Graduate Studies Authority
Bloom Graduate School
UNIVERSITY OF HAIFA

Bloom Scholars 2026

Dear Research Students

The University of Haifa - anchored between the mountain, the city, and the sea - stands as a leading research institution committed to scientific excellence, interdisciplinary innovation, and measurable societal impact. Our unique academic ecosystem brings together researchers from the natural sciences, social sciences, humanities, law, health, design, and medicine to address the most pressing challenges of our region and the world. As a university built on the values of diversity, shared society, and public engagement, we cultivate scholars whose work advances knowledge and strengthens the resilience and cohesion of Israeli society and beyond.

The Bloom School for Graduate Studies, established through the visionary support of the Bloom family, serves as an intellectual accelerator for outstanding doctoral and postdoctoral researchers. It embodies our commitment to expanding access to high-level research training while elevating the University of Haifa's role in producing transformative, field-shaping scholarship. The school brings together a diverse community of emerging scientists and scholars working at the forefront of their disciplines, generating insights that span from foundational discovery to policy, technology, health, environmental sustainability, and social advancement.

Our academic and research mission is grounded in:

- **Providing world-class academic, methodological, and professional training** that empowers graduate researchers to excel in competitive, global research environments.
- **Advancing cutting-edge, high-impact research** that drives new scientific understanding and generates solutions to critical societal, technological, environmental, and biomedical challenges.
- **Promoting interdisciplinary collaborations** that integrate data science, AI, neuroscience, social sciences, law, humanities, and environmental sciences to produce comprehensive, evidence-based knowledge.
- **Strengthening a vibrant, inclusive, and intellectually rigorous graduate community**, reflective of the University's commitment to diversity and shared society.
- **Attracting and retaining exceptional graduate talent** by enhancing the prestige of advanced studies and fostering pathways for research excellence.
- **Deepening synergy between faculty, research groups, and the Graduate School** to cultivate collaborative laboratories, centers, and interdisciplinary programs.
- **Expanding the interface between academia and society**, ensuring our researchers' work informs public policy, technological development, community resilience, and cultural understanding.

We are acutely aware of the challenges our community has endured during this difficult period. The University stands firmly with its students and early-career researchers, committed to ensuring continuity, stability, and academic support. We are confident that your graduate studies will provide you not only with advanced scientific and scholarly tools but also with the resilience and leadership necessary to drive meaningful impact within academia and society.

With pride in your achievements and warm wishes for a productive and inspiring academic journey.

Greetings,

Prof. Gur Alroey
President

Prof. Mouna Maroun
Rector

Prof. Irit Akirav
Dean, Bloom School
for Graduate Studies

Dr. Chagai Schlesinger

Postdoctoral Student in the Faculty of Law

Research Title: Church Autonomy for a Jewish State

Supervisor: Prof. Yair Sagi

Short description of research:

This research project explores the potential adaptation of the American "church autonomy" doctrine to Israel's unique religiously established state. While the United States is characterized by a constitutional "wall of separation" between church and state, Israel's legal framework is defined by its "Jewish and democratic" character, with no equivalent non-establishment principle. Despite these differences, recent legal developments in both countries make a comparative analysis valuable.

In the U.S., church autonomy has emerged as a doctrine emphasizing the rights of religious institutions and communities to self-governance, shifting the focus of religious freedom from individual rights to communal autonomy. This doctrine, endorsed by the Supreme Court, has been used to exempt religious organizations from certain state regulations, such as anti-discrimination labor laws. The concept itself is debated: some scholars view religious institutions as proxies for individual conscience, while others emphasize their associational value, which influences the extent of their autonomy.

The project asks whether the church autonomy framework can inform Israel's approach to religious freedom, particularly given the state's central role in regulating religious life. In the Israeli context, adapting church autonomy would mean shifting power from the central state to religious communities, potentially offering a new constitutional constraint on state authority beyond mere respect for individual conscience. This could serve as a theoretical basis for limiting state intervention in both minority religions and diverse Jewish communities.

A key challenge is tailoring the doctrine to Israel's context, which requires addressing the rights of non-Jewish minorities and limiting central state regulation over the established religion's internal diversity. Unlike in the U.S., where church autonomy often opposes general and neutral state intervention, in Israel, the concern is whether the state establishment itself infringes on communal autonomy. The project aims to develop an Israeli model of church autonomy that expands minority rights and protects intra-faith pluralism among Jewish communities.

The research will examine both the general normative aspects of church autonomy and its specific application to Israel's legal institutions, considering the non-institutional nature of many Jewish traditions and the status of secular or "traditional" communities within a religiously regulated state.

Dr. Neil Bar

Postdoctoral Student in the Department of Governance and Political Thought & The Comper Center for the Study of Antisemitism and Racism

Research Title: European Populism, Radical Left and Right

Supervisor: Dr. Ayelet Banai

Short description of research:

My postdoctoral research project builds upon my doctoral dissertation on the Greek far-right's use of historical narratives by expanding to a comprehensive study of European far-right political thought and its ideological foundations. This research responds to the contemporary political climate, where persistent polarization systematically expands radical politics and erodes traditional mainstream discourse, creating fertile ground for extremist movements to flourish across European democracies.

The research comprises two distinct components: first, an in-depth study of the ideological infrastructure of the radical right, examining how far-right parties across Europe develop and articulate their worldviews, analyzing their core premises, theoretical frameworks, and traditions. The primary focus is Italy's Brothers of Italy, Germany's AfD, France's National Rally, Greece's Voice of Reason, and the Netherlands' PVV, among others, and investigating their articulations of national identity, sovereignty, ethnonationalism, anti-globalism, and cultural conservatism. The second component creates a comparative framework that includes radical parties from the left, including Greece's SYRIZA, Spain's Podemos, France's La France Insoumise, Germany's Die Linke, and Italy's Potere al Popolo, exploring the sometimes shared ideological approaches through which both radical right and radical left challenge and undermine the political consensus of mainstream parties.

Through systematic analysis of party documents, manifestos, speeches, and theoretical writings, employing discourse analysis combined with political theory, this study aims to map the ideological innovations of contemporary radical politics.

