



**סמינר מחלקתי (מוסמכים) – הנדסה ביורפואית**  
**2.12.2012 יום ראשון בשעה 14:00 בנין 30 חדר 300**  
**BME Seminar, Sunday 14:00, Building 30, room 300**

## **Biomedical Cellphone Imaging for the Developing World**

**Itay Remer, PhD candidate**

*Department of Biomedical Engineering, Ben-Gurion University of the Negev*

Blood diseases such as malaria are one of the major causes of morbidity and mortality in third world countries. Conventional diagnostic methods including microscopy of blood samples require clinical laboratory infrastructures and trained technicians – both are rare in most regions where these diseases occur. The need for point-of-care diagnostics and the uprising use of cellphones in developing countries has motivated us to develop a compact and inexpensive diagnostic tool for detection of blood diseases based on cellphone technology that is compatible with current telemedicine networks.

In this talk, I will first introduce the development of an optical probe based on a standard camera cellphone for noninvasive imaging of blood perfusion and precise measurement of biocrystal content. Next, detailed experimental validations of the ability of the cellphone-based probe to measure accurately microcirculatory blood perfusion *in vitro* / *in vivo* will be presented. In particular, I will describe the use of the probe for monitoring of microvascular changes in a murine model of cerebral malaria

In addition, I will present the application of the cellphone-based probe for detection of hemozoin – the malaria pigment – and its synthesized analog (beta-hematin) *in vitro* and will show that parasitemia levels as low as ~0.5% can be detected, suggesting that the probe is capable of early diagnosis of malaria.

### **About the Lecturer**

Itay Remer received his BSc degree in Biomedical Engineering in 2011 from the Department of Biomedical Engineering in Ben-Gurion University of the Negev, where he is currently a PhD candidate in the direct-track program. Itay is pursuing his research work in the lab of Dr. Alberto Bilencia where and his research work is focused on experimental biomedical optical imaging.