



College of Liberal Arts and Sciences
Spring 2022 Chemistry Seminar Series
Friday, April 8th

Dr. Adem Yildirim
Assistant Professor of the Division of Oncological Sciences and CEDAR
OHSU Knight Cancer Institute, School of Medicine

Controlled self-assembly of peptides for cancer detection and therapy

Abstract: Proteases, which catalyze the hydrolysis of peptide bonds of proteins, are essential for many processes in the body, such as angiogenesis, cell migration, wound healing, bone remodeling, and apoptosis. To date, at least 600 proteases have identified that function based on a wide range of catalytic mechanisms for substrate hydrolysis for different purposes, from simply degrading proteins for food digestion and protein turnover to activation of zymogens or complex pathways such as blood clotting cascade. Aberrant activity and location of proteases are linked to many human diseases, including cancer. In addition, dysregulated protease activity is usually correlated with tumor invasion and aggressiveness, metastasis, and poor prognosis of cancer patients. Thus, proteases are promising biomarkers for early detection and prognosis of cancer and targets for molecular cancer therapy. In this seminar, I will discuss the ongoing efforts at CEDAR that utilizes controlled peptide self-assembly to develop sensitive protease activity assays for the early detection of pancreatic cancer. In addition, I will present preliminary data showing that this approach can be used for fluorescent detection of small tumors and metastatic lesions in vivo and their treatment.

Bio: At Division of Oncological Sciences and CEDAR, Adem aims to develop next-generation interfacial engineering technologies and chemistries for colloidal nanomaterials and apply these materials to cancer detection and therapy techniques of clinical relevance. Prior to joining CEDAR, he was a Postdoctoral Associate at the University of Colorado, Boulder in the group of Andrew Goodwin, where he worked on the development of nanoscale contrast agents for ultrasound imaging and therapy. He received his Ph. D. in Materials Science and Nanotechnology from Bilkent University in Ankara, Turkey.