

# Research

Research is one of the three cornerstones of the OUI, alongside course development and teaching. OUI faculty members conduct a broad range of research in a variety of fields, including the humanities, social sciences, natural and life sciences, the exact sciences, and engineering.

The Dean of Research, Prof. Tzahi Weiss, heads the Research Authority and the OUI research institutes. As dean, he is also chairman of the board of OpMop Ltd., the OUI's technology transfer subsidiary.

## The Research Authority

The role of the Research Authority (RA) is to encourage research and to make infrastructure and equipment available to OUI researchers; provide assistance in submitting research proposals to competitive sources of funding; and primarily, to publish papers in journals and books. The RA is a platform for promoting research and maintaining the university's high academic level, and for the development and individual progress of faculty members.

Moreover, the RA promotes research studies by OUI researchers through direct support via an internal fund for grants, scholarships for research students, and funds for travel to present research results at scientific conferences.

The RA is responsible for the financial and administrative monitoring of the research proposals submitted and funded through it, and for managing researchers' budgets. It handles researchers' needs in all matters related to physical infrastructure (labs, computers) and human resources (research students and assistants). The RA also negotiates agreements with other academic institutions to promote collaboration between OUI researchers and colleagues from other universities.

A steering committee of four senior faculty members from different disciplines oversees the work of the RA. The dean of research is the head of the committee, which sets the standards for evaluation of proposals submitted for funding by the internal fund, and for distribution of the fund's resources.



## News and developments

- The OUI entered into agreement with the United States Federal Funds, following a complex process that involved approving the OUI as a body authorized to apply. OUI researchers may now answer calls for proposals pertinent to the exact sciences, life sciences, and social sciences issued by the National Institute of Health (NIH) and the Department of Defense (DOD). These funds are part of a growing list of foundations and tracks that have become available to the OUI in the past few years, resulting in several impressive grant awards.
- Early this year, the RA underwent a reform which redefined its responsibilities to match OUI research fields. The reform's goal was to deepen the RA team's acquaintance with the research areas of the academic staff, to increase professionalism, and to offer individual responses to researchers.
- The RA launched a new website for researchers, including updated calls for papers, research financing options, useful information, EU plans, etc. The website is updated on a regular basis with news and information applicable to researchers.

## Research Centers

The three research institutes of the OUI provide a framework for interdisciplinary research in a variety of fields, and forge reciprocal and cross-departmental collaboration. The centers provide support for researchers as they generate new scientific knowledge, participate in the mutual exchange of ideas, and foster cooperation, collaboration, and programming with researchers and experts in Israel and abroad.

### The Institute for Policy Analysis

The Institute for Policy Analysis, headed by Prof. Izhak Berkovich, is an interdisciplinary center dedicated to the promotion of research on theoretical, empirical, and applied subjects related to the correlation between policy design and implementation, and social, political, and

economic processes and mechanisms. The institute was founded in 2011, and its members include most of the OUI social sciences faculty.

The Institute focuses on policy analysis and contemporary social issues, and encourages research that focuses on Israel and abroad, comparative studies, and research examining the global and international dimensions of policy design and implementation. In order to create a vibrant and productive research environment for scholars from different fields, the institute organizes local and international seminars and conferences, publishes a series of working papers, and provides research assistance to its members.

This year, the institute's activities included workshops on the following topics:

- The link between education and citizenship: Issues in teaching and policy
- Legitimizing violence

### Research Center for Innovation in Learning Technologies

The Research Center for Innovation in Learning Technologies, headed by Prof. Ina Blau, explores the integration of innovative technologies in teaching and learning processes. The center encourages research by OUI faculty aimed at improving the understanding of teaching and learning processes in technology-rich environments, and the integration of innovative technologies in the teaching of academic courses, particularly at the OUI. The institute was founded in 2010 to replace the Chais Center for the Integration of Technology in Education, which had been active since 2004. The institute currently includes fifty faculty members from various departments, and one part-time research fellow. It works in close cooperation with the OUI Center for Technology in Distance Education (Shoham). A key goal of the institute is creating a solid community of Israeli researchers whose members keep close contact with each other. To this end it organizes regular academic events, including research seminars, symposia, and conferences.

In 2020, the Research Center for Innovation in Learning Technologies held a symposium open to the general public and four seminars, at which members presented their studies. To comply with COVID-19 restrictions, several sessions were held online.

