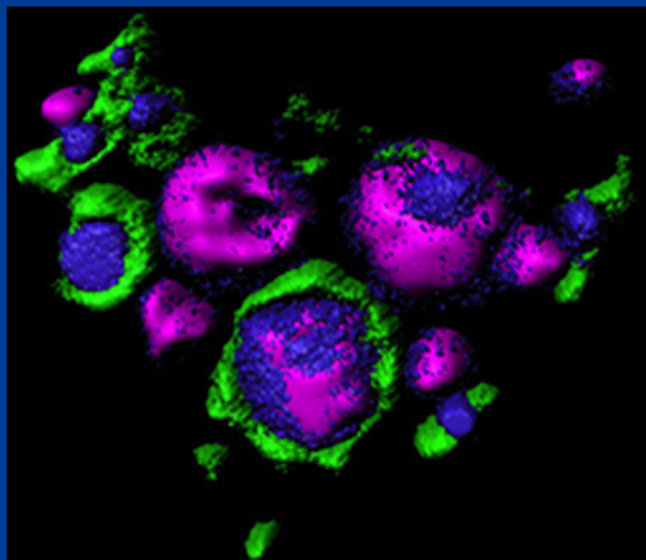
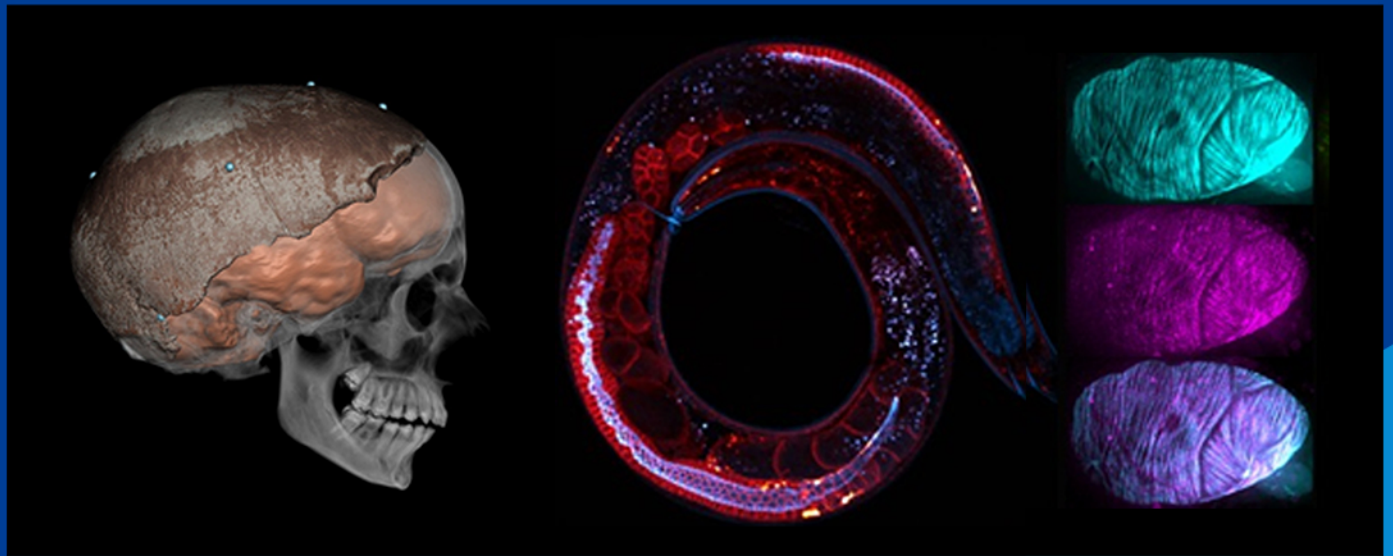
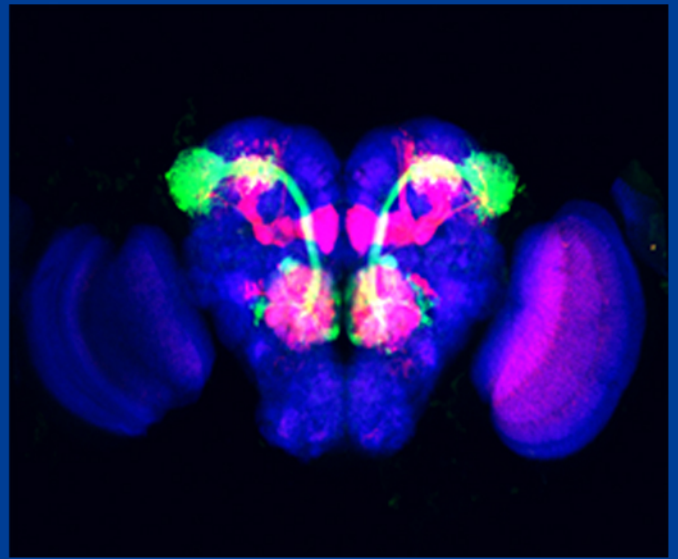




Tel Aviv University  
Faculty of Medicine



Health and Medical Sciences  
at Tel Aviv University

## Our Faculty

### *Basic and translational research*

As the largest health and medical sciences faculty in Israel, our **research and teaching** cover the full spectrum of cutting-edge health and biomedical sciences.

Our **diverse educational and training programs** are delivered by academic staff who are experts in their fields, offering PhD, MSc, MD, DMD, and MPH degrees in medical sciences, clinical medicine, dental medicine, communication disorders, nursing, occupational therapy, physical therapy and public health.

Our broad **areas of research** encompass cancer and molecular therapies, cardiovascular research and diseases, dental health and medicine, diabetes, metabolic and endocrine diseases, genomics, artificial intelligence and precision medicine, hearing, language and speech sciences and disorders, infectious disease, inflammatory and autoimmune diseases, medical education and ethics, nervous system and brain disorders, nursing, occupational and physical therapy, public health, reproduction, development and evolution, stem cells, regenerative medicine and aging.



For more information, please visit <https://en-med.tau.ac.il/>

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Prof. Ran Elkon

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Prof. Bruria Adini  
Dr. Ilana Dubovi  
Dr. Natalia Freund  
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Prof. Khitam Muhsen

#### ***Development, Aging and Regeneration***

Prof. Lihi Adler-Abramovich  
Prof. Ruth Ashery-Padan  
Dr. Daniel Bar  
Prof. Dafna Benayahu  
Prof. Yankel Gabet  
Prof. Chen Luxenburg  
Prof. Ronen Zaidel-Bar

#### ***Diabetes, Metabolic and Endocrine Diseases***

Prof. Shimon Efrat  
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#### ***Education Training***

Prof. Orit Karnieli-Miller

#### ***Ethics, Biomedicine and Policy***

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#### ***Genomics and Precision Medicine***

Prof. Gil Ast  
Prof. Karen B. Avraham  
Prof. David Gurwitz  
Prof. Noam Shomron

#### ***Infectious and Inflammatory Diseases***

Prof. Motti Gerlic  
Prof. Fuad Iraqi  
Prof. Ariel Munitz

Prof. Nir OsheroV  
Prof. Udi Qimron  
Prof. Ronit Sagi-Eisenberg  
Prof. Dor Salomon

#### ***Nervous System and Brain Disorders***

Dr. Avraham Ashkenazi  
Prof. Bernard Attali  
Dr. Tami Bar-Shalita  
Dr. Orit Bart  
Dr. Ran Darshan  
Prof. Hagit Eldar-Finkelman  
Dr. Arseny Finkelstein  
Prof. Illana Gozes  
Dr. Yoni Haitin  
Prof. Talma Hendler  
Prof. Yael Henkin  
Prof. Michal Itzhaki  
Dr. Michal Katz-Leurer  
Prof. Liat Kishon-Rabin  
Prof. Rachel Kizony  
Dr. Tal Laviv  
Prof. Tova Most  
Prof. Yuval Nir  
Prof. Daniel Offen  
Dr. Moshe Parnas  
Prof. Eran Perlson  
Prof. Sigal Portnoy  
Dr. Violetta Rozani  
Dr. Angela Ruban  
Dr. Moran Rubinstein  
Dr. William (Will) Saban  
Prof. Inna Slutsky  
Dr. Ido Tavor  
Dr. Noham Wolpe  
Dr. Nogah Zeltzer

#### ***Public Health***

Dr. Anat Amit-Aharon  
Dr. Moran Bodas  
Prof. Gabriel Chodick  
Prof. Dani Cohen  
Prof. Jiska Cohen-Mansfield  
Dr. Yftach Gepner  
Prof. Yariv Gerber  
Dr. Israel Halperin  
Dr. Samah Hayek  
Dr. Yael Lahav  
Prof. Liat Lerner-Geva  
Dr. Uri Obolski  
Prof. Chava Peretz  
Prof. Leah Rosen

#### ***Rehabilitation***

Dr. Michal Avrech Bar  
Prof. Ruth Defrin  
Prof. Jason Friedman  
Dr. Alon Kalron  
Prof. Debbie Rand  
Prof. Navah Ratzon  
Dr. Mor Saban  
Dr. Osnat Segal  
Dr. Sigalit Warshawski  
Dr. Yael Zaltz

#### ***Training opportunities***

#### ***Life in Tel Aviv***

## Vision

We believe that bringing together the best and brightest minds – faculty, research associates, post-doctoral fellows and graduate students at the Faculty of Medicine - will expedite medical breakthroughs.

Our **Preclinical Faculty** members performing basic and translational research on the Tel Aviv University campus, along with our **Clinical Faculty** members at the 18 affiliated medical centers and hospitals in the greater Tel Aviv area, are the key to our success to **translate our research** into effective cures and treatments.

## The Faculty by numbers

- 110 Preclinical Faculty members, with labs on the Tel Aviv University Ramat Aviv campus, and 14 with labs at the affiliated hospitals
- 1200 Clinical Faculty members, with labs at the 19 affiliated hospitals in the greater Tel Aviv area
- 1,050 Graduate students performing research on campus and hospitals
- 1250 Medical, 360 Dental, 1660 Health Profession and 600 Public Health students



Prof. Karen B. Avraham, PhD  
Dean

### Dean's Committee:

**Prof. Rina Rosin-Arbesfeld**, PhD, Vice Dean for Preclinical Affairs

**Prof. Eli Sprecher**, MD, PhD, Vice Dean for Clinical Affairs

**Prof. Neta Erez**, PhD, Vice Dean for Preclinical Teaching Excellence & Mentoring

**Prof. Anat Gafter-Gvili**, MD, Vice Dean for Clinical Teaching Excellence & Mentoring

**Prof. Ronen Zaidel-Bar**, PhD, Vice Dean for Preclinical Research Innovation & Development

**Prof. Benjamin Dekel**, MD, PhD, Vice Dean for Clinical Research Innovation & Development



## Schools & Departments

School of  
Medicine

Anatomy & Anthropology  
Cell & Developmental Biology  
Clinical Microbiology &  
Immunology  
Human Molecular Genetics &  
Biochemistry  
Physiology & Pharmacology  
Pathology  
Medical Education

School of  
Public  
Health

Emergency Management &  
Disaster Medicine  
Epidemiology and  
Preventive Medicine  
Health Promotion  
Sports Institute

School of  
Health  
Professions

Nursing  
Physical Therapy  
Occupational Therapy  
Communication Disorders

School of  
Dental  
Medicine

Oral Biology

# Our areas of study

Understanding and conquering human disease remains one of the most important missions of humanity. Despite centuries of continuous progress, we still lack basic knowledge about the human body in health and disease. From genetics and biochemistry to epidemiology and public health, from virology to immunology, and from diabetes to cancer -- at the Faculty of Medicine we apply our basic curiosity of the **secrets of life** to **questions** that actually matter. We strive to improve **patient care** by bettering our **understanding of human disease**. Join us in this important and fascinating journey.

**Anthropology and Ancient DNA**

**Cancer and Molecular Therapies**

**Cardiovascular Research and Diseases**

**Computational Biomedical Research**

**COVID-19 Pandemic**

**Development, Aging, and Regenerative Medicine**

**Diabetes, Metabolic and Endocrine Diseases**

**Ethics, Biomedicine and Policy**

**Genomics and Precision Medicine**

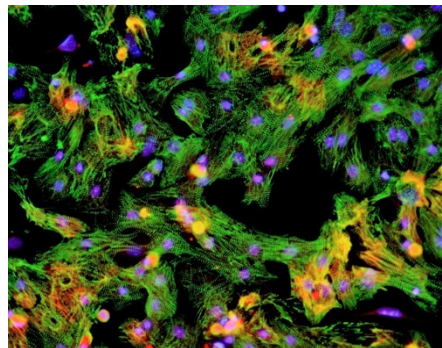
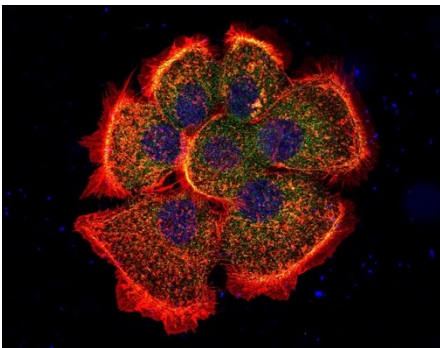
**Infectious and Inflammatory Diseases**

**Molecular targeting and drug discovery**

**Nervous System and Brain Disorders**

**Public Health**

**Rehabilitation**



Credits:

Left – Primary mouse keratinocyte stained with phalloidin (red), striatin (green), and Dapi (blue). Yarden Shor, Michal Caspi, Rina Rosin-Arbesfeld.

Middle - Induction of heart cell growth. OPN activates signals (yellow) that enter the heart cell (green) nuclei (blue). Itai Rotem, Jonathan Leor.

Right - *C. elegans* germline expressing a membrane marker. Yusuke Hara, Ronen Zaidel-Bar.

# *Centers, Institutes and Hubs*

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**Prof. Yftach Gepner** at the Sylvan Adams Sports Institute

[\*\*Aufzien Family Center for the Prevention & Treatment of Parkinson's Disease\*\*](#)

[\*\*Felsenstein Medical Research Center\*\*](#)

[\*\*Goldschleger Eye Research Institute\*\*](#)

[\*\*Sylvan Adams Sports Institute\*\*](#)

[\*\*Neufeld Cardiac Research Institute\*\*](#)

[\*\*Yoran Institute for Human Genome Research\*\*](#)

[\*\*Sagol Center for Regenerative Medicine\*\*](#)

[\*\*Gertner Institute of Nanomedicine\*\*](#)

# Anthropology and Ancient DNA



## Affiliations

[Dan David Center for Human Evolution and Biohistory Research](#)

[Shmunis Family Anthropology Institute \(SFAI\)](#)

The Institute is dedicated to investigating the thousands of fossil specimens that comprise the Sackler Biological Anthropology Collection, one of the world's largest, employing state-of-the-art technologies. The Skeletal Imaging Laboratory, the heart of the institute, is enabling scholars to extract hidden information from fossils on the multitude aspects of past human behavior, nutrition

and health. Images are stored in a database, forming the Shmunis Digital Library, a web-based resource made available for scholars around the world.

The Institute is managed by Prof. Israel Hershkovitz, Dr. Hila May, Dr. Rachel Sarig, and Dr. Viviane Slon.



Neanderthal skull from Amud cave 50,000 years ago.

Young anthropologist in action: Emma Blatt excavating at Manot Cave (photo with permission).





# *Affiliated Centers*

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[Blavatnik Center for Drug Discovery](#)

[Center for Nanoscience and Nanotechnology](#)

[Edmond J. Safra Center for Bioinformatics](#)

[Center for Artificial Intelligence & Data Science \(TAD\)](#)

[Healthy Longevity Research Center](#)

[Cancer Biology Research Center](#)



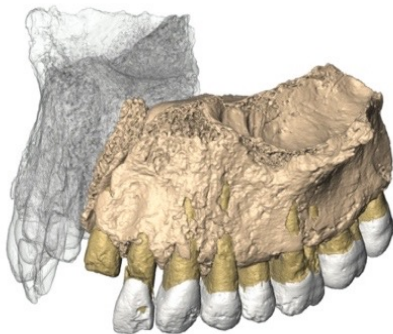
Source: Healthy Longevity Research Center

## Prof. Israel Hershkovitz



### *Paleopathology in medicine*

Prof. Hershkovitz' varied research touches many aspects of past population life. By providing detailed descriptions of bone modifications for many diseases, he made paleopathology an evidence-based medical discipline. His studies showed how evolution affect current people health (demonstrating that many spinal diseases are "trade off" for bipedalism), and how important



Prof. Hershkovitz is an emeritus Professor in the Department of Anatomy and Anthropology, where he is head of the Dan David Laboratory for the Search and Study of Modern Humans. He is also Head of the Tassia and Dr. Joseph Meychan Chair for the History and Philosophy of Medicine. During his career he has been engaged in numerous excavations in Israel, responsible for some of the major fossils found in the country, and was a key person in establishing and organizing the fossil collection at the Faculty of Medicine.

diseases were in shaping past population physique (being the right hand of natural selection). He introduced the time dimension into medical thinking and showed how human behavior and climate affect population health in past times. He further showed that the turning point in human population health was at the advent of agriculture, some 10,000 years ago. He documented the first modern humans migrating out of Africa (Misliya cave fossils 200,000 years ago), and retrieved the mother population of all present people outside Africa (Manot cave fossils 55,000 years ago).

# Anthropology and Ancient DNA

## Dr. Hila May



### *Biohistory and evolutionary medicine*

What make people vulnerable to diseases? Most present-day health hazards, such as obesity, cancer, sclerosis, and arthritis, have their roots thousands or even millions of years ago, when humans began to acquire their current anatomical shape. Dr. May studies recent and past human populations to achieve new insights on long lasting biological and social phenomena. This type of research allows a comprehensive understanding of human behavior, biology and illness. The research is based on a

Dr. May is head of the Biohistory and Evolutionary Medicine Laboratory at the Department of Anatomy and Anthropology. She is affiliated to the Dan David Center for Human Evolution and Biohistory Research. Dr. May graduated from Tel Aviv University in Life Sciences and Sociology and Anthropology, obtained an MSc in Evolutionary Medicine, and a PhD in Physical Anthropology at Tel Aviv University. For her postdoctoral research, she joined the Institute for Evolutionary Medicine at Zurich University, where she specialized in methods of virtual anthropology. The research in her laboratory is multidisciplinary and involves novel methodologies for the study of past populations and revealing the evolutionary causes of modern-day diseases. Dr. May won the Memorial Award from the BSF for young scientists.

<https://hilamaylab.wixsite.com/bem-lab>

multidisciplinary approach for the study of humankind and combines both genetic and morphological data. The morphological research is carried out using advanced imaging techniques, as well as traditional anthropological methods. The genetic study uses cutting-edge techniques of DNA that is extracted from ancient bones.



## Prof. Rachel Sarig

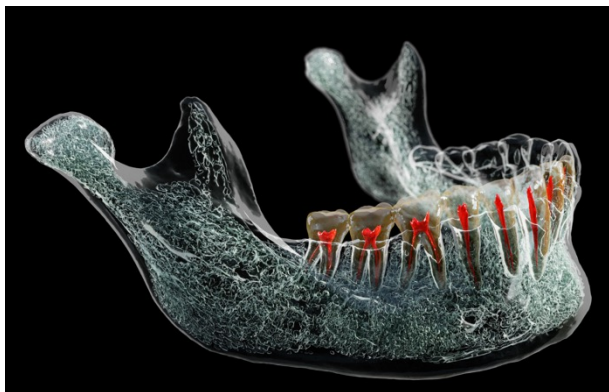


Prof. Sarig is at the Goldschleger School of Dental Medicine, where she is a principal investigator and the head of the Dental Anthropology Laboratory. Sarig is a graduate of Tel Aviv University, having completed her D.M.D. and her Ph.D. in anatomy and anthropology, and her post-graduate studies in orthodontics (*summa cum laude*), all at the Faculty of Medicine. Prof. Sarig is the Head of the Dan David Center for Human Evolution and Biohistory Research, and Head of the Shmunis Family Anthropology Institute.

### Dental anthropology

Understanding who we are and where we come from can shed a light on our future. Many of the current oral diseases and malformations have their roots in our evolutionary history. Knowing the evolutionary processes that led to the current shape and size of our skull and mandible may greatly bear on our understanding of phenomena such as malocclusions, dental malformations and oral

diseases. Prof. Sarig's main interest is in studying the evolutionary and environmental effects on oral health in prehistoric populations and their implications on modern societies. The study of the masticatory apparatus is conducted both on prehistoric and modern samples using laboratory models, micro-CT scans and clinical studies.





## Dr. Viviane Slon



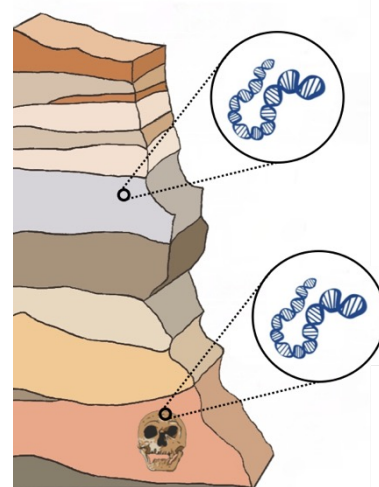
### Ancient DNA

Who were the people living in our region in prehistoric times? Were they related to other populations living elsewhere in the world at the same time? Did they migrate or otherwise interact with populations living in neighboring regions? How were their societies organized? To answer such questions, we analyze DNA from ancient individuals, which we recover both from skeletal remains and from sediments deposited at archaeological sites. We do so by implementing and pursuing the development of state-of-

Dr. Slon is at the Departments of Anatomy and Anthropology and Human Molecular Genetics and Biochemistry and affiliated with the Dan David Center for Human Evolution and Biohistory Research. Her PhD and post-doctoral research on ancient hominin DNA were conducted in the Department of Evolutionary Genetics of the Max Planck Institute for Evolutionary Anthropology (Leipzig, Germany). She has an MSc in Medical Sciences and a BSc in Medical and Life Sciences, both from Tel Aviv University. Dr. Slon is the recipient of the Dan David Prize Scholarship for Young Researchers, the Otto Hahn Medal, the Otto Hahn Award, and the Alon Fellowship.

<https://www.tau.ac.il/~viviane/>

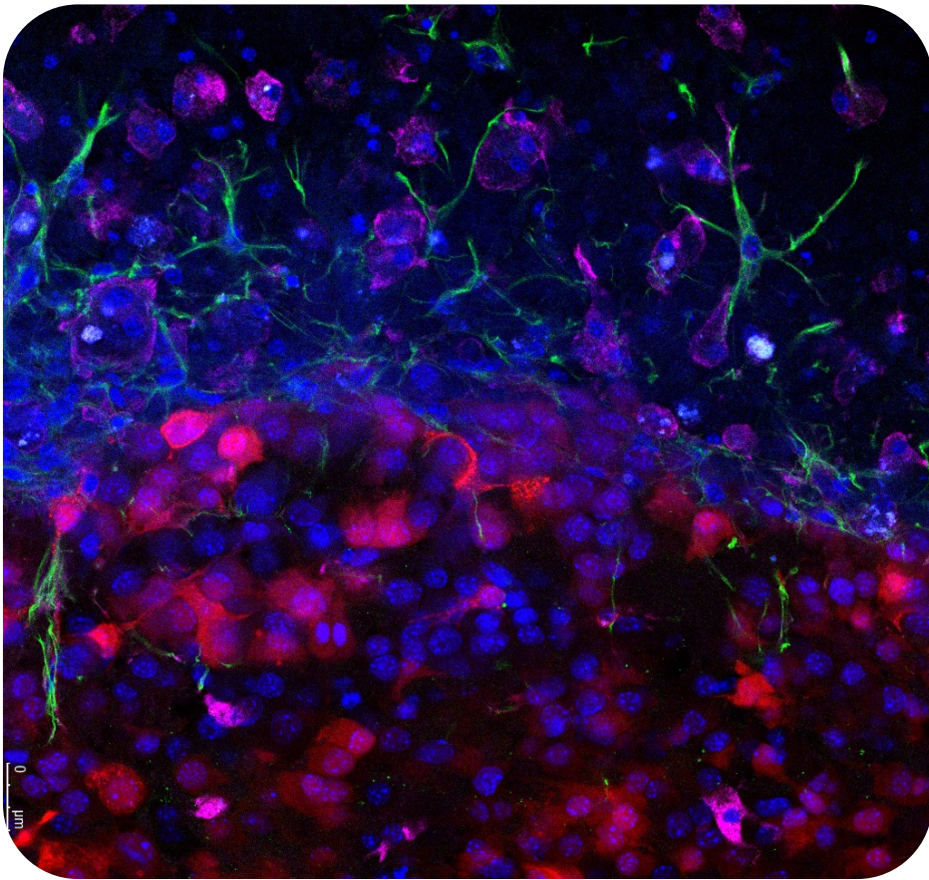
the-art methodology suited to face the challenges of DNA preservation over time in warm climates. Our newly-established laboratory, which includes a clean room facility dedicated to the generation of ancient DNA data, is the first of its kind in Israel. The study of ancient genomes allows to elucidate not only who were the people living in the past, but also how past events affect on our own genomes today.



