Molecular and Cellular Biology Courses (MCB)

This is a list of all molecular and cellular biology courses. For more information, see Molecular and Cellular Biology.

**MCB:6215 Transcription and Multi-Functional Regulation by RNA** 1 s.h.
Principles and techniques for investigating mechanisms of controlling eukaryotic gene expression; basic genome organization, chromatin structure, transcription, RNA processing, translation; cloning methods, use of electronic sequence databases, footprinting, chromatin immunoprecipitation, in vivo and in vitro transcription assays, DNA microarray analysis, information retrieval. Prerequisites: BISC:5201.

**MCB:6217 Epigenetics, Cancer, and Mouse Models of Disease** 1 s.h.
Epigenetic mechanisms of transcriptional control; regulation of chromatin structure and its relation to disease; fundamental concepts in cancer; mouse models for understanding the molecular basis for human disease; based on research publications. Prerequisites: BISC:5201.

**MCB:6220 Mechanisms of Cellular Organization** 3 s.h.
Current understanding of basic cell biological processes; key experiments that led to guiding insights; mechanisms that cells use for compartmentalization and how those mechanisms are regulated; biogenesis of major organelles (e.g., mitochondria, peroxisomes, nucleus, secretory/endocytic membrane system); functions of cytoskeleton in cell motility, organelle motility, and cell division. Prerequisites: BIOC:3130. Same as ACB:6220, MPB:6220.

**MCB:6225 Growth Factor Receptor Signaling** 1 s.h.
Mechanisms of signaling by growth factors; cytokines and related molecules that regulate cell proliferation, development, differentiation, and survival; emphasis on molecular mechanisms of signaling, relevance of these signaling processes to various human diseases. Same as ACB:6225, MPB:6225.

**MCB:6226 Cell Cycle Control** 1 s.h.
Cell cycle regulation, DNA damage-dependent cell cycle regulation, redox-dependent cell cycle regulation, cellular senescence. Same as ACB:6226, MPB:6226.

**MCB:6227 Cell Fate Decisions** 1 s.h.
Cellular fate decisions, including signal integration, terminal differentiation in development, mechanisms of embryonic stem cell gene regulation/cellular reprogramming, cell death paradigms, and cell death in development and cancer. Same as ACB:6227, MPB:6227.

**MCB:6240 Inflammatory Cell Signaling and Targeted Cancer Therapy** 1 s.h.
Introduction to topics in important cancer signaling pathways; promises and challenges of targeted cancer therapy; emphasis on current fundamental topics in cancer cell signalings; how altered protein ubiquitination/deubiquitination, constitutive activation of proteins kinases, and transcription factors underpin uncontrollable proliferation and survival of cancer cells in tumor microenvironment; translation of knowledge to targeted cancer therapy; promotion of critical thinking. Recommendations: MCB:6225, MCB:6227, and BIOC:5243.

**MCB:6250 Mechanisms of Parasitism Journal Club** 1 s.h.
Reviews of recent publications in molecular parasitology research and thesis research by training grant or journal club students. Same as MICR:6250.

**MCB:6280 Topics in Molecular and Cellular Biology** 1 s.h.
Opportunity to work closely with participating faculty to gain skill in critical reading of research literature and facility in presenting material to an audience. Requirements: advanced graduate standing.

**MCB:7290 Seminars in Molecular and Cellular Biology** 1 s.h.
Research findings in molecular biology. Requirements: molecular and cellular biology graduate standing.

**MCB:7305 Molecular and Cellular Biology Research** arr.
Requirements: molecular and cellular biology graduate standing.