Below are several studies currently underway by members of the Research Center:

**Shir Etgar, Ina Blau and Yoram Eshet-Alkalai**, "Perception of digital dishonesty in the COVID-19 era."

**Ina Blau, Gal Ben-Yehudah and Yoram Eshet-Alkalai**, "Development of digital literacy competencies in language arts among Hebrew-speaking and Arabic-speaking school students."

**Nitza Geri, Orna Kopolovich and Amir Winer**, "Replay-peak attention chart: A performance measure for improving online video lecture design."

**Sarit Moldovan and Yael Steinhart**, "Unwillingness to recommend professional courses in order to keep a competitive edge."

**Yael Sidi and Yoram Eshet-Alkalai**, "Metacognitive monitoring and control processes in hyper-text learning environments."

**Yael Sidi, Ina Blau, Tamar Shamir-Inbal and Roy Yarokni**, "Behavior in a hyper-video environment in academia: Contribution of annotations to teaching-learning processes."

**Yael Sidi and Tirza Lauterman**, "Item and contextual cues that affect self-judgments of creativity."

**Yael Feldman-Maggor, Inbal Tuvi-Arad and Ron Blonder**, "Organization of academic teaching and learning in an information-rich technology environment: chemistry courses for teachers and students."

**Kesler Avital, Tamar Shamir-Inbal, Ina Blau**, "How do students' age, teaching goals, and type of assessment affect the quality of visual programming artifacts in elementary and middle schools?"

**Ronen Kasperski, Ina Blau, Gal Ben-Yehudah and Yoram Eshet-Alkalai**, "Teaching digital literacy in the education system: Gaps between the teachers' perspective and the reality in the classroom."

**Eyal Rabin, Yoram Kalman, Marco Kalz, Vered Silber-Varod and Maartje Henderikx**, "Through the lens of the learner: using learning analytics to predict learner-centered outcomes in massive open online courses."

**Esti Schwartz, Tamar Shamir-Inbal and Ina Blau**, "The role of local culture in integrating a digital platform for learning Hebrew as a second language in elementary schools in the Diaspora."

**Tamar Shamir-Inbal, Ina Blau and Shlomit Hadad**, "Collaborative learning between schools in order to promote the sustainability of digital innovation in school culture."

## Chais Conference 2020

The 2020 Chais Conference was the 15<sup>th</sup> in the annual series of research conferences initiated by the Research Center for Innovation in Learning Technologies. The conference provides a forum for leading researchers and professionals in the field of innovation and learning technologies in Israel to present their research. The conference contributes to the formation of an Israeli community of learning technology researchers and the positioning of the OUI as a leader in the field.

The conference took place in February 2020, with the participation of approximately 300 researchers, students, and professionals. Prof. Vanessa Dennen from the University of Florida gave the keynote lecture and pre-conference seminar. The conference included 17 lectures, 11 mini-lectures, two round-table discussions, and a display of 15 posters. A moving memorial session was held in memory of Prof. Mickey Ronen.

## The Center for the Study of Relations between Jews, Christians, and Muslims

The Center for the Study of Relations between Jews, Christians, and Muslims (JCM), headed by Prof. Avriel Bar Levav, holds events for researchers and for the public that

engage in topics related to its goals, supports research groups, and presents the findings with a view to enhancing understanding and interaction between the religions.

The following activities were sponsored by the center in 2020:

- Support of the translation and publishing of Olga Tokarczuk's Nobel Prize-winning *The Books of Jacob*, which tells the story of Jacob Frank, who converted from Judaism to Christianity and Islam. Tokarczuk is an OUI Honorary Fellow.
- A conference on asceticism in thirteenth-century Abrahamic religions, in collaboration with the Goldstein-Goren Center of Ben-Gurion University of the Negev. The publication of a collection of articles on this topic is scheduled for next year.
- Annual conference of the forum of female Middle East historians.
- A joint conference with the Ben-Zvi Institute on the centenary of the death of Prof. Israel Friedlander, a researcher of Judaism and Islam.
- Support of the issue of the journal *Zion* dealing with antisemitism, edited by Prof. Guy Miron and Dr. Scott Uri.
- Publication of a collection of research articles on the Middle East from past Divan sessions, edited by Prof. Mustafa Kabha.