The research will investigate how these parties construct coherent worldviews that challenge liberal democratic consensus, examining similarities and differences in their approaches to sovereignty, identity, economy, and political organization. A central finding demonstrates that both radical spectra often function as ideological mirror images, articulating virtually identical critiques of globalization, neoliberal policies, elite domination, and democratic deficits through opposing symbolic frameworks. By comparing far-right and far-left radical ideologies, this project seeks to develop new theoretical insights into political radicalism itself, contributing to understanding how extremist movements develop intellectual legitimacy in contemporary European democracies. In a quickly polarized political world, where mainstream politics is being marginalized and radical politics take center stage, this research aims to understand their ideology and appeal to the not-necessarily radical voter, with implications for counter-extremism strategies and democratic resilience.

Dr. Amer Elias

Postdoctoral Student in the Sagol Department of Neurobiology

Research Title: Designing Novel Therapies and a Cure for GRIN2B Disorders by Use of Human Cortical Brain Organoids In Vivo and In Vitro

Supervisor: Prof. Shani Stern

Short description of research:

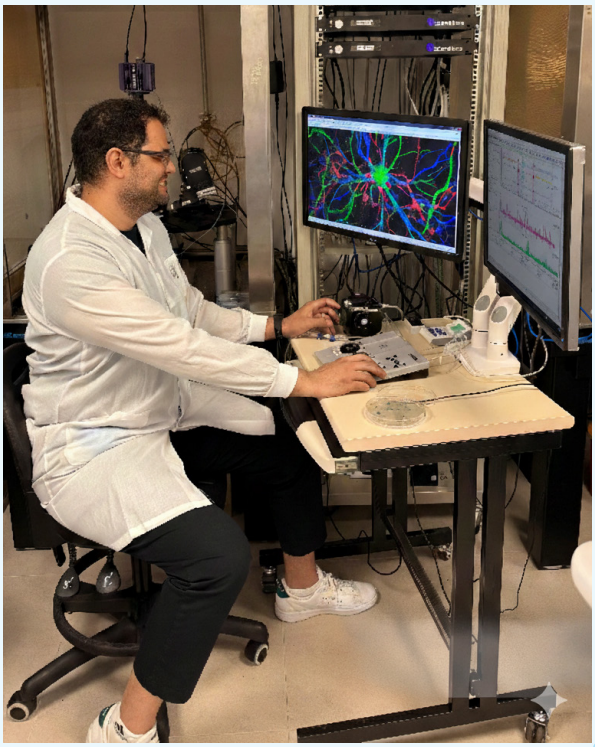
Glutamatergic synapse dysfunction has been strongly implicated in neurodevelopmental disorders such as intellectual disability (ID), autism spectrum disorder (ASD), and epilepsy. Among key genes involved, GRIN2B, which encodes the NR2B subunit of N-Methyl-D-aspartate receptors (NMDARs), has emerged as a significant risk factor. NMDARs are glutamate-gated ion channels critical for brain development, synaptic plasticity, learning, memory, and cognition. This study proposes a multifaceted strategy to explore therapeutic avenues targeting GRIN2B-related dysfunction using patient-derived models.

The primary objective is to conduct a functional drug screen on cortical neurons differentiated from induced pluripotent stem cells (iPSCs) derived from five patients with GRIN2B mutations. First-degree relatives serve as controls. Four lines have been successfully differentiated into cortical neurons and organoids, with two undergoing extensive characterization. A panel of 15 compounds, including NMDA receptor modulators such as L-serine, D-serine, minocycline, piracetam, magnesium threonate, and cannabinoids, is being tested for their ability to restore neural function. Initial results from two lines suggest a promising drug-induced correction of activity impairments.

Additionally, this study will involve the development of genetic and exosome-based therapies. Gene therapies created in collaboration with the Schroder and Berlin labs are being tested in patient-derived neurons and organoids. These are delivered via lipid nanoparticles (LNPs) and evaluated for their capacity to alleviate disease phenotypes using custom analysis pipelines. Additionally, exosomes harvested from wild-type neurons are being tested on patient neurons, with initial data indicating a reduction in pathological phenotypes. Optimization efforts are ongoing using organoid models.

Finally, we will transition to in vivo validation. Patient-derived cortical organoids will be transplanted into rat brains, where they will continue to mature. Treated with drugs, LNPs, or exosomes, these chimeric models will be evaluated through imaging and functional analysis to assess therapeutic impact.

This innovative and collaborative research program combines advanced iPSC technology, genetic engineering, exosome science, and in vivo modeling. By integrating cutting-edge techniques from leading research groups, it has significant potential to develop personalized therapies for GRIN2B-related neurodevelopmental disorders.



Dr. Maayan Trzewik

Postdoctoral Student in the Department of Special Education

Research Title: Improving Face Recognition in Autism Spectrum Disorder Through Visual Variability

Supervisor: Prof. Bat Sheva Hadad

Short description of research:

Research has shown that individuals with autism spectrum disorder (ASD) have difficulty recognizing faces. Existing interventions for improving recognition in ASD primarily target discrimination—the ability to differentiate between seen and unseen faces. For example, they address the tendency to focus on local features rather than engage in holistic processing, or to fixate on less informative areas, such as the mouth, rather than the eyes.

However, successful face recognition also requires generalization—the ability to recognize the same face across different appearances. Generalization involves extracting invariant features and applying that knowledge across varying contexts. Without it, one might avoid mistaking unseen faces for seen ones but still fail to recognize a seen face in new settings. Since individuals with ASD often struggle with generalization across domains, interventions that address only discrimination provide an incomplete solution.

A promising strategy to enhance generalization is to increase the variability of the learned inputs. By exposing learners to varied instances of the same face, they can better identify which features remain stable and which are context-dependent. In prior studies with typically developing participants, learning faces from multiple images improved recognition of both learned and unlearned appearances, especially when the learned images presented high, rather than low, variability.

The proposed study will test whether this approach benefits individuals with ASD. Participants will learn faces from multiple images per identity, with different levels of variability. I will then assess both discrimination and generalization performance. Discrimination will be measured by the correct identification of learned identities in learned images and the rejection of unlearned identities. Generalization will be measured by recognition of learned identities appearing in new images. I hypothesize that high- (versus low-) variance learning will enhance both abilities.

