Molecular Physiology and Biophysics

Chair
• Kevin P. Campbell

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Faculty: https://medicine.uiowa.edu/physiology/profile
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Courses

Molecular Physiology and Biophysics Courses

**MPB:4199 Research, Independent Study**  arr.
Recommendations: closed to molecular physiology and biophysics graduate students.

**MPB:5153 Graduate Physiology**  4 s.h.
Principles of human physiology, organ systems, cell function. Offered fall semesters. Requirements: grades of C- or higher in BIOL:1411 and CHEM:2210 and CHEM:2220, and graduate standing.

**MPB:5200 Medical Physiology Online**  5 s.h.
Fundamental principles of cellular membranes, muscle, sensory organs, motor neurological systems, autonomic nervous systems, cardiovascular, pulmonary, renal, gastrointestinal, endocrine, and reproductive systems; interdependence of organ systems to maintain a normal physiological state using clinical correlates as applied to humans; basic physiological principles that establish a solid foundation for future pathophysiological and pharmacological concepts. Recommendations: medical, dental, physician assistant, nurse anesthesia, physical therapy, or graduate standing.

**MPB:5201 Advanced Physiology Online**  3 s.h.
Examination of cellular and organ systems of medical physiology; fundamental principles of cellular membranes including muscle, sensory organs, motor neurological systems, autonomic nervous system, cardiovascular, pulmonary, renal, gastrointestinal, endocrine, and reproductive physiology; emphasis on interdependence of organ systems to maintain a normal physiological state (homeostasis) using clinical correlates as applied to humans; basic physiological principles that establish a solid foundation for future pathophysiological and pharmacological concepts.

**MPB:5241 Neuromuscular Diseases: Case-Based Seminar**  1 s.h.

**MPB:6209 Steroid Receptor Signaling**  1 s.h.
Structure-function relationship and genomic and nongenomic actions of the steroid hormone receptor family; basis for actions of novel new ligands on these receptors. Offered spring semesters of even years. Same as NSCI:6209, PCOL:6209.

**MPB: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, secretary/ endocytic membrane system); functions of cytoskeleton in cell motility, organelle motility, and cell division. Prerequisites: BIOC:3130. Same as ACB:6220, MMED:6225.

**MPB: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, MMED:6225, PCOL:6225.

**MPB: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, MMED:6226.

**MPB: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, MMED:6227.

**MPB:6265 Neuroscience Seminar**  0-1 s.h.

**MPB:6302 Research Physiology and Biophysics**  arr.
Requirements: molecular physiology and biophysics graduate standing.

**MPB:7402 Thesis**  arr.
Requirements: molecular physiology and biophysics Ph.D. candidacy.

**MPB:8115 Human Physiology for Dental Students**  4 s.h.
Principles of human physiology, organ systems, cell function. Offered fall semesters. Requirements: grades of C- or higher in BIOL:1411, CHEM:2210, and CHEM:2220; and D.D.S. enrollment.

**MPB: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, secretary/ endocytic membrane system); functions of cytoskeleton in cell motility, organelle motility, and cell division. Prerequisites: BIOC:3130. Same as ACB:6220, MMED:6225.

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Cell cycle regulation, DNA damage-dependent cell cycle regulation, redox-dependent cell cycle regulation, cellular senescence. Same as ACB:6226, MMED:6226.

**MPB: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, MMED:6227.

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