The following Divan sessions were led by Prof. Mustafa Kabha:

- Dr. Salwa Alinat-Abed, "From the personal to the collective: Memories of the 1967 war among West-Bank Palestinian women"
- Prof. Meir Bar-Asher, "Selection and rejection – Jews in the Koran"
- Dr. Merav Emergui, "Muslims in India – from Mahatma Gandhi's liberalism to Narendra Modi's nationalism"
- Dr. Tarik Firro, "The Saudi regime in the shadow of the succession struggles"

- Prof. Yoram Meital (session in memory of Dr. Hagar Hillel), "The future of documenting the Jewish past in Egypt – a view from Cairo."

## Research Infrastructure

OUI policy encourages collaboration with other academic institutions in order to find satisfactory solutions for faculty members who require experimental research infrastructure.

The OUI signed an agreement of cooperation with the Technion to allow Prof. Ofer Reany to conduct research in the Technion laboratory.

**OpMop Ltd.** is a technology transfer subsidiary of the Open University. The OUI creates new knowledge, which is defined as intellectual property. As a public academic institution, the OUI has an interest in putting to use the commercial potential of new knowledge for the benefit of society and the economy, and producing income for the university that will serve in turn to promote its goals. OpMop Ltd. works on behalf of commercialization and transfer of knowledge to the industry and the marketplace.

An Israel Innovation Authority Magnetron track research grant was approved for the transfer of academic knowledge to industry. The study, "Algorithms for allocation of memory resources distributedly on graphs" is a collaboration between Prof. Leonid Barnboim of the OUI Department of Mathematics and Computer Sciences and Ceva D.S.P.

OPMOP Ltd. manages and commercializes the inventions and patents of OUI staff. Last year, it handled seven patents of OUI staff members, some of which are currently being prepared for submission and others that have been submitted and await approval.

As part of its work, OPMOP has entered into contract with the National Institute for Biotechnology in the Negev at Ben-Gurion University. The contract led to the establishment of a company for pooled COVID-19 diagnostics based on the joint research of Prof. Noam Shental of the OUI Department of Mathematics and Computer Science, and Prof. Angel Porgador and Dr. Tomer Hertz from Ben-Gurion University.

## Individual Research Grants from External Funds

This year, 21 research grants and fellowships from external funds were approved.

### Grants from the Israel Science Foundation

#### Individual research grants:

**Dr. Adi Amit**, Department of Education and Psychology, "The regulatory role of morality in maintaining favorable intergroup differentiation."

**Prof. Avriel Bar-Levav**, Department of History, Philosophy and Judaic Studies, "The role of broadsheets in Jewish ritualistic and cultural space in the early modern period."

**Dr. Noga Efrati**, Department of History, Philosophy and Judaic Studies, "Women's activism in Iraq, 1900-1958 : a transnational perspective."

**Dr. Esther Eisenmann**, Department of History, Philosophy and Judaic Studies, "Gersonides' supercommentary on Averroes' middle commentary on Aristotle's physics: an annotated critical edition with an introduction."

**Dr. Einat Hazkani-Covo**, Department of Natural and Life Sciences, "The evolutionary dynamics of short inverted repeats in yeast."

**Dr. Inna Leykin**, Department of Sociology, Political Science and Communication, "When categories travel: the social meanings of migration-related measures."

**Dr. Ido Liviatan**, Department of Education and Psychology, "Language abstraction as a communication tool for system justification."

**Dr. Naphtaly Shem-Tov**, Department of Literature, Language and the Arts, "Repertoire quality and reception in Haifa International Children's Theatre Festival."

**Dr. Boaz Slomka**, Department of Mathematics and Computer Science, "Polarity, covering, transportation and concentration."

**Dr. Ariel Stanhill**, Department of Natural and Life Sciences, "Ubiquitination of mislocalized proteins by RNF149 as a regulatory step in ER membrane translocation."

**Dr. Rafael Tsirkin-Sadan**, Department of Literature, Language and the Arts, "David Vygotsky: Translator, Critic, Poet."

**Dr. Eyal Wurgaft**, Department of Natural and Life Sciences, "The effects of heterogeneous interactions between seawater and suspended particles on total alkalinity and dissolved inorganic carbon in seawater."

