

Shira Weingarten-Gabbay

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EDUCATION AND RESEARCH EXPERIENCE

- 2022 - present** **Visiting Postdoctoral Fellow.** The Rockefeller University
Advisor: Prof. Charles Rice, Laboratory of Virology and Infectious Disease
- 2017 - present** **Postdoctoral Fellow.** The Broad Institute of MIT and Harvard
Advisor: Prof. Pardis Sabeti, Infectious Disease & Microbiome Program
Research topic: Viral non-canonical ORFs as a hidden source for T cell epitopes
- 2011 – 2017** **PhD in Life Sciences (Systems Biology).** Weizmann Institute of Science
Advisor: Prof. Eran Segal, Department of Computer Science & Applied Mathematics and Department of Molecular Cell Biology
Thesis: Unraveling the regulatory code of transcription and translation in the human genome and viruses
- 2008 – 2011** **MSc in Life Sciences (Molecular Genetics).** Weizmann Institute of Science
Advisor: Prof. Adi Kimchi, Department of Molecular Genetics
Thesis: The translation initiation factor DAP5 promotes IRES-driven translation of p53 mRNA
- 2005 - 2008** **BSc in Medical Sciences** (*magna cum laude*). Hadassah Medical School, Hebrew University

AWARDS AND HONORS

- The RNA Society Eclipse award for innovation in high throughput Biology. 2023
- Leading Edge Fellow. 2022
- BroadIgnite award. The Broad Institute. 2021
- 40-under-40 list of Israel's most promising young people. Globes Magazine. 2020
- Human Frontier Science Program (HFSP) Long-Term fellowship. 2019
- Life Science Research Foundation (LSRF) fellowship. (declined)
- The Zuckerman STEM Leadership Program for Israeli Postdoctoral Fellowship. 2019
- SPARC catalytic funding. The Broad Institute. Co-investigator. 2018
- EMBO Long-Term fellowship. 2018 (non-stipendiary fellow).
- Gruss-Lipper postdoctoral fellowship. 2018
- Rothschild postdoctoral fellowship. 2017.
- Israel national postdoctoral award for advancing women in science. 2017
- The Israeli council for higher education (VATAT) fellowship for excellent women postdocs. (declined)
- The Lady Anne Chain memorial prize for academic excellence. Finberg Graduate School. 2017
- Travel grant award - EMBO workshop on Antigen Processing and Presentation. 2017
- Travel scholarship for the McGill-Weizmann Cancer Symposium in Montreal. 2016
- Clore PhD fellowship. 2013
- Student project grant award of the Azrieli Center for Systems Biology. 2012, renewed in 2014
- Student research grant award of the Kahn Center for Systems Biology. 2011
- Rector of the university scholarship for outstanding students. Hebrew University of Jerusalem. 2008
- Dean of the faculty scholarship for outstanding students. Faculty of Medicine, Hebrew University. 2007
- Dean of the faculty excellence list. Faculty of Medicine, Hebrew University of Jerusalem. 2006, 2007, 2008
- Amos De Shalit Ulpana for outstanding students in life sciences. Weizmann Institute of Science. 2007

FIRST/CO-FIRST AUTHOR PUBLICATIONS

NCBI My Bibliography: <https://www.ncbi.nlm.nih.gov/myncbi/1DyhuytwgNF5r/bibliography/public/>

* co-first author;

^ corresponding authors;