S. Peyrégne

## *Affiliations*

Cancer Biology Research Center



Melanoma brain metastases. Tumor cells, red; astrocytes, green; microglia, violet. Neta Erez.

## Prof. Sivia Barnoy



### *Nursing genetics and information technology*

Patients do not always share hereditary cancer information with their at-risk relatives. Prof. Barnoy is engaged in studies that deal with testing and disclosure of cancer genetic information to blood relatives. She examines factors such as stigma and health beliefs that might influence the decision to be tested and share test results with relatives.

Prof. Barnoy, Department of Nursing, School of Health Professions, completed her nursing degree at the Hebrew University with distinction. She then obtained an M.Sc. (graduated with distinction) and Ph.D. at the Department of Human Genetics of the School of Medicine at Tel Aviv University. Barnoy served as the department chair between 2010-2014. She is active internationally in genetic nursing in the International Society for Nurses in Genetics, who in 2018 granted her the Founder Award for Excellence in Research. She was nominated as the Israeli delegate in the Global Genomic Nursing Alliance Initiative.

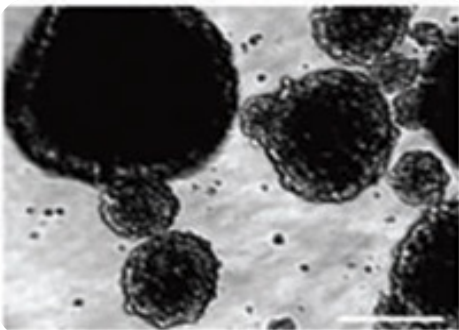
Her approach is unique as she studies this question from both the patients, the counselees, and counselors' point of view. The Israeli law states that genetic information belongs to the counselees; however, her current results call for a re-discussion about the privacy of genetic information.

## Prof. Uri Ben-David



### *Cancer aneuploidy*

Healthy human cells have 23 pairs of chromosomes. Any deviation from this number – known as aneuploidy – has very severe consequences. For example, an extra copy of chromosome 21 results in Down syndrome. However, cancer cells are highly aneuploid, and aneuploidy is even required for tumor



Prof. Ben-David, Department of Human Molecular Genetics and Biochemistry at the School of Medicine, completed his PhD at the Hebrew University and his postdoctoral training at the Broad Institute of Harvard and MIT. Prof. Ben-David is a principal investigator at the Department of Human Molecular Genetics and Biochemistry at the School of Medicine. He completed his PhD at the Hebrew University and his postdoctoral training at the Broad Institute of Harvard and MIT. He was selected as a "Next Generation Star" of the American Association for Cancer Research (AACR). He has earned several prestigious prizes for early-career scientists, including 2021 Cells "Young Investigator of the Year" Award and the 2022 "Krill Award" by the Wolf Foundation. He is a recipient of the ERC Starting Grant. At the TAU Board of Governor's in May 2023, he will be awarded the Kadar Family Award for Outstanding Research.

<https://www.bendavidlab.com/>

progression. Prof. Ben-David studies this "aneuploidy paradox" using state-of-the-art genomic and functional approaches. The work in the lab aims to uncover the basic biology underlying this hallmark of cancer, and to exploit it to target cancer cells and eliminate tumors.



## Dr. Yaron Carmi

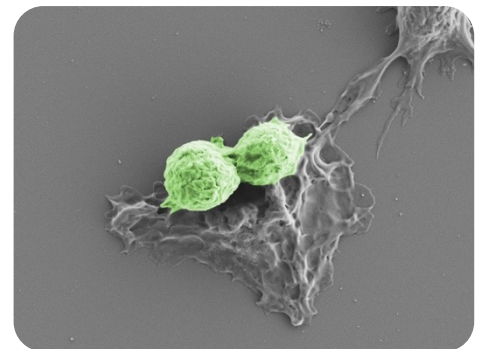


### Cancer immunotherapy

Our body's immune system knows how to attack and kill cancer cells – so why isn't this happening in each case? How do we unblock this natural lethal response? Dr. Carmi is taking a fresh approach to the problem using advanced microscopy and genetic engineering to monitor, in real time, how our immune cells communicate with each other. He will use the new understanding to develop better, safer therapies that kick in the natural anti-cancer immune response.

Dr. Carmi, Department of Pathology, completed his PhD studies *summa cum laude* at Ben-Gurion University of the Negev and won the *Pratt* award for excellence PhD students. He completed his postdoctoral training at the Department of Immunology at Stanford University, where he earned the *Young Investigator Award*. His work on dendritic cell vaccination was published in *Nature* and *Cell* and he has co-authored manuscripts in peer-reviewed journals, including *Science* and *Immunity*, and written four patents. Based on his findings, he co-founded two companies, Bolt Therapeutics and more recently, Gilboa Therapeutics, and he serves as a consultant in Velocity Pharmaceutical Development venture capital, and as a board member at the Israel Society for Gene and Cell Therapy. Carmi was awarded the Alon Fellowship for outstanding young Israeli scientists.

<https://www.carmilab.org/>



NK cells attacking a tumor cell

## Dr. Merav Cohen



### Immunotherapy targets using single-cell analysis

Tissue development, homeostasis and pathologies are highly regulated processes orchestrated by intercellular crosstalk between immune cell niche and tissue resident cells, not necessarily from the immune lineage. Dr. Cohen incorporates state-of-the-art single cell RNA-sequencing technologies, murine models, clinical approaches and advanced computational methods in order to reveal the molecular signature of interacting cells that drives

Dr. Cohen, Department of Clinical Microbiology and Immunology, received her MSc in the field of Cancer Immunology from the Faculty of Engineering Sciences, Department of Biotechnology Engineering, Ben-Gurion University of the Negev, in a direct MSc track for excellent students, and graduated *summa cum laude*. She received her PhD in the field of 'Neuro-Immunology' from the Department of Neurobiology, the Weizmann Institute of Science. Dr. Cohen performed her postdoctoral training in the field of 'Immuno-Genomics', at the Department of Immunology at the Weizmann Institute of Science, and at the Department of Oncological Sciences, Icahn School of Medicine at Mount Sinai, New York, in the field of 'Cancer Immunology'. She won the Feinberg Graduate School Prize for Outstanding Achievements in Postdoctoral Research, and the Ministry of Science and Technology Scholarship for Postdoctoral Fellows in Applied and Engineering Science.

<https://www.mcohenlab.com/>

exclusive cell function. The lab aims to assess similarities and discrepancies in interactome molecular signature between tissue development process and cancerous conditions in order to identify novel immunotherapy targets, directed against intercellular crosstalk.

## Prof. Neta Erez



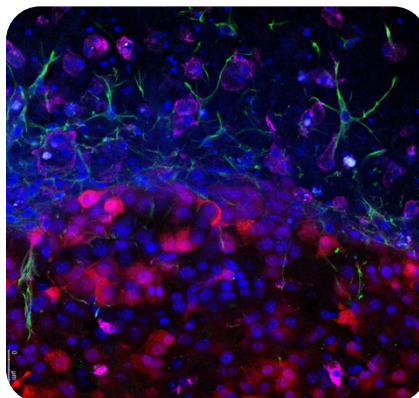
### *Tumor microenvironment in metastasis*

The research of Prof. Erez is focused on tumor biology, tumor microenvironment, cancer-related inflammation and the role of stromal cells in facilitating tumor progression and metastasis. Her main focus is in understanding the early stages of metastatic relapse, and the role of the metastatic microenvironment. Prof. Erez studies these crucial aspects of cancer using genetically engineered

Prof. Erez, Department of Pathology, began her academic career at the Faculty of Agriculture, Hebrew University where she received her B.Sc. She then proceeded to complete her M.Sc. and Ph.D. at the Weizmann Institute of Science in the field of tumor immunology. Supported by a fellowship from the Cancer Research Institute (CRI), Dr. Erez performed her postdoctoral research at the University of California, San Francisco, working in the field of tumor biology. She is on the European Association for Cancer Research (EACR) board and is Vice President of the Israeli Society for Cancer Research (ISCR).

<https://netaerez.tau.ac.il/>

models of breast cancer and of melanoma. The main goal of the studies is to identify key molecular pathways in the communication between tumor cells and their microenvironment that can be targeted by novel therapeutics, to prevent tumor metastasis.



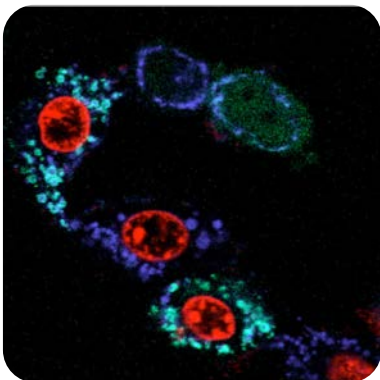
Melanoma brain metastases:  
Tumor cells, Astrocytes, Microglia

## Prof. Zvi Fishelson



### *Cancer cells resisting immunity*

Several therapeutic approaches try to enlist the patient's immune system for killing of his/her cancer. All these approaches face a major obstacle: cancer cells are resistant to any type of damage inflicted by the armory of our immune system. Prof. Fishelson has uncovered several defense strategies employed by cancer cells to resist immune attack. His team is currently



Prof. Fishelson is a member of the Department of Cell and Developmental Biology and an Incumbent of The Roberts-Guthman Chair in Immunopharmacology. He served as President of both the International Complement Society and European Complement Network (ECN) and was awarded an ECN Gold Medal. He is treasurer of the Israeli Society for Cancer Research, Board Member of the Israel Immunological Society and member of the Henry Kunkel Society. He is an editorial board member of *Molecular Immunology* and associate editor of *Frontiers in Immunology*.

investigating the molecules that protect the cancer cells and their mode of action, and seek potential intervention points through which this protection could be annulled. They develop reagents that block resistance of cancer cells, sensitize them to available immunotherapies and enable the patient's immune system to destroy its cancer.



## Dr. Maayan Gal



### *Protein modulators for therapy*

Dr. Gal focuses on the discovery and development of novel protein modulators as the basis for new therapeutics. Of main interest are the challenging targets belonging to the biological space of protein-protein interactions (PPIs). For this purpose, we are integrating cutting-edge computational, biophysical and cellular biology tools. We are focused on the interaction of calcineurin-NFAT proteins, known as the T-cell activation switch,

Dr. Gal is a faculty member in the Department of Oral Biology at the School of Dental Medicine. He completed his PhD studies at the Department of Chemical Physics at the Weizmann Institute of Science and was an HFSP postdoctoral fellow at the Harvard Medical School. He ran an independent lab at Migal in northern Israel. Gal co-founded two biotech companies dealing with food and Ag.Chem protein modulators.

<https://maayaangaal.wixsite.com/galma>

as the basis for developing new immunosuppressant and on immune checkpoint receptors function. The T-cell inhibition switch is the basis for developing new therapeutics for inflammation and cancer.

## Prof. Carmit Levy



### Cancer development and other side of UV exposure

The human body takes different measures in order to protect itself against the results of UV exposure and its accompanied hazards, such as skin cancer. Despite extensive studies regarding the molecular regulation of the two main UV protection mechanisms, namely, the DNA repair system and the pigmentation system, a comprehensive theory that simultaneously accounts for the two systems is still missing. We aim to elucidate, for the first time, the dynamic control used to schedule and synchronize the UV protection subsystems. Furthermore, melanoma is

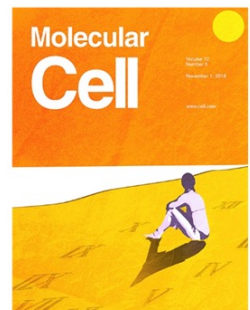
Prof. Levy is in the Department of Human Molecular Genetics and Biochemistry. She performed her PhD at the Hebrew University of Jerusalem and her post-doctoral training at the Harvard Medical School and Broad Institute. Since establishing her research team, Levy received the ERC Consolidator Award, the Rector and Dean Excellence in Teaching Awards, and the International Young Melanoma Investigator Award of the Society of Melanoma Research.

<https://carmitlevylab.com/>

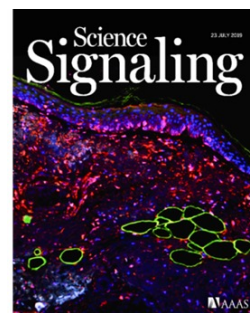
the most lethal skin cancer. It is also a preventable cancer with the most rapid increase in its incidence. Although the majority of patients are diagnosed in the early phase of disease, about 10% of patients will develop systemic disease and succumb to it. Checkpoint inhibitors (CPIs) and targeted agents (TAs) have had a tremendous impact on this disease's course. We aim to find biomarkers for melanoma treatment response and to further dissect their mechanism of action, in order to enhance the effectiveness of immunotherapy.



Dror et al 2016



Malcov et al 2018



Golan et al 2019

## Dr. Asaf Madi



Dr. Madi, head of the Systems Immunology Lab, completed his Ph.D. studies at Tel Aviv University in computational immunology. Dr. Madi then continued to do a postdoctoral fellowship at Harvard Medical School, Brigham and Women Hospital, Broad Institute of Harvard and MIT, Boston, USA where he mainly focused on the study of T-cell differentiation and cancer immunology.

[www.asafmadilab.com](http://www.asafmadilab.com)

### *Systems immunology for cancer*

Can we activate our immune system to fight cancer? What immune cells are important and what prevents them from exercising their anti-tumor functions? Can we trigger these specific immune cells to destroy cancer cells and at the same time provide an immunological memory to prevent recurrence of the disease? The main interest of the lab is studying gene circuits of immune cells involving differentiation, activation and regulation. We focus on exploring these cells and circuits mainly in the context of the tumor pathology following stimulation,

immunotherapies or cell-cell interactions. We apply cutting-edge technologies including 3D bioprinting of tumors, single cell RNA-seq and spatial transcriptomics, mouse tumor models, molecular biology, and other high-throughput genetic and genomic methods combined with advanced computational approaches to identify and functionally characterize genes that play an important role in immune cell circuits and their effect on tumor growth. This approach will enable in-depth studies of immune-cell signaling in the context of the tumor microenvironment.

## Dr. Michael Milyavsky



### *Leukemia hematopoietic stem cells*

As we age, our blood (hematopoietic) stem cells (HSCs) suffer from accumulated mutations in their DNA that eventually can lead to accelerated leukemogenesis and/or inefficient immune response. How normal and leukemia stem cells regenerate after acute or chronic damage is our main research interest. Dr. Milyavsky addresses these questions by studying DNA damage signaling and its outcomes

Dr. Milyavsky is at the Department of Pathology, School of Medicine, where he is a principal investigator and the head of the Hematopoietic Stem Cell and Leukemia Laboratory. Dr. Milyavsky is a graduate of the Weizmann Institute of Science, having completed his M.Sc. and Ph.D. in molecular and cellular biology. Michael completed his post-doctoral training in hematopoiesis and leukemia at the University of Toronto, Canada.

[www.milyavskylab.com](http://www.milyavskylab.com)

in highly purified human normal and leukemia cell subsets. Uniquely, we use humanized mice and genetic engineering to monitor in real time how normal and leukemia stem cells communicate with other bone marrow cells in the process of regeneration. We will use this new understanding to stop regeneration of leukemia cells without harming normal HSC?



## Dr. Yaara Oren

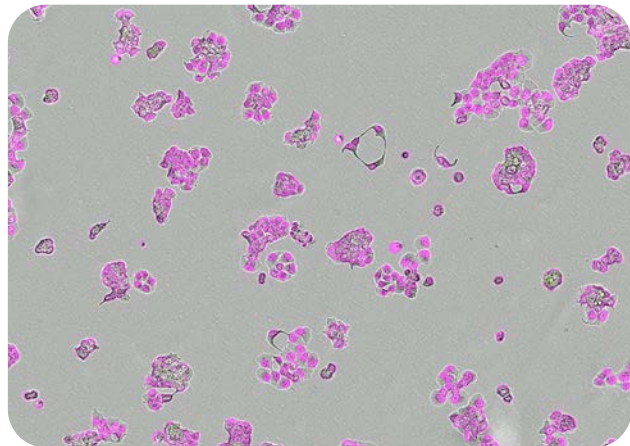


### *Cancer persister cells*

Our lab studies non-Darwinian evolution in the context of cancer therapy. We focus on a recently discovered sub-population of cancer cells, called persister cells, that can evade therapy through a non-mutational reversible mechanism. We combine experimental and computational approaches to uncover the basic biology underlying the ability of cells to survive drug onslaught in the absence of a resistance-mediating genetic alteration. We develop new tools and systems to study reversible resistance in hope to pave the way for new therapeutic approaches that could prevent the emergence of genetic resistance.

Dr. Oren is a new faculty member at the Department of Human Molecular Genetics and Biochemistry at the School of Medicine, completed her PhD at Tel Aviv University and her postdoctoral training at the Broad Institute of Harvard and MIT. She was recently selected as a Zuckerman Faculty Scholar. She has earned several prestigious prizes for early-career scientists, including the American Association for Cancer Research Women in Cancer Scholar Award, the Rivkin Award, and the Cozzarelli Prize for scientific excellence and originality in biomedical sciences.

<https://www.yaaraoren.sites.tau.ac.il/>

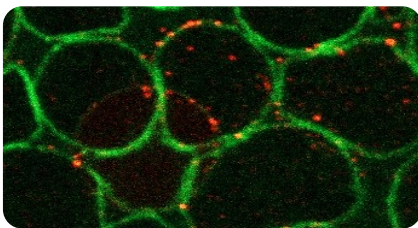


## Prof. Rina Rosin-Arbesfeld



### *Molecular changes in cancer*

Wnt signaling is one of the most fundamental signaling cascades involved in both development and homeostasis. Aberrant activation of the Wnt pathway is associated with numerous diseases, most notably in the development of colorectal cancer (CRC). The Rosin-Arbesfeld lab focuses on different aspects of Wnt signaling in both sickness and health. The team conducts comprehensive genetic and biochemical screens to isolate novel



Prof. Rosin-Arbesfeld received her PhD in Biochemistry and Microbiology from TAU and trained as a post-doctoral fellow at the MRC-LMB in Cambridge, UK. Rosin-Arbesfeld serves as Vice Dean for Preclinical Affairs and head of the Preclinical Promotions Committee of the Faculty of Medicine. Rosin-Arbesfeld has competitive grant funding from the US-Israel Binational Science Foundation, the Jerome Lejeune Foundation, and the German-Israeli Foundation for Scientific Research and Development.

<http://www3.tau.ac.il/rosin-arbesfeld/>

regulators of the Wnt pathway in order to identify new targets for therapeutic purposes. Currently, the team is involved in pre-clinical, as well as clinical trials, aimed at restoring the normal expression of tumor suppressors, known to inhibit the Wnt pathway in patients suffering from hereditary CRC. The team is looking into the relationships between Wnt signaling and the microbiome and have identified bacteria that are involved in CRC development.

Wnts associate with the erythrocyte membrane



## Prof. Ronit Satchi-Fainaro



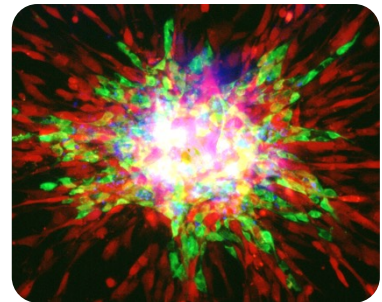
### Nanomedicine

Major efforts invested into the development of new drugs often fail to be translated into meaningful clinical benefit for cancer patients. Developing effective novel therapeutics for cancer while accurately predicting their clinical success in certain cancer types remains an urgent unmet medical need. Prof. Satchi-Fainaro incorporates cutting edge multidisciplinary basic, translational and clinical approaches to explore this scientific “blind spot”. To this end, Satchi-Fainaro develops clinically relevant 3D cancer models that better capture the clinical characteristics and drug

Prof. Satchi-Fainaro is at Department of Physiology and Pharmacology, where she is head of the Cancer Research & Nanomedicine Laboratory, Head of the TAU Kahn 3D BioPrinting Initiative and holds the Kurt and Herman Lion Chair in Nanosciences and Nanotechnologies. She completed her PhD in Polymer Chemistry and Cancer Nanomedicine at the University of London and her postdoctoral training at Harvard University and Children’s Hospital Boston working on Vascular and Cancer Biology. She was awarded the Fulbright, Rothschild, and JULUDAN Prizes, Teva Pharmaceutical Industries Founders Award, the 2019 Youdim Family Prize for Excellence in Cancer Research, 2020 Kadar Family Award for Outstanding Research, the 2020 Humboldt Foundation Bessel Research Prize, and “Woman of the Year” by Globes magazine. She serves on the Board of Directors of Teva Pharmaceutical Industries Ltd.

<https://satchifainarolab.com/>

responsiveness of human cancer. These models are being exploited for the development of efficacious clinically-translatable therapies for various cancer types. Her vision is that this multidisciplinary approach will revolutionize our perception of tumor progression and consequently the way we diagnose and treat cancer.



3D glioblastoma. Cancer cells in red, endothelial cells in green, nanomedicine in blue

## Dr. Eric Shifrut



### *Immuno-oncology & cell engineering*

Adoptive T cell therapies are a new class of living drugs, achieving durable results in a subset of patients with aggressive malignancies. These transformative outcomes are not shared with the majority of patients with solid tumors that remain resistant to current T cell therapies. Dr. Shifrut develops and leverages CRISPR-based platforms in primary human T cells to discover ways to engineer robust anti-tumor immunity. His goal is to design breakthrough cell-based therapies and learn how to engineer immune

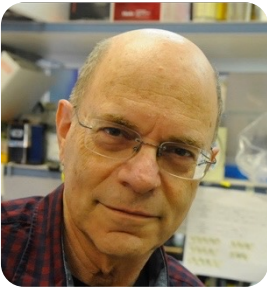
Dr. Shifrut, PhD, holds a joint position at the Department of Pathology, School of Medicine and the Faculty of Life Sciences at Tel Aviv University and is a principal investigator at the Tel-Aviv Sourasky Medical Center. Dr. Shifrut completed his graduate studies under the mentorship of Prof. Nir Friedman at the Weizmann Institute of Science, mapping the TCR repertoire in health and disease. For his postdoctoral training, he joined Alex Marson at UCSF and Gladstone Institutes to pioneer CRISPR discovery platforms to study primary human T cells. Shifrut's laboratory is located at the Tel-Aviv Sourasky Medical Center.

<http://www.shifrut-lab.org/>

cells to function in the suppressive tumor microenvironment. His team uses lentiviral vectors, precise knock-in by CRISPR-mediated HDR and advanced experimental tools to map genetic programs that control anti-tumor immunity. The lab aims to test promising candidate perturbations in preclinical animal models of cancer immunology. His laboratory is uniquely positioned to address these translational gaps.



## Prof. Yossi Shiloh



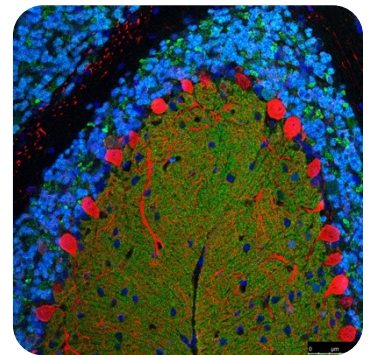
### *Genome instability in disease*

The Shiloh lab studies the implications of genome instability on our health. Our DNA is constantly damaged by internal and external DNA damaging agents. In response to this ongoing threat to the genome, the DNA damage response (DDR) – a broad signaling network is activated. The Shiloh lab discovered a key player in this system – the protein kinase, ATM. This discovery was a result of a long quest to identify the gene responsible for a human genome instability syndrome called ataxia-telangiectasia (A-T). A-T involves cerebellar

Prof. Shiloh heads the Myers Laboratory for Cancer Genetics at the Department of Human Molecular Genetics and Biochemistry. He obtained his Ph.D. in Human Genetics at The Hebrew University of Jerusalem and trained at the Harvard Medical School, University of Michigan, New York University Cancer Center, Memorial Sloan Kettering Cancer Center and Rockefeller University, and was a Fogarty Fellow at the U.S. National Institutes of Health. He is a member of The Israel National Academy of Sciences and Humanities and won the 2005 EMET Prize in Life Sciences, the American Association of Cancer Research G.H.A. Clowes Memorial Award for Outstanding Accomplishments in Cancer Research, the Israel Prize in Life Sciences and the Olav Thon Prize in Natural Sciences and Medicine (Oslo, Norway). Shiloh is a member of the US National Academy of Sciences. He has dedicated most of his scientific career to understanding A-T. He gives popular scientific lectures to the general public on the medical, social and ethical implications of the genome revolution.

