

Yoav Ram — CV

School of Zoology, Faculty of Life Sciences, Tel Aviv University

yoav@yoavram.com www.yoavram.com +972 (545) 383136

Education

2010–2016	PhD , Direct PhD track, Tel Aviv University Mentor — Lilach Hadany Thesis — <i>The Evolution of Stress-Induced Mutagenesis: Causes and Consequences</i>
2010–2012	MSc , Direct PhD track, Tel Aviv University Theoretical & Computational Biology
2007–2010	BSc , Biology and Mathematics <i>magna cum lauda</i> , Tel Aviv University

Employment

2020–	Senior lecturer School of Zoology, Faculty of Life Sciences, Tel Aviv University Sagol School of Neurosciences, Tel Aviv University Safra Center for Bioinformatics (affiliate), Tel Aviv University
2018–2020	Senior lecturer School of Computer Science, Reichman University (IDC Herzliya)
2016–2018	Postdoctoral fellow Department of Biology, Stanford University Center for Computational, Evolutionary, and Human Genomics, Stanford University Mentor — Marcus W. Feldman
2016	Postdoctoral fellow Department of Plant Sciences, Faculty of Life Sciences, Tel Aviv University
2016	Data scientist , Neura
2010–2016	Ph.D. student Department of Plant Sciences, Faculty of Life Sciences, Tel Aviv University Mentor — Prof. Lilach Hadany
2008–2010	Research assistant Department of Plant Sciences, Faculty of Life Sciences, Tel Aviv University Mentor — Prof. Lilach Hadany
2008–2009	Software developer , NetAlign
2006–2008	Software developer , XLNet

Grants & Awards

2020	Israel Science Foundation (ISF) KillCorona research grant, 2020-2022
*	John Templeton Foundation grant, Co-PI, 2021-2024
*	Minerva Center on Lab Evolution, Co-PI, 2020-2025
*	Excellence in Teaching award from Reichman University
2019	Israel Science Foundation (ISF) Personal Research grant, 2019-23
*	AWS Cloud Credits for Research program
*	NVIDIA Accelerated Data Science GPU grant
2016-17	Postdoctoral fellowship from the Stanford Center for Computational, Evolutionary, and Human Genomics
2015-16	Dean's Award for Excellence in Teaching, Engineering Faculty, Tel Aviv University
2015	The Israel Society for Microbiology travel award
*	The Anat Karuskopf Fund travel award
*	The Manna Institute for Plants BioSciences travel award
2014	The Israeli Ministry of Science and Technology International Education Scholarship
2013-2014	Research achievements scholarship, Life Sciences Faculty, Tel Aviv University.
*	Fellowship from the Manna Program in Food Safety and Security
2013	The Manna Institute for Plants BioSciences travel award
2012	Registration & accommodation waiver for PopGroup45 in Nottingham, UK
*	Crowd-funded travel expenses for PopGroup45 via The #SciFund Challenge
2011-2012	Research achievements scholarship, Life Sciences Faculty, Tel Aviv University
2011	Society for the Study of Evolution International travel award
2010-2015	Direct Ph.D. scholarship , Department of Plant Sciences, Tel Aviv University
2010	Society for Molecular Biology & Evolution Undergraduate Diversity Mentoring Program award
*	Best poster award at Mathematical Methods in Systems Biology workshop, Tel Aviv, Israel
2009	Amos de-Shalit Ulpana for excellent students in Life Sciences, Weizmann Institute.

Publications *equal contribution, students

Preprints & Submitted

Avecilla, G., Chuong, J.N., Li, F., Sherlock, G., Gresham, D., **Ram, Y.** *Simulation-Based Inference of Evolutionary Parameters from Adaptation Dynamics Using Neural Networks*. bioRxiv. DOI: [10.1101/2021.09.30.462581](https://doi.org/10.1101/2021.09.30.462581)

Gurevich, Y., **Ram, Y.**, Hadany, L. *Modeling the evolution of SARS-CoV-2 under non-pharmaceutical interventions*. medRxiv. DOI: [10.1101/2021.02.20.21252133](https://doi.org/10.1101/2021.02.20.21252133)

Lobinska, G., Pilpel, Y., **Ram, Y.** *Epigenetically Inherited Mutation Rates Give Rise to Highest Rates of Evolutionary Adaptation*. Preprint.

Cohen, O. **Ram, Y.**, Hadany, L., Gafny, S., Geffen, E. *The effect of habitat and climatic factors on microsatellite allele length variation*. Submitted.