lead contact

1. **Weingarten-Gabbay S[^]**, Bauer MR, Stanton AC, Klaeger S, Verzani EK, López D, Clauser KR, Carr SA, Abelin JG, Rice CM, Sabeti PC[^]. Pan-viral ORFs discovery using Massively Parallel Ribosome Profiling. **bioRxiv**. 2023
2. **Weingarten-Gabbay S^{*^}#**, Chen D-Y*, Sarkizova S*, Taylor HB, Gentili M, Pearlman LR, Bauer MR, Rice CM, Clauser KR, Hachoen N, Carr SA, Abelin JG, Saeed M, Sabeti PC. The HLA-II immunopeptidome of SARS-CoV-2. **Cell Reports**. 2023
3. **Weingarten-Gabbay S^{*^}#**, Pearlman LR*, Chen D-Y, Klaeger S, Taylor HB, Welch NL, Keskin DB, Carr SA, Abelin JG, Saeed M, Sabeti PC. HLA-I immunopeptidome profiling of human cells infected with high-containment enveloped viruses. **STAR protocols**. 2022
4. **Weingarten-Gabbay S^{*^}#**, Klaeger S[^], Sarkizova S*, Pearlman LR, Chen D-Y, ..., Hachoen N, Carr SA, Abelin JG, Saeed M[^], Sabeti PC. Profiling SARS-CoV-2 HLA-I peptidome reveals T cell epitopes from out-of-frame ORFs. **Cell**. 2021 > [Cell cover](#), [HFSP highlight](#), [Broad Institute news](#), [Boston University news](#)
5. **Weingarten-Gabbay S^{*^}**, Nir R*, Lubliner S, Sharon E, Kalma Y, Weinberger A and Segal E[^]. Systematic interrogation of human promoters. **Genome Research**. 2019
6. Gritsenko AA*, **Weingarten-Gabbay S***, Elias-Kirma S, Nir R, de Ridder D and Segal E. Sequence features of viral and human internal ribosome entry sites predictive of their activity. **PLoS Comp Biol**. 2017
7. **Weingarten-Gabbay S**, Elias-Kirma S, Nir R, Gritsenko AA, Yakhini Z, Stern-Ginossar N, Weinberger A and Segal E. Systematic discovery of cap-independent translation sequences in human and viral genomes. **Science**. 2016 > [Perspective in Science](#), [Highlight in Cell Systems](#), [Faculty of 1000 review](#), [Weizmann Institute news](#)
8. **Weingarten-Gabbay S** and Segal E. Toward a systematic understanding of translational regulatory elements in human and viruses. **RNA Biology**. 2016.
9. **Weingarten-Gabbay S** and Segal E. The grammar of transcriptional regulation. **Human Genetics**. 2014
10. **Weingarten-Gabbay S** and Segal E. A shared architecture for promoters and enhancers. **Nature Genetics**. 2014 (News and Views on Core *et al.*)
11. **Weingarten-Gabbay S***, Khan D*, Liberman N, Yoffe Y, Bialik S, Das S, Oren M and Kimchi A. The translation initiation factor DAP5 promotes IRES-driven translation of *p53* mRNA. **Oncogene**. 2013

CONTRIBUTING AUTHOR PUBLICATIONS

12. Hernández G, García A, **Weingarten-Gabbay S**, Hussain T, Mishra RK, Amiri M, Lasko P, Moreno-Hagelsieb G, Ivanov IP, Dever T, Sonenberg N. Functional analysis of the AUG initiator codon context reveals a conserved motif that disfavors mRNA translation in eukaryotes. **NAR**. 2023
13. David M, Olender T, Mizrahi O, **Weingarten-Gabbay S**, Friedlander G, Savidor A, Levin Y, Salomon V, Stern-Ginossar N, Bialik S and Kimchi A. DAP5 drives translation of specific mRNA targets with upstream ORFs in human embryonic stem cells. **RNA**. 2022.
14. Chen CK, Cheng R, Demeter J, Chen J, **Weingarten-Gabbay S**, Jiang L, Snyder MP, Weissman JS, Segal E, Jackson PK and Chang HY. Structured elements drive extensive circular RNA translation. **Molecular Cell**. 2021.
15. Taylor HB, Klaeger S, Clauser KR, Sarkizova S, **Weingarten-Gabbay S**, Graham DB, Carr SA, Abelin JG. Mass spectrometry-based HLA-II peptidomics combined with multi-omics will aid the development of future immunotherapies. **Mol Cell Proteomics**. 2021

16. Finkel Y*, Mizrahi O*, Nachshon A, **Weingarten-Gabbay S**, Yahalom-Ronen Y, Tamir H, Achdout H, Melamed S, Weiss S, Israely T, Paran N, Schwartz M and Stern-Ginossar N. The coding capacity of SARS-CoV-2. **Nature**. 2020
17. Vainberg Slutskin I, **Weingarten-Gabbay S**, Nir R, Weinberger A and Segal E. Unraveling the determinants of microRNA mediated regulation using a massively parallel reporter assay. **Nature Communications**. 2018
18. Keren L*, van Dijk D*, **Weingarten-Gabbay S**, Davidi D, Jona G, Weinberger A, Milo R and Segal E. Noise in gene expression is coupled to growth rate. **Genome Research**. 2015