<https://www.tau.ac.il/~yossi/>

degeneration and cancer stability and continues to decipher the physiological basis of the many symptoms of A-T, particularly the cerebellar attrition. Recently, the lab initiated an investigation of the role of genome instability in aging and cellular senescence.



Mouse cerebellum. Purkinje cells, which gradually disappear in A-T patients, highlighted in red.

## Affiliations

[Neufeld Cardiac Research Institute](#) at  
the Sheba Medical Center,  
Affiliated with the Faculty of Medicine

## Artist statement

The bravery of compassion, to love and the commonality of our experiences as human beings are key themes in my artwork. This heart series are my translations of our heroic journey. I use color, pattern, texture, and symbols to depict our universal human experiences such as birth, evolution, revelation, temporality, beauty, the sacredness of life, and experiences of suffering and joy. The image of the heart resonates for me as a symbol of these journeys.



HP "Journey - Given" Leslie Snyder Portney 2010

## Prof. Silvia Koton



### *Stroke epidemiology, aging and cognitive function*

Stroke is a major cause of long-term disability and a strong predictor of dementia and cognitive decline in adult and elderly populations. The incidence of stroke has declined in the last decades in various countries, however, this decline is not consistent across population-groups. Prof. Koton's varied research includes studies on epidemiology of stroke and other cardiovascular diseases; age and aging; dementia, changes in physical and cognitive functioning after stroke, and health of primary caregivers of the elderly.

Prof. Koton, Department of Nursing, is a Registered Nurse and holds a Master's Degree in Occupational and Environmental Health and a PhD in Epidemiology and Preventive Medicine from TAU. She was Chair of the Department of Nursing and holds adjunct associate professor appointments at John Hopkins University, Department of Epidemiology, Bloomberg School of Public Health, and School of Nursing. Prof. Koton was nominated International Fellow of the American Heart Association (FAHA), and selected as a Paul Dudley White International Scholar. She is head of the Herczeg Institute on Aging at Tel Aviv University.

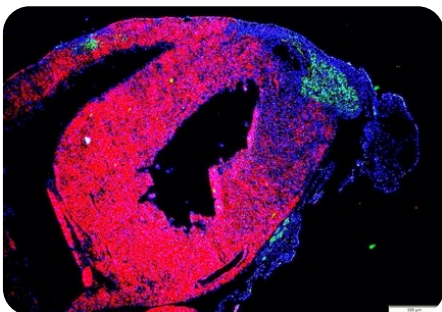
Prof. Silvia Koton studies the factors associated with changes in stroke epidemiology and cardiovascular risk factors in Israel and in the US. Her research provides important information on possible reasons for these changes; how the incidence of stroke may be affected by the increasing rates of obesity, diabetes and other cardiovascular risk factors, and how the changing trends in stroke may influence rates of physical and cognitive function in old persons.

## Prof. Jonathan Leor



### Cardiovascular regeneration

Leor's research includes the study of the heart's lack of reparative ability. His research group approached the challenge from a different angle by studying the role of extracellular matrix and immune cells in heart repair. Leor pioneered the use of scaffolds and injectable biomaterials to treat heart diseases. His lab was the first to target macrophages to improve infarct healing.



Prof. (Yoni) Leor is a Professor of Cardiology at TAU and the Director of the Neufeld and Tamman Cardiovascular Research Institutes at TAU and the Sheba Medical Center. He is a cardiologist, physician-scientist. He obtained his MD degree from Tel-Aviv University. He completed his medicine residency and cardiology training at the Sheba Medical Center, Israel. Leor performed a post-doctorate fellowship in cardiovascular regenerative medicine at the University of Southern California. He served as the director of the Intensive Cardiac Care Unit at Soroka Medical Center and head of the Experimental Cardiology Lab at Ben-Gurion University. He is currently the director of the Neufeld and Tamman Cardiovascular Research Institutes at Tel Aviv University and Sheba Medical Center.

<https://leor-lab.wixsite.com/leor>

His work has led to establishing a novel line of research dedicated to understanding how the immune system and extracellular matrix affect heart repair. He was the first in Israel to develop novel cardiovascular regenerative therapies, such as cardiac stem cell therapy, tissue engineering, and gene therapy. Leor is a co-inventor of breakthrough injectable biomaterial to treat heart attacks and heart failure.

Myocardial regeneration. Macrophages (green cells) infiltrate the injured heart (red) of neonatal mouse and promote heart repair. Tal Konfino & Leor.

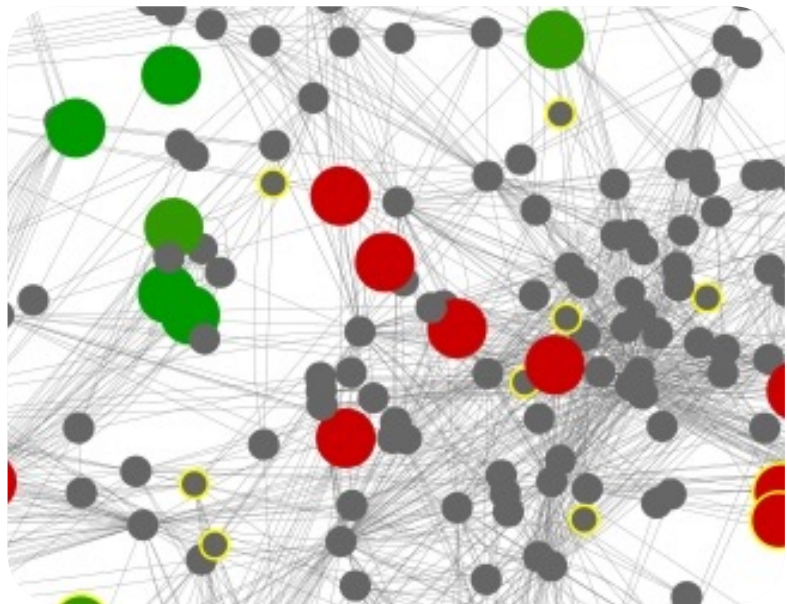


## Affiliations

[Edmond J. Safra Center for Bioinformatics](#)

*Developing novel computational tools to study a wide variety of biological problems and systems*

- A huge scope and scale of biomedical data is being generated by modern molecular technologies
- Sophisticated computational techniques needed for analyzing, modeling, and mining data
- Several research groups are dedicated to computational biomedical research
- Topics range from the role of gut microbes on human health to the impact of genetic variation on disease risk



## Prof. Elhanan Borenstein



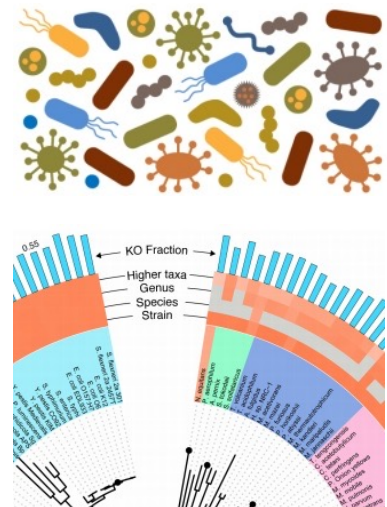
### Computational microbiome research

The human microbiome – the complex ensemble of microorganisms that populate the human body – has a tremendous impact on our health. World-wide research initiatives and novel metagenomics-based studies now provide exciting insights into the previously uncharted composition of the microbiome, and reveal marked compositional changes associated with a wide range of diseases. Yet, a system-level understanding of the human microbiome and its impact on the host is still lacking. To address this challenge, Prof. Borenstein focuses on the

Prof. Borenstein is a Professor at the Faculty of Medicine and at the Blavatnik School of Computer Science at Tel Aviv University. He is head of TAU's Edmond J. Safra Center for Bioinformatics and an external professor at the Santa Fe Institute. Prof. Borenstein received his BSc in physics and computer science and his PhD in computer science from Tel-Aviv University and held a joint postdoctoral position at Stanford University and the Santa Fe Institute. In 2010, he joined the Department of Genome Sciences at the University of Washington as a faculty member, and in 2018, moved to Tel Aviv University with a joint appointment in Medicine and in Computer Science. Prof. Borenstein is the recipient of various prestigious awards including the Alfred P. Sloan Fellowship and the NIH New Innovator Award.

<http://borensteinlab.com/>

computational study of the human microbiome, spearheading research in microbiome systems biology. His group develops novel computational methods inspired by data science machine learning, metabolic modeling, and network theory to model the microbiome, to analyze multi-omic microbiome data, and to better understand the role of the microbiome in health and in disease.



## Prof. Ran Elkon



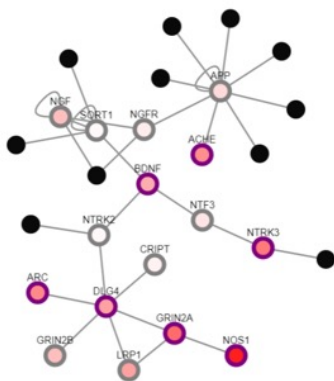
Prof. Elkon, Department of Human Genetics and Biochemistry at the School of Medicine, has his training in Physics and Bioinformatics. He is a member of the Safra Center for Bioinformatics. He completed his Ph.D. at TAU and his postdoctoral research at the Netherlands Cancer Institute.

<http://www.elkonlab.tau.ac.il/>

### Computational tools for prevention of disease

Our genomes are 99.9% identical. The 0.1% variation determines not only the uniqueness of each one of us, but also our predisposition to common diseases such as cancer, heart diseases, diabetes, schizophrenia, and Alzheimer's Disease. Understanding how genetic variants affect the risk for developing these diseases is a major challenge of current

human genetic research, and Prof. Elkon's lab develops and applies novel computational tools to decipher such links. Gaining better understanding of genetic risk factors to common diseases will allow the identification of individuals who are at high risk before the onset of the disease and subject them to preventive regimens.



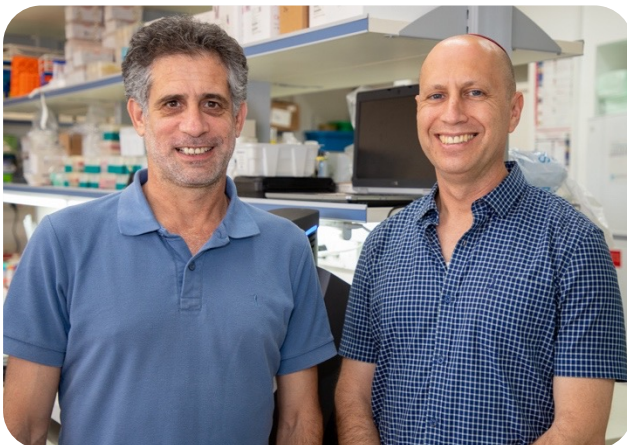
# COVID-19 Pandemic

The COVID-19 pandemic has changed our lives as we know it. Our scientists at the Faculty of Medicine mobilized within days to:

- Build a “Corona Lab”, to conduct thousands of tests per day
- Develop the serological tests used by the IDF
- Lead the effort in public health policy and messaging
- Isolate neutralizing antibodies against SARS Co-V-2
- And develop a nanovaccine

## Affiliations

### [The Center for Combating Pandemics](#)



Left: Prof. Motti Gerlic & Prof. Ariel Munitz.  
Right: Ziv Ehrlich at the Corona Lab





## Prof. Bruria Adini



### *Resilience in a pandemic*

A vital component of an effective management of any pandemic is the resilience of the population and the responders. What factors encourage or impede on the compliance to behavioral directives? How do varied aspects of resilience impact on our well-being and capacity to adapt to adversities? Prof. Adini implements an eclectic approach to monitor continuously the

Prof. Adini, head of the Department of Emergency Management and Disaster Medicine in the School of Public Health, is an expert in both field and academic activities in disaster management. Adini serves as a board member of Local Authorities Confronting Disasters and Emergencies (LACDE) and the Israeli National Council for Trauma and Emergency Medicine and served two terms as a board member of the World Association of Emergency & Disaster Medicine (WADEM).

individual, community, national and organizational levels of resilience. The evolving findings facilitate policy-makers' ability to sustain or modify measures to improve management of the pandemic.

## Dr. Ilana Dubovi



Dr. Dubovi is at the Department of Nursing, Stanley Steyer School of Health Professions at the Faculty of Medicine. She completed her PhD in Education at the Department of Learning, Instruction and Teacher Education, University of Haifa. She completed two postdoctoral positions, at the Department of Instructional Technology and Learning Sciences at Utah State University, and at the Faculty of Education at Ben-Gurion University of the Negev, Israel.

### *Educational technology*

Building upon a growing evidence that patient education plays a pivotal role in patient disease self-management and health outcomes, Dr. Dubovi's research seeks to leverage the efficacy of educational programs by integrating digital educational technology. With this goal in mind, she develops and evaluates various cutting-edge technologies, such as virtual reality simulations, online games, computer-based models,

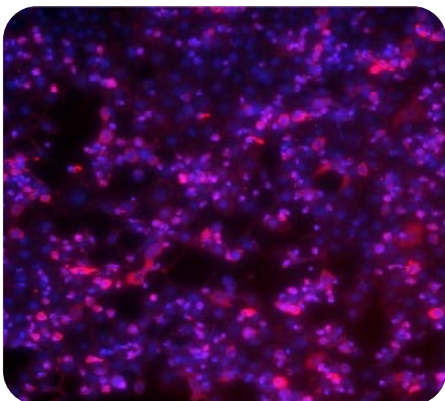
interactive visualizations and more. Using intelligent multi-modal biosensors, her team was the first in the world to looking into personalized adaptive technology to make patient education process more fine-tuned to patient's needs and literacy levels. Educational technology for patients is a very timely approach, even more so in times of COVID-19 pandemic era, to support distant patient-clinician encounters as telemedicine aids.

## Dr. Natalia Freund



### *Neutralizing antibodies*

Neutralizing antibodies are a key component of adaptive immunity against many viruses and can be elicited by natural infection or vaccination. Recent studies showed that neutralizing antibodies are elicited after SARS Coronavirus 2 (SARS-CoV-2) infection and are directed against the receptor binding domain (RBD) of the SARS-CoV-2 Spike protein. Dr. Freund's



Dr. Freund is at the Department of Clinical Microbiology and Immunology. Her research focuses on human adaptive immune response towards diseases, such as HIV-1, Tuberculosis, SARS-CoV-2 and cancer. Before coming to Tel Aviv University, she completed her postdoctoral training at the Rockefeller University in New York City, where she led groundbreaking research on anti-HIV-1 neutralizing antibodies and proved their efficacy as novel HIV immunotherapeutics.

<http://www3.tau.ac.il/nfreund/>

goal is to characterize the neutralizing antibody responses against SARS-CoV-2 by isolating neutralizing antibodies from infected donors and determining the mechanistic basis for their action. Additionally, she is interested in how these antibodies correlate with COVID-19 clinical manifestations and disease severity. Recently, her team has isolated 22 monoclonal antibodies from COVID-19 donors, some of which were found neutralizing against the live SARS-CoV-2.

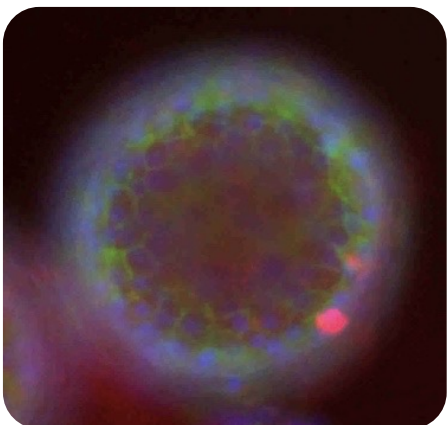
Vero E6 cells infected with SARS Coronavirus-2.  
Freund & Ben Croker, UC San Diego.

## Prof. Oren Kobiler



### *Organoid models*

SARS-CoV-2 is a new emerging coronavirus that cause the COVID-19 global pandemic. The clinical manifestations among SARS-CoV-2 infected individuals vary from asymptomatic infection to acute respiratory failure and death. While SARS-CoV-2 share many features of the other human coronaviruses, it has become a major threat on



Prof. Kobiler is at the Department of Clinical Microbiology and Immunology. Kobiler obtained his BSc from the Hebrew University in Medical Sciences. He received, in parallel, his MD and PhD from the Hebrew University. As a postdoctoral fellow at the Department of Molecular Biology at Princeton University, he received a Human Frontier Science Program (HFSP) Long Term Fellowship and the ISF Bikura Postdoctoral Award. He frequently appears on the news to share a scientist's perspective on the COVID-19 pandemic.

<https://www.tau.ac.il/~okobiler/Home.html>

global human health. By comparing basic infection processes of the seasonal coronaviruses to the SARS-CoV-2, Kobiler anticipates to identify the unique features of this virus. His team is establishing a model system for coronavirus infection of patient-derived airway organoids. The reproducibility of the model system will allow the team to test and identify the role of specific parameters of the SARS-CoV-2 infection, and to test possible drugs.



## Prof. Khitam Muhsen



### *Sero-epidemiological studies on coronavirus*

Dr. Muhsen initiated sero-epidemiological studies to assess the acquisition and transmission of the new coronavirus in the population, and the development and persistence of the humoral immune response to SARS-Cov-2 in COVID-19 patients and their households contacts and medical personnel. These questions are being addressed in longitudinal studies, with measurement of serum IgG antibodies against coronavirus that develop in patients and in asymptomatic persons. This includes studies in households of COVID-19

Prof. Muhsen is at the Department of Epidemiology and Preventive Medicine, School of Public Health. Trained as a nurse, she then obtained her PhD in epidemiology at Tel Aviv University, and a post-doctoral fellowship at the Center for Vaccine Development, University of Maryland School of Medicine, US. Prof. Muhsen's main research interest is in the epidemiology of infectious diseases, enteric diseases and vaccines. Her research has been supported by competitive awards and grants such as the Israel Science Foundation, Israel-US Binational Science Foundation, Ministry of Health, Israel National Institute for Health Policy and Health Services Research, and Bill and Melinda Gates Foundation.

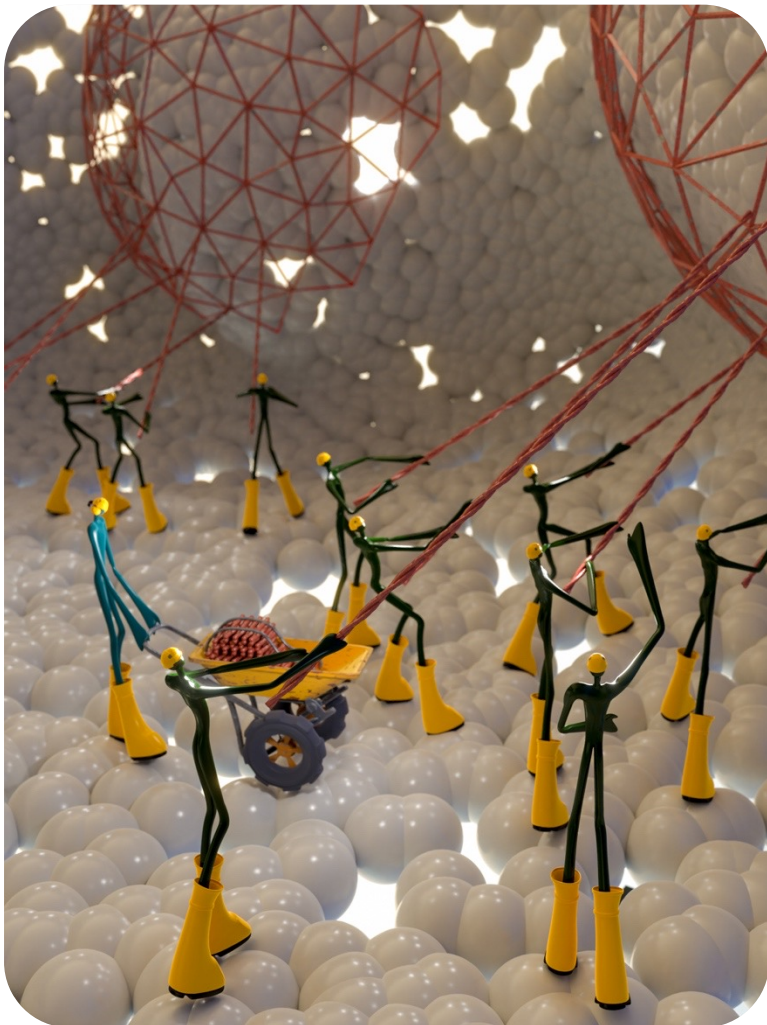
patients and a multicenter study among medical personnel. The novel aspects of these studies include the longitudinal design, the inclusion of various populations and ethnic groups and capturing the first and second waves of COVID-19 epidemic in Israel. The expected results will assist in shaping preventive measures, and the assessment of their effectiveness. Understanding the natural immunity to SARS-Cov-2 is important for vaccine development.

## *Affiliations*

Switzerland Institute of  
Developmental Biology

Healthy Longevity Research Center

Herczeg Institute on Aging



Contractile activity of actomyosin A: a miniature world (cell) where toy-like workers (formins: cyan and myosin: green) are reshaping the surface of their world (cell membrane: white) by pulling metal meshes (actin filaments). Diego Pitta de Araujo.

## Prof. Lihi Adler-Abramovich



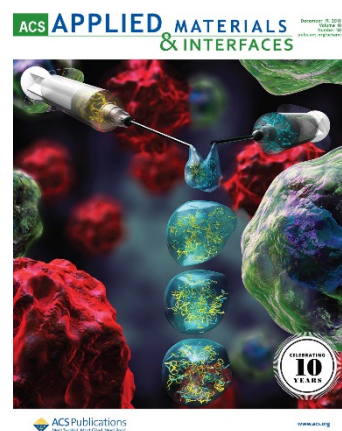
### Bone regenerative medicine

Bone regeneration is a critical challenge in the treatment of fractures, bone loss due to tumor resection, and alveolar bone deficiencies. Approximately 2.2 million bone graft procedures are performed annually worldwide. Despite significant progress in bone tissue engineering, there is an unmet need for patient-specific long-lasting bone restoration. Dr. Adler-Abramovich's research in the Laboratory of Bioinspired Materials is focused on mimicking self-assembly processes that occur in nature, including biomineralization and the organization of short

Prof. Adler-Abramovich is at the School of Dental Medicine, where she is a principal investigator and the head of the Laboratory of Bioinspired Materials and Nanotechnology. Dr. Adler-Abramovich studied biology at Tel Aviv University where she received both her M.Sc. (*summa cum laude*) and her Ph.D. She has been awarded numerous prestigious grants and prizes, including the ERC Starting Grant, ISF-Center for Excellence Grant and the Colton Foundation Scholarship. She has published in *Nature Nanotechnology*, *Nature Chemical Biology*, *Nature Communications*, *Nano Letters*, *ACS Nano* and is the inventor of more than 10 patents.

<https://lihi13.wixsite.com/lihi>

peptides and amino acids into ordered nanostructures. We are a materials science laboratory with emphasis on organic chemistry and medical-biological applications. The group aims to develop customized supramolecular scaffolds that will promote personalized therapy for bone regenerative medicine, thus significantly advancing the fields of tissue engineering and materials science while offering a novel solution to a major healthcare issue.

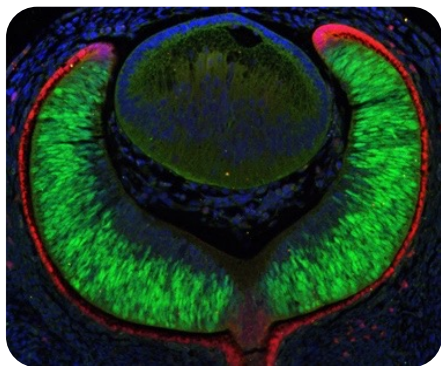


## Prof. Ruth Ashery-Padan



### *Development of visual system in mammals*

Prof. Ashery-Padan's research group focuses on understanding the molecular mechanisms that control the development of the visual system in mammals. The group established and employs transgenic mouse lines for state-of-the-art functional studies of genes in vivo. This is combined with gene-expression profiles using laser capture and single-cell sequencing, transcription



Prof. Ashery-Padan is at the Department of Human Molecular Genetics and Biochemistry, a member of the Sagol School of Neuroscience and holds the Zucker–Sussman Chair for Glaucoma Research. Ashery-Padan completed her MSc and PhD at the Hebrew University of Jerusalem and her postdoctoral training at the Max Planck Institute for Biophysical Chemistry in Göttingen, Germany. She is the recipient of the Alon Fellowship (VATAT), the Dan David Prize for Young Investigators, Teva Prize, and the E. Matilda Ziegler Foundation for the Blind Award. Prof. Ashery-Padan heads the Yoran Institute for Human Genome Research.

