Mimicking Cardiomyocyte Functionality *In Vitro* Using Magnetic Gels

The **objectives and expected significance of the proposed research was:** to overcome the limitations of current *in vitro* cardiac models by **creating a human-relevant *in vitro* model of the cardiovascular system that mimics the dynamic environmental pressures to which CMs are subjected *in vivo*.** During the grant period, we accomplished the following:

	Proposed	**Accomplished**
Aim 1	*Develop controllable soft substrate which mimic preload and afterload pressures.*	The platform was developed as we proposed
Aim 2	*Integrate CM into the soft substrate and identify their response to the substrate.*	The gels were optimized for CM growth and viability
Aim 3	*Assess CM functionality under various preload/afterload conditions, and compare it to known PV loops.*	The functionality assessment is still ongoing as we identified interesting response due to the force we applied.

The Nicholas and Elizabeth Slezak Super Center for Cardiac Research and Biomedical Engineering at Tel Aviv University was acknowledged in the following (3) **publications**:

- Recent progress in translational engineered in vitro models of the central nervous system – under review
- Organs-on-a-Chip Technology for Studying Human Physiology – under review
- Mimicking Cardiomyocyte Functionality In Vitro Using Magnetic Gels – In Preparation

In addition, the center was acknowledged in the following (12) **conferences**:

17th International conference on biomedical engineering, NUS engineering, December 9-12, **2019**, Singapore; Technion, Haifa, Israel, December 6th, **2019**; I-NVU: the 1st forum Neurovascular symposium, October 31st, **2019**, Porter, Tel Aviv University, Israel; 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and the 4th Conference on Imaging and Visualization, Columbia University, August 14-16, **2019**, New York, USA; New Technologies for Human Health, Tel Aviv University, May 30th, **2019**, Tel Aviv, Israel; The Gonda Brain Research Center, Bar Ilan University, May 13th, **2019**, Tel Aviv, Israel; Symposium Organs-on-a-Chip, Natural history museum, March 19th, **2019**, Tel Aviv, Israel*;* Dept. of Cell and Developmental Biology, Tel Aviv University, March 17th, **2019**, Tel Aviv, Israel; The Israel Society of Biological Psychiatry, March 13, **2019**, Kfar Blum, Israel; Sagol School of Neuroscience, Tel Aviv University, February 25-26, **2019**, Jerusalem, Israel; 12th TAU Nano workshop, February 19-21, **2019**, Dead Sea, Israel; Freiburg University, February 11, **2019**, Freiburg, Germany.