

## **NAME OF LABORATORY: Endocrinology, metabolism and hypertension Institute- Research Labs**

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**PI:** Prof. Naftali Stern, MD and Dr. Gabi Shefer PhD

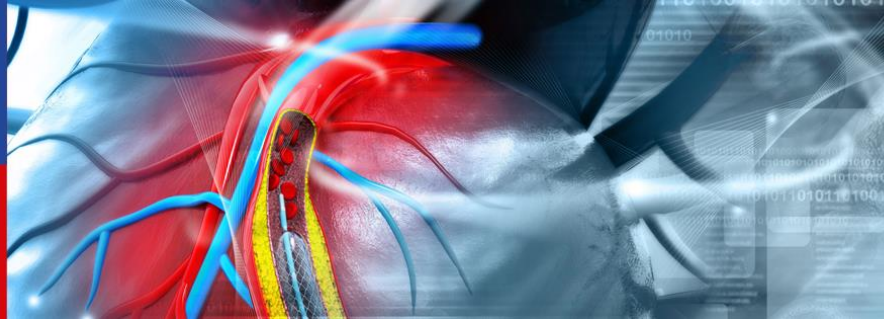
**Director of Department:** Prof. Naftali Stern MD

### **Research Objectives:**

- Mechanisms of Late onset Tay-Sachs disease as a basis for developing novel therapies, mainly using enzymatic replacement therapy;
- Synthesis of chimeric proteins with dual capacity that will a. improve function of damaged brain cells and b. cross the blood-brain barrier into the brain tissue, upon peripheral injection
- Deciphering the influence of hormones, primarily estrogen, on pancreatic beta cell survival, proliferation and function both in cells lines and in primary pancreatic cells from human origins
- Autologous transplantation of pancreatic cells for the prevention of diabetes or as a therapy in models or patients following total pancreatectomy.
- Elucidation of cellular and molecular mechanisms which underlie the metabolic syndrome in older age, focusing on brain, bone, skeletal muscle, and adipose (white and brown) tissue.
- Angiotensin 1-7 as novel regulator of adrenal hormone secretion: towards the development of new measures to lower the overproduction of adrenal hormones, such as aldosterone, and reduce its systemic effects (e.g., hypertension, cardiovascular complications).
- The effect of sorafenib alone or combined with vitamin D and CD-Tboc on the proliferation of thyroid cancer cells of human origin.
- The role of PPAR alpha in the regulation of blood pressure through the renin angiotensin system, and its influence on the process of atherosclerosis
- The role of PPAR alpha, in the central nervous system, on controlling the stress response, and its role in the reproductive system

### **Main Research Topics:**

- Transfer of proteins through the blood-brain barrier, for the purpose of curing neurodegenerative diseases using protein coupled / viral constructs. This is done in the context of enzymatic replacement treatment for late onset Tai-Sachs disease.
- Involvement of the Foxo1 transcription factor in estradiol-17beta induced beta cell proliferation.
- Involvement of the different estrogen receptors in conveying estrogen effect upon normo- and hyperglycemia
- Synergism between estradiol and other hormones; GLP1, vitamin D derivatives
- The biopharmacological role of angiotensin 1-7 and exercise in old age, obesity and the metabolic syndrome.
- Angiotensin 1-7 as a new regulating factor of adrenal aldosterone secretion
- The role of PPAR alpha in the regulation of blood pressure through the renin angiotensin system, and its influence the process of atherosclerosis.



- The role of PPAR alpha, in the central nervous system, on the controls the stress response, and its role in the reproductive system
- Gene therapy of thyroid cancer
- Gene therapy of excess adipose tissue

**Staff:** Prof. Naftali Stern, MD, Dr. ETTY Osher MD, PhD, Dr. Nataly Urshanski PhD, Nadav Sagiv, MSc, Natan Landis, MSc, Dr. Meital Grafi Cohen, PhD, Prof. Karen Tordjman, MD, Dr. Yona Greenman, MD, Dr. Yonit Marcus MD, PhD, Dr. Gabi Shefer PhD, Ms. Esther Knoll, Mrs. Orli Sharon, Dr. Sigal Shaklai MD, PhD, Dr. Yael Sofer MD, Dr. Elena Izhakov MD, Prof. Dalia Somjen PhD.

**Active Grants:**

- Ministry of Health
- Adopt a Researcher – TASMIC internal
- Excellence promotion – TASMIC internal
- Israel Diabetes association
- Israel cancer association Sagol foundation for metabolic syndrome research center

**Collaborations:**

- Prof. Alon Chen, the Department of Neurobiology, the Weizmann Institute of Science
- Prof. Semenkovich, Washington University, St. Louis
- Drs. James Shapiro and Tatsuya Kin at the Clinical Islet Laboratory at the Alberta Diabetes Core, University of Alberta, Canada
- Prof. Meir Wilchek, an Israel Prize Laureate from the Weizman Institute of Science
- Dr. Tamar Unger, Dr. Shira Albek and Prof. Joel Sussman, the Structural Proteomic Institute at the Weizman Institute of Science.
- Prof. Ruth Navon Sackler Faculty of Medicine, Tel-Aviv University, Israel
- The research group of prof. Paul Zimmet, Monash University, Melbourne, Australia
- Dr. Yuval Ebenstein, principle investigator and head of the NanoBioPhotonics lab in the school of chemistry at Tel-Aviv University
- Dr. Elad Segev, Faculty of Sciences, HIT
- Professor Aviv Amirav, Laboratory of Analytical Instruments Development, Department of Chemistry, Tel Aviv University.

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