



## **סמינר מחלקתי – הנדסה ביורפואית**

**20.11.2019 יום רביעי בשעה 14:00, בנין 51, חדר 15**

**Biomedical Engineering Department Seminar**

**Wednesday 20.11.2019 at 14:00, Building 51, Room 15**

**כיבוד קל יוגש בשעה 14:00, ההרצאה תתחיל ב-14:10**

**Refreshments will be served at 14:00, the lecture will begin at 14:10**

### **The heart clocks: From bench to bedside and vice versa**

**Yael Yaniv**

**Biomedical Engineering Faculty, Technion-IIT**

The heartbeat is the dominant signal in the human body. We can hear it, feel it, and use simple measures to quantify its dynamics. Therefore, it is not surprising that since Egyptian times, its dynamics were correlated with life and death: “If the heart trembles, has little power and sinks, the disease is advancing ... and death is near...” (Papyrus Ebers, circa 1550 BC). Although the correlation between changes in heartbeat dynamics and death has been known since then, the underlying mechanisms behind this correlation are not known. Moreover, when using the current methods to quantify changes in heartbeat dynamics, it is too late to provide a treatment to reverse the heart condition. My lab research focuses on two main objectives: understanding the molecular mechanisms that control heart rate dynamics and developing algorithms to identify changes in heartbeat dynamics in a time window that will allow prediction of future cardiac events or provide treatment in the early stages of a disease.

#### **About the speaker:**

Prof. Yael Yaniv is the head of The Technion Bioelectric and Bio-energetic Systems Laboratory which examines how bioelectric and bioenergetics signal control biological and physiological system function. She is also the head of Mobile Health Lab which develop new algorithms to predict arrhythmogenic episodes by examining variability in the electrical signal. The interdisciplinary research interests focus primarily on sinoatrial/atrial intracellular mechanism connections under healthy and cardiac disease conditions. Specifically, her lab is searching for disease-related changes in the interconnected signaling that may lead to new drug treatments.

Prof. Yael Yaniv’s research makes use of both computational and experimental techniques from the in vitro to the in vivo levels. These techniques include high-speed FRET imaging, dynamics of intracellular signaling measured by confocal microscopy, computational modeling, electrophysiology and bioenergetic measurements, and signal processing of heart rate variability.