Published & Accepted

Kohanovski, I., Obolski, U., **Ram, Y.** (2022) *Inferring the effective start dates of non-pharmaceutical interventions during COVID-19 outbreaks*. International Journal of Infectious Diseases. DOI: [10.1016/j.ijid.2021.12.364](https://doi.org/10.1016/j.ijid.2021.12.364)

Denton, K.K., **Ram, Y.**, Feldman, M.W. (2021) *Conformity and content-biased cultural transmission in the evolution of altruism*. Theoretical Population Biology. DOI: [10.1016/j.tpb.2021.10.004](https://doi.org/10.1016/j.tpb.2021.10.004)

Cohen, O., **Ram, Y.**, Hadany, L., Gafny, S., Geffen, E. (2021) *Annual climatic fluctuations and short-term variations in population genetics*. Scientific Reports. DOI: [10.1038/s41598-021-92696-w](https://doi.org/10.1038/s41598-021-92696-w)

Gutierrez, R., **Ram Y.**, Berman, J., de Sousa, K.C.M., Nachum-Biala, Y., Britzi, M., Elad, D., Glaser, G., Covo, S., Harrus, S. (2021) *Adaptive resistance mutations at supra-inhibitory concentrations independent of SOS mutagenesis*. Molecular Biology and Evolution. DOI: [10.1093/molbev/msab196](https://doi.org/10.1093/molbev/msab196)

Cohen, D., Lewin-Epstein, O., Feldman, M.W., **Ram, Y.** (2021) *Non-Vertical Cultural Transmission, Assortment, and the Evolution of Cooperation*. Proceedings of the Royal Society B. DOI: [10.1098/rspb.2020.3162](https://doi.org/10.1098/rspb.2020.3162)

Arthur, R.F., Jones, J.H., Bonds, M.H., **Ram, Y.**, Feldman, M.W. (2021) *Adaptive social contact rates induce complex dynamics during epidemics*. PLOS Computational Biology. DOI: [10.1371/journal.pcbi.1008639](https://doi.org/10.1371/journal.pcbi.1008639)

Kolodny, O., Berger, M., Feldman, M.W., **Ram, Y.** (2020) *A new perspective for mitigation of SARS-CoV-2 infection: priming the immune system for attack*. Open Biology. DOI: [10.1098/rsob.200138](https://doi.org/10.1098/rsob.200138)

Krebs Denton, K., **Ram, Y.**, Liberman, U., Feldman, M.W. (2020) *Cultural evolution of conformity and anticonformity*. Proceedings of the National Academy of Sciences USA. DOI: [10.1073/pnas.2004102117](https://doi.org/10.1073/pnas.2004102117)

Ram, Y., Obolski, U., Feldman, M.W., Berman, J. and Hadany, L. (2020) *Reply to Balsa-Canto et al.: Growth models are applicable to growth data, not to stationary-phase data*. Proceedings of the National Academy of Sciences USA. DOI: [10.1073/pnas.1917758117](https://doi.org/10.1073/pnas.1917758117)

Liberman, U., **Ram, Y.**, Altenberg, L., Feldman, M.W. *The Evolution of Frequency-Dependent Cultural Transmission*. Theoretical Population Biology. DOI: [10.1016/j.tpb.2019.12.004](https://doi.org/10.1016/j.tpb.2019.12.004)

Ram, Y., Dellus-Gur, E., Bibi, M., Karkare, K., Obolski, U., Feldman, M.W., Cooper, T.F., Berman, J. and Hadany, L. (2019) *Predicting Microbial Growth in a Mixed Culture from Growth Curve Data*. Proceedings of the National Academy of Sciences USA, 201902217. DOI: [10.1073/pnas.1902217116](https://doi.org/10.1073/pnas.1902217116).

Ram, Y., Hadany, L. (2019) *Evolution of stress-induced mutagenesis in the presence of horizontal gene transfer*. The American Naturalist, 194:1. DOI: [10.1086/703457](https://doi.org/10.1086/703457).

Zinger, E., Guiejman, A., Obolski, U., **Ram, Y.**, Ruby, E., Binder, M., Yechieli, N., Ohad, N., Hadany L. (2019) *Less fit Lamium amplexicaule plants produce more dispersible seeds*. Scientific Reports. DOI: [10.1038/s41598-019-42158-1](https://doi.org/10.1038/s41598-019-42158-1).

Ram, Y., Liberman, U., Feldman, M.W. (2019) *Vertical and oblique cultural transmission fluctuating in time and in space*. Theoretical Population Biology, 125:11-19. DOI: [10.1016/j.tpb.2018.11.001](https://doi.org/10.1016/j.tpb.2018.11.001).

Ram, Y., Liberman, U., Feldman, M.W. (2018) *Evolution of vertical and oblique transmission under fluctuating selection*. Proceedings of the National Academy of Sciences USA, 201719171. DOI: [10.1073/pnas.1719171115](https://doi.org/10.1073/pnas.1719171115).

Ram, Y., Altenberg, L., Liberman, U., Feldman