Next, I will compare this method to existing single-image-based interventions (e.g., directing gaze to the eyes). I expect existing methods to improve discrimination but not generalization.

In summary, this study explores a crucial yet overlooked mechanism for improving face recognition in ASD: enhancing facial generalization through visual variability. The findings will expand our theoretical understanding of ASD and suggest a simple, scalable intervention to support a critical social skill.

Alon Blachinsky

Ph.D Student in the Department of Marine Biology

Research Title: Utilization Patterns of Urea in Oligotrophic and Autotrophic oceans

Supervisors: Prof. Ilana Berman Frank and Prof. Sarah R. Smith

Short description of research:

Nitrogen (N) is a key driver of phytoplankton growth and productivity, with dissolved organic nitrogen (DON) dominating the N pool in oligotrophic regions such as oceanic gyres and the Eastern Mediterranean Sea (EMS). This study compares urea (as a representative DON source) uptake strategies in two contrasting systems: the nutrient-rich Monterey Bay and the nutrient-depleted EMS. In Monterey Bay, we aim to evaluate how phytoplankton shift from nitrate to urea utilization under nutrient limitation and assess their resilience to global change scenarios and periodic downwelling events. In early November (04 November 2025), when the waters are relatively warm and nitrate and chlorophyll concentrations are lower than average, we will conduct a five-day microcosm experiment with the following treatments: 1. Urea + Trace Metals + Phosphate; 2. Nitrate + Trace Metals + Phosphate; 3. Trace Metals + Phosphate; 4. Control.

We will use 8 L incubation bottles, each containing 25% of the microbial population from T_0, to minimize potential bottle effects. We will measure changes in microbial populations using DNA amplicons (16S and 18S), assess gene expression related to urea and DON uptake via metatranscriptomics, and quantify total biomass using chlorophyll a, POC, flow cytometry (FCM), and microscopy. Nitrogen uptake in each treatment will be determined from daily changes in nutrient concentrations.

In the EMS, which is chronically depleted in dissolved inorganic nitrogen (DIN) and where urea represents the primary form of N uptake, we will quantify the contribution of urea and its effects on specific dominant field populations, such as Synechococcus and Prochlorococcus by depth, using single-cell NanoSIMS analysis. Our approach integrates field sampling and controlled incubations to investigate phytoplankton N assimilation. Field profiles will include metatranscriptomic and qPCR-based assessments of genes involved in DON and urea assimilation (e.g., URT, DUR3, ureC, urease, formamidase, leucine aminopeptidase), alongside biological and chemical parameters (e.g., DIN, DON, DNA, flow cytometry, HPLC, POC, PON).

Together, these efforts will provide detailed insights into nitrogen utilization strategies and the ecological roles of urea and DON in phytoplankton communities.

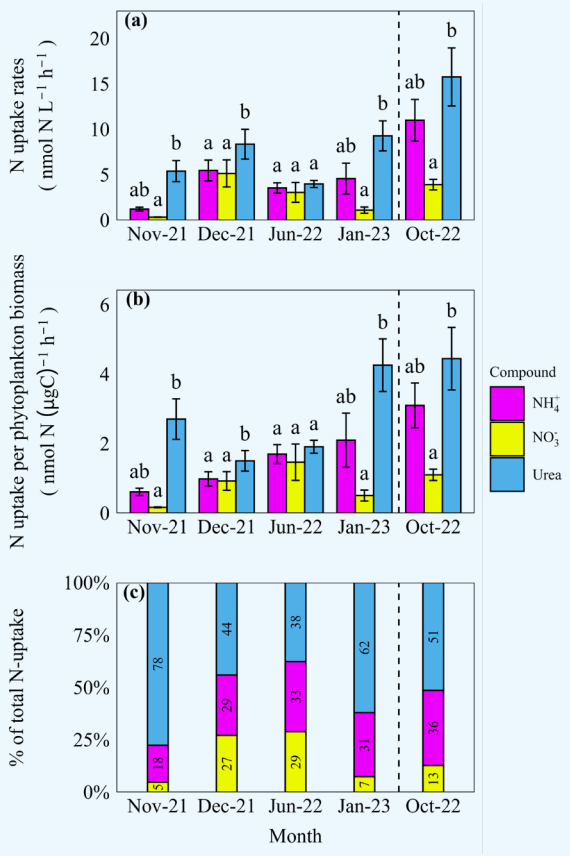
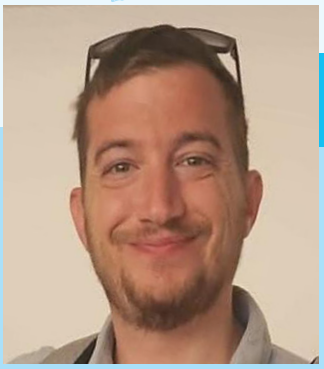


Fig. 6. In situ uptake rates (nmol N L-1 h-1) (a) N uptake normalized to picophytoplankton biomass (nmol N L-1 μgC-1 h-1) (b), and N uptake fractional contribution (c) of DIN and urea at the 800m station (Dec-21 to Jan-23; (32.52N, 34.72E) and 100m station (32.55N, 34.78E) (Nov-21) sampled at 25m depth. In situ uptake rates of ammonium (NH4) (Magenta), nitrate (NO3) (yellow), and urea (blue). The dashed black line represents the separation of October 2022 as an unusual mixing event that does not correspond with the seasonal N uptake pattern. Error bars represent standard deviation (n = 3). This is a figure from my submission at the Limnology and Oceanography Journal. The manuscript received major comments and is now in the revision stage at Limnology and Oceanography



Almog Ben-Natan

Ph.D Student in the Department of Marine Biology

Research Title: The Impact of Biological Processes on Submerged Cultural Heritage Sites and Artifacts

Supervisors: Prof. Tali Mass and Prof. Assaf Yasur-Landau

Short description of research:

Traditional approaches in underwater archaeology have largely focused on excavation and recovery methods such as the "Danish method," which are valuable for locating and retrieving artifacts, but neglect the post-submergence biological processes that shape their preservation. Once submerged, human-made materials rapidly become substrates for colonizing organisms, initiating complex ecological successions. Metals, ceramics, and stone structures are overgrown by algae, sponges, bryozoans, mollusks, and corals, which often form mineralized biogenic concretions. These layers can alternately protect or accelerate deterioration: for example, corroding metals may be shielded by encrustations, while ceramics, though abundant, remain understudied as colonization substrates. Despite their central role in the preservation and transformation of artifacts, long-term ecological processes acting on ancient submerged materials are poorly documented, as most studies rely on short-term observations of modern structures.