**Dr. Baruch Ziv**, Department of Natural and Life Sciences, "New 4-D automatic classification of rain-producing synoptic systems and its application for understanding the mechanism and future projection of the rain regime in Israel."

#### Grant of the joint China-Israel program ISF-NSFC

**Prof. Jonathan Granot**, Department of Natural and Life Sciences, "Insights from gamma-ray burst polarization."

#### Scientific equipment grant for staff members currently conducting research

**Prof. Oren Soffer**, Department of Sociology, Political Science and Communication, "Database management system: compilation, refining, and analysis of media objects."

#### Book publication grant

**Prof. Iris Shagrir**, Department of History, Philosophy and Judaic Studies, "The parable of the three rings and the idea of religious toleration in pre-modern European culture."

### Grants from other external funds

**Prof. Leonid Barenboim**, Department of Mathematics and Computer Sciences, received a Magnetron grant from the Israel Innovation Authority of the Ministry of Economy for his joint research with Ceva D.S.P on "Algorithms for allocation of memory resources distributedly on graphs."

**Dr. Elishai Ezra Tsur**, Department of Mathematics and Computer Science, received an Intel Neuromorphic Research Community (INRC) grant from Intel and Accenture for his research "Implementation of neuromorphic nonlinear adaptive control in wheelchair-mounted assistive robotic arm."

**Prof. Rica Gonen**, Department of Management and Economics, received a research grant from the Ministry of Science as part of a Taiwan-Israel collaboration program, for her research "Alternative privacy-preserving online advertising system: empirical approach to practical learning."

**Prof. Mustafa Kabha**, Department of History, Philosophy and Judaic Studies, received a research grant from the Ministry of Education for his research "Palestinian names of places and their connection with space."

**Dr. Yael Sidi**, and **Prof. Yoram Eshet**, Department of Education and Psychology, received a grant from the Ministry of Education for their study "Social-emotional aspects of online teaching."

Below are brief descriptions of two studies awarded grants by external competitive funds:

**Prof. Leonid Barenboim**, "Algorithms for allocation of memory resources distributedly on graphs." A joint study with a group at CEVA Inc.

Various computer communication networks, such as wireless networks, the Internet of Things, and sensor networks, can be represented by graphs, with computing units that exchange messages over communication links. Each computation unit can be autonomous with its own resources, but may also employ shared system resources, such as energy sources and memory chips. Optimal resource allocation is a central and challenging problem. Various constraints caused by network configurations make the process of resource allocations very complicated. So far, wide theoretical research has been conducted for resource allocation problems on graphs.

The goal of the current project is to develop practical solutions for real networks, based on distributed algorithms for graph coloring. The project aims at adapting the algorithms for efficient execution in such networks in various scenarios. In addition, experiments

and performance analysis will take place in industrial systems, in order to improve products that are based on such algorithms.

**Dr. Eyal Wurgaft**, "The effects of heterogeneous interactions between seawater and suspended particles on total alkalinity and dissolved inorganic carbon in seawater."

The goal of this research is to determine whether heterogeneous interactions between seawater and suspended particles constitute an important sink for total alkalinity (TA) and dissolved inorganic carbon (DIC) in coastal environments. The research targets three types of chemical mechanisms: inorganic heterogeneous  $\text{CaCO}_3$  precipitation on the surface of suspended particles (HCP), cation exchange between adsorbed protons and dissolved ions, and formation of cation-bearing clays from cation-free clays. HCP has been extensively studied in the Bahama Banks, where it is an important mechanism for the removal of TA and DIC. Furthermore, previous studies based on laboratory experiments suggested that the flux of carbon leaving the upper ocean as secondary precipitant on sinking foraminifera skeletons is similar to the flux of carbon entering to the ocean by rivers, making it a potentially important factor in the vertical distribution of TA in DIC in the ocean. Cation exchange and clay formation have been studied in the context of major ions and silica cycling in riverine deltas and marine sediments. Nevertheless, no systematic research on the in-situ effects of these three pathways on the TA and DIC budgets in coastal or open-ocean environments has been conducted. Consequently, the poor understanding of heterogeneous interactions stands out as a knowledge gap in the otherwise well-studied oceanic carbon cycle. To address this gap, this research will integrate experiments and field measurements. The objective of the experiments is to identify the types of particles that induce TA and/or DIC decrease, to explore the chemical mechanisms by which the decrease occurs,