<https://asherypadanlab.com/>

factor activity on target genes, and chromatin structure during development. Her group studies ocular cell types generated from human stem cells to uncover the molecular mechanisms underlying the differentiation of human lineages, and to model human diseases. The work is contributing to understanding the etiology of monogenic and complex retinal diseases, toward a better prediction of individuals' susceptibility and the design of stem cell-based models and future therapies for blinding diseases.

Cytoarchitecture of the mature mouse retina - subset of retinal cell types are identified by immunostaining. Shaul Raviv, Ashery-Padan.



## Dr. Daniel Bar



### *Molecular biology of aging*

Aging is the major risk factor for many prevalent diseases in the developed world, including cancer, diabetes and cardiovascular disease. Systemically slowing the aging process has been shown to delay the onset of many diseases and prolong healthspan and lifespan in multiple model organisms. We now know of metabolic and pharmacological interventions that slow aging, and of epigenetic modifications that correlate with aging with

Dr. Bar is a principal investigator at the School of Dental Medicine. Dr. Bar earned his bachelor's degree in physics and biology from Tel Aviv University. He later went on to complete his PhD in Genetics at the Hebrew University of Jerusalem in the lab of Prof. Gruenbaum. Here, Dr. Bar worked on the nuclear lamina and lifespan regulating pathways in *C. elegans*. He continued to a visiting-fellow position in the lab of Dr. Francis Collins at the National Human Genome Research Institute, the National Institutes of Health, USA. He worked on proximity labeling, focusing on the nuclear lamina in primary human samples. He serves as guest editor of *JOVE*.

<https://barlabtau.wixsite.com/website>

exceptional accuracy. However, the molecular details of these interventions, as well as natural aging, are only partially known. The Bar lab develops new tools and applies them to study the molecular changes that accompany aging. These include using antibodies and various enzymes to label proteins, DNA and RNA and analyze them using high-throughput methods.

## Prof. Dafna Benayahu



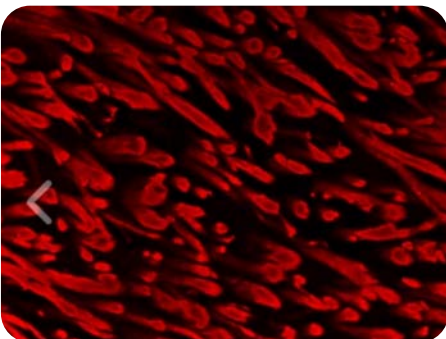
### *Stem cell metabolism & tissue regeneration*

Prof. Benayahu's research has two arms; one is on mesenchymal stem cells (NSCs) differentiation and related pathophysiology of skeletal and fat tissues. The mesenchymal cells are the main regulators of immune cells in the bone marrow and in fat tissue. The role of MSCs in aging and diseases is due to their capacity to convert into lipid-accumulating fat cells. Various pathways serve as cues in the niche

Prof Benayahu is at the Department of Cell and Developmental Biology and the Director of the Marian Gertner Institute for Medical Nano-systems. She is currently the President of the Israel Calcified Tissue. Society She has served as head of the Department and of the Nomination Committee at the Faculty of Medicine. Prof. Benayahu's research is funded by the US-Israel Binational Science Foundation, the Israel Science Foundation, the Ministry of Health, the Ministry of Science, and the Ministry of Commerce. She has served as editor of a book, guest editor on special issues and reviewer for numerous international journals.

<https://benayahulab.wixsite.com/benayahudafnatau>

regulating stem cell differentiation. The lab also uses mesenchymal stem cells (MSC) for various clinical applications such as immunomodulatory therapies and in cell replacement therapies application related to metabolic disease and tissue regeneration.



## Prof. Yankel Gabet

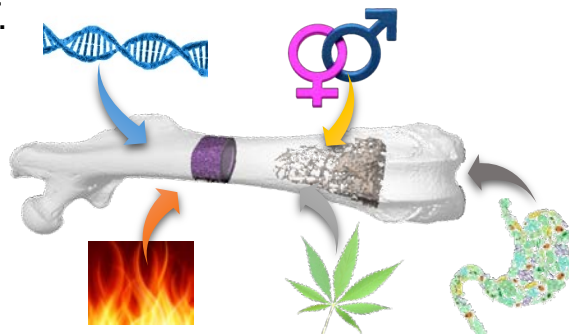


### *Bone health & cannabinoids*

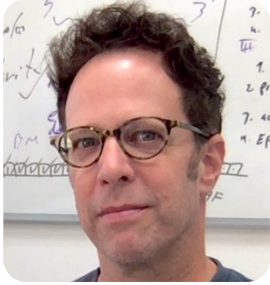
Did you know that the skeleton is the largest organ by weight? Did you know that critical steps of immune cell development occur in the bone marrow? How do immune cells affect bone health? Can bone cells regulate our immune system? How can we suppress inflammation-induced bone destruction? Do specific strains of bacteria in our gut have an impact on the strength of our bones? Why do our bones weaken with age? Our main focus is on bone health and the crosstalk between bone and immune cells. We developed unique models for the assessment of osteoporosis, inflammation-induced

Prof. Gabet, D.M.D., Ph.D., is the Head of the Department of Anatomy & Anthropology and Director of the Bone Research Laboratory. He completed his post-doctoral training at the University of Southern California. He received several awards including the ASBMR Young Investigator award. He serves as treasurer of the Israeli Society for Skeletal Biology and Medicine. He is also a dentist focusing on implantology and oral rehabilitation and a consultant and scientific advisor for companies in dentistry, orthopedics and cannabinoids.

bone destruction and bone microarchitecture in response to modulations in the gut microbiota. Our therapeutic approaches include cannabinoids, anti-inflammatory and bone anabolic agents that can modulate the bone-immune axis. Our research spans from molecular biology to in vivo settings and we developed unique tools in 3D models using micro-CT.



## Prof. Chen Luxenburg



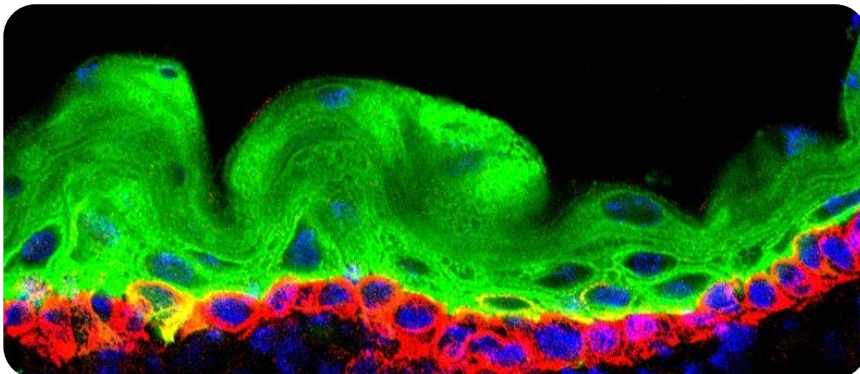
### *Cytoskeletal regulation of epidermal stem cells*

One of the significant challenges in biomedical research is to understand how stem cells give rise to functional tissue during development, maintain it throughout life, and regenerate it upon wounding. The Luxenburg lab studies how cytoskeleton-derived signals regulate stem cells function. We use the skin epidermis as our primary

Prof. Luxenburg completed his Ph.D. studies in Molecular and Structural Cell Biology at the Weizmann Institute of Science. For his post-doctoral training, he trained at the laboratory of Prof. Elaine Fuchs at the Rockefeller University in New York. Prof. Luxenburg is the recipient of a number of research grants and awards, including the ISF, I-CoRE, BSF, ICRF, and the Teva Founders Prize. Prof. Luxenburg serves on the scientific board of the Israeli Society of Developmental Biology, Switzerland Institute of Developmental Biology, and the Biomed@TAU Developmental Research Hub. He is also the academic coordinator of the International Graduate program.

<https://www.luxenburglab.com/>

model system, and studies in the lab provide insight into both skin development and common skin diseases such as cancer and psoriasis.



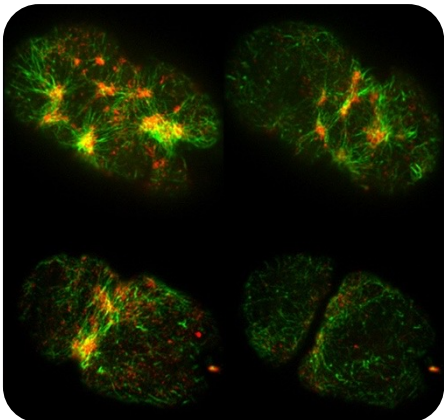


## Prof. Ronen Zaidel-Bar



### Cytoskeletal regulation

A developing embryo taking shape, a heart pumping blood, and a wound closing itself all rely on mechanical forces to accomplish their important tasks. A special cellular machinery, the cell's skeleton, is responsible for generating these forces, but how this machinery is assembled at the right time and place in our bodies remains poorly



Prof. Zaidel-Bar, PhD, is head of the Department of Cell and Developmental Biology at the School of Medicine and Vice Dean for Preclinical Research Innovation & Development of the Faculty of Medicine. He completed his Ph.D. in Molecular Cell Biology at the Weizmann Institute and post-doctoral training at the University of Wisconsin - Madison. He started his independent group at the Mechanobiology Institute, National University of Singapore, where he was awarded the National Research Foundation Fellowship, and seven years later he joined Tel Aviv University. Zaidel-Bar is a world leader in the field of cell and tissue mechanobiology.

<https://www.zaidelbarlab.com/>

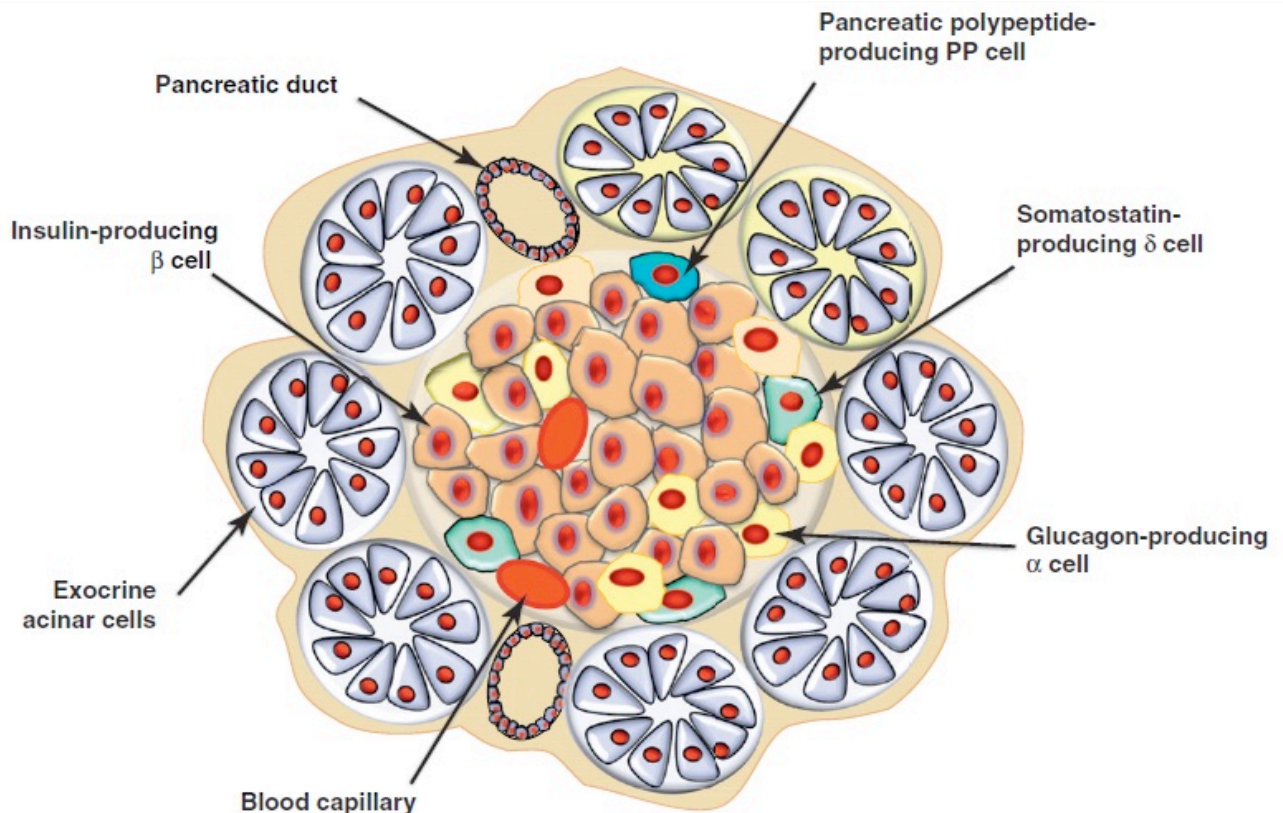
understood. Prof. Zaidel Bar's group is using cutting edge genetics and live-imaging microscopy in human and nematode models to gain a "front row seat" view of what the cytoskeleton is doing inside an animal. A better understanding of cytoskeleton regulation is important to prevent birth defects and to treat numerous diseases, such as asthma, hypertension, and cancer metastasis.

Actin (green) and myosin (red) in the cortex of a *C. elegans* 1-cell embryo form a contractile belt that drives the first cell division. Wei-Yung Ding, Zaidel-Bar.

# Diabetes, Metabolic and Endocrine Diseases

One in 20 people in the world has diabetes, a chronic disease that occurs when the pancreas is unable to make insulin, or when the body becomes insensitive to this hormone.

This year marks the centenary of the discovery of insulin, which provided a life-saving treatment. However, most patients still develop severe long-term complications. Research is on for a cure, and for disease prevention.



TRENDS in Endocrinology & Metabolism

Insulin-producing cells in the pancreatic islets

## Prof. Shimon Efrat

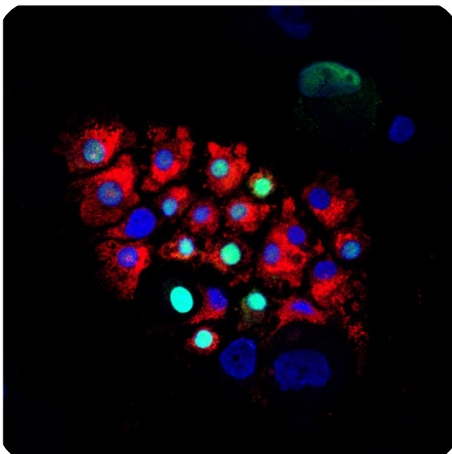


### Diabetes

Diabetes, resulting from loss or failure of insulin-producing pancreatic beta cells, afflicts about 400 million people. The optimal treatment, transplantation of functional cells, is severely limited by shortage of human organ donors. Prof. Efrat aims at developing an abundant source of human insulin-producing cells for beta-cell replacement therapy,

Prof. Efrat chairs the Department of Human Molecular Genetics and Biochemistry at the School of Medicine and is the Nancy Gluck Regan Chair in Juvenile Diabetes. He received his Ph.D. at the Hebrew University, followed by postdoctoral training at Cold Spring Harbor Laboratory. He then joined the faculty of Albert Einstein College of Medicine for a decade, where he is still a Visiting Professor, before moving to Tel Aviv University. He has seven patents, co-founded a company, and served on the scientific advisory boards of several companies.

by reprogramming human donor beta cells into pluripotent stem cells, which can be massively expanded in tissue culture, followed by differentiation.



## Prof. Limor Landsman

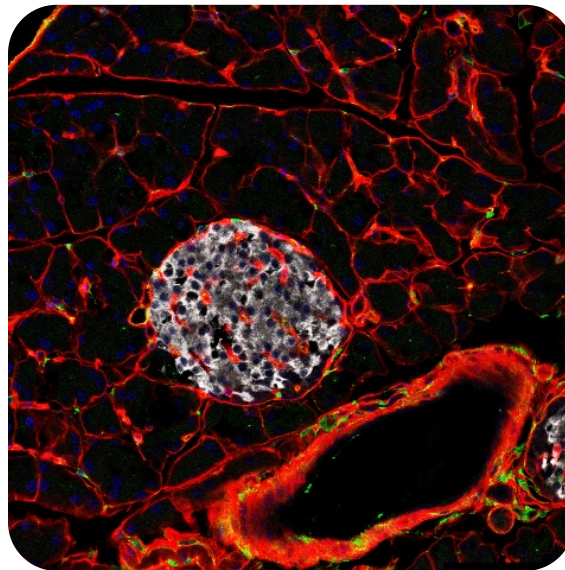


### *Pancreatic microenvironment*

Diabetes is now reaching epidemic proportions, yet our incomplete understanding of its etiology hinders the quest for a cure. Dr. Landsman studies how proper pancreatic insulin production is maintained in health, and why it is lost in diabetes. To this end, she and her team research the crosstalk between insulin-producing cells and their surroundings, focusing on how this communication is affected by the various diabetes risk factors. Their primary goal is to decipher the underlying causes of diabetes, to facilitate a personalized approach for a cure.

Dr. Landsman is head of the Pancreas Biology Lab at Tel Aviv University. She graduated from the Hebrew University of Jerusalem with honors and obtained an M.Sc. and Ph.D. degrees in Molecular Genetics and Immunology from the Weizmann Institute of Science. For her postdoctoral studies, she joined the laboratory of Prof. Matthias Hebrok at UCSF, an expert on pancreas physiology and pathophysiology. She has obtained prestigious research grants and awards, including the European Union ERC and FET programs, the Israel Science Foundation, and the German-Israeli Foundation. She serves on the scientific board of the Switzerland Institute of Developmental Biology, the D-Cure Foundation, and the Israeli Islet Researchers Forum.

<https://www.landsman-lab.com/>



Pancreas: white are insulin-producing cells; green and red cells marks the vasculature.



## Prof. Drorit Neumann



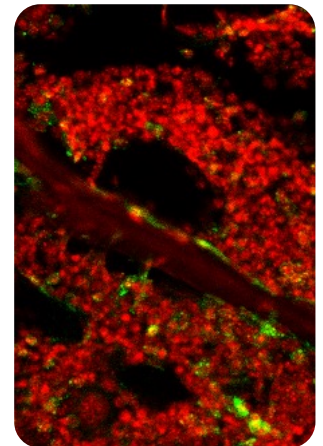
### Osteoporosis

Anemia is a serious global health concern estimated to affect a third of the world's population. The introduction of erythropoietin (Epo) into clinical practice has revolutionized the treatment of this condition, although there is the risk of inadvertent effects that may be hazardous. Prof. Neumann has demonstrated that Epo is associated with a dual action of bone loss and immunomodulatory effects. Osteoporosis is the most common bone disease, affecting nearly half the population over

Prof. Neumann, PhD, Department of Cell and Developmental Biology, completed her PhD at the Weizmann Institute and was trained as a postdoctoral fellow with Prof. Lodish at MIT. She set up and coordinated the EpoCan FP7 Consortium, which assessed the long-term risks of Epo and investigated better Epoetin-driven treatment modalities. She currently serves as Dean of Students at Tel Aviv University and holds the Lily and Avraham Gildor Chair for the Investigation of Growth Factors. She is the Dean of Students at Tel Aviv University.

<https://droritneumannlab.com/>

the age of 50. Neumann's team studies Epo in mouse models and patients, in collaboration with bone experts and clinicians. Epo is a new player in osteoimmunology, and will link the effects of the hormone to a wide range of outcomes on bone and immune cells, and suggest methods to realize the therapeutic potential of Epo, maintaining immune competence as well as the erythroid stimulating-effect while attenuating the risk for bone loss.



Deshet-Unger et al. *Theranostics* 2020



*Affiliations*

**Bioethics and Law Center**



## Dr. Oren Asman



### *Bioethics and Health Law*

The Corona pandemic put to the front major bioethical concerns relating to public health policy, resource allocation, medical research ethics, public compliance with health promotion recommendations, privacy and human rights in times of emergency. Dr. Asman studies these issues from a normative perspective, as well as from a cognitive, behavioral one. He partners with psychiatrists, psychologists, nurses and

Dr. Asman, PhD, is a member of the Department of Nursing at the School of Health Professions. He is the founder and co-director of the Bioethics and Law Center at Tel Aviv University. His doctorate at the Hebrew University focused on mental competence in Israeli law, both in Rabbinical and Shar'i courts. His role as Chair of District Psychiatric Committees inspires some of his current research projects. Following his doctorate he joined the Harvard Project on Disability led by Prof. Michael Stein and the Harvard Program in Psychiatry, Law and Ethics led by Prof. Harold Bursztajn. The Harvard Medical School Center for Bioethics has been a strong supporter of the Bioethics Center he established at TAU. His role as Co-chair of the Mental Health Forum in the Israeli Bar Association opened the door for several highly attended Law and Medicine events during the COVID-19 pandemic.

<https://www.bioethics.center/>

jurists in his work that connects case-based ethics with policy, and empirical evidence with normative claims.

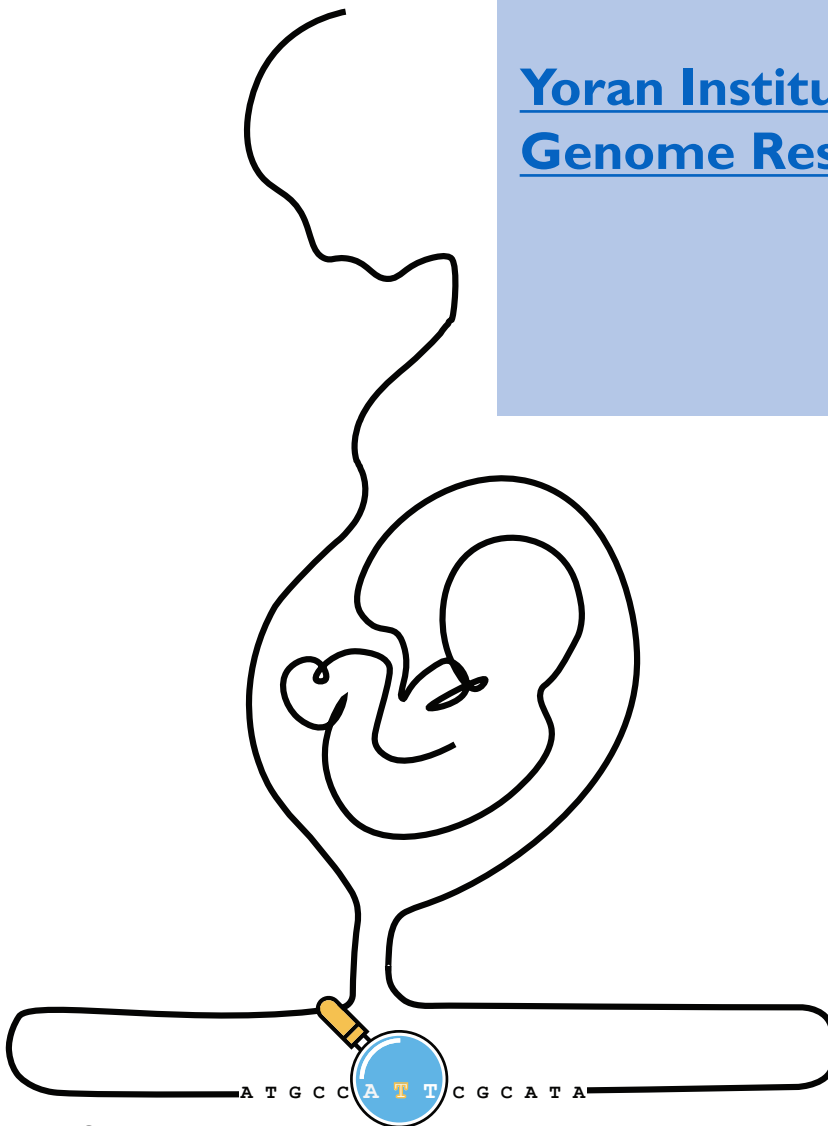
A big portion of his research focuses on Mental Health, Law and Ethics.

## Affiliations

Safra Center for Bioinformatics

Single Cell Genomics Core

Yoran Institute for Human  
Genome Research



Noam Shomron

## Prof. Gil Ast



### *Alternative splicing & epigenetics in human disease*

Prof. Ast's team has made several breakthroughs in the field of alternative splicing, revealing how the human genome obtained some of its unique characteristics, how chromatin structure and epigenetics can regulate the splicing reaction, and the links between alternative splicing and certain genetic disorders and cancer. Prof. Ast currently focuses on the link between alternative splicing, epigenetic changes, and Hi-C in

Prof. Ast, PhD, is the head of the laboratory of Genome Medical Research in Rare Genetics Disorders and Cancer. He is a member of the Department of Human Molecular Genetics and Biochemistry, the Sagol School of Neuroscience and the Edmond J. Safra Center for Bioinformatics. Ast won many awards and prizes, and is an EMBO member, Human Genome Organization member, the International Union Against Cancer Fellow, and Head of the Israeli Society of RNA Biology, European Network of Excellence on Alternative Splicing member, and elected many times as 'Best lecturer' at the Faculty of Medicine. Ast mentored 36 Ph.D. students, 24 M.Sc. students, and 6 postdoctoral fellows. Of them, 10 now hold academic positions.