This research develops and applies an interdisciplinary framework that integrates biological and archaeological methodologies to address this gap. Our objectives are threefold: (1) to investigate how biological processes influence the degradation or conservation of submerged cultural materials, including metal artifacts, ceramics, and stone constructions; (2) to identify spatial and temporal patterns of marine organism settlement along ancient maritime routes; and (3) to examine the ecological role of archaeological remains in shaping reef development and marine habitats over centuries to millennia.

Fieldwork will focus on three key sites along the Israeli coast—Dor, Hof HaBonim South, and Atlit-Yam—where authentic archaeological remains are embedded in dynamic marine ecosystems. Analyses will combine DNA barcoding and microscopy for organism identification, ecological surveys for mapping fouling communities, and mineralogical profiling for characterizing biogenic concretions. Radiocarbon dating will provide temporal depth, situating biological activity in a historical context. Complementary techniques such as micro-photogrammetry will document surface transformations and quantify ecological impacts.

The methodological innovation of this project lies in applying marine biological tools—such as DNA sequencing and ecological community analysis—directly to archaeological materials, while simultaneously employing archaeological dating and mineralogical methods to reconstruct long-term ecological trajectories. This cross-disciplinary approach enables a holistic reconstruction of how artifacts and ecosystems co-evolve underwater.

The significance of this study is twofold. First, it provides unprecedented insight into the ecological histories of submerged archaeological materials, offering a temporal scale that spans centuries rather than decades. Second, it delivers applied outcomes for conservation science: by clarifying how biological colonization contributes to preservation or deterioration, the research supports evidence-based strategies for managing submerged cultural heritage under increasing environmental and human pressures. In doing so, it establishes a novel paradigm at the intersection of marine biology and underwater archaeology.

Maya Bloch Haimson

Ph.D Student in the Department of Marine Geosciences

Research Title: Development and implementation of a framework for data-based identification of critical changes in marine systems

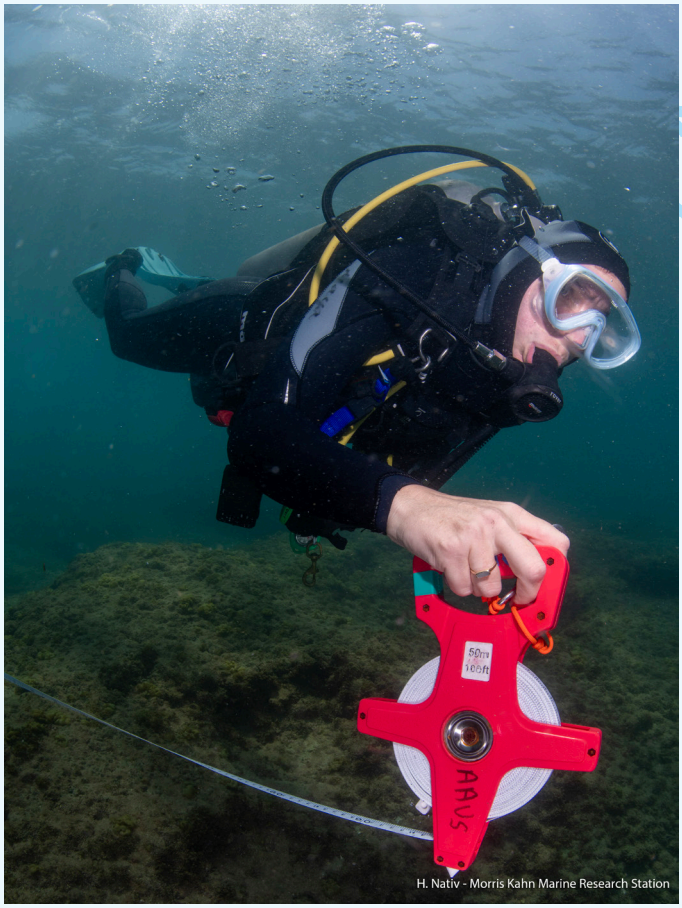
Supervisor: Prof Yoav Lehahn

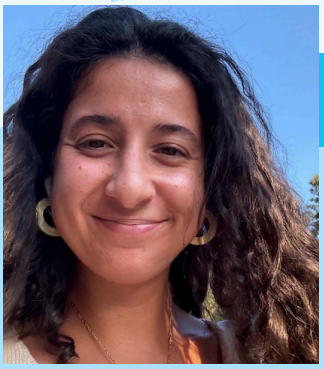
Short description of research:

The oceans, covering approximately 70% of Earth's surface, play a pivotal role in regulating climate, supporting biodiversity, and driving biogeochemical processes. Climate change poses unprecedented threats to marine environments through ocean acidification, sea level rise, and sea ice loss, while positioning oceans as critical components in climate mitigation strategies. The large and growing volume and complexity of ocean data, spanning diverse disciplines and formats across dispersed sources, present both opportunities and challenges for advancing scientific research and addressing societal needs. Despite abundant ocean data, identifying early warning signals (EWS) of ecosystem tipping points remains critical for predicting irreversible shifts in marine ecosystems. Current data limitations constitute fundamental barriers to understanding and preventing drastic marine environmental changes.

This research addresses these limitations by developing a novel machine learning framework for analyzing diverse oceanographic datasets to identify critical changes in marine systems. The research will proceed through the identification of state-of-the-art data science applications in oceanography, the development of a framework for integrating data-based applications within marine science, and subsequent implementation to identify critical changes in marine systems, with the Mediterranean Sea as a possible case study, and example datasets such as phytoplankton dynamics and ocean-climate interactions.

