

## EDUCATION

### **M.S. & Ph.D. in Biomedical Engineering**

1998-2004

"Ben-Gurion University of the Negev", Beer-Sheva, Israel (Prof. Smadar Cohen, academic/thesis supervisor): "Enhancing the Vascularization of 3D Porous Alginate Scaffolds Intended for Tissue Engineering, by Incorporating Controlled Release Angiogenic Factors (VEGF, bFGF)".

### **B.S. in Life Science - Biology**

1990-1993

"The Hebrew University" Jerusalem, Israel

## SUMMARY OF QUALIFICATIONS

Strong background in life science and material science. Working experience with animal cell culture, biology, microscopy, micro/nanofabrication, controlled delivery systems, protein purification and stabilization, and protein arrays. Team player with strong work ethics.

## PROFESSIONAL SKILLS

- Life Science: animal cell culture, cryostat and routine histology, protein and RNA extraction, western- blot, 2D and IEF gels, ELISA, protein stability, *in vivo* implantation (rat, mouse), etc.
- Biomaterials: collagen, fibronectin, gelatin, PLGA, Matrigel, Alginate.
- Biotechnology: electrospinning, lyophilization; critical point drying, Microspheres preparation, Proteomics.
- Microscopy: scanning electron microscopy (SEM), Fourier transform infrared Spectroscopy - (FTIR), confocal microscopy, conventional fluorescence microscopy, Protein array Scanner.
- Statistics: experimental design and data analysis using Excel and SAS.
- Other instrumentations: mechanical property testing machine; surface profiler; UV-visible spectrophotometer; fluorescence spectrometer, Homogenizer, Ultrasound probe, Gel Permeation Chromatography (GPC), rotating wall vessel (RWV) bioreactor .

## PROFESSIONAL ACTIVITIES

### **Postdoctoral Associate**

September 2004 to present

Drexel University, Philadelphia, Pennsylvania

- Designed and developed 3D Scaffolds (nanofibrous scaffolds and Pores scaffolds) for neuron formation guiding survival and regeneration of PC12 and neuronal stem cells.
- Proteomic Analysis of Protein Phosphorylation and Signaling in PC12 Cell Exposed to Modeled Microgravity
- Tissue engineering.
- Investigated the mechanical properties of engineering scaffolds.
- Evaluated the morphology and proliferation of PC12 cells and neuronal stem cells on porous and fibrous three-dimensional scaffolds.
- Implanted tumor cells into mice and extracted extracellular matrix matrigel from the murine Engelbreth-Holm-Swarm (EHS) sarcoma.

### **Visiting scientist**

October 2001

Visiting scientist at Prof Boris Rubinsky's lab, Department of Mechanical Engineering, "University of California Berkeley", U.S.A. Experimenting the effect of freezing on the pore architecture in 3-D alginate scaffolds during fabrication.

## **AWARDS**

- A travel grant to make an oral presentation at the 25th international symposium on controlled release of bioactive materials in Las Vegas, Nevada, U.S.A, June, 1998.
- First prize to outstanding oral presentation from the Israeli chapter of the Controlled Release Society (ICRS) in The 3rd Annual Meeting of The Israel Society for Controlled Delivery of Bioactive Materials. Karmiel, Israel, September 1998.
- First prize to outstanding poster in the annual meeting of the Israel Society for Medical and Biomedical Engineering, Tel-Aviv, Israel, January, 2001.

## **PUBLICATIONS**

- Perets, A. Baruch, Y. Weisbuch, F. Shoshany, G. Neufeld, G. & Cohen, S. (2003) Enhancing the vascularization of 3-D porous alginate scaffolds by incorporating controlled release bFGF microspheres. *Journal of Biomedical Materials Research*, 65A:489-497.
- Kedem, A. Perets, A. Gamlieli-Bonshtein, I. Dvir, M. Mizrahi, S. & Cohen, S. (2005) VEGF-Releasing scaffolds enhance vascularization and engraftment of transplanted hepatocytes transplanted on the liver lobes. *Tissue Engineering* 11:5-6, May-June.
- Lazarovici, P., Li, M., Perets, A., Mondrinos, M.J., Lecht, S., Koharski C.D, Bidez, P.R. III, Finck, CM., and Lelkes, P.I. (2006) Intelligent Biomatrices and Engineered Tissue Constructs: in vitro Models for Drug Discovery and Toxicity Testing. In: *Drug Testing In Vitro: Breakthroughs & Trends in Cell Culture Technology* (U.Marx, & V. Sanding, Eds.). pp 1- 57, J.Wiley Indianapolis, USA.
- Arien-Zakay, H., Lecht, S., Perets, A., Roszell, B., Lelkes, P.I, and Lazarovici, P. (2008) Quantitative assessment of neuronal differentiation in three dimensional collagen gels, using enhanced Green Fluorescence Protein expressing - PC12 pheochromocytoma cells, *J. Molec. Neurosci.*, in press
- Lelkes, P.I., Li, M., Perets, A., Lin, L., Han, J., and Woerdeman, D.L. (2008) Electrospinning of natural proteins for tissue engineering scaffolding in: *Handbook of Natural-based Polymers for Biomedical Applications* Rui L.Reis editor), Woodhead Publishing Ltd, in press
- Li, M., Perets, A., and Lelkes, P.I., (2008) Nanofiber Scaffolds for Tissue Engineering. *Journal of Biomaterials Science (JBS) – Polymer Edition*, manuscript submitted for publication

## **Conference Proceedings**

- Perets, A. Baruch, Y. Spira, G. & Cohen, S. (1998) Fabrication of alginate composites containing vascular endothelial growth factor to enhance scaffold vascularization. *Proceedings of the 25th Intern. Symp. Control. Rel. Bioact. Mater.* K. Park and R. O. Potts (eds).CRS. pp 225-226.
- Perets, A. Baruch, Y. Shankar, L. Neufeld, G. & Cohen, S. (2000) Vascularization of 3-D alginate scaffolds by controlled delivery of VEGF and bFGF. *Proceedings of the 27th Intern. Symp. Control. Rel. Bioact. Mater.* S. Benita and P. Couvreur (eds). Controlled Release Society, Inc. pp 376-377.
- Weisbuch, F. Perets, A. Cohen, S. Shenkar, L. Shoshani, G. Neufeld, G. & Baruch, Y. (2001) Alginate composites containing vascular growth factors enhance scaffolds angiogenesis as a first step before hepatocyte transplantation. *Hepatology*, 34(4): 89, part 2. Suppl. S.