FIND YOUR LAB
The Zuckerman Postdoctoral Scholars Program attracts high-achieving postdoctoral researchers from premier universities in the United States to do research at one of seven Israeli universities.

**Duration and Funding**

- Zuckerman Postdoctoral Scholarships are for up to two years.
- Zuckerman Postdoctoral Scholars receive a scholarship of $50,000 per academic year for up to two years, with $36,000 each year for living expenses and $14,000 each year for research ($10,000) and travel ($4,000) expenses.
- Candidates may apply to more than one university.
- Candidates must be citizens of the United States or Canada, or have a documented status that allows them to study and work in the US.
- Candidates must hold a Ph.D. degree from a premier university, or if still studying for a Ph.D., must submit their Ph.D. thesis before October 1, 2018.
- Candidates who began their postdoctoral training at the host institution after October 1, 2017, or who will arrive to begin their training no later than October 1, 2018, may still apply for the upcoming deadline.
- Candidates must obtain consent from a potential hosting supervisor at the Israeli university/universities the candidate is applying to.

**Apply by March 15, 2018**

[Application Guidelines](http://zuckerman-scholars.org)

**DEADLINE EXTENDED TO JUNE 1, 2018**
Condensed matter physics

Study of emergent electronic phenomena in advanced materials, by means of local magnetic imaging. We develop and use scanning superconducting quantum interference device (SQUID) microscopy to map electronic properties such as conductivity, superconductivity and magnetism, near surfaces, interfaces and nanowires. We investigate the nature of the electronic states, track them across phase transitions, and image quantum phenomena.

Contact: Beena Kalisky  
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Parkinson’s disease

The basal ganglia (BG) are a group of deep brain nuclei, strongly connected with the cerebral cortex, thalamus and other brain areas, that act as a cohesive functional unit. This makes them an interesting system in which to investigate the contribution of synaptic integration on network activity and how it is affected by Parkinson’s disease. We are bridging the gap between the integration at the cellular level to network function.
Personalized Immunotherapy

The research at my laboratory focuses on the molecular mechanisms regulating the immune response with the primary goal of using this knowledge to develop immunotherapeutic approaches for pathophysiological conditions such as primary immunodeficiency or cancer. We recently identified novel intracellular immune checkpoints that control natural killer cell behavior with the aim to boost their immune response in cancer (Science Signaling, 2016 and EMBO J., 2018). Other strategies include but are not limited to personalized T cell-mediated cancer immunotherapy.

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Intestinal neuro-immune-microbiome interactions, in health and disease

We study how cells of the immune system communicate with the gut microbiota and the enteric nervous system, to control inflammation and tolerance, in health and disease (including cancer, IBD, autoimmunity and more). We combine a unique gut organ culture system with next-generation sequencing and state-of-the-art molecular and cellular methods (Yissachar et al., Cell, 2017). We are looking for an energetic, curious, quick learning and friendly (!) postdoctoral fellows.
Social Behavior

Our new lab utilizes a range of approaches to study animal sociality. We are involved in long-term studies of wild animals such as rock hyraxes and Arabian babblers. We introduce state-of-the-art technologies to gain new insights into social networks and animal communication. We also develop theory to test our interpretation of observed patterns.

Contact: Amiyaal Ilany
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Neurobiology of behavior

We study the principles by which social interactions among individuals produce specific changes in the brain that lead to modification of behavior. In particular we are interested in identifying the molecular signature of social experience within defined subset of neuronal populations. We are exploring this question using reproductive behavior, possibly the most important event in an animal's life, using Drosophila melanogaster as a model system.
Protein Kinase A (PKA) plays multiple roles in neuronal functions. Elucidating the cellular and the molecular interactions that are properly controlled by PKA signaling and are dysregulated in the neurodegenerative disease will help discover opportunities and challenges toward personalized medicine. The lab is integrating various methods including X-ray crystallography and advanced microscopy techniques as well as molecular biology, biochemistry and signal transduction to study normal and abnormal brain function.
The field of Interactive Coding combines coding theory with distributed computations. Two parties or more conduct a computation over a communication network which may suffer from noise.

Our research goal is developing coding schemes for various different types of networks, channels and noise, and analyzing their properties. We also care about information security (e.g., privacy) and the apparent tradeoff between security and noise-resilience in interactive coding schemes.