This research aims to provide the scientific community with practical solutions to key barriers limiting data-driven research on marine systems, supporting the oceanographic community and accelerating the adoption of advanced AI techniques in oceanographic research, thereby helping bridge the gap between current machine learning developments and ocean science applications.





Dalia Moallem

Ph.D Student in the School of Psychological Sciences

Research Title: Stress and Resilience: Opportunities for National Growth (STRONG)

Supervisors: Dr. Ziv Ben Zion and Prof Roee Admon

Short description of research:

The events of October 7, 2023, and the ongoing war have resulted in mass trauma across Israeli society, with early estimates suggesting over 500,000 individuals may develop PTSD . While clinical interventions are crucial, they are not sufficient on their own. There is a pressing need to understand the broader psychological, biological, and social mechanisms that shape resilience and vulnerability following trauma—knowledge that can inform more targeted and effective responses.

Under the joint supervision of Prof. Roee Admon and Dr. Ziv Ben-Zion, my doctoral research at the University of Haifa will aim to identify predictors of resilience and risk in the aftermath of collective trauma. Our study will follow a nationally representative longitudinal cohort of 4,000 individuals and use latent growth mixture modeling (LGMM) to identify distinct psychological trajectories. We will then isolate behavioral, cognitive, physiological, and neurobiological markers that differentiate resilient individuals from those who remain vulnerable over time.

What makes this research innovative is its multi-level and interdisciplinary design: we will complement large-scale longitudinal data with in-depth assessments of subgroups using neuroimaging and physiological tools. These include functional and structural MRI, stress reactivity measures, and cognitive-behavioral tasks targeting processes such as reward learning and emotion regulation. By integrating biological and psychosocial data, we hope to uncover how factors like hippocampal volume, social support, and community cohesion interact to shape mental health outcomes.

The ultimate goal is to develop a predictive, multi-domain model of resilience that can inform both clinical interventions and public health policy—ensuring that resources are allocated where they are most needed and that support systems are grounded in evidence. In a country facing long-term psychological fallout, this research is both urgent and deeply relevant.

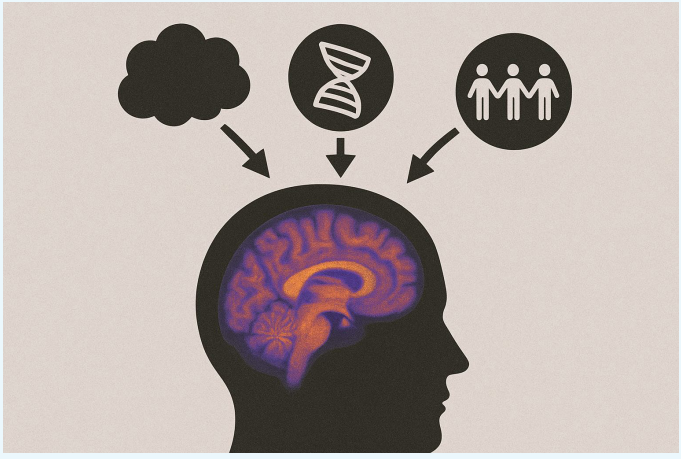


Image created by ChatGPT

[1] D. Katsoty, M. Greidinger, Y. Neria, A. Segev, and I. Lurie, "A Prediction Model of PTSD in the Israeli Population in the Aftermath of October 7th, 2023, Terrorist Attack and the Israel-Hamas War," Israel Journal of Health Policy Research 13, no. 1 (2024): 63.

Or Front

Ph.D Student in the School of Psychological Sciences

Research title: Interpersonal Synchrony in Psychotherapy

Supervisor: Prof. Sigal Zilcha-Mano

Short description of research:

The measurement of interpersonal synchrony has recently emerged as a promising biomarker of the therapeutic alliance. Moment-to-moment patient-therapist synchrony can be measured nowadays using large-scale data, and empirical findings indicate its association with therapeutic alliance. However, a recent meta-analysis shows mixed support for this association. A recently proposed theoretical model aims to explain this inconsistency by mapping each patient's unique individual-specific bio-signature of interpersonal synchrony and identifying the curative change occurring in this bio-signature throughout the course of treatment (Zilcha-Mano, 2025). The overarching goal of the present study is to examine the practical utility of this model by characterizing synchrony signatures in a way that is accessible and interpretable to clinicians, to assess whether feedback on these signatures enables them to enhance treatment outcomes.

The first part of this dissertation will investigate whether a unique bio-signature of interpersonal synchrony can be reliably extracted for each individual from multimodal behavioral and physiological data. Applying the Actor-Partner Interdependence Model alongside machine learning techniques, we aim to identify person-specific synchrony patterns and evaluate their distinctiveness relative to those of other participants.

The second part explores the clinical feasibility of providing therapists with real-time feedback on patients' synchrony signatures, implemented in an open trial. Through qualitative methods, we examine how therapists perceive and apply this feedback in practice.

The third part examines whether feedback regarding bio-signatures can play a causal role in therapeutic change. Participants will be randomized to receive either accurate or pseudo-real-time feedback on momentary deviations from their individual synchrony signature. Therapists will be trained to collaboratively use this feedback with clients to guide tailored therapeutic adjustments, and the study will examine their effect on treatment outcomes.

Zilcha-Mano, S. (2025). How getting in sync is curative: Insights gained from research in psychotherapy. Psychological Review, 132(2), 470

Yaseen Abd-Elhaleem

Ph.D Student in the Department of Computer Science

Research Title: Distributed Algorithms for Planar Graphs

Supervisors: Dr. Michal Dory and Prof. Oren Weimann

Short description of research:

Graphs are mathematical structures used to model pairwise relations between objects. A graph is made up of vertices that are connected by edges. A planar graph is a graph that can be drawn on the plane without edges intersecting.

Among the most fundamental optimization problems in algorithmic graph theory are shortest paths, maximum flow, and minimum cut. For decades, every theoretical computer science conference has included results on these problems, which by now appear in thousands of papers.