[astlab.tau.ac.il](http://astlab.tau.ac.il)

autism. His lab was the first in Israel and one of the first in the world to integrate computational biology and experimental bench work. His team's mastery of both bioinformatics and molecular biology approaches enables the multidisciplinary work that has led to their leading position in the field of RNA processing.



## Prof. Karen B. Avraham



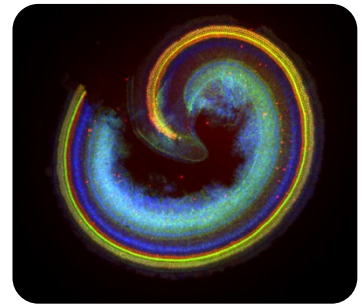
### *Genetics and epigenetics for human disease*

Hearing loss is a leading cause of disability worldwide, with an estimated 466 million people suffering from this debilitating loss. Prof. Avraham's goal is to determine the genetic basis of hearing loss and use genome editing to create models to study the mechanisms of auditory function. Gene therapy is being conducted on these models for human hearing loss. Regulatory mechanisms are being discovered at the level of non-coding RNA and methylation. The team's work has demonstrated

Prof. Avraham, PhD, is Dean at the Faculty of Medicine at Tel Aviv University and holds the Drs. Sarah and Felix Dumont Chair for Research of Hearing Disorders. She is a member of the Department of Human Molecular Genetics and Biochemistry, the Sagol School of Neuroscience and the Safra Center for Bioinformatics. Avraham was recently awarded the Israel Science Foundation Breakthrough Research Grant. She is founder and was co-director of the Aufzien Family Center for the Prevention and Treatment of Parkinson's Disease and the Healthy Longevity Research Center. Prof. Avraham founded and directs the MSc program in Medical Sciences with a specialty in Genetic Counseling.

<https://www.kbalab.com/>

that genomic sequencing using high-throughput technologies is effective for genetic diagnoses in a diverse population, providing a guideline for precision medicine for hearing loss in Israel. *GRIN2D* mutations are associated with epileptic encephalopathy. Avraham and her team study the mechanism of this NMDA receptor and develop mouse models, towards drug therapy.



Organ of Corti immunolabelled hair cells. Shazar Taiber.

## Prof. David Gurwitz



### *Precision medicine biomarkers for CNS disorders*

Neurologic and mental disorders affect over 10% of the global population, with higher frequencies seen among the elderly. The anticipated graying of the human population makes the challenge of finding better personalized treatments for CNS disorders a priority. Prof. Gurwitz leads a team whose research is focused on the identification and validation of precision medicine biomarkers for diagnosis and treatment choice for CNS disorders, including Alzheimer's disease, major depressive

Prof. Gurwitz, PhD, is an Emeritus Professor at the Department of Human Molecular Genetics and Biochemistry, where he directs the National Laboratory for the Genetics of Israeli Populations (NLGIP). The laboratory was established in 1995 by the Israeli Academy for Sciences and Humanities and serves as the National Biobank of Israel. Its collection of human DNA samples and cell lines is applied for numerous research projects on the human genome diversity. He is an editorial board member of several journals, including *Trends in Molecular Medicine*, *Genome Medicine*, *CNS Drugs*, and *Drug Development Research*.

disorder, bipolar disorder, and autism spectrum disorder. The team studies the effects of CNS disorders, and of their therapeutics, on the gene expression patterns of white blood cells from individuals with CNS disorders. The research approach has identified potential biomarkers and drug targets for patient-oriented CNS therapeutics.

## Prof. Noam Shomron



### Genomics and human diseases

Our body is built from billions of cells. How each cell and organ interpret DNA is still a great puzzle. Understanding the molecular interactions within our cells, in health and disease, would greatly improve our ability to diagnose and treat complex human diseases, such as cancer and neurological disorders. Prof. Shomron and his team scan thousands of genes in order to pinpoint the ones that play a major role in tumor development and metastasis. His team has shown that

Prof. Shomron, PhD, heads the Functional Genomic Team at the Faculty of Medicine, after training at MIT. He leads a multidisciplinary team of scientists that develops computational methods for parsing big-data in the bio-medical field using Artificial Intelligence. Shomron is Editor of the 'Deep Sequencing Data Analysis' book; Director of 'Rare-Genomics' Israel (NPO); Academic Director of 'ScienceAbroad' (NPO); and, Co-founder and Chief Scientific Officer (CSO) of Variantyx, which provides clinical interpretation of whole genome sequences.

<http://www.tau.ac.il/~nshomron>

by injecting nanoparticles with small molecules into the tumor the spread within the body is halted. In another study, using a simple blood test combined with artificial intelligence, the team has shown that circulating DNA and RNA molecules in the blood can indicate early development of neurological diseases, their stage, and the spectrum of the disease. This information could be used to devise a novel therapeutic approach.



## Dr. Tony Gutentag



### *The psychology of medical education*

Dr. Gutentag studies social and emotional aspects in education in general, and in medical education in particular. For example, in what way can we help physicians to be more empathic toward their patients? How can we attenuate burnout among healthcare professionals? Can we improve medical students' learning by using academically productive talk?

Dr. Gutentag, PhD, MBA, is a faculty member in the Department of Medical Education. Dr. Gutentag completed a B.A., M.A., Ph.D., and M.B.A., all *Magna Cum Laude*, at the Hebrew University of Jerusalem. She completed her post-doctoral training in educational psychology at the Hebrew University, and in psychology at the University of Toronto and at the University of Melbourne.

Dr. Gutentag's research is interdisciplinary, combining psychology, organizational behavior, education, and psychometrics, and uses multi-method (e.g., experiments, surveys, experience sampling).



## Prof. Orit Karnieli-Miller

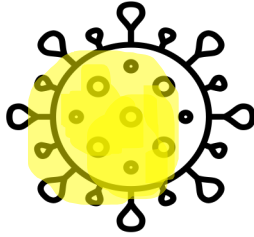


### *Humanist care*

One of the challenges physicians face is managing difficult conversations, including breaking bad news. These conversations require high-level capabilities to identify different patients' needs, share information in a tailored manner, and address patients' emotions with empathy. Prof. Karnieli-Miller explores these challenging encounters from patients, family members, and physicians' perspectives. Her research focuses on understanding participants' needs and developing physicians' skills. Prof. Karnieli-Miller, as the director of communication skills training, studies and publishes how to teach

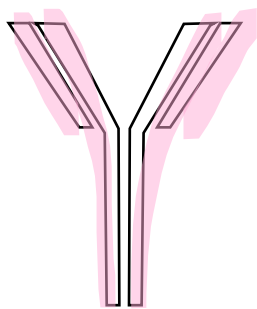
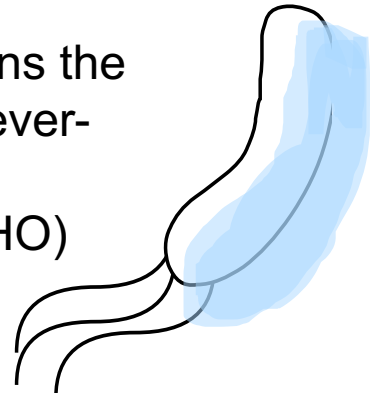
Prof. Karnieli-Miller, PhD, is the Chair of the Department of Medical Education at the Faculty of Medicine. She received her Ph.D. in Social Work from Haifa University in Israel with a specialty in communication in healthcare. She completed a post-doctoral fellowship at the Regenstrief Institute at Indiana University School of Medicine, focusing on professionalism and humanism in healthcare. Prof. Karnieli-Miller has been awarded numerous significant research grants and has published widely in leading peer-reviewed journals within the field of medical education and communication in healthcare.

communication skills, including developing a revised protocol on how to break bad news. She also identified physicians' personal and professional challenges and created a reflective practice protocol to prepare for these encounters. Furthermore, Prof. Karnieli-Miller explores the medical culture and focuses on its impact on medical students' identity formation. Her studies focus on enhancing students' moral courage to speak up when faced with professionalism and patient safety breaches to enhance humanistic, compassionate, and trustworthy medical care.



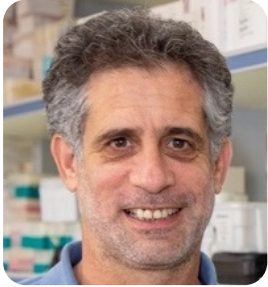
**Infectious diseases** are among the top 5 global causes of death (WHO)

**Antimicrobial resistance (AMR)** threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi (WHO)



**Chronic inflammatory diseases** — including stroke, heart disorders, cancer, and diabetes — are the most significant cause of death worldwide (WHO)

## Prof. Motti Gerlic



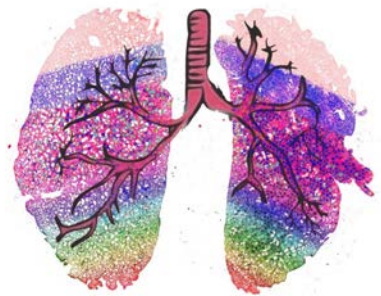
Prof. Gerlic, PhD, is head of the Department of Clinical Microbiology and Immunology. He obtained his PhD (Direct track) at Ben Gurion University, followed by a CCFA postdoctoral fellowship at Sanford Burnham Prebys Medical Discovery Institute (SBP), San Diego. Prof. Gerlic joined Tel Aviv University following a research officer position at WHEI & Melbourne University.

<https://www.gerliclab.sites.tau.ac.il>

### Cell death and disease

Cell death, an essential cellular process, facilitates the removal of damaged or infected cells, and is necessary for the resolution of immune responses. Cell death is long suggested to act as an innate immune response by killing infected cells to prevent dissemination of pathogens. Using animal models and genetics approaches, the Gerlic laboratory focuses on several projects including: Investigating the mechanisms of the inflammatory cell death pathways, necroptosis and pyroptosis, studying the immunological

consequences of inflammatory cell death pathways during allergic and inflammatory disease in the skin, lung, liver and intestinal, studying the role of inflammatory cell death pathways during infectious diseases; and developing cancer immunotherapy based on non-apoptotic cell death. The Gerlic lab focuses on learning the mechanisms of necroptosis and pyroptosis to ultimately harness this knowledge to fight cancer and improve the health of infectious and inflammatory diseases patients.



## Prof. Fuad A. Iraqi



Prof. Iraqi, PhD, at the Department of Clinical Microbiology and Immunology, completed his PhD at the Hebrew University in Jerusalem and three postdoctoral positions at University of Toronto, University of Michigan and the International Livestock Research Institute (ILRI).

### *Genetic basis of host response to diseases*

People respond differently to infection (viral, bacterial, fungal and parasite) and chronic diseases (obesity, diabetes, cancer, heart diseases). Based on our and others studies, this variation in response are controlled by the individual (host) genetic structure. Prof. Iraqi has studied, mapped and identified the host genetic components

that control and define the individual response to variety of infectious and chronic diseases, including bacterial, fungal, viral, parasite, obesity, type 2 diabetes, periodontitis, lung cancer, and intestinal cancer. Currently, he also focuses on studying the host genes that control the variation in response to COVID-19.



## Prof. Ariel Munitz



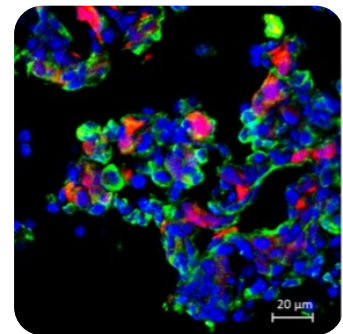
### *Immunity in health and disease*

Type 2 immunity occurs during allergic diseases or infection with parasites. Emerging data highlight new roles for Type 2 immune responses in metabolism, tissue regeneration and cancer. We aim to define the roles of cells and proteins that are “traditionally” associated with allergy in additional chronic inflammatory diseases and the tumor microenvironment. Our main research aim is to define how eosinophils, white blood cells, operate in settings of allergy and cancer. How and when do eosinophils recognize tumor cells? Do resident and recruited eosinophils

Prof. Munitz, PhD, is at the Department of Clinical Microbiology and Immunology at the School of Medicine. He obtained a BSc in Medical Science and direct PhD in Pharmacology at Faculty of Medicine at Hebrew University. His post-doctoral training was at the Division of Allergy and Immunology at Cincinnati Children’s Hospital Medical Center, Ohio. Munitz was awarded the Alon Fellowship, the Teva Medicine Award for Outstanding Research, the Eva and George Klein Award by the Israel Science Foundation, the Tel Aviv University Rector Award for Outstanding Teaching Achievements and the Dean Prize for Excellent Teaching Skills. He is a board member of the International Eosinophil Society.

[www.munitzlab.com](http://www.munitzlab.com)

act differently in the tumor microenvironment? Are the opposing activities of eosinophils dictated by heterogeneity of these cells in distinct microenvironments? Finally, can eosinophils be therapeutically targeted as a new cellular target in the cancer? Answering these questions will introduce a conceptual shift from allergy to tumor biology providing cross-disciplinary understandings of the tumor microenvironment that can be translated into novel immunotherapy.



## Prof. Nir Osherov



Prof. Osherov, PhD, is at the Department of Clinical Microbiology and Immunology at the School of Medicine and holds the Chair for the Ella Kodesz Institute for Host Defense. He completed his PhD studies at the Hebrew University of Jerusalem and his post-doctoral training at the Baylor College of Medicine and MD Anderson Cancer Center in Houston, Texas, USA. Osherov heads the Joint BSc Program in Medical and Life Sciences.

[www.tau.ac.il/~nosherov/index.html](http://www.tau.ac.il/~nosherov/index.html)

### *Fungal diseases and novel treatments*

Every year, over 1.5 million people die worldwide from fungal infections. These numbers are increasing fast because of the growing number of at-risk immunocompromised patients. Worryingly, fungi are developing resistance to our top antifungal drugs. One of the most dangerous and common fungal infections, called Invasive Aspergillosis, is caused by the green mold *Aspergillus fumigatus*. It is commonly found in

decaying vegetation, producing airborne spores that can infect the lungs. The Osherov lab uses cutting-edge molecular techniques to study how this fungus infects the lungs and how it develops resistance to antifungal drugs. They develop new drugs that take advantage of its weaknesses. This work is contributing to better understanding and treatment of a surprisingly common and lethal fungal infection.

## Prof. Udi Qimron

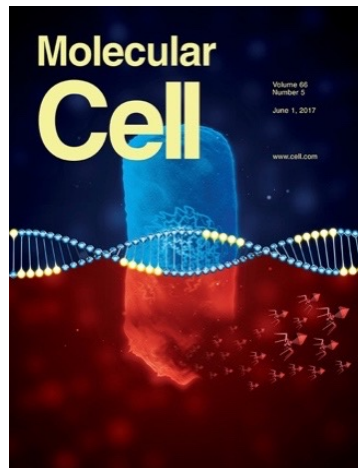


Prof. Qimron, PhD, is at the Department of Clinical Microbiology and Immunology. He has authored over 50 scientific articles, some in prestigious journals such as *Nature*, *Science*, and *Cell*. He won the prestigious ERC grant twice. He is also the CTO of a company established based on his inventions, Trobix-Bio.

<https://flaxadam.wixsite.com/qimronlab>

### *CRISPR-Cas for bacterial resistance*

Bacterial resistance to antibiotics is among the top three major health threats according to the World Health Organization. Rather than producing more antibiotics, which may worsen the problem, we have taken a unique approach, in which we reverse bacterial resistance to antibiotics. Our approach uses the genetic engineering tool, CRISPR-Cas, to eliminate resistance genes from bacteria, and at the same time to enable growth of antibiotic-sensitive bacteria.



## Prof. Ronit Sagi-Eisenberg



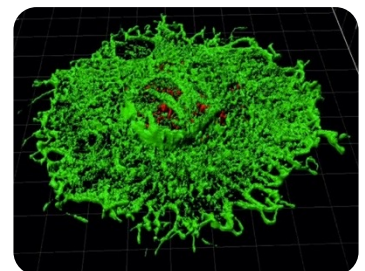
Prof. Sagi-Eisenberg, PhD, holds the Herczeg Memorial Chair of Argentine Friends on Allergy and Related Diseases and is head of the Graduate School for Advanced Degrees. She is a member of the Department of Cell and Developmental Biology. She completed her PhD at Tel Aviv University and trained at the Weizmann Institute of Science and at the National Institutes of Health in the US.

<https://rselab.wixsite.com/mysite>

### Allergic diseases

Allergic diseases have reached epidemic proportions affecting more than 30% of the world population. Yet, allergy treatment is still by largely symptomatic, the reason being the multiple and diverse stimuli that trigger mast cells, the central players in allergic diseases, and the wide spectrum of inflammatory mediators that are released by triggered mast cells. The latter might cause allergic symptoms when mast cells are triggered by an allergen, but might also cause neurogenic or chronic inflammation, when mast cells are activated by neurotransmitters or neighbouring cells, as is

the case of neurodegenerative diseases, autoimmune diseases and cancer. Therefore, the best treatment for mast cell dependent disorders would be blocking mediator release from triggered mast cells. To this goal, the Sagi-Eisenberg lab combines functional genomics analyses with high resolution microscopy to delineate the secretory response and identify the protein networks that control this process. Central proteins are marked as targets for the development of novel therapeutic means aimed at targeting the pathological activity of mast cells during disease.



## Prof. Dor Salomon



### *Antibacterial treatment*

The World Health Organization predicts that by 2050, multidrug-resistant pathogens will become the leading cause of death worldwide. To prevent this catastrophe, the development of novel antibacterial treatments is necessary. Prof. Salomon is employing multi-disciplinary approaches to study mechanisms and toxins that are used by

Prof. Salomon, PhD, is at the Department of Clinical Microbiology and Immunology. He completed his PhD (Dean's direct track) at Tel Aviv University, followed by a Postdoctoral fellowship at the University of Texas Southwestern Medical Center. Prof. Salomon was awarded the NIH Pathway to Independence Award (K99/R00) and was also awarded the Alon Fellowship for young investigators and the prestigious European Research Council (ERC) starting grant. During the period of COVID-19 quarantine, he organized a virtual international conference with over 400 participants, named T6SympoZOOM.

<https://www.dorsalomonlab.sites.tau.ac.il/>

bacteria to neutralize their bacterial competitors. By adapting and custom-engineering these natural antibacterial mechanisms, Prof. Salomon is developing next-generation antibacterial treatments and prophylactics.



## Prof. Ella Sklan



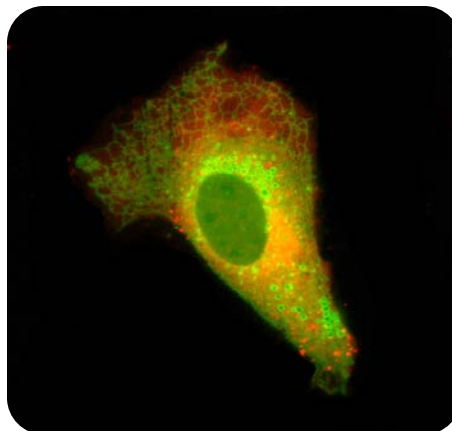
Prof. Ella Sklan, PhD, is at the Department of Clinical Microbiology and Immunology. Sklan obtained her Ph.D. in Biological Chemistry from the Hebrew University of Jerusalem and trained as a post-doctoral fellow at Stanford.

<https://ellasklan.github.io/ellasklan/html.html>

### *Novel anti-viral drugs*

RNA viruses are major pathogens affecting the lives of millions worldwide. Our primary goal is to better understand the interactions of these pathogens with their host cells using RNA viruses from different families as models. We employ genome-wide genetic screens to identify mechanisms underlying

innate host defenses and understand how some of these viruses overcome them. We hope that a better understanding of these molecular mechanisms will contribute to the identification of novel anti-viral drugs.



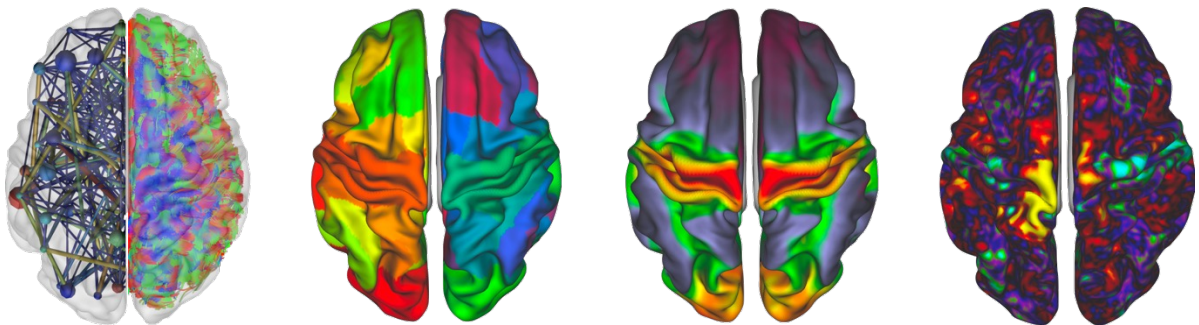
Hepatocyte-expressing hepatitis C protein NS5A.

## *Affiliations*

[Sagol School of Neuroscience](#)

[Aufzien Family Center for the Prevention and Treatment of Parkinson's Disease](#)

[Goldschleger Eye Research Institute](#)



From left to right: Structural brain connectivity, extracted from diffusion MRI scans; Parcellation of the human cortex, based on functional connectivity; Myelin map (calculated from T1w/T2w MRI scans); Brain activation map extracted from functional MRI, while moving the right foot. Ido Tavor.

## Dr. Avraham Ashkenazi



### *Autophagy in Huntington and Parkinson's disease*

Dr. Ashkenazi's long-term scientific goal is to identify mechanisms that contribute to neuronal survival. To achieve this goal, his laboratory combines stem cell technology, primary neurons, animal models, and biochemical and cellular approaches. Dr. Ashkenazi's pioneering work on autophagy (self-eating) revealed how this cell survival pathway breaks down protein clumps (aggregates), and reduces toxicity in models of triplet repeat expansion diseases, such as Huntington's and Parkinson's disease. He

Dr. Ashkenazi, PhD, from the Department of Cell and Developmental Biology at the School of Medicine, completed his PhD at the Weizmann Institute of Science and his postdoctoral training at Cambridge University. He was awarded the Young Investigator Award by the European Biochemical Society and the Azrieli Fellowship for excellent new faculty in Israel. He is part of the Taube-Koret Global Collaboration in Neurodegenerative Diseases.

<https://www.ashkenazilab.com/>

was the first to describe a biological function of triplet repeats encoding polyglutamine stretches in regulating autophagy in health and in Huntington's disease. Dr. Ashkenazi's research opens several new venues of understanding protein degradation pathways and the biology of neurodegenerative diseases. Moreover, his research has the potential to reveal new druggable targets that can be utilized to control a range of neurological disorders caused by aggregate-prone proteins.

## Prof. Bernard Attali



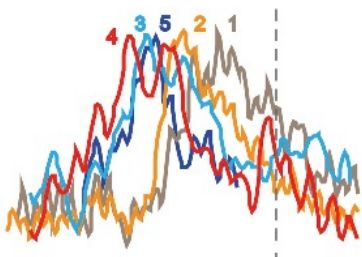
Prof. Attali, PhD, in the Department of Physiology and Pharmacology, was educated in France, and received a B.Sc/M.Sc. in Chemistry and Pharm.D. from Paul Sabatier University (Toulouse). He obtained his Ph.D. in Neurobiology from the Weizmann Institute of Science and performed his post-doctoral training at the National Centre for Scientific Research (CNRS) in France.

<https://attalilab.com/>

### *Channels in disease*

Prof. Attali focuses on potassium channels since they play crucial roles in many cellular functions such as shaping cardiac and neuronal action potentials, tuning neuronal firing patterns, synaptic integration or modulating neurotransmitter release. Using the powerful combination of molecular biology, biophysics, biochemistry and electrophysiology, his team's research aims at elucidating the structural, biophysical and physiological attributes of

potassium channels in human brain and heart. His laboratory is a worldwide leader in studying Kv7 potassium channels, whose mutations lead to major neurological and cardiovascular disorders such as epilepsy, myokymia, atrial or ventricular fibrillation. Notably, he showed that SK4  $\text{Ca}^{2+}$ -activated  $\text{K}^+$  channels are involved in the cardiac pacemaker activity and represent new targets for cardiac arrhythmias.