and to characterize the decrease rate as a function of temperature and CaCO<sub>3</sub> saturation level. The field measurements will compare background concentrations of TA and DIC to their levels after events that entrain large amounts of sediments to the seawater, namely dust storms, flash floods and sediment resuspension by storms. In addition, material from sediment traps will be examined for mineralogical and morphological changes resulting from heterogeneous interactions. These data will be collected from the northern Gulf of Aqaba and the coast of the eastern Mediterranean. Both environments receive large amounts of solids by the above-mentioned mechanisms, and are supersaturated with respect to CaCO<sub>3</sub>. These characteristics make them prone to be affected by heterogeneous reactions, and thus, ideal "indicators" for a first systematic study on the in-situ effects of heterogeneous reactions. The rate functions that will be determined in this study could be used in future studies as input to numerical models that will quantify the basin-scale effects of heterogeneous reactions on TA and DIC.

## Research Grants and Fellowships from the Internal Fund

The OUI makes funding available to its researchers for the purpose of leveraging their research. In the past year, 99 proposals were awarded funding from the internal fund.

Following is a brief description of one of the studies awarded funding from the internal fund this year:

**Dr. Idit Gil** and **Dr. Dana Kaplan**, "Beauty and sexual abuse during the Holocaust: A resource for survival and an expedient for destruction."

Under extreme circumstances such as those endured by Jews in the Holocaust, beauty (or lack thereof) might have been one factor that separated those who lived from those who died. Moreover, given the connections between beauty, sexual exploitation, and social stigma, survivors were

sometimes forced to lead their post-Holocaust life with a cloud of suspicion hanging over their heads, that they supposedly traded their good looks in return of other favors that consequently has earned them their life. Based on testimonies given at Nazi and Jewish leaders' trials, as well as early and late memoirs and testimonies, the research looks at the dynamic, oftentimes agentic space that spans between perpetrators and victims in order to study the double-edged sword of beauty. We ask: how being pretty - or being acknowledged as one - has either helped Jewish women to survive during the Holocaust, or, conversely, brought about their persecution and/or expedited their annihilation. By bringing together history and sociology, we unpack the ways in which women's and girls' beauty functioned as a resource and a measure of human value, created embodied economies of survival, or defied Nazi racial ideology.

## Honors and Awards

**Prof. Ina Blau** and **Dr. Tamar Shamir-Inbal**, Department of Education and Psychology, jointly with Eynat Leykin of the Ministry of Education, won the Best Research Idea prize from the Awards Committee and IIAKM for the KM Conference 2020, Lisbon, Portugal (virtual), for their study "How to train for making and tinkering in formal education? Professional development of code and robotics teachers through MOOC to promote self-regulated learning."

**Dr. Diamanta Benson-Karhi**, Department of Mathematics and Computer Science, won a certificate of appreciation from the Israel Society for Quality for her outstanding activity to promote the field of quality in Israel.

**Prof. Avriel Bar-Levav**, Department of History, Philosophy and Judaic Studies, won the Am Ve-olam Prize for an excellent paper in history, by the Historical Society of Israel, for the article "Textual intimacy and the bond of reading between the expulsion from Spain and Amsterdam,"

in *Paths to Modernity: A Tribute to Yosef Kaplan*, eds. Avriel Bar-Levav, Claude Stuchinsky, and Michael Heyd, Jerusalem: Zalman Shazar Center, 2018.

**Prof. Izhak Berkovich**, Department of Education and Psychology, received the 2020 Emerging Scholar Award from the Educational Change Special Interest Group of the American Educational Research Association (AERA).

**Dr. Ravid Doron**, Department of Education and Psychology, won first prize for an excellent poster at the Symposium on Epigenetics of the Incubation of Stress and Addiction Disorders for the joint research of Motty Franko, Gilad Ben-David, Noa Gueron-Sela and Ravid Doron on "Behavioral and biological implication of preterm birth: A mouse model" (Bar Ilan University Brain Research Center).

For the same research, Dr. Doron and his colleagues also won third prize for excellent poster from the Israel Society for Biological Psychiatry at the 23<sup>rd</sup> annual meeting of the Israel Society for Biological Psychiatry in Kfar Blum, and second prize for excellent poster from the Israeli Society for Neuropsychology at the annual meeting of the Israel Society for Neuropsychology, The Open University.

