Optical Biosensing for Remote Healthcare: Can we shift the landscape to include both disease management and disease prevention?

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Lecture Hall 143
Light lunch will be served

Although tremendous strides have been made in health care over the years, over one billion people still lack access to health care systems. The global health challenges of today include chronic medical conditions (e.g. cardiovascular disease, cancer, diabetes, asthma, depression, and anxiety), infectious diseases (e.g. HIV/AIDS, influenza, malaria, and tuberculosis), and the conditions closely associated with poverty including malnutrition, diarrheal diseases, and pneumonia. Beyond these chronic and infectious disease health conditions, there is a global need for monitoring health status for the elderly, athletes, astronauts, and field deployed military personnel. In particular, for home healthcare the technology is emerging to enable a paradigm shift that includes disease management and disease prevention.

Specifically, advances in biomaterials and medical devices allow the development of novel systems that will promote a paradigm shift in remote patient monitoring and patient-specific diagnosis and treatment. At the same time, ongoing research and advances in signal processing, telecommunications and networking, along with the ubiquitous connectivity afforded by the internet make it now much easier for doctors to remotely diagnose and treat patients. This marriage of information systems with portable medical devices is key to the success of delivering health care at a distance.

In this presentation both fitness and health in the context of the new Center for Remote Healthcare Technology will be discussed. Specific technologies and research areas will be focused on biomedical sensing devices for remote monitoring including noninvasive wearable devices for monitoring health and fitness such as heart rate as well as point-of-care optofluidic devices for monitoring blood biomarkers such as glucose and cardiac biomarkers.

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