## Dr. Tami Bar-Shalita



Dr. Bar-Shalita, PhD, Department of Occupational Therapy at the School of Health Professions, completed her PhD at the Hebrew University of Jerusalem and her postdoctoral training at the University of Southern California. She is actively translating the knowledge evolved in her lab to the clinical field.

### *Sensory modulation dysfunction*

We all share the same physical environments, yet for some of us these severely attenuate our efficient function and well-being. This condition is termed sensory modulation dysfunction (SMD), characterizing about 10% of the general population. Dr. Bar-Shalita is the first to apply a unique approach by the coupling of sensory and

pain domains using neurophysiology and psychophysical methods. Through this approach, Dr. Bar-Shalita found that SMD is linked to disorders such as substance use disorder and chronic pain, which further served developing novel mechanism-based therapeutic modalities, currently under testing.



## Prof. Orit Bart



### *Autism spectrum disorder*

Children with autism experience stress in diverse life situations. The most common stress-provoking situations are engagement in social interaction and exposure to tactile stimuli. Dr. Bart aims to assess brain engagement during different play settings (solitary play vs. dyadic play) and during exposure to different tactile stimuli (direct – physiology vs. indirect -cognitive) in children with autism. This

Dr. Bart, PhD, is a faculty member at the Department of Occupational Therapy in the School of Health Professions. She holds a Ph.D. in health professions and performed her post-doctoral training at Haifa University. She is Chair of the Department of Occupational Therapy. Bart is a member of the International Advisory Council for Children with Developmental Coordination Disorder (DCD) and of the Israeli Association of Occupational Therapy and the American Occupational Therapy Association.

is a step towards a better understanding of the physiological and cognitive-emotional mechanism underlying atypical sensory responsiveness and social interaction. To overcome the challenge of assessing young children with autism, Dr. Bart uses an electro-physiological marker for sustained attention, the Brain engagement index, which is an easy-to-use, reliable, and valid tool.

## Dr. Ran Darshan



### *Shaping cognitive behaviors*

Dr. Darshan is a theoretical neuroscientist, employing computer simulations and the use of mathematical tools to unravel how our brain works. His research draws from the realms of statistical physics, theory of nonlinear dynamics and machine learning, as he constructs and studies mathematical models of neural circuits and develops innovative tools for analyzing neural data. His primary goal is to understand how cognitive abilities emerge from the collective activity of neurons at the network

Dr. Darshan is a member of the Department of Physiology and Pharmacology at the Faculty of Medicine and the Sagol School of Neuroscience, as well as affiliated with the School of Physics and Astronomy of the Faculty of Exact Sciences. Darshan holds a BSc in Physics and Biology from the Hebrew University, where he participated in the 'Amirim' special honors program for Exact Sciences and the 'Etgar' honors program for Life Sciences. He pursued a PhD in theoretical and computational neuroscience at the Hebrew University, focusing on developing theories of learning and dynamics of neural networks. Following the completion of his doctorate, Dr. Darshan established his own theoretical lab as a fellow researcher at Janelia Research Campus, HHMI.

level, and how such activity evolves during the process of learning. Spanning a wide range of neuroscience domains, his work delves into topics including learning, memory, motor preparation, and decision-making processes within the brain. His lab will work closely with experimentalists, forging a collaborative effort to reveal the mechanisms underlying these cognitive brain processes.

## Prof. Hagit Eldar-Finkelman



### *GSK-3 and neurodegeneration*

The research in Prof. Eldar-Finkelman's laboratory is focused on the development of new innovative therapeutics addressing unmet needs in the neurodegenerative disorders arena. A particular interest is given to the protein kinase, glycogen synthase kinase-3 (GSK-3), as a prominent drug target for treating neurodegeneration. They combine expertise in chemistry, biology, and

Prof. Eldar-Finkelman, PhD, obtained her BSc in Chemistry from the Hebrew University of Jerusalem, and her MSc in Physical Chemistry and PhD in Life Sciences at the Weizmann Institute. Her postdoctoral work was conducted with the Nobel Prize Laureate Edwin G. Krebs at the University of Washington in Seattle. She then became an Assistant Professor at the Harvard Medical School in the Division of Women's Health and then joined TAU. Eldar-Finkelman was a visiting scientist at MBL Woods Hole, Cape Code; EMBL-EBI Hinxton, UK; Perelman School of Medicine, University of Pennsylvania, Philadelphia; and at Rockefeller University, NYC. Her academic activities include representing the University in the Inter-University Forum for Medical Sciences, in the National Council for Experiments in Animals Subjects, and in the State Control Committee in the Knesset. She is part of the Taube-Koret Global Collaboration in Neurodegenerative Diseases.

<https://heflab.com/>

computational modeling to design drugs with unique inhibition modality. The team's goal is to ultimately produce beneficial therapeutics for clinical practice.

## Dr. Arseny Finkelstein



### *Memory formation and neural plasticity*

The brain is a highly plastic system that is constantly changing. Changes in interactions between neurons allow us to learn from experience and to create new memories. The long-term goal of Dr. Finkelstein's lab is to study what constitutes the building blocks of memory by literally watching how memories are formed using optical imaging of the living brain, and by implanting artificial memories directly into the brain using novel optogenetic methods. Dr. Finkelstein studies

Dr. Finkelstein, PhD, is in the Department of Physiology & Pharmacology in the School of Medicine and is affiliated with the Sagol School of Neuroscience. He completed his Ph.D. studies at the Weizmann Institute of Science and his postdoctoral training at Janelia Research Campus (Howard Hughes Medical Institute, USA). Dr. Finkelstein is a recipient of several awards including the Wolf Foundation award, Clore Foundation fellowship, The John F. Kennedy Prize (Weizmann Institute of Science), FENS-Kavli Network of Excellence PhD Thesis Prize, Young Investigator Award and the Capranica Prize from the International Society for Neuroethology, EMBO Long-Term Fellowship, Rothschild Fellowship for postdoctoral research, and is an Azrieli Foundation Early Career Faculty Fellow.

<https://www.finkelstein.sites.tau.ac.il/>

memory formation processes using mice engaged in cognitively complex behaviors involving decision-making and navigation. The lab employs cutting edge microscopy techniques allowing turning on or off specific neurons in the brain, in combination with advanced computational methods for modeling and analysis of neural dynamics. In addition to studying changes in neural interactions in the healthy brain, Dr. Finkelstein's lab will study another important aspect of neural plasticity – the reorganization of brain networks during neurodegeneration, with a focus on brain plasticity following stroke.

## Prof. Illana Gozes



### *Therapeutics for autism and beyond*

Prof. Gozes discovered and studies Activity-dependent neuroprotective protein (ADNP), recognized as a leading gene accounting for 0.17% of autism spectrum disorder (ASD) cases globally. The Gozes laboratory focuses on genome editing, to test and develop therapeutics such as the ADNP enhancing fragment NAP (CP201) and pipeline products, for effects on autism and other ASD-related predicaments. Prof. Gozes further discovered convergence among autism, schizophrenia, stress-related ailments and

Prof. Gozes, PhD, (Emerita) is Head of the Dr. Diana and Zelman Elton (Elbaum) Laboratory for Molecular Neuroendocrinology, and at the Department of Human Molecular Genetics and Biochemistry, the Adams Super Center for Brain Studies and Sagol School of Neuroscience. She is Chief Scientific Officer at Coronis Neurosciences, with her BSc, from Tel Aviv University, Direct PhD, from Weizmann Institute of Science, Israel, postdoc at MIT and Salk Institute, and was a Senior Scientist/Associate Professor at the Weizmann Institute and Fogarty-Scholar-in-Residence at the NIH, USA. Prof. Gozes has won many awards of excellence, including Tel Aviv University's Vice President Award, Olson Prize, Julodan Prize, Teva Prize, Neufeld Award, Hanse-Wissenschaftskolleg (HWK) Fellowship, Humboldt Award, the Landau Prize for Life Achievements and the RARE Champion of Hope Award. She currently serves as Secretary of the European Society for Neurochemistry, is a member of the Israeli Ministry of Education, Council of Higher Education and is the Editor-in-Chief of the *Journal of Molecular Neuroscience*.

<https://www.adnpkids.com/illana-gozes.html>

Alzheimer's disease with ADNP playing a role in all of these diseases. As such, the Gozes laboratory strives to pave the way to novel diagnostics and treatments toward healthy development, maturation and aging of the brain.



## Dr. Yoni Haitin



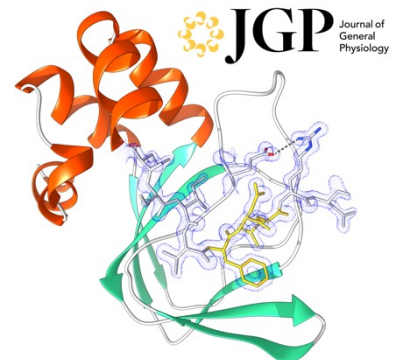
### *Ion channels in disease*

Proteins are molecular machines essential for all cellular activities. When they malfunction due to genetic mutations or environmental effects, they also underlie and facilitate many human diseases. As the roles of these crucial cellular building blocks are tightly related to their atomic structures, deciphering disease-related mechanisms requires scrutinizing proteins' utmost fundamental molecular properties. Dr. Haitin focuses on studying ion channels and prenyltransferases, two

Dr. Haitin, PhD, completed his Ph.D. studies at Tel Aviv University and his postdoctoral training at the University of Washington, where he was awarded the Human Frontier Organization Long Term Postdoctoral Fellowship. Haitin has established a structural-physiology research program at the Department of Physiology and Pharmacology at the School of Medicine. Dr. Haitin serves as the secretary of the Israeli Society for Physiology and Pharmacology and is on the editorial board of *PLoS One*. He heads the Joint Undergraduate Program with the Faculty of Life Sciences.

<https://haitinlab.com/>

types of radically different enzyme families. By utilizing cutting-edge biochemical and biophysical approaches, they delineate the structural mechanisms underlying functional regulation of these key protein families. Moreover, given the emerging pivotal roles these proteins play in numerous diseases, they use high-throughput screens to identify novel modulators, which may prove beneficial for future development of targeted therapeutic strategies.



## Prof. Talma Hendler



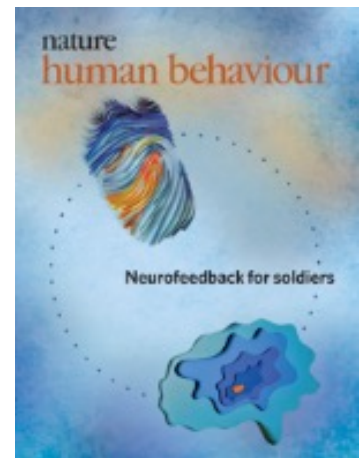
### *Neuropsychiatry and NeuroModulation*

The main research aim in the Hendler lab is to harness the brain for improving mental health, by examining emotional brain processing in healthy and diseased human states. They are approaching the problem by applying multi-scale brain imaging (fMRI, EEG and intracranial recording), ecological behavioral assessments and computational modeling. Prof. Hendler is using innovative neuroimaging methods, and prospective large scale human studies to untangle cause from consequence in mental disorders with respect to traumatic stress,

Prof. Hendler, MD-PhD, is a member of the Department of Physiology and Pharmacology in the Faculty of Medicine and at the School of Psychological Sciences at Tel Aviv University. She earned her PhD in SUNY at Stony Brook, NY, USA and her MD at Tel Aviv University. Hendler completed a psychiatry residency at the Sheba Medical Center. Dr Hendler is the founding director of the Sagol Brain Institute at the Tel-Aviv Sourasky Medical Center. She was a TAU representative at the I-CORE on Cognitive Neuroscience and was recently awarded the leading scientist voucher by the Flagship EU Program of the Human Brain Project. She is the inventor and chief medical scientist at GrayMatters Health.

<https://www.cbf-tlv.com/>

Her team was the first in Israel to apply simultaneous recording of EEG/fMRI in humans, and the first in the world to perform a prospective study in humans showing that the amygdala is a vulnerability marker for traumatic stress psychopathology, developing and validating an fMRI-informed electrical fingerprint of the amygdala and applying it in self-neuromodulation (NueroFeedback) for stress resilience.



Keynan...Hendler 2019

## Prof. Yael Henkin



### *Auditory neuroscience and hearing rehabilitation*

What are the neurophysiological underpinnings of auditory processing in the normal and impaired auditory system? how are they affected by increasing age, monaural vs. binaural listening, and by rehabilitation with cochlear implants and hearing aids? Prof. Henkin utilizes a complementary auditory neuroscience approach in search of neurophysiological biomarkers and behavioral indices of auditory processing in normal hearing listeners, hearing-impaired listeners with bilateral/unilateral hearing loss habilitated by

Prof. Henkin, PhD, from the Department of Communication Disorders at the School of Health Professions, completed her PhD and post-doctoral studies at TAU and at the University of Michigan, respectively, focusing on auditory processing in cochlear implant recipients, using auditory cortical neurophysiology. Prof. Henkin is Head of the Hearing, Speech, and Language Center and Communication Disorders Services, and co-director of the cochlear implant program at the Sheba Medical Center. She manages a diverse spectrum of diagnostic and therapeutic activities in the field of communication disorders including audiology, hearing rehabilitation, speech, language, communication disabilities, and swallowing disorders. She was awarded the DFG German-Israeli grant in collaboration with scientists from the University of Hannover. Prof. Henkin consults the Israeli Ministry of Health on various topics in the fields of communication disorders and hearing healthcare.

cochlear implants and hearing aids, and in children with autism, selective mutism, and auditory processing disorders (APD). Her clinical experience in audiology and hearing rehabilitation have set the ground for clinical research aimed at transforming research findings into diagnostic and rehabilitative approaches.



## Prof. Michal Itzhaki



### *Emotion management*

Feeling rules are unwritten social rules that dictate the strength of emotions appropriate for different situations. In case of incompatibility between experienced and socially expected emotions, emotional management is required to overcome the dissonance. Prof. Itzhaki explores the feelings experienced by healthcare workers and patients and their coping strategies with differences between expected versus experienced emotions in life-threatening situations

Prof. Itzhaki, PhD, Department of Nursing, School of Health Professions, serves as the Chair of the Department. She is the first registered nurse in Israel to have completed a direct PhD track, which she obtained at the Department of Nursing Department at Tel Aviv University. She completed her post-doctoral training at the Department of Sociology & Anthropology at Bar-Ilan University. She collaborates with nursing theorists in academic institutions worldwide exploring caring in multicultural societies.

(emergency and disaster) and in complex care situations. Investigation of the emotion management experienced by nurses includes attention to caring and emotional resilience. Her research forms the basis for developing intervention programs aimed at efficient emotional labor, which includes raising the caregiver/patient's sense of resilience and emotional support. She uses a mixed methods design that combines qualitative and quantitative methods.

## Dr. Michal Katz-Leurer



Dr. Katz-Leurer, PhD, is at the Department of Physical Therapy at the School of Health Professions. Michal is a physiotherapist and completed her BA in statistics and sociology, and her MPH and PhD degrees in biostatistics and epidemiology at the Hebrew University of Jerusalem.

### *Brain injury impairment and rehabilitation*

The autonomic nervous system regulates the activity of the internal organs according to the needs of the body in changing environments. The heart rate control system is also regulated by the autonomic nervous system. The heart rate system is easy to monitor and can provide us with simple and quantitative information on the activity of the autonomic system in both health and disease states. Although the system is

called "autonomic" - it is under control of high brain centers. After a brain injury, autonomic damage is quite a common phenomenon. This might be due to the primary brain damage or secondary to musculoskeletal or sensory systems impairment. Identifying the source of the impairment and rehabilitation of this system function in populations post brain injury is my main research area.



## Prof. Liat Kishon-Rabin



### *Speech processing and brain plasticity in cochlear implant users*

Prof. Kishon-Rabin investigates the effect of sensory, cognitive and linguistics processes that are involved in speech perception in optimal and degraded listening conditions in normal and pathological hearing. The different factors that influence performance assist in understanding the wide variability in performance of implanted cochlear implant users, as well as in developing habilitation protocols that are tailored to the hearing-impaired individual. Prof. Kishon-Rabin was one of the first to study functional hearing in infants with cochlear implants, for

Prof. Kishon-Rabin, PhD, is at the Department of Communication Disorders, School of Health Professions and is the Dean of Innovation in Teaching & Learning at Tel Aviv University. She completed her PhD in psychoacoustics from the Speech & Hearing Sciences Department at the Graduate Center, City University of New York. She was the first Israeli to be awarded with the Graham Fraser Memorial Lecture by the British Cochlear Implant Group. She is an associate editor for the *International Journal of Audiology*. She is vice president of the European Federations of Auditory Societies (EFAS) and will serve as president from 2021-2023. In continuation to her research, which supports intervention during the early years of the developing brain, Prof. Kishon-Rabin initiated a series of social startups in infant day-cares and pre-school bringing evidence-based practice of language acquisition programs to practitioners, caretakers and parents either directly or via novel on-line programs.

which she received worldwide recognition. She investigates the influence of auditory stimulation and experience dependent factors that drive cortical development in infants using video analysis and brain-imaging techniques. Her team are pioneers in implicit learning processes via auditory modality using fNIRS measurements, for the first time for cochlear implants in Israel.

## Prof. Rachel Kizony



### *Cognition and everyday function*

Prof. Kizony's research aims to achieve a better understanding of how cognition and specifically functional cognition is linked to a person's ability to participate in everyday activities by integrating her expertise in neurological rehabilitation, the aging process, and rehabilitation technologies. Specifically, she is exploring the role of cognition in everyday function, conducting clinical studies in various populations such as post-stroke, traumatic brain injury, Parkinson's disease, and cancer.

Prof. Rachel Kizony, PhD, the Department of Occupational Therapy, is an occupational therapist. Prof. Kizony completed her PhD at the Hebrew University of Jerusalem, and her postdoctoral training at McGill University, Montreal, Canada.

Furthermore, she developed interventions targeting functional cognition and daily participation, some of which incorporate telerehabilitation. Currently she is investigating brain activation during the performance of cognitive tasks to better understand mechanisms underlying the cognitive performance.

## Dr. Tal Laviv



### *Cognitive decline and neurodegeneration*

The brain has an amazing capacity to change throughout our life, a process essential for our most basic functions: experiencing the world through our senses, learning a new task or remembering past events. This involves highly synchronized changes in electrical activity of cells within the brain, much like individual orchestra tools playing together to achieve harmony. Inside cells, complex array of proteins provide the molecular instructions for this process. We develop biosensors, sensitive

Dr. Laviv, PhD, is at the Department of Physiology and Pharmacology and the Sagol School of Neuroscience. His PhD in neurobiology was conducted in the Interdisciplinary Doctoral Program in Neurosciences at Tel Aviv University. His postdoctoral research was conducted at the Max Planck Florida Institute for Neuroscience (Jupiter, Florida). He received a BSc in the Joint Program in Life and Medical Sciences at Tel Aviv University. Dr. Laviv received two international postdoctoral fellowships, from the European Molecular Biology Organization (EMBO) and the Human Frontiers Science Program (HFSP). He was awarded the ERC Starting Grant.

<https://www.lavivlab.com/>

biological devices and specialized microscopy to visualize them in the brain. Our main goal is to explore the protein landscape in the living brain, during processing of information from the environment. This approach, first of its kind in Israel, will allow us to better understand the inner workings of the healthy brain, and identify critical failure points leading to detrimental conditions such as cognitive decline and neurodegeneration.

## Prof. Tova Most



### *Rehabilitation and education of hard of hearing and deaf individuals*

Prof. Most's research activities focus on the effect of hearing loss and the use of various sensory aids (hearing aids, cochlear implants) on the perception and production of spoken language. The research relates to individuals from a wide range of ages and various degrees of hearing loss from unilateral and mild hearing loss to profound deafness. Prof. Most also studies the ramifications of a hearing and communication deficiency

Prof. Most, PhD, is at the Department of Communication Disorders, Steyer School of Health Professions, Faculty of Medicine and the Department of Counselling and Special Education, Jaime and Joan Constantiner School of Education. Prof. Most research focuses on the rehabilitation and education of deaf and hard of hearing individuals. Her research work has been published in leading international scientific journals including 95 research manuscripts, 15 book chapters and a book in the area of education and rehabilitation of deaf and hard of hearing children and adults.

on the individual's academic, social and emotional functioning. She examines their functioning in the various life environments of education, family, community and occupation, focusing on the individuals with hearing loss as well as their parents, friends, teachers and employers. She provides a holistic approach and broad in-depth understanding of the ramifications of the hearing loss on the individual's functioning.

## Prof. Yuval Nir



Prof. Nir, PhD, is at the Department of Physiology and Pharmacology and is a member of the Sagol School of Neuroscience. He completed his PhD at the Weizmann Institute of Science and his postdoctoral training at center for sleep and consciousness, University of Wisconsin-Madison. He has won several awards, including the Adelis Neuroscience Prize.

<https://yuvalnirlab.com/>

### Sleep

Sleep is a universal behavior that is present across the animal kingdom. We spend a third of our lives sleeping, but still do not fully understand what it is for. Prof. Nir is studying the relation between sleep and cognition using a unique combination of animal and human research: what it is about sleep that keeps us 'disconnected' from the external environment? How does sleep promote learning and memory? Can we harness sleep to improve neuropsychiatric diagnosis and counteract neurodegeneration?





## Prof. Dani Offen



### *Translational neuroscience*

Prof. Offen's work has concentrated on the processes of cell death in neurodegenerative diseases, specifically in Parkinson's and ALS. He focuses on developing cell-based and gene-based therapies for neurodegenerative diseases. His team uses advanced methods, such as CRISPR/Cas9, for in vivo gene modification, and takes advantage of multiple platforms for the delivery of therapeutics into the CNS, including mesenchymal stem cells, exosomes and peptides.

Prof. Offen, PhD, is a member of the Department of Human Molecular Genetics & Biochemistry in the School of Medicine. He studied molecular biology, specializing in RNA processing, at the Weizmann Institute of Science, Israel. He furthered his education at the Albert Einstein College of Medicine, NY, USA, as a Post Doctoral Fellow, where he developed transgenic models of autoimmunity. Offen heads the Laboratory for Neurosciences at the Felsenstein Medical Research Center, Tel Aviv University. Prof. Offen is a co-founder of several biotechnology companies developing gene and cell therapies for neurological disorders. One of them, Brainstorm Cell Therapeutics, showed efficacy in ALS patients in a Phase III clinical trial.

<https://www.danioffenlab.com/>

Using cell cultures and animal models, his team evaluates the effect of gene modification on cognition and behaviour, as well as on disease-related biochemical and histological features. Recently, Prof. Offen and his group conducted pioneering work in the role of stem cells in health and disease

## Dr. Moshe Parnas

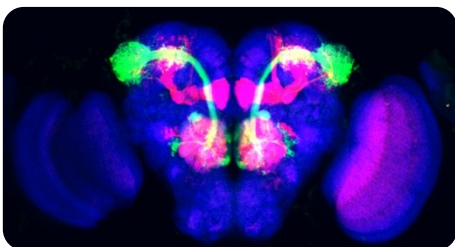


### Neural circuits encode learning and memory

The Parnas lab uses the fruit fly to study how neural circuits encodes information and support behavior, learning and memory. Using a multidisciplinary approach, we modulate the activity of single proteins and neural circuits in behaving animals and examine the consequences such manipulations have on flies' perception, decisions and behavior. In particular we are interested in a novel phenomena in which G-protein coupled

Dr. (Shiko) Parnas, PhD, at the Department of Physiology and Pharmacology and Sagol Schol of Neuroscience, completed his PhD studies at the Hebrew University of Jerusalem. He conducted his postdoctoral training at the University of Oxford, where he was awarded the European Molecular Biology Organization and the Edmond & Lily Safra Center for Brain Sciences Long Term Postdoctoral Fellowships. He has a current ERC grant. He is a board member of the Israeli Society for Neuroscience and a Review Editor for *Frontiers in Behavioural Neuroscience*. More info at: <https://www.parnaslab.sites.tau.ac.il/>

receptors (GPCRs) change their activity when neurons change their electrical activity. Whether these changes in GPCR activity have physiological importance is unknown. Approximately 35% of approved drugs target GPCRs. Thus, unraveling the physiological roles of this novel phenomena may lay the foundation to an entire new approach of drugs development.



