

Molecular View of Human Anatomy: Diabetes

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M10:20A-01:20P

Proteomics Building Room 126

Busch Campus

What do proteins, DNA, and RNA look like? Where do these molecules fit in your body and how do they work? This seminar will introduce you to the basics of structural biology using human anatomy, physiology, and disease as themes.

The focus of the 2016 course will be to understand the structures and functions of proteins involved in the major public health challenge of Type II Diabetes Mellitus, its causes, prevention, treatment, and management of clinical sequelae.

During the first half of the semester, students will learn the fundamentals of structural biology - how proteins, DNA, and RNA are shaped and how their structures are experimentally determined. They will also be introduced to contemporary ideas concerning diabetes, its causes, diagnosis, treatment, and clinical management. Through the second half of the seminar, students will conduct supervised research on proteins related to diabetes. They will learn to appreciate the disease related molecules from a structural perspective and understand how these structures can play an important role in understanding the disease, action of drugs currently used to treat diabetes, and upcoming treatment options. Throughout the semester, students will learn to use scientific data resources (including the Protein Data Bank, PubMed, and UniProt), critically read scientific articles, identify molecules related to the assigned topics, analyze them in detail, and write scholarly articles about them. Students will have the opportunity to get their articles reviewed by experts in the field and publish them on an online educational resource. All class related material will be made available online. Students are strongly encouraged to bring in their own laptops to class.

The seminar has no pre-requisites; science and non-science majors are encouraged to enroll. Students will be evaluated on the bases of two written reports and two oral presentations related to structural aspects of the course them plus participation in class discussions/activities. The seminar requires research-based learning and familiarizes students with a structural view of biology at the atomic level.