PATENTS

- U.S. Non-Provisional Patent Application No. 17/463,429. “Profiling SARS-CoV-2 HLA-I peptidome reveals T cell epitopes from out-of-frame ORFs”
- U.S. Provisional Application No. 63/507,324. “The HLA-II immunopeptidome of SARS-CoV-2”
- U.S. Provisional Application No. 63/540,279. “Pan-viral ORFs discovery using Massively Parallel Ribosome Profiling”

INVITED SEMINARS AND ORAL PRESENTATIONS

- Chemical Biology Supergroup. The Broad Institute, Cambridge, MA. 2024
- RNA Society Meeting. Singapore. 2023 (Awardee talk)
- Gordon Research Conference on Viruses and Cells. Castelldefels, Spain. 2023 (Selected talk)
- University of Cambridge Virology Seminar. Cambridge, UK. 2023 (Invited seminar, Virtual)
- NYC RNA Symposium. New York, NY. 2023 (Selected talk)
- Precision Public Health Symposium. Cambridge, MA. 2023 (selected talk)
- Infectious Disease and Microbiome Program (IDMP) seminar. The Broad Institute, Cambridge, MA. 2023
- Translational Control Meeting. Cold Spring Harbor Laboratory, NY. 2022 (Selected talk)
- Leading Edge Symposium. 2022 (Awardee talk)
- The Rockefeller University Chris Browne seminar series. NY. 2022
- Fred Hutch computational biology seminar. Seattle, WA. 2022 (Invited seminar, Virtual)
- The annual Broad retreat. Cambridge, MA. 2021 (Selected talk)
- NIAID GCID annual meeting. 2021(Virtual)
- Institut de Génétique Moléculaire de Montpellier (IGMM) seminar. France. 2021 (Invited seminar, Virtual)
- Massachusetts Consortium on Pathogen Readiness (MassCPR). 2021(Virtual)
- Biology Postdocs & Associate-Scientists seminar. Columbia University, NY. 2021 (Invited seminar, Virtual)
- World Health Organization (WHO) working group on COVID-19 assays. 2020 (Invited seminar, Virtual)
- ScienceAbroad life sciences symposium. 2020 (Selected talk, Virtual)
- Genomic Center for Infectious Diseases (GCID). The Broad Institute, Cambridge, MA. 2020
- Bioclub computational biology seminar. The Hebrew University of Jerusalem, Israel. 2015 (Invited seminar)
- Computational RNA Biology meeting. Hinxton, UK. 2014 (Invited speaker)
- Genomics and Epigenomics club. Weizmann Institute of Science, Israel. 2014
- FEBS Workshop: Translating epigenomes into function. Capri, Italy. 2013 (Invited speaker)
- ENCODE Consortium meeting. Palo Alto, CA. 2013 (Lightning talk)

PROFESSIONAL SERVICE

- Co-founder of an international [Systems Virology Journal Club](#) with >800 registrants. 2020-
- Topic editor for special research issue on "Systems Viral Immunology" in *Frontiers in Virology*.
- Peer review for scientific journals: *Science*, *Nature*, *Cell*, *Nature Genetics*, *Nature Communications*, *Nature Plants*, *Genome Research*, *iScience*, and *Molecular Cell*.

TEACHING EXPERIENCE

- Teaching "Bioinformatics: Databases, Tools and Current Research". The Rothschild-Weizmann program for the advancement of science teachers (MSc Track), Feinberg Graduate School. 2013-2016

SCIENCE COMMUNICATION AND OUTREACH

- The United Nations (UN) initiative to counter misinformation around COVID-19 vaccines. [YouTube](#). 2020
- Participating in an experts panel on COVID-19 vaccines in Israel. [Facebook](#). 2020
- Engaging female high school students with STEM. Academic Community for Israeli Society (Bashaar). 2017
- Tutor in the "Sparks of Science" program for the scientific and technological advancement of high school students from Ethiopia. Davidson Institute. 2011-2015.
- 'Science on Tap' lecturer. Popular science lectures in bars and cafés. Israel. 2012-2014.