Contact: Ran Gelles
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In our laboratory we utilize state of the art synthesis techniques for interfacial modification of electrochemically active surfaces by functional thin films. Students in our lab experience synthesis through atomic/molecular layer deposition ALD/MLD. The characterization of the synthesized thin films and the fundamental studies of their efficacy as surface modification materials, are conducted using state of the art microscopic and spectroscopic surface analysis facilities.
In order to mimic the natural environment of neurons we develop 2D and 3D platforms for optimal neuronal growth. By controlling the external and internal structures of these environments we optimize growth and direct regeneration. Specifically, we use hydrogels, nanotopographies, combine nanoparticles and growth factors. We examine these platforms in vitro and in vivo for the development of post-injury controlled neuroregeneration medical applications.
We are structural biologists that focus on the early events of viral infection. New and re-emerging viral pathogens are being discovered every year, generating serious health concerns and heavy economical burden around the globe. We use the powerful strategy of X-ray crystallography combined with biochemistry, biophysics and cell biology to decipher the molecular mechanisms of viral infection at the atomic resolution.
RNA Biology: The structural and function of non-coding RNA, trans-splicing, rRNA processing, RNA modification

My group is studying the regulation at the level of RNA from the such as RNA modification splicing and rRNA processing and the structure and function of non-coding RNA. We study these regulation in parasites from the trypanosome family as well as in cancer. We also study the delivery of therapeutic RNA in cancer using nano-technology and developing nano-drugs against Leishmania. We are expert in many RNA-RNA and RNA-protein methodologies.
Synthesis of 1D & 2D nanostructures

The Nessim laboratory at Bar Ilan University (Israel) focuses on the synthesis of 1D and 2D nanostructures using state-of-the-art chemical vapor deposition (CVD) equipment. The scientific focus is to better understand the complex growth mechanisms of these nanostructures, to possibly functionalize them to tune their properties, and to integrate them into innovative devices. Through multiple international collaborations, our nanomaterials have been used in batteries, supercapacitors, fuel cells, composites, etc.
Human Microbiome

We are located at the Bar Ilan University Faculty of Medicine in the Galilee, Israel. Our research focuses on the microbiome, studying the roles of the trillions of bacteria that reside within each individual. We have a wide variety of research interests including interactions between microbiota and the host endocrine system, host behavior, and host development, in health and in disease states.
In my lab we are using single cell technologies and next generation sequencing to understand how tissues and organs are formed, how they are maintained and regenerated, and what causes them to behave badly and create cancer. Candidates with PhD in computational genomics and systems biology are welcome to apply.
Protein-Protein Interactions

Protein-protein interactions (PPIs) are intimately involved in almost all biological processes, including inter- and intracellular signal transduction, gene expression, cell proliferation and apoptosis. We developed novel algorithms to detect specific PPI interfaces between a vital protein and one of its many partners. Based on rational design, we create molecular modulators of PPIs using bioinformatics analysis, peptide and protein chemistry, and system-wide biological assays. These regulators are powerful potential therapeutic agents.
We are interested in the proximate mechanisms and functions of wildlife social behavior. Our studies are in the field, where we try to understand the trade-offs involved with glucocorticoids and androgens on one hand, and fitness on the other hand. We study the underlying hormonal mechanisms that are related to survival, mate choice, reproduction, social behavior, sexual allocation, sex differences, communication, and parental behaviors. Wildlife models include the rock hyrax, Baluchistan gerbils, nutrias, and babblers.
Modeling renal disorders by hPSCs

We have in the lab a collection of hPSCs with diverse types of mutations linked to abnormal kidney development or to renal disorders. We also have an access to somatic cells from patients that can be reprogrammed into iPSCs. We aim to use these cells to generate new models for kidney disorders.

Requirements – proven experience in the field of hPSCs (reprogramming, differentiation and genetic manipulations).

Contact: Achia Urbach
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The effect of Lin28 on embryonic development

Lin28 is a RNA binding protein expressed mainly in stem and progenitor cells. Lin28 gain of function and loss of function have a very strong effect on diverse processes during embryogenesis. Yet, the spatial and temporal expression pattern of Lin28 during embryonic development is still not clear. By the generation of a reliable reporter mouse strain for Lin28 we aim to study the role of Lin28 during embryonic development.
Our laboratory carries out molecular genetic research, mostly in plants of the Cucurbitaceae family. We have analyzed the melon and cucumber genomes using mapping and “omics” approaches, and investigated the interaction of these plants with pathogens and insects. We also studied sex differentiation and fruit set in cucumbers at the molecular level. Our projects ask genetic and developmental-genetic questions on plant reproduction, using methods such as transcript and protein profiling, genetic engineering, CRISPR-cas9 and more. Research Projects include:

- Plant-pathogen molecular interaction in melons
- Molecular control of fruit set in cucumber

Contact:
Rafi Perl-treves
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We aim to develop an innovative evolution-based approach in teleost fish models to functionally characterize novel bone relevant genes that are identified in a genome-wide association study (GWAS).

We will use three fish species (incl. zebrafish), which are encompassing the spectrum of ray-finned fish evolution. The chosen fish models offer unique opportunities for gene modification by CRISPR/Cas9 technologies followed by gross morphological and live imaging of dynamic bone cell behavior.
Bone-Muscle molecular interactions

Bone strength and muscle mass share genetic determinants; therefore, genes with potentially pleiotropic effects exist and have to be functionally validated.