## Prof. Eran Perlson



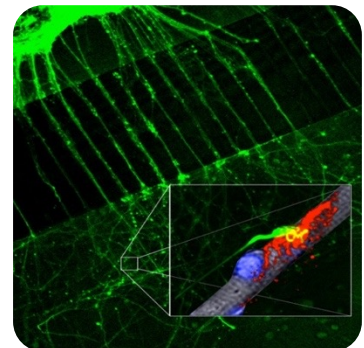
### *Amyotrophic lateral sclerosis*

Amyotrophic lateral sclerosis (ALS) is a lethal adult-onset disease, characterized by neuronal death and degeneration. No effective treatment exists for ALS. Prof. Perlson is taking a fresh approach to this challenge using advanced microscopy, genetic engineering and a novel NMJ-on-a-Chip platform that mimics the human motor unit. This novel platform was developed first in the world by Prof. Perlson's team, and enables growth of patients' neurons and muscle on a silicon chip.

Prof. Perlson, PhD, at the Department of Physiology and Pharmacology and Sagol School of Neuroscience, is a leader in the research of nerve degeneration and regeneration. He completed a Ph.D. at the Weizmann Institute of Science in molecular and cellular neurobiology. As a Postdoctoral Research Fellow at University of Pennsylvania Medical School, he focused on understanding the mechanisms underlying axon degeneration in ALS. His scientific work has earned him a large number of distinguished grants, awards and honors, and he is the author of numerous publications in high profile journals and invited speaker to leading international meetings.

<http://www3.tau.ac.il/medicine/perlson/>

This unique platform opens new possibilities for experimental analyses of neuron degeneration and regeneration process, and provides a tool for personalized medicine. The team's main goal is to elucidate the critical events leading to neuron damage that can be targeted and prevented. By preventing nerve degeneration and activating its regeneration, they will be able to find effective treatment to neurodegenerative disease such as ALS or spinal cord injuries.



## Prof. Sigal Portnoy



### *Technology for rehabilitation*

The promise of new and exciting technologies to enhance the world of motor and cognitive rehabilitation, relies on its integration in the clinics. One of the main goals of Prof. Portnoy is to create and distribute accessible and innovative tools that will promote the use of technologies in rehabilitation. Among the

Prof. Portnoy, PhD, is head of the Department of Occupational Therapy at the School of Health Professions. Prof. Portnoy received her B.Sc. in Electronic Engineering at Tel Aviv University and her M.Sc. and Ph.D. in Biomedical Engineering at the Musculoskeletal Biomechanics Laboratory at Tel Aviv University. She was the scientific director of the Gait and Motion Laboratory at the Hadassah Medical Center in Jerusalem.

<https://www.tau.ac.il/~portnoys/>

developed tools are a software that evaluates cognitive function, validated, published and to date, downloaded by more than 250 users worldwide, and a software that automatically fits the dimensions of virtual model of orthoses for 3D printing, according to simple limb measurements performed by the clinician.



## Dr. Violetta Rozani



### *Bio-physiological factors in aging*

Dr. Rozani's research focuses on bio-physiological and psychosocial factors, as well as on case/disease management associated with both aging and chronic illness. She conducts big-data studies based on national and international medical datasets, as well as studies in the clinical field focusing on the well-being of older patients, their families, and medical staff. In her research on bio-physiological factors, Rozani focuses on the association between medications for type two diabetes mellitus treatment

Dr. Rozani, PhD, is a faculty member at the Department of Nursing in the School of Health Professions. She is a Registered Nurse and holds a Master's Degree in Nursing from Tel Aviv University. Her graduate research study was one of the first in Israel to examine exposure to viral occupational hazards among nurses in the course of their work. She earned a PhD in Epidemiology and Preventive Medicine at Tel Aviv University, examining risk and protective factors associated with Parkinson's disease. These findings were reported to the Israeli Center for Disease Control (ICDC), allowing the ICDC, for the first time, to make a comprehensive report regarding neurodegenerative morbidity in Israel. She then continued her postdoctoral training at the Faculty of Health Science at Ben-Gurion University of the Negev, exploring the indicators of healthy aging.

and Parkinson's disease, trying to better understand the mechanism of these medications for the prevention or modification of Parkinson's disease. As a researcher in the field of case/disease management, Dr. Rozani examines the quality and safety of care provided by nurses in various wards during the hospitalization, as well as the burden of chronic illness experienced by patients, their families, and health care providers.



## Dr. Angela Ruban



### Spinal cord injury

Spinal cord injury causes permanent changes in strength, sensation and motor functions. Hope of recuperation is slim to none. Primary mechanical damage to spinal cord tissue kills a certain number of neuronal cells. But there is a secondary damage due to the release of excess glutamate, which is responsible for an additional functional disability. Our main idea is to reduce the secondary damage as soon as possible — to block the body's reaction to the spinal cord trauma. Our new study finds the intravenous injection of a potent enzyme, just hours

Dr. Ruban, PhD, at the Department of Nursing in the School of Health Professions, received a PhD in Clinical Pharmacology from the Ben Gurion University. She was a postdoctoral scholar at the Department of Neurobiology at Weizmann Institute of Science. During this period, she and Prof. Teichberg developed a novel Blood Glutamate Scavenging (BGS) technology for the treatment of malignant and neurodegenerative disorders. Dr. Ruban is a faculty member at the Health Profession School, Faculty of Medicine, Tel Aviv University. Her lab research has focused on evaluating the therapeutic potential of the treatment in the neurotrauma, neurodegenerative and malignant diseases.

<https://www.angelarubanlab.com/>

after the accident, has the potential to diminish a cascade of pathological events responsible for neuronal death, such as inflammation and scarring. It will be the first emergency treatment for neurotrauma in the world. We suggest administering the injection by paramedics even in cases of uncertain diagnosis. There is no side effect, but it might just mitigate secondary damage and dramatically improve the quality of a person's life.

## Dr. Moran Rubinstein



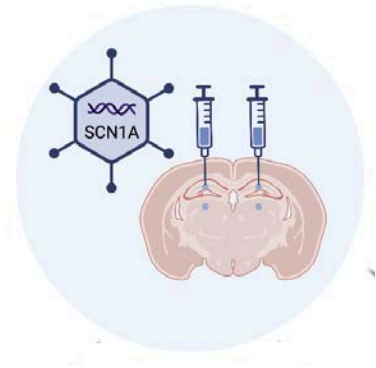
### Neurodevelopmental disorders

Neurodevelopmental disorders, which include cognitive impairment, severe epilepsy and autistic features, are the leading cause of morbidity in children. While recent genetic studies, exposing involvement of specific genes in the etiology of these disorders, have contributed to the tremendous advancement in the studies of these disorders, our understanding of the pathophysiological pathways leading from a

Dr. Rubinstein, PhD, head of the Goldschleger Eye Research Institute and member of the Department of Human Molecular Genetics and Biochemistry at the Faculty of Medicine of Tel Aviv University, completed her Ph.D. studies at Tel Aviv University and her postdoctoral training at the University of Washington. She serves on the scientific committee of the Israeli Society for Physiology and Pharmacology, the editorial board of the *Journal of Molecular Neuroscience* and as guest editor for *Frontiers in Pharmacology*.

<https://moranrub.wixsite.com/rubinsteinlab>

genetic mutation to abnormal brain function is limited. In order to bridge this gap, the lab of Dr. Rubinstein uses unique mouse models, which are a precise mimic of the human disorder. By combining genetic, electrophysiological and behavioral approaches, her goal is to elucidate the neurobiological basis of these disorders and unveil novel diagnostic and therapeutic approaches.



## Dr. William (Will) Saban



### Online neuropsychological testing

The lab specializes in remote neuropsychological testing for individuals with neurological abnormalities such as Parkinson's disease, spinocerebellar ataxia, and developmental dyslexia. The main advantage of remote neuropsychological testing is the vast amount of data that can be collected quickly. For example, it is possible to collect data from nearly 1,000 patients in three

Dr. Saban, PhD, is in the Department of Occupational Therapy at the School of Health Professions at the Faculty of Medicine. Dr. Saban completed his Clinical Neuropsychology Ph.D. studies at the Department of Psychology of the University of Haifa. He then completed his postdoctoral training at the University of California Berkeley in the Department of Psychology, and the Helen Wills Neuroscience Institute, where he received the Rothschild Fellowship.

years, whereas in-person studies might only have 50 patients. The research identifies risk factors and cognitive markers for these neurological abnormalities. With these large data sets, by utilizing computational models and machine learning algorithms, Dr. Saban aims to better map the subtypes and progression of these diseases, leading to improved earlier detection and interventions.

## Prof. Inna Slutsky



### *Plasticity and memory in Alzheimer's disease*

Prof. Slutsky's research is focused on understanding the basic mechanisms that maintain synaptic plasticity and memory function and initiate memory dysfunction in Alzheimer's disease (AD). Using high-resolution optical imaging, electrophysiology and molecular biology, Slutsky's team focuses on identifying the mechanisms that initiate synaptic and cognitive impairments in common, late-onset AD. Dr. Slutsky and her team discovered how neuronal activity and sensory experience

Prof. Slutsky, PhD, is the head of the Department of Physiology and Pharmacology at the School of Medicine and a member of the Sagol School of Neuroscience at Tel Aviv University. Prof. Slutsky completed her PhD at the Hebrew University of Jerusalem and post-doctoral studies at MIT. She is a member of the American Federation for Aging Research (AFAR) National Scientific Advisory Council, editorial member of *eLife* and *Scientific Reports* journals, and scientific committee member of the Israel Society of Neuroscience. Dr. Slutsky is a recipient of the MetLife Foundation Prize in Alzheimer's research, Bernard Katz Prize in Neuroscience, the New Investigator Award in Alzheimer's Disease from American Federation for Ageing Research, the Sieratzki Prize and the ERC Starting and Consolidator Awards. Prof. Slutsky is the President of the Israel Society for Neuroscience.

<https://www.slutskylab.com/>

regulate molecular composition of amyloid-beta, the physiological role of amyloid-beta, the role of magnesium ion in cognitive enhancement and the molecular mechanism triggering synaptic hyperactivity at the earliest AD stages.

## Dr. Ido Tavor



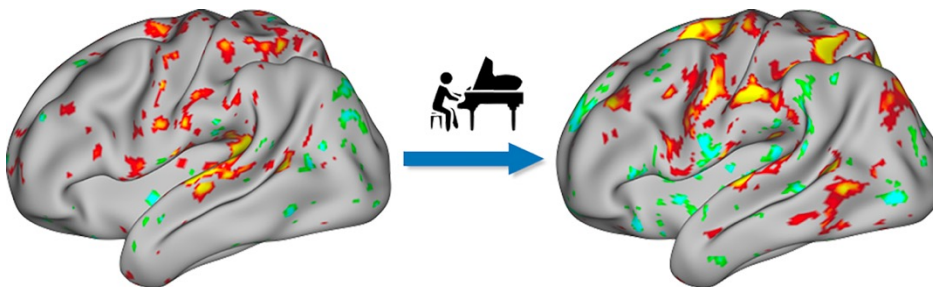
Dr. Tavor, PhD, from the Department of Anatomy and Anthropology at the School of Medicine and the Sagol School of Neuroscience, completed his PhD at Tel Aviv University. He then proceeded to a postdoctoral training at the University of Oxford where he specialized on advanced imaging techniques. He holds an inter-disciplinary lab, combining computational, statistical and cognitive neuroscience methods to study the human brain and behavior.

<https://www.tau.ac.il/~idotavor/>

### *Brain structure, function and human behavior*

What makes us different? While doing the exact same thing, different individuals present different patterns of brain activity. Dr. Tavor studies what underlies behavioral and functional differences between individuals using Magnetic Resonance Imaging (MRI). Specifically, he uses advanced imaging

techniques to examine how modifications in brain connectivity and microstructure affects brain function and human behavior, both in healthy and clinical populations. By better understanding the relations between brain function and structure, new insights on human behavior may be gained.





## Dr. Noham Wolpe



### *Psychiatry in action*

It may seem quite menial, but even a simple action like reaching for a cup of coffee requires complex, yet instantaneous computations by the brain. In addition to variables like how full the cup is or the shape of the cup, there are many other factors that can affect these computations. Changes in cognition, such as memories of using similar cups in the past, and changes in mental health, affecting how much we value drinking this coffee – can all determine how we will reach for and grasp this cup of coffee.

Dr. Wolpe, MD, PhD, Department of Physical Therapy in the School of Health Professions, completed his medical degree at the Hebrew University, Jerusalem. He conducted most of his research in the UK: he first completed an MSc degree in Neuroscience at University College London, and later did a PhD as a Bill & Melinda Gates Scholar and a post-doctoral fellowship at the University of Cambridge. He was then received a National Institute of Health Research Academic Clinical Fellowship in general psychiatry, allowing him to combine clinical psychiatry and academic work.

[www.noham-wolpe.org](http://www.noham-wolpe.org)

Dr. Wolpe's research aims to improve our understanding of the links between cognition, mental health and action both in health and disease. More specifically, a main theme of the current research is how mental health impacts cognition and motor functioning across the adult lifespan. His team examines the role of specific mental health factors, such as motivation, in bringing about age-related decline. For our research, we combine clinical and basic neuroscience methods, including neuroimaging and computational models of behaviour.

## Dr. Nogah Zeltzer



Dr. Zeltzer, PhD, is at the Department of Communication Disorders of the School of Health Professions. Dr. Zeltzer completed her Ph.D. studies at Northwestern University and her postdoctoral training at the University of California Davis Department of Otolaryngology-Head and Neck Surgery, where she was the recipient of the Dickenson Fellowship.

### *Swallowing disorders*

Swallowing disorders are prevalent in older adults and have severe health implications including dehydration, malnutrition, pneumonia and reduced quality of life. Dr. Zeltzer's research focuses on investigating the effects of ageing on the swallow and devising prophylactic treatment methods for the preservation of swallow function in the elderly. She utilizes high resolution manometry and biomechanical analysis of the swallow to characterize physiological components of both

normal and disordered swallowing, with the goal of designing accurately targeted preventative and rehabilitative treatment for adults with dysphagia (difficulty swallowing). Her research also focuses on identifying risk factors and biomarkers for the development of aspiration pneumonia, a common complication of swallowing disorders, and translating these research discoveries into novel approaches for pneumonia prevention in individuals with dysphagia.

# Public Health

Public health laboratories at the Faculty of Medicine are responsible for providing timely and reliable results, primarily for the purpose of disease control and prevention, as well as improving quality of life across range of population.

Our public health researchers conduct interdisciplinary studies, incorporating behavioral health, mental health, health education, occupational safety, disability, gender issues in health, reproductive epidemiology, and disease prevention.

## Programs

[Summer Institute of Advanced Epidemiology and Preventive Medicine](#), in collaboration with Johns Hopkins University Bloomberg School of Public Health

[Emergency & Disaster Management Program](#)

*The School of Public Health has been at the forefront of efforts to benefit the health of populations worldwide, including the current COVID-19 pandemic.*



## Dr. Anat Amit-Aharon



### *Culture and decisions affecting health*

How does culture influence health? What is the mutual relationship between culture and health? How does cultural diversity generate health differences and disparities and what is the association with health education and promotion? Dr. Amit-Aharon explores these complex issues among a variety of communities, including secular and orthodox

Dr. Amit-Aharon, PhD, is at the Department of Nursing, School of Health Professions, and is a registered nurse and holds a Master's degree in health administration from Tel Aviv University and a Ph.D. in public health from Haifa University. Dr. Amit-Aharon serves as the head of the PISGAH program for pre-military nursing students. She was one of the first researchers in Israel to examine parental non-compliance to childhood vaccines during her service as a head nurse in the Department of Public Health at the Tel Aviv-Yafo municipality. Her doctoral dissertation dealt with parental compliance of vaccinations and their feelings of control over health factors.

Jews, Arabs, and asylum seekers in Tel Aviv. Understanding the associations between culture and health may lead to implementation of programs tailored to individual needs in different communities and hence, reduce health inequity.

## Dr. Moran Bodas



### *Resilience in a pandemic*

Dr. Bodas deciphers the psychosocial determinants of preparedness behavior and develop newer and more refined behavioral models that could explain why disaster risk communication falls short of achieving its goal of promoting public readiness to emergencies. At the Gertner Institute, his research focuses on the epidemiology of injury. The Israeli National Trauma Registry provides 25 years of data covering hospitalized cases due to traumatic injuries in Israel. This vast database allows

Dr. Bodas, MPH, PhD, is a member of the Department of Emergency Management and Disaster Medicine in the School of Public Health. He is also the acting director of the Israel National Center for Trauma & Emergency Medicine Research, Gertner Institute of Epidemiology. Dr. Bodas holds a B.Sc. in Life Sciences, a Master's in Public Health (MPH) with an emphasis in emergency and disaster management, and a PhD in Disaster Management, all from Tel Aviv University. He completed a post-doctoral fellowship at the Research Center in Emergency and Disaster Medicine (CRIMEDIM) in Novara, Italy, where he studied the Italian population's preparedness for earthquakes. He is an affiliated faculty member at the PhD Program in Global Health, Humanitarian Aid and Disaster Medicine and the European Master in Disaster Medicine, both at Università del Piemonte Orientale, Italy.

clinical aspects of treatment provided to casualties, as well as the impact of interventions and public health policies designed for the trauma system. These studies have supported the improvement of the Israeli trauma system, which is now one of the leading trauma systems in the world.



## Prof. Gabriel Chodick



### *Epidemiology and database research*

The integrated system of state-mandated health providers in Israel has facilitated the linking of inpatient, outpatient, hospital, ambulatory care, pharmaceutical, and laboratory data. Prof. Chodick uses the wealth of real-world data for policymaking and guidelines to increase well-being and improve prevention efforts. His focus has been to study the use of new drugs, study the long-term adverse outcomes of cancer, metabolic disorders, and vascular events, and assess the economic and medical burden of diseases. During the pandemic,

Prof. Gabriel Chodick, PhD, MHA, recently joined as on-campus faculty of the School of Public Health, after heading the Maccabitech Institute for Epidemiology and Database Research at Maccabi Healthcare Services, the second largest HMO in Israel. He earned M.Sc. and Ph.D. degrees in Epidemiology from Tel Aviv University, where he also completed his Master's in Health Administration. He was a Fulbright Visiting Scholar at the School of Public Health, UNC at Chapel Hill and completed a two-year post-doctoral fellowship at the National Cancer Institute in Bethesda. Prof. Chodick has authored or co-authored over 350 articles in peer-reviewed journals, primarily in the area of pharmacoepidemiology and big data analytics. His major areas of interest include outcome research using real-world data, drug adherence, vaccine effectiveness, and preventive medicine.

Prof. Chodick has led observational studies that have given immediate findings to decision makers such as the safety of ACE-I therapy, and the effectiveness of COVID vaccines and anti-viral therapies. Chodick's lab's goal is to further develop the use of healthcare electronic records, registries, and other data resources to improve the quality of healthcare delivery and clinical innovation.

## Prof. Dani Cohen



### *Epidemiology of infectious diseases and vaccinology*

Prof. Cohen's research has contributed to the development of *Shigella* conjugate vaccines, which are currently the leading *Shigella* vaccine candidates. Prof. Cohen studies the immune response following natural exposure to *Shigella* species or vaccination with *Shigella* candidate vaccines. His group has developed immunological correlates of protection against shigellosis and are currently quantifying them in observational and vaccine studies facilitated by competitive grants, including support from the Bill and Melinda Gates Foundation.

Prof. Cohen, PhD, MPH, is at the Department of Epidemiology and Preventive Medicine in the School of Public Health, former head of the School of Public Health (TAU SPH) and the Chair of the Middle East Consortium for Infectious Diseases Surveillance (MECIDS). Prof. Cohen has served for many years on the National Advisory Committee on Vaccines and Infectious Diseases and is currently a member of working groups on the COVID-19 immunization program in Israel. Prof. Cohen is an appointed member of the WHO COVID-19 working group for selection of candidate vaccines for the WHO solidarity vaccine trial. He received several awards for outstanding contributions to research.

<https://en-med.tau.ac.il/profile/dancohen>

A longstanding expertise developed by Prof. Cohen and his group in Israel in different populations at risk for diarrheal diseases and shigellosis are currently applied in studies for young children in low- and middle- income countries severely affected by shigellosis. Prof. Cohen is involved in the preclinical development of a conjugate vaccine against brucellosis and in the performance of sero-epidemiological studies of selected vaccine preventable diseases.



## Prof. Jiska Cohen-Mansfield



### *Mental health in aging*

Prof. Cohen-Mansfield's research focus is on mental health promotion in the older population, with an emphasis on preventing or ameliorating loneliness in old age, and improving the quality of the lived experience of persons with dementia and those who are at the end of life. About forty percent of community-dwelling older persons experience loneliness, associated with increased morbidity, mortality and dementia. Her team has used a model of factors she developed to develop and test an intervention to decrease loneliness among community dwelling older persons.

Prof. Cohen-Mansfield, PhD, is in the Department of Health Promotion in the School of Public Health. She holds the Igor Orenstein Chair for the Study of Geriatrics. Cohen-Mansfield studied statistics and psychology at the Hebrew University and clinical psychology at State University of New York at Stony Brook, followed by a post-doc at New York University Medical Center Institute of Rehabilitation Medicine. She was awarded a Distinguished Scientist Award by the American Association of Geriatric Psychiatry, and ranked 12<sup>th</sup> in the world in the field of Geriatrics according to a study by Stanford University in 2020. Prof. Cohen-Mansfield is the Director of the Minerva Center for Interdisciplinary Study of End of Life.

To reduce such experiences, she has studied group activities for persons with dementia and are now conducting a trial of activity kits her team developed for recreational activity workers, with the goal of enabling them to provide more social and stimulating activities for older persons with dementia. With regards to end of life, Cohen-Mansfield has developed an app to improve communication between staff who care for persons at the end of their lives and family members.

## Prof. Yftach Gepner



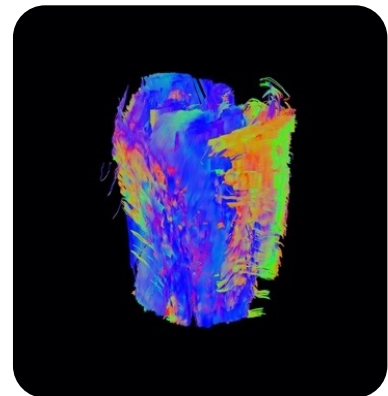
### *Impact of exercise training*

Regular physical activity is one of the most important things you can do for your health, and has long been touted as a strategy for weight loss. However, only 20% meeting the physical activity guidelines and over 90% of the people who lose weight will gain it all back. Prof. Gepner's research focuses on understanding the impact of exercise training, combined with dietary strategies, on muscle damage and mass, metabolism and performance across a range of populations. Prof.

Prof. Gepner, PhD, School of Public Health, Faculty of Medicine, completed his Ph.D. at Ben-Gurion University on the role of lifestyle intervention on various body fat depots. He then continued his training in the Department of Sport and Exercise at University of Central Florida, to better understand the field of exercise physiology in both applied and basic in nature. Prof. Gepner was awarded the 2020 Neufeld Memorial Research Grant, which runs concurrently with his BSF and other grants.

<https://www.gepnerlab.com/>

Gepner uses cutting-edge technologies, including magnetic resonance imaging (MRI) for assessing muscle damage and adipose tissue distribution, doubly labeled water to assess energy expenditure and labeled amino acid to determine protein synthesis by muscle biopsy. By combining applied and mechanistic metabolism and physiology adaptation studies, his goal is to elucidate the unique beneficial effect from physical activity.



## Prof. Yariv Gerber



### *Cardiovascular disease epidemiology*

Prof. Gerber studies risk factors for and time trends in various vascular diseases across different populations and settings, with the goal of improving public health and training future leaders in epidemiologic research. Much of his work has centered on factors affecting prognosis and well-being of patients suffering an acute myocardial infarction (“heart attack” or MI). His team investigated a large cohort of Israeli patients aged  $\leq 65$ , longitudinally, hospitalized for a first MI.

Prof. Gerber, PhD, School of Public Health, completed his direct track Ph.D. at Tel Aviv University. He then continued his training in the Division of Cardiovascular Diseases, Mayo Clinic College of Medicine, Rochester, Minnesota, in cardiovascular disease epidemiology. He is head of the School of Public Health, Director of the Stanley Steyer Institute for Cancer Epidemiology and Research and holds the Lilian & Marcel Pollak Chair in Biological Anthropology. He is an Adjunct Professor of Epidemiology at Mayo Clinic College of Medicine.

They assessed the clinical course, risk factor control and adjustments among these patients over decades of follow-up. They have looked at individual and area-based risk factors while applying advanced epidemiologic methods and statistical modeling. The ultimate goal of Prof. Gerber’s work is to reduce the massive burden of vascular disease through advancing the scientific basis for appropriate public health interventions.