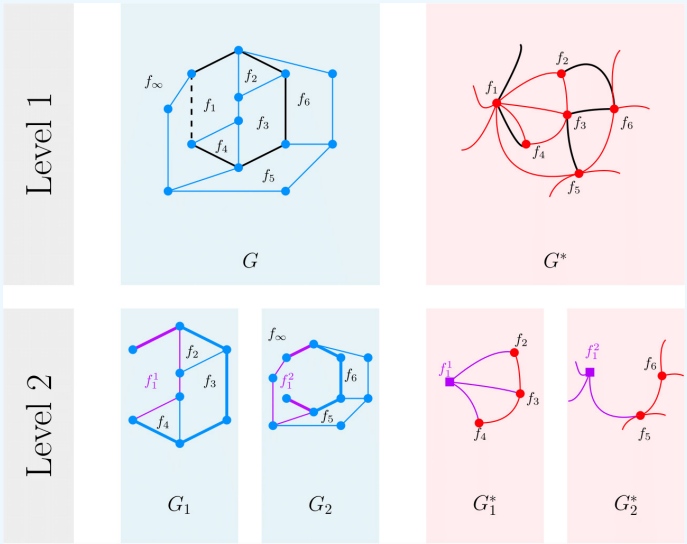
Studying these problems in planar graphs is further supported by the fact that instances arising in practice are often planar or near-planar.

In addition, planar graphs exhibit a remarkable wealth of properties that can be exploited to obtain extremely efficient algorithms.

Traditionally, these problems were studied in planar graphs in the standard sequential model, where an algorithm is given a graph as input, and after a sequence of computational operations, produces the desired answer as output. However, in the modern era of big data, even optimal sequential algorithms can be too slow in practice when the input is extremely large. To cope with this, people have turned to distributed computing, where multiple computers run in parallel, each on a small part of the input, with the common goal of computing the answer with as few rounds of communication as possible.

However, the study of distributed algorithms on planar graphs was initiated only in the last decade. Hence, our goal is to enrich the literature in this field by developing more efficient algorithms for planar graphs and by exploring problems that have not been studied before in this setting.

Here is a photo from my master's thesis:



Amal Abd Elkader

Ph.D Student in the Department of Human Biology

Research Title: Prostaglandin Independent Role of COX-2 Fragments in Colorectal Cancer

Supervisors: Prof. Liza Barki-Harrington

Short description of research:

Cyclooxygenase-2 (COX-2) is a key enzyme in the conversion of arachidonic acid (AA) into pro-inflammatory prostaglandins. While COX-2 expression is typically low under normal conditions, it is rapidly upregulated in response to inflammatory stimuli. Our recently published article, which I co-authored, demonstrated that COX-2 undergoes activity-dependent proteolytic cleavage, generating fragments that exhibit prostaglandin-independent cellular functions.

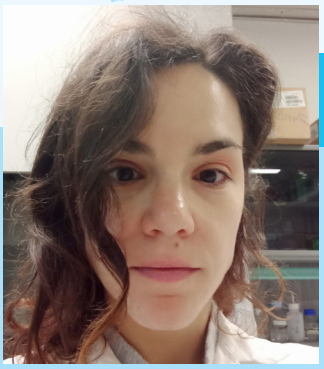
In my M.Sc. thesis, I investigated how high-fat diet (HFD)-derived fatty acids influence COX-2 activity and cleavage, both in vivo and in vitro. I identified a tissue-specific increase in full-length COX-2 and its cleavage fragments in the kidneys of rats fed HFD. In vitro, I demonstrated that among the main fatty acids that compose the HFD, only linoleic acid (LA) significantly enhanced AA- and LPS-induced COX-2 activity and proteolysis. Conversely, omega-3 fatty acids, including alpha-linolenic acid (ALA) and docosahexaenoic acid (DHA), partially reduced LA-induced COX-2 activation and cleavage.

In my PhD studies, I plan to explore the role of COX-2 cleavage in colorectal cancer (CRC). Specifically, I plan to:

1) Identify COX-2 fragments that are present in CRC-derived lines and the CRC mouse model of APC Min/+.
2) Explore the role of known and newly discovered COX-2 fragments in CRC tumorigenesis.
3) Elucidate the role of the protease **y**-secretase in COX-2 proteolysis.

The significance of this research is that CRC remains a leading cause of cancer-related death. While COX-2 is known for its pro-tumorigenic, prostaglandin-mediated functions in CRC, we suggest it may also exert prostaglandin-independent effects through interactions of its proteolytic fragments with different signaling pathways. Exploring these PG-independent pathways and uncovering additional functions of COX-2 will deepen our understanding of its complex involvement in pathologies such as proliferative diseases and chronic inflammation, potentially identifying new targets for therapeutic intervention.

Credit: Israa Yasin



Elena Rita Vecchi

Ph.D Student in the Sagol Department of Neurobiology

Research Title: Spliceosome Malfunction and Neurodevelopmental Disorders

Supervisor: Prof. Hanoch Kaphzan

Short description of research:

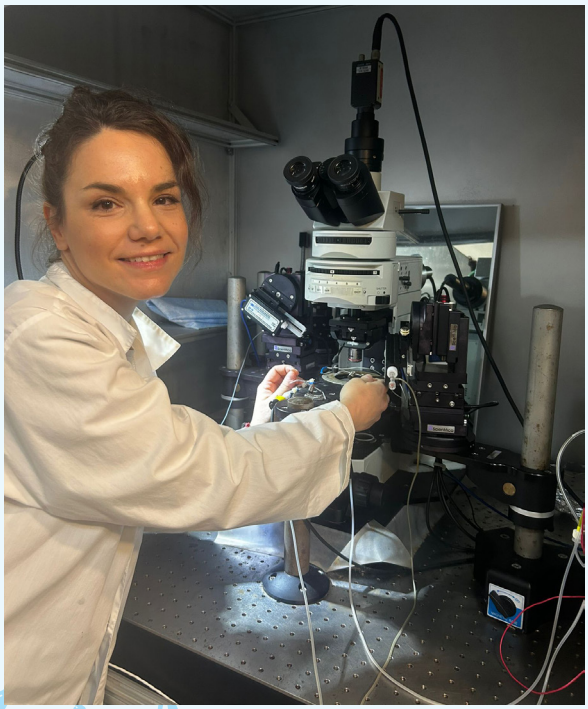
Proper brain development depends on the precise coordination of gene expression programs, many of which are regulated by RNA splicing. The spliceosome, a large ribonucleoprotein complex, is responsible for excising introns and assembling mature mRNAs. This process is especially critical in the nervous system, where alternative splicing contributes to the remarkable diversity of proteins required for neuronal differentiation, synaptic formation, and circuit maturation. Increasing evidence links spliceosome dysfunction to neurodevelopmental disorders, yet the mechanisms by which splicing abnormalities translate into impaired brain function remain poorly understood.

