoya; Session 2: BRB 801 by McKensie
**B:** Thursdays 3:30pm - 4:30pm (Session 3: Stellar Chance 204 by Aoi; Session 4: Stellar Chance 104 (except for Apr. 19, in Stellar Chance 301 by Megan
**C:** Fridays 11am - 12pm (Session 5: BRB 1413 BRB (except for Feb. 2 and 23, in Blockley 1311 by Blake; Session 6: Stellar Chance 204 (except for Feb.23 and Mar.16, in Stellar Chance 1001 by (TA))

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**Section 1 – Genome Maintenance**
January 17: Course Introduction – Relevance to BGS students (Klaus Kaestner)
January 22: Regulation of DNA Replication (Paul Lieberman)
January 24: DNA Repair and Cell Cycle Checkpoints I (Roger Greenberg) *(Discussion problem set 1)*
January 29: DNA Repair and Cell Cycle Checkpoints II (Roger Greenberg)
January 31: Telomere Function (Brad Johnson) *(Discussion of problem sets 2)*

**Section 2 – Transcription and Epigenomic Methods**
February 5: Design and interpretation of ChIP-Seq and ATAC-seq (Klaus Kaestner)
February 7: Design and interpretation of RNAseq, GROseq, and scRNAseq (Golnaz Vahedi) *(Discussion 3)*
February 12: Eukaryotic Gene Transcription 1 (Ken Zaret)
February 14: Eukaryotic Gene Transcription 2 (Ken Zaret) *(Discussion 4)*
February 19: EXAM 1, IN CLASS

**Section 3 – Chromatin Modifications**
February 21: Covalent DNA Modifications (Zhaolan (Joe) Zhou) *(Discussion 5)*
February 26: Nucleosome Structure (Ben Black)
February 28: Genome Editing (Jorge Henao-Mejia) *(Discussion 6)*
March 5: Spring Break
March 7: Spring Break
March 12: Histone and Chromatin I (Shelley Berger)
March 14: Histone and Chromatin II (Shelley Berger) *(Discussion 7)*
Section 4 — Chromatin Regulation
March 19: Chromatin regulation in the context of nuclear architecture (Maya Capelson)
March 21: Chromatin regulation by the Polycomb pathway (Roberto Bonasio) (Discussion 8)
March 26: Chromatin-chromatin interactions (Gerd Blobel)
March 28: Analysis of higher chromatin structure:3C, 4C, HiC (Robert Faryabi)
April 2: Chromatin regulation in the context of Imprinting (Marisa Bartolomei)
April 4: REVIEW SESSION FOR EXAM (TAs)

Section 5 — Post-transcriptional Regulation
April 9: Exam 2, IN CLASS
April 11: miRNAs/siRNAs (Zissimos Mourelatos) (Discussion 9)
April 16: Long non-coding RNAs (Montserrat Anguera)
April 18: RNA editing (Tom Jongens) (Discussion 10)
April 23: RNA processing I (Kristen Lynch)
April 25: RNA processing II (Kristen Lynch) (Discussion 11)
April 30: Translational Control and RNA Localization I (Peter Klein)
May 2: Translational Control and RNA Localization II (Peter Klein) (Discussion 12)
May 7: REVIEW SESSION FOR EXAM (TAs)
May 9: EXAM 3, IN CLASS

General References for Review (Library/Web)
Molecular Biology of the Cell (Alberts et al.)
Molecular Cell Biology Lodish et al. (older editions are by Darnell et al.)
Genes VIII Benjamin Lewin

Lecturers: (Area code is 215 for all phone numbers)
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GRADES
3 EXAMS: 25% each
DISCUSSION SESSION (STUDENTS MUST CHOOSE ONE DISCUSSION SESSION AND ATTEND THAT SESSION EACH WEEK. ATTENDANCE AND PARTICIPATION REQUIRED): 25 %