We will estimate effects of silencing and knocking-out potentially pleiotropic genes in Zebrafish and medaka, by generation of CRISPR/Cas9 mutant fish. The research is performed in collaboration with the EU and US-based colleagues; there is a possibility of training in Singapore.
Imaging gene expression

Our studies focus on the processes of mRNA transcription, trafficking, and export from the nucleus. We use cell systems in which major elements of the gene expression pathway are fluorescently tagged and visualized in real-time, in single living cells. We are looking for a motivated and experimentally qualified postdoc for a study focused on mRNA export in mammalian cells. Prior experience in imaging and image analysis is required.
Dr. Frenkel-Morgenstern is a systems biologist with a coherent career leading to excellence in extracting the maximal capabilities in a wide variety of molecular & computational tools. She remained focus on creative improvements in the interphase of large scale data and personalized diagnostics. We are interested to study such naturally occurring phenomenon as trans-splicing and fusion proteins in cancers, as well as regulation of protein translation by transfer-RNAs during the cell-cycle, chimeric RNA transcripts and proteins, changes in protein-protein interaction networks by fusion proteins, single cell sequencing and cell-to-cell variability, personalized medicine and identification of novel diagnostic and prognostic biomarkers in cancers using circulating tumour DNA in plasma and by means of Liquid Biopsy.
We study the dynamics of genetic information, and how it affects evolution, behavior, and disease. Specifically, we develop algorithms to uncover the full extent of A-to-I RNA editing. This modification frequently changes the function of the encoded protein and initiating global processes that are crucial for normal life. We aim to create accurate genome wide screens for editing detection and determine the global editing levels in various physiological and pathological conditions.
Precise and efficient CRISPR genome editing as a curative therapy for genetic disorders and cancer

Our lab is interested in applying CRISPR genome editing for gene therapy of genetic diseases such as primary immunodeficiencies and cancer. We believe that a precise correction of the disease causing mutation is the ultimate cure for these diseases. Therefore, our research focuses on improving genome-editing efficiency, specificity and safety in order to advance this technology towards treatment in patient.

We are looking for postdoc researchers with expertise in molecular biology and immunology.

Contact: Ayal Hendel
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A postdoctoral position is currently available for a researcher who is interested in the design and analysis of approximation, online, and distributed algorithms.

Research interests include: algorithmic aspects of computer networks, centralized and distributed resource allocation, online buffer management, energy efficient algorithms, scheduling of sensor networks, and social networks.

Contact: Dror Rawitz
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We invite excellent postdocs to join a research program on designing new biological computing devices, aimed to solve complex computational problems efficiently and investigate alternative computing technologies. The selected candidates will also have opportunities to collaborate with several leading groups in Europe that will be studying the theory, development and design of the underlying methods and technology, as part of the European Project Bio4Comp. http://bio4comp.org/
Viral infections contribute to about 15% of all human cancers. The viruses we study are the human gamma herpes viruses; Kaposi’s sarcoma associated herpesvirus (KSHV, HHV-8) and Epstein-Barr virus (EBV, HHV-4) that are associated with increasing number of human malignancies. The research interests in the lab are to study the functional interactions between viral proteins and the cellular machinery, which control both the viral life cycle and tumorigenesis.
We are currently looking to recruit outstanding postdoc students with various backgrounds (computer science, applied mathematics, computer/electrical engineering, etc.) to work on theoretical and computational methods in geometry and their applications to problems in computer graphics and digital geometry processing. In particular, our group deals with the following applications: bounded distortion bijective mappings, surface parameterization, shape analysis, computer animation. Experience in the following areas is an advantage: convex as well as nonlinear optimization, discrete differential geometry, topology, computational geometry, general-purpose computations on graphics hardware (GPGPU).

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Vision restoration, retinal prosthesis, retinal stem cells, vision electrophysiology

The research is focused on developing cutting-edge technologies for restoration of sight to the blind. Using an interdisciplinary approach, we develop a hybrid retinal prosthesis composed of a high-resolution electrode array integrated with glutamatergic cells. We aim at selectively stimulating the retinal circuits at the cellular level resolution. The lab is fully equipped with rodent surgical suite, retinal imaging, OCT and electrophysiology, patch-clamp, MEA, Calcium imaging, VSD imaging.
We are studying the molecular mechanisms underlying neurodegenerative human diseases involving drastic damage to the central nervous system. We work with patient-derived cells and focus on the cell nucleus and perturbations in the function of the nuclear pore complex. We use high resolution light and electron microscopy together with biochemical tools. Future extensions of the current projects will include iPSCs and neuronal cell models.

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