**Dr. Inna Leykin**, Department of Sociology, Political Science and Communication, won The Louis Guttman Best Article award by the Israeli Sociological Association, for the article: "When Borders Migrate: Reconstructing the Statistical Category of International Migrant," co-authored with Anastasia Gorodzeisky, *Sociology* 54 (1), 2020: 142-158.

**Dr. Levi Spectre**, Department of History, Philosophy and Judaism, was selected to join the international and interdisciplinary research project "Knowledge Resistance: Causes, Consequences, and Cures," headed by Stockholm University and funded by Riksbankens Jubileumsfond (RJ), Sweden.

**Dr. Salwa Alinat-Abed**, Department of History, Philosophy, and Judaism, won a postdoctoral fellowship from the Dan David Fund and Tel Aviv University, for the study of Islamic feminism in Israel.

**Dr. Rinat Shaanan-Satchi**, Department of Management and Economics, and co-writers Prof. Jacob Hornik and Dr. Matti Rachamim won the 2020 Emerald Literati Awards prize of the journal *Internet Research*, for the article "The joy of pain: A gloating account of negative electronic word-of-mouth communication following an organizational setback," *Internet Research*, Vol. 29 No. 1, pp. 81-103.

**Dr. Tamar Shamir-Inbal**, Department of Education and Psychology, received an excellence scholarship from the Open University Dean of Academic Studies for initiatives and renewal in teaching.

**Orly Weisser**, a Ph.D. student at the OUI Open Laboratory of Media and Information, won the Israeli President's scholarship for excellence and scientific innovation, for "Information Analysis Skills as a Civil Empowerment Tool – the Watchdog of Journalism, Democracy, and People's Sovereignty."

## The Open University of Israel Press – Lamda Scholarship

The Open University of Israel Press - Lamda Scholarship publishes original research and other academic titles in all disciplines under rigorous academic review. The OUI Press is chaired by Prof. Tamar Hermann. Serving with her on the editorial board are Prof. Anat Barnea, Prof. Inbal Ofer, Prof. Tzahi Weiss, and Prof. Motti Regev from the Open University; Prof. Mahmoud Ganaim and Prof. Menachem Mautner from Tel Aviv University; Prof. Menachem Klein from Bar-Ilan University; and Prof. Sheizaf Rafaeli from Shenkar College.

Eight new titles were published in 2020:

1. Gila Ballas, *Composition in Painting*
2. Sigal Davidi, *Building a New Land: Women Architects and Women's Organizations in Mandatory Palestine* (winner of the Joseph and Dorothy Goldberg Charitable Trust Prize 2017)
3. Tal Dekel, *Women and Old Age: Gender and Ageism as Reflected in Israeli Art* (winner of the Joseph and Dorothy Goldberg Charitable Trust Prize 2017)
4. Natan Efrati, *Ideology and Reality: American Jewry and the Yishuv in the Late Ottoman Period*
5. Haggai Erlich, *Delusional Annexations: in the Middle East* (first volume in the Israelis book series, published with the Ben-Gurion Institute for the Study of Israel and Zionism at Ben-Gurion University of the Negev).
6. Tama Halfin, *Home by the Sea: Everyday Life in The Kibbutz of the Third Millennia* (winner of the Joseph and Dorothy Goldberg Charitable Trust Prize 2016)

7. Jehuda Hartman, *Patriots without Homeland: Hungarian Jewish Orthodoxy from Emancipation to Holocaust*
8. Gideon Katz, *In Silence and Out Loud: Yishayahu Leibowitz in Israeli Context* (second volume in the Israelis series)

Gideon Katz's manuscript "In silence and Out Loud: Yishayahu Leibowitz in Israeli Context" won a support grant from the Mifal HaPays Council for Culture and the Arts. The grant is part of the support dedicated to publishing non-fiction, essays and research books in Hebrew, and is a further indication of the quality and importance of Lamda Scholarship Press.

During the year, many manuscripts were submitted to the editorial board. After rigorous academic review, seven were approved for publication in 2021.

This year, the sixth round of the Joseph and Dorothy Goldberg Charitable Trust prize for original, research-based manuscripts of interest to the researcher community and to the general public was publicized. The list of award winners will be announced in early 2021.