My research seeks to characterize the neurodevelopmental consequences of spliceosome abnormalities by integrating molecular, cellular, and functional approaches. At the molecular level, I investigate how disruptions in spliceosome components alter the splicing patterns of genes essential for neuronal development. Using transcriptomic profiling, I identify mis-spliced targets and map convergent pathways, including those involved in axonal guidance, synaptic plasticity, and mitochondrial physiology. These analyses provide a framework to connect splicing dysregulation with neuronal vulnerability.

In parallel, I examine the cellular outcomes of spliceosome dysfunction using neuronal culture models and imaging-based techniques. Alterations in dendritic arborization, axonal connectivity, and synaptic density are assessed to determine how splicing defects impair structural development. By correlating morphological changes with transcriptomic alterations, I aim to reveal causal links between splicing errors and neurodevelopmental phenotypes.

A third dimension of the project focuses on neuronal function. Electrophysiological recordings and live-cell imaging are used to assess whether spliceosome abnormalities compromise synaptic transmission or network activity. These experiments provide critical insights into how molecular-level disturbances manifest as functional deficits, bridging the gap between altered gene expression and disrupted neural circuits.

Ultimately, this research strives to illuminate the role of splicing regulation in healthy neurodevelopment and to uncover how its disruption contributes to disease. By defining key molecular and cellular signatures of spliceosomopathies, my work aims to inform the development of therapeutic strategies that either restore correct splicing or mitigate the downstream consequences of its dysfunction.



Noga Saranga Rockowitz

Ph.D Student in the School of Creative Arts Therapies

**Research Title: Between Rupture and Repair:
The Therapeutic Alliance Within the Relational Triangle of Art Therapy in a Post-Crisis Community Clinic -Therapist, Clients, and Artmaking**

Supervisors: Prof. Dafna Regev and Prof. Sharon Snir

Short description of research:

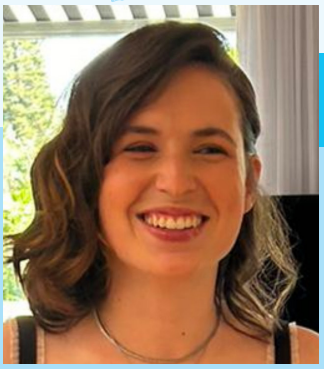
Since the Iron Swords War, community-based art therapy (CBAT) emerged as a critical intervention in Israel, providing therapeutic and rehabilitative support to communities in crisis. Kiryat Shmona residents, who have long faced cumulative stressors, recently intensified by security threats, displacement, and prolonged uncertainty, have been particularly affected by these conditions. Given the collective nature of the crisis and low inclination toward individual therapy in such contexts, CBAT nurtures belonging and agency through creative expression, tapping into communal strengths and healing capacities.

The emergency nature of wartime interventions - characterized by therapist turnover and shared trauma - created distinct CBAT settings that have yet to receive focused scholarly attention. Within this context, a central element of art therapy practice is the relational triangle among therapist, client, and artistic creation; yet this fundamental component remains underexplored in this setting, particularly regarding processes of rupture and repair within the therapeutic alliance.

This qualitative study examines the therapeutic alliance and its dynamic interplay with artistic creation in post-crisis CBAT through three complementary investigations. The first phase explores art therapists' perspectives on therapeutic alliance, ruptures, and repair processes through in-depth interviews with therapists who conducted community interventions during emergency situations. The second phase examines these processes from both clients' and therapists' viewpoints through analysis of reflective journals written by participants in Tel Hai's community clinic for post-crisis communities.

The third phase investigates the role of art materials and creative processes in alliance rupture and repair through video documentation of therapy sessions, followed by Interpersonal Process Recall (IPR) interviews with therapists and clients who participated in these sessions.

The study's significance lies in addressing a critical gap in therapeutic knowledge during a period of acute national need. By developing a deeper understanding of therapeutic dynamics in community-based art therapy interventions, particularly regarding the unique influence of the relational triangle in post-crisis settings, this research will contribute essential professional knowledge for art therapists working with collective trauma and crisis situations. The findings are expected to inform both clinical practice and training programs, ultimately enhancing the quality and effectiveness of community-based therapeutic interventions in times of crisis.



Dana B. Vilker

Ph.D Student in the Department of Occupational Therapy

Research Title: Creating a Cognitive-Executive Profile to Assess the Functionality of Working Dogs

Supervisor: Prof. Avraham Avital and Dr. Naor Demeter

Short description of research:

Working dogs are essential partners in many areas of human life: they locate missing persons, detect explosives or narcotics, and support people with disabilities. Their roles demand not only physical skill and obedience but also a remarkable level of cognitive ability. Yet, the way we currently select and train these dogs often overlooks one critical factor: their executive functions—the mental processes that allow them to focus, adapt, remember, and make decisions.

This research proposes developing a cognitive-executive profile for working dogs to identify what distinguishes dogs who thrive on demanding tasks from those who struggle. By understanding and mapping these mental abilities, the project seeks to transform how we evaluate and prepare dogs for their roles.

The idea is simple but powerful: just as humans are assessed for attention, flexibility, and decision-making in high-pressure jobs, so, too, do dogs. Executive functions like inhibitory control (resisting distractions), working memory (holding target information in mind), cognitive flexibility (adapting when conditions change), and problem-solving (finding efficient solutions) are likely the hidden drivers behind a dog's success in the field.