## Dr. Israel Halperin



### *Personalized exercise prescription models*

Exercise is medicine, yet few get the recommended dose. One reason for this is that exercise prescription models tend to be complicated and generic, leading to low participation and adherence rates. Accordingly, Dr. Halperin studies personalized exercise prescription models that emphasize individual abilities and preferences. Specifically, he investigates the effects of providing trainees with choices regarding the

Dr. Halperin, PhD, School of Public Health, Faculty of Medicine, completed his PhD studies at Edith-Cowan University in collaboration with the Australian Institute of Sport. He studied the effects of augmented feedback on physical performance. He then completed his post-doctoral training at Memorial University of Newfoundland, focusing on ways to optimize exercise training programs. Halperin is a member of the Sylvan Adams Sport Institute.

<https://www.halperin-lab.com/>

structure of the training sessions (e.g., selecting the number of repetitions) and if trainees can effectively regulate the intensity of exercise based on their subjective experiences (e.g., perception of effort). His team's goal is to develop simple and personalized exercise prescription models that will increase participation and adherence rates, and lead to better health, psychological well-being, and physical performance.

## Dr. Samah Hayek



### *Leveraging big data to improve public health and cancer care*

We are in a new era of medicine and healthcare where innovation and big data are a significant part of healthcare delivery. Cancer care does not only rely on advanced and therapeutic solutions, but it starts years before cancer diagnosis. Further, cancer care does not end with the completion of cancer therapy, it continues decades after therapy. Thus, there is a need for establishing innovative approaches and new clinical decision tools to assist in the early identification of individuals at most risk of developing.

**Dr. Samah Hayek**, DrPH, is a faculty member in the Department of Epidemiology and Preventive Medicine, at the School of Public Health, Faculty of Medicine. She also serves as a senior researcher/ Epidemiologist at Clalit Research Institute. Samah holds a B.A. in statistics, and sociology-anthropology; and a Master Degree in public health from the University of Haifa. She obtained her doctoral degree in Public Health (Epidemiology) at the University of Kentucky, as a Fulbright scholar. She completed a two-year fellowship at the Center for Disease Control and Prevention (CDC), Atlanta, Georgia, USA. Further, she completed a post-doctoral study in the department of Epidemiology and Cancer Control, at St. Jude Children Research Hospital, Memphis, Tennessee, USA.

cancer, based on the combination of genotype and phenotype data. Dr. Hayek's studies explore the late effect of cancer therapies among children, adolescents, and young adult cancer survivors. She has been utilizing big data from large national and international cohorts and using electronic medical record data to answer the unmet medical need of clinicians and patients

## Dr. Yael Lahav



### *Trauma and abuse*

Dr. Lahav investigates the implications of psychological trauma and focuses on uncovering the mechanisms underlying post-traumatic distress following interpersonal and ongoing traumatic events, such as captivity, domestic violence, as well as sexual, physical, and emotional abuse during childhood. Her interests revolve primarily, around the unique associations between the

Dr. Lahav, PhD, is a faculty member in the Department of Occupational Therapy. Dr. Lahav is a licensed clinical psychologist. She completed her PhD studies at Tel Aviv University, where she studied the longitudinal associations between attachment and perceived health among former-prisoners-of-war of the 1973 Yom Kippur War. She was a post-doctoral fellow at the University of Southern Denmark, where she studied the link between attachment and dissociation during treatment among childhood sexual abuse survivors and at Stanford University, as a Fulbright grantee, where she studied posttraumatic growth, as well as the phenomenon of identification with the aggressor among childhood sexual abuse survivors.

<https://www.tau.ac.il/~yaellah/>

psychological, interpersonal, somatic, physiological, and functional facets of psychological trauma; as well as the interpersonal processes involved in the victim-perpetrator dynamics, known as identification with the aggressor.

## Prof. Liat Lerner-Geva



### *Reproduction and infertility*

Israel has a world-wide unique epidemiology and public health policy regarding reproduction in general and infertility treatments in particular. Prof. Lerner-Geva are taking a scientific, evidence-based approach to evaluate these topics, including investigation of factors that predicts successful reproduction

Prof. Lerner,-Geva PhD, is at the School of Public Health, Faculty of Medicine, and Chair of the Department of Epidemiology and Preventive Medicine. She is a board-certified physician in Epidemiology and Public Health with special emphasis on reproductive epidemiology. She is the director of the Women and Children's Health Research Unit at the Gertner Institute for Epidemiology and Health Policy Research (Ltd) and the founder and director of the National Registry for in vitro fertilization treatment cycles in Israel.

and having healthy babies. She is carefully assessing on a national basis the short and long-term adverse outcomes of infertility treatments. These insights will lead to the development of safer and better procedures that are of great interest in the national, as well as the international arena.

## Dr. Uri Obolski



### *Infections diseases and the environment*

Dr. Obolski is interested in infectious diseases and their interactions with the environment. Specifically, his group analyses the dynamics of mosquito-borne diseases with respect to climate, and patterns of antibiotic resistance and their relation to antibiotic usage. They develop and apply mathematical models as well as machine learning and advanced statistical techniques to electronic medical records and other disease-related data. For

Dr. Obolski, PhD, holds a dual appointment at the School of Public Health, Faculty of Medicine and the Porter School of the Environment and Earth Sciences, Faculty of Exact Sciences. He obtained a BSc in mathematics, and an MSc and PhD in computational biology from Tel Aviv University. He conducted his postdoctoral research at the University of Oxford as an EMBO Research Fellow.

example, they analysed the relationship between the incidence of dengue virus in Brazil and West Nile Virus in Israel to weather; and they predicted antibiotic resistance patterns of hospitalized patients' infections using machine learning. Dr. Obolski's major aim is to understand and predict the dynamics of infectious diseases to successfully mitigate their future emergence and spread.





## Prof. Chava Peretz



### *Neuro-epidemiology and environmental epidemiology*

Aiming to enhance knowledge on the elusive etiology and treatment of neuro-generative diseases, Prof. Peretz studies the epidemiology of diseases of the brain. She does so with a multidisciplinary team, studying risk factors, markers (e.g. anemia), prognosis and pharmaco-epidemiology of Parkinson's disease. She also applies Big Data-driven studies based on databases of Maccabi Healthcare Services. In the area of environmental epidemiology, environmental hazards and public health, she

Prof. Peretz, PhD, is at the Department of Epidemiology and Preventive Medicine at the School of Public Health, Faculty of Medicine. She obtained a BSc in mathematics and statistics from Tel Aviv University, a PhD degree from Utrecht University, the Netherlands in occupational and environmental epidemiology, and post-doctoral training at the University of Washington University, Seattle, USA. She is a consultant on matters regarding air pollution/climate and health to the Israeli Ministry of Environment and the Ministry of Health. She is a member of the editorial boards of the *Ecology and Environment* and *Neuroepidemiology*. Peretz is a member of the International Society of Environmental Epidemiology (ISEE)

uses advanced statistical modelling to study the spatio-temporal distribution of diseases or mortality, and the association with climate conditions and air pollution. The results are important for public health considerations and health system preparedness for temperature increases as a result of climate change and for the clean ambient air act. Most recently, to evaluate the global burden of the pandemic in Israel, Peretz has established COVID-19 related studies, accounting for climate conditions.

## Prof. Leah Rosen



### *Tobacco reduction*

Tobacco use is the leading cause of preventable death in the world today, with 8 million annual deaths, and a predicted 1 billion deaths in this century. About a million of the annual deaths are due to exposure to other people's smoking. Prof. Rosen's primary area of research is promoting public health through reduction in tobacco use and exposure. Topics include prevention of child exposure to tobacco smoke, smoking cessation and initiation, public attitudes regarding tobacco policy, and public understanding of the role of nicotine and harm reduction. At the

Prof. Rosen, PhD, is at the Department of Health Promotion at the School of Public Health, Faculty of medicine. She performed her B.Sc. at Rutgers University in mathematics, her M.Sc. At Harvard School of Public Health in biostatistics, and her Ph.D. at the Hebrew University of Jerusalem Braun School of Public Health. Rosen initiated and teaches Israel's only academic course on tobacco control and is on various national and international health advisory committees.

intersection of evidence and policy, Rosen contributes to the science base for healthy public policy; her work has been quoted widely in the press, used in policy-making by health bodies and in the Knesset, and submitted to the Supreme Court. Most of Rosen's original research is conducted in Israel, often with ramifications for those in other countries. Rosen's proposal to include tobacco package inserts in all tobacco products, as a means of messaging smokers about risks and ways to quit smoking at very low cost to the government, was passed into law by the Knesset.



# *Rehabilitation and Educational Training*

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## The Stanley Steyer School of Health Professions

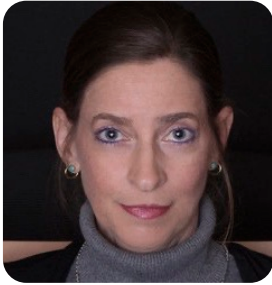
Four clinical fields  
of study and  
research

- Communication Disorders
- Nursing
- Occupational Therapy
- Physical Therapy

Our major goal: to improve the health and wellbeing of our population.



## Dr. Michal Avrech Bar



### *Occupational science*

Dr. Avrech Bar's primary area of research is occupational science, a scientific discipline that is defined as the systematic study of the human as an occupational being. It is the basic science that supports the practice of occupational therapy. As an occupational scientist she studies the relationship between engagement in occupations, health, and wellbeing. The goal of her research is to clarify the

Dr. Avrech Bar, PhD, is at the Department of Occupational Therapy at the School of Health Professions. She received her PhD from Tel Aviv University, followed by a postdoctoral fellowship at the University of British Columbia, Vancouver, Canada. She joined the Occupational Science Europe (OSE) - Research Committee as Israel's representative. The committee is responsible for developing the research agenda for Occupational Science Europe.

nature of these relationships and to provide empirical evidence to support them, especially among women in relation to their role as mothers. In her research she employs advanced qualitative and quantitative methods with healthy women, women in their role as caregivers to their children or spouse and women diagnosed with illness or having a disability.

## Prof. Ruth Defrin



### *Pain*

A traumatic spinal cord injury may provoke a debilitating, lifelong pain in some people, whereas other people may remain pain free thereafter. Similarly, some people develop posttraumatic stress disorder in the aftermath of traumatic stress, which is often accompanied by chronic pain and alterations in pain modulation, whereas other people are resilient to such stress. By applying a multidisciplinary approach using advanced psychophysical and

Prof. Ruth Defrin, PhD, is at the Department of Physical Therapy in the School of Health Professions. She completed a Bachelors degree in Physical Therapy, MSc and PhD in Physiology and Pharmacology at Tel Aviv University and post-doctoral training in pain imaging at the University of Toronto, Canada. Prof. Defrin established the Pain Laboratory, which includes branches in several departments of affiliated hospitals. Prof. Defrin has founded and co-directs the Biomed@TAU Pain Research Hub and is the research chair of the Israeli Pain Association. Prof. Defrin has won several awards, including from the Israeli Pain Association for outstanding contribution in the promotion of national and international pain research.

imaging methods, Prof. Defrin aims to uncover the mechanisms leading to these seemingly opposite effects of physical and traumatic stress, and the biomarkers that enable their prediction. Early detection of vulnerability would enable preemptive management, which may mitigate or prevent the hazardous consequences of such pathological conditions.



## Prof. Jason Friedman



### *Motor learning*

In day-to-day life, we perform an enormous variety of movements, usually with little thought. However, we know that planning and executing these movements is in reality very complicated. Dr. Friedman seeks to enhance our understanding of how we produce movements, with a focus on how we can speed up the process of motor learning. He tests applications of the

Prof Friedman, PhD, is in the Department of Physical Therapy, where he is a principal investigator and co-director of the Movement Sciences lab. Originally from Australia, Dr. Friedman completed his undergraduate studies at Monash University in Australia, followed by an M.Sc. and Ph.D. at the Weizmann Institute of Science, all in the field of Computer Science. He also performed postdoctoral research in the Department of Kinesiology at Penn State University in the US, and in the Department of Cognitive Science at Macquarie University in Australia. He takes advantage of his multidisciplinary background to find new ways of looking at problems related to human motor control. Dr. Friedman heads the Biomed@TAU Research Hub on Motor Learning.

<https://www.curiousjason.com/>

techniques developed in the lab on different populations, including children as they develop, and individuals with motor disorders such as Parkinson's disease and cerebral palsy, with a goal of improving rehabilitation and other motor learning processes.

## Dr. Alon Kalron



### Physical rehabilitation

Dr. Kalron's research focus is on new (and traditional) physical rehabilitation treatments that affect the brain and improve mobility functions (walking and balance). Additionally, physical activity is a significant interest of the lab, as it has a huge impact on brain function, especially for people suffering from damage in the CNS. The main interest is people suffering from multiple sclerosis (MS), in addition to other population groups, such as ALS and stroke. This line of research will add new insights into the neural mechanisms of

Dr. Kalron, PhD, PT, is head of the Department of Physical Therapy at the School of Health Professions and affiliated with the Sagol School of Neuroscience. Dr. Kalron completed his undergraduate studies at Ben-Gurion University of the Negev, and his Master's and PhD at Tel Aviv University. He also served as head of the Physical Rehabilitation Research Unit, at the Center of Multiple Sclerosis, Sheba Medical Center, Israel. Dr. Kalron is a PI in the *Movement and Brain Interaction Research* lab.

<https://www.alonkalron.sites.tau.ac.il/>

physical rehabilitation and open new frontiers for the treatment of people with central neurological damage. Dr. Kalron's work involves creating and testing new rehabilitation treatments that promote brain plasticity and restore lost mobility functions. He challenges conventional thinking by combining new technologies such as Virtual Reality (VR), while tracking the impact via advanced motion sensors in/outside the laboratory environment focusing on real-life situations.



## Prof. Debbie Rand



Prof. Rand, PhD, is at the Department of Occupational Therapy at the School of Health Professions, and affiliated with the Sagol School of Neuroscience. She completed her PhD at Haifa University and her postdoctoral training at the University of British Columbia, Canada. She presented her research at international conferences in the field of rehabilitation, gerontology and advanced technologies.

<https://www.tau.ac.il/~drand/>

### *Gaming for rehabilitation*

Prof. Rand's research aims to achieve a better understanding of the factors hindering and facilitating the recovery of individuals post stroke and specifically the use of their affected upper extremity. Her studies are clinical, aiming to research the factors related to the limited recovery of the affected upper extremity. She has developed interventions (utilizing gaming technologies)

aimed to improve the affected upper extremity as well as assessment and treatment of the cognitive deficits of these individuals. Recently, Rand has expanded her research to the growing population of (healthy) older adults. She investigates physical and social frailty as well as cognitive decline, aiming to determine ways to promote successful aging.

## Prof. Navah Ratzon



### *Occupational rehabilitation*

Ratzon's research areas focus on ergonomics, vocational rehabilitation, and driving rehabilitation. Her research in the field of ergonomics focuses on workers at risk of developing skeletal muscle problems. Her studies highlight multiple populations, such as professional musicians, people who work long hours on the computer, and "blue-collar" workers. In her research on occupational rehabilitation, Ratzon focuses on raising awareness of professional

Prof. Ratzon, PhD, is at the Department of Occupational Therapy, and is Head of the School of Health Professions. Among her other achievements, Ratzon chaired the Council for the Advancement of Women in Science and Technology at the Ministry of Science and Technology from 2016-2020. She is a member of the Advisory Council to the Minister of Health on the subject of rehabilitation and of the Advisory Committee to the Minister of Health and the Minister of Labor and Welfare on the subject of employee health. Prof. Ratzon is a social activist, engaged in developing community intervention programs and research among communities in need, such as children of immigrants from Ethiopia, children of foreign workers, and students with disabilities.

risks and treatments among those recovering from cancer, people after hand injuries, and more. As a researcher in the field of driving rehabilitation, Ratzon examines ways to assess driving ability and interventions to reduce the driving risks in professional drivers, adolescents with ADHD, people with schizophrenia, and people after a stroke.

# Rehabilitation and Educational Training

## Dr. Mor Saban

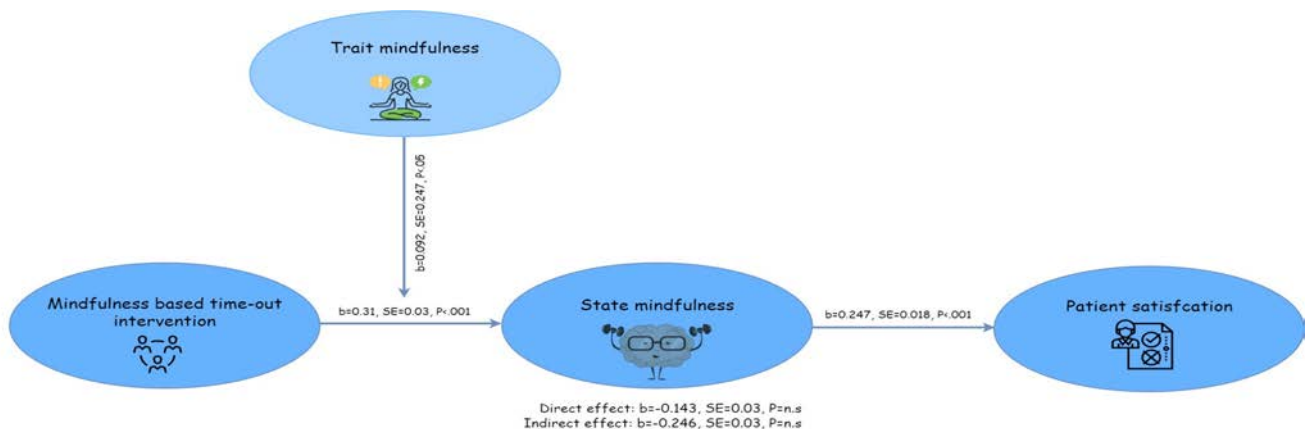


### Clinical decision making in medicine

Over the years, the importance of clinical decision support systems in medicine have increased as part of the information revolution, the digitalization of the world of medicine, and the development of various technologies.

Dr. Saban, PhD, is at the Department of Nursing in the School of Health Professions at the Faculty of Medicine. She holds a B.A. degree in Nursing, three Master's degrees (MA, MPH, MEM) and a PhD in the field of clinical decision making in an emergency setting. Dr. Saban completed a post-doctoral fellowship in the Department of Health System Management from Ben-Gurion University. She is continued her studies in data science with a specialization in machine learning at Bar-Ilan University. Dr. Saban has earned several prestigious prizes, including the Reboot.Forum Prize for supporting HealthCare with Innovation.

Dr. Saban's research focuses on examining the diagnosis of clinical conditions using clinical decision support systems and its implications for providing care along the therapeutic continuum.





## Dr. Osnat Segal



### *The journey of early language acquisition*

One of the most interesting questions in the field of language acquisition is how a newborn becomes a speaker of its native language within the first three years of life. Understanding early language-learning processes, from infancy, is highly important in order to: gain insight on the typical and atypical courses of language acquisition, identify developmental difficulties as early as possible, and assess the influence of interaction, exposure and use of language on the processes of language learning. My goal as a researcher and

Osnat Segal, PhD, is at the Department of Communication Disorders, School of Health Professions. Dr. Segal earned her BA, MA and PhD in Communication Disorders at Tel Aviv University. Her doctoral studies focused on speech perception and language acquisition in infants. During her PhD she established the first dedicated laboratory in Israel for assessing processes in speech perception and language acquisition in infants. Her post-doctoral studies focused on recognition of morphological patterns by infants learning Hebrew, and took place at Tel Aviv University and at the Department of Language and Linguistics Science, University of York. She is the Chair of the Israeli Speech Hearing and Language Association (ISHLA), and an executive board member of the International Association of Logopedics and Phoniatrics (IALP).

communication disorders clinician is to study the aforementioned processes of early language development in typically developing infants as a basis for understanding these processes in special populations including children with hearing loss, children with autism spectrum disorder (ASD), children with developmental language disorder (DLD), children with childhood apraxia of speech (CAS), and children from low socio-economic status (LSES).

# Rehabilitation and Educational Training

## Dr. Sigalit Warshawski



### *Nursing education and advanced technologies*

Nursing education has undergone significant changes in its training programs for several decades with the purpose of ensuring quality care and adjusting to organizational and technological changes in healthcare systems. We employ both quantitative and qualitative methods to explore nurse and nursing students' role as leading the therapeutic process. As such, examining their training and skills during their studies is crucial.

Dr. Warshawski, at the Department of Nursing, School of Health Professions, serves as the Head of the Baccalaureate Nursing program. She is a registered nurse and holds a post-basic professional license as a Pediatric and Preterm Intensive Care Nurse. Dr. Warshawski received her Master's degree in Nursing from Tel Aviv University and a Ph.D. in Health Sociology from Ben-Gurion University. Her doctorate was one of the first in Israel that focused on Interprofessional collaboration between healthcare teams in hospitals.

Understanding students' needs and competencies accompanied by the integration of novel teaching methods may improve students' learning experience, confidence and professional skills. These may bring about improved treatment outcomes. Dr. Warshawski is part of research project at the School of Health Professions that is exploring interprofessional attitudes among health profession students in Israel.

## Dr. Yael Zaltz

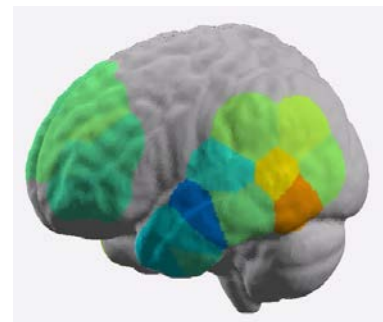


### *Auditory training to improve speech perception*

Can we improve speech-in-noise perception via behavioral auditory training? What is the best way to do so? Will the improvement last? Dr. Zaltz examines the possibility to enhance the underlying psychoacoustic, linguistic, and cognitive mechanisms for speech perception in degraded listening conditions in normal and pathological populations via auditory training. She explores the behavioral effects of auditory training, including the time course of learning, magnitude of improvements,

Dr. Zaltz is at the Department of Communication Disorders, School of Health Professions. Her PhD was conducted at the Department of Communications Disorders at Tel Aviv University. Her postdoctoral training on the psychoacoustic cues for voice discrimination in hearing impaired individuals with cochlear implants, as compared to individuals with normal hearing, was conducted at the University of Southern California (USC). Her research work in the areas of auditory skill learning, voice discrimination and speech perception in normal and pathological populations has been presented at leading international and national professional conferences. Dr. Zaltz is also an audiologist and a speech therapist.

generalization, susceptibility to interferences, and long-term retention of the learning-gains. She is also in the process of establishing a neuroimaging lab that will be the first in Israel to use functional Near Infrared Spectroscopy (fNIRS) data to gain insight on the neural mechanisms that undergo modifications following auditory training in cochlear implant users and in individuals with normal hearing.



## Training opportunities

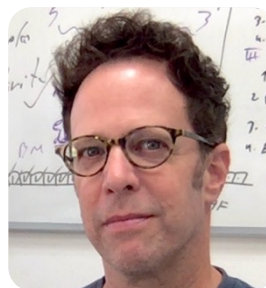
**The School of Graduate Studies** at the Faculty of Medicine **strives for excellence** in research and serves as a training platform for Master's programs – M.Sc., M.P.H., M.Occ.H., M.A. - and Doctor of Philosophy - Ph.D. - in diverse biomedical fields. The school is the largest graduate school at Tel Aviv University, with 1050 students, including 430 Ph.D. students, and 580 Masters' students.

The Faculty of Medicine's M.Sc. and Ph.D. thesis projects offers financial support to undertake research in our laboratories. **Tuition and stipend scholarships** are available to qualified students, providing a tuition-free degree and living stipend.

We welcome **students from abroad**, with opportunities for courses in English. While our official spoken language is Hebrew, all laboratory members speak English, providing an international environment.



Prof. Ronit Sagi-Eisenberg, Head of the Graduate School



Prof. Chen Luxenburg, Academic Coordinator, International Graduate Program



## Life in Tel Aviv

The city of Tel Aviv-Jaffa is a bustling, energetic and dynamic one, with opportunities for sun, exercise, food and socializing like no other place.



Source: Unsplash

For more information, please visit <https://en-med.tau.ac.il/>



## Cover credits

Top: Second and third order olfactory neurons in the *Drosophila* brain. Hadas Lerner Nussbaum, Moshe Parnas.

Middle left: Manot 1 skull, 55,000 years ago, the mother of modern populations. Israel Hershkovitz.

Middle right: Genetic engineering and fluorescence microscopy in the nematode *C. elegans* allows observation of cytoskeletal protein localization and dynamics in adult physiology and embryonic development. Priti Agarwal, Kriti Sethi, Ronen Zaidel-Bar.

Bottom left: Rab5-stimulated fusion that mast cell secretory granules undergo during their biogenesis. Ronit Sagi-Eisenberg.

Bottom right: Recording electrical brain activity during overnight sleep with a high-density (256-channel) EEG system. Yuval Nir.

**For more information, please visit <https://en-med.tau.ac.il/>**