The outcomes of this project could be wide-reaching. On a practical level, it will allow training organizations to select dogs more effectively, reducing wasted resources on candidates who are unlikely to succeed. It can also improve animal welfare by matching dogs with tasks that suit their cognitive strengths, minimizing frustration and failure. On a scientific level, the research will advance our understanding of canine cognition, opening the door to standardized assessments and new applications in fields such as animal-assisted therapy, rehabilitation, and comparative cognition research.

Ultimately, this work envisions a future where dogs are evaluated not just for their obedience or physical capabilities, but for their mental toolkit—their ability to concentrate, adapt, and persist in complex tasks. Such an approach could revolutionize working dog programs worldwide, ensuring that every dog is placed in the role that best fits its abilities, while also deepening our understanding of animals' cognitive lives.

Adi Mohel

Ph.D Student in the Department of Women's & Gender Studies

Research Title: Can Competitive Sports Change? Listening to Female Athletes' Voices as a Means to Challenge and Rethink Gender and Professionalism in Sport

Supervisors: Prof. Maayan Sodai and Prof. Zipora Shechtman

Short description of research:

The research aims to re-examine the dominant discourse of competitive sports by listening to the silenced and conflictual voices of young female athletes navigating a masculine-hegemonic sporting environment. It explores the tension between the dominant sports discourse- which defines professionalism through masculine-associated traits such as emotional restraint, hierarchy, and competitiveness- and alternative voices that emphasize values like emotion, connection, and care, often regarded as "feminine" or "nonprofessional." Attention will also be given to the conflictual and contradictory voices of other stakeholders, including senior coaches and male athletes in comparable positions, to sharpen understanding of gendered socialization processes in sport.

The study will further examine the implementation of alternative discourses through a group intervention with adolescent female athletes, alongside an evaluation of its influence on key factors related to central conflictual themes identified in the research.

Main questions: In order to examine these issues, the study will:

- Examine how female and male athletes position themselves between adoption, resistance, or transformation of the "masculine" competitive discourse, and how this positioning relates to their motivation and well-being.
- Analyze the role of coaches as agents of preservation or change of the discourse and of gendered attitudes.
- Investigate how a group intervention process within competitive female athlete teams influences key factors associated with retention and burnout, including perceived support, levels of conflict, and group cohesion.

  Methodology - Participants include female and male athletes aged 14–18, as well as senior coaches from competitive team sports. The research will employ semi-structured interviews, focus groups, and group interventions. Data will be analyzed using Gilligan's Listening Guide, alongside Consensual Qualitative Research (CQR).

Contribution - The research aims to propose a rethinking of gendered socialization processes in sport and of the prevailing sports discourse, and to develop a more complex model of sport and professionalism that examines the possibility of embracing voices and values often perceived as contradictory. In addition, it seeks to establish both conceptual and practical foundations for the development of gender-sensitive coaching approaches for male and female athletes, with the aim of influencing coach-training discourse, notions of excellence, and the conditions for the mental and physical well-being of athletes of all genders.

Einav Perry

Ph.D Student in the School of Criminology, Faculty of Law

ResearchTitle: Developmental Characteristics of Human-Technology Relationships in the Use of Online Financial Trading Platforms

Supervisor: Dr. Sharon Rabinovitz-Shenkar

Short description of research:

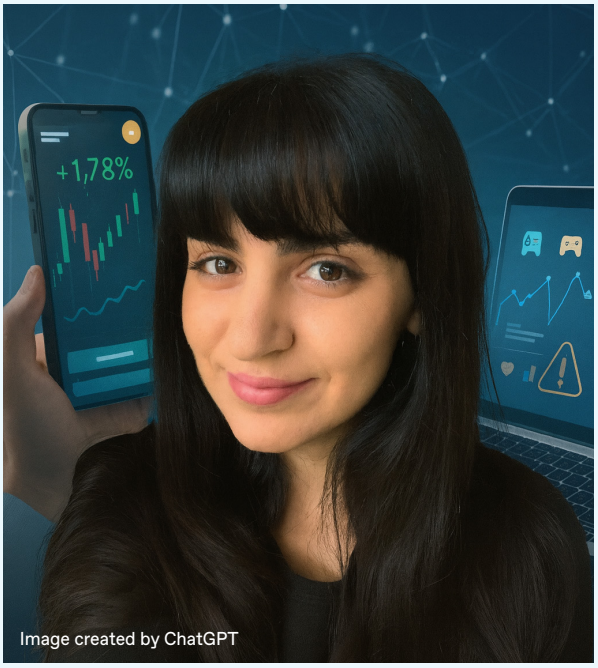
The field of human-technology relations studies interactions, mutual influences, and complex connections between humans and technological systems. Recent studies indicate that digital platforms such as social networks, gaming, and gambling use dark patterns that are particularly harmful to users from disadvantaged groups.

Online trading applications and prediction platforms offer convenient access to the capital market and are increasingly popular, especially among young people from low socioeconomic backgrounds. Many of them provide a user experience that simulates a game, using variable reinforcement, visual reactivity, and the illusion of control, familiar characteristics from the gambling sector. At the same time, they market a message of equal opportunities, using manipulations that exploit a sense of belonging, competitiveness, autonomy, social mobility, and fear of missing out.

While previous studies have primarily focused on behavioral characteristics (though few have examined this empirically), my doctoral research explores how such platforms activate emotional and psychological mechanisms that may undermine users' ability to make free and informed decisions. Drawing on developmental psychology, criminology, and socio-legal perspectives, the study focuses on how problematic usage patterns are shaped by personal traits, environmental design, and group dynamics, rather than solely by rational risk assessment.

The project combines empirical and theoretical components and forms part of a larger research group focused on the regulatory, predictive, and criminological aspects of online trading platforms. The criminological framework allows us to observe not only the behavior itself, but also the hidden mechanisms that encourage problematic or addictive use, especially among vulnerable populations.

Beyond its academic contribution, the current study may serve as an empirical basis for determining regulatory policy to protect individuals and public health, to assist in the development of practical implications and tools for protecting vulnerable users and disadvantaged populations from exploitation or manipulative design practices, while contributing to ethical and resilient digital environments that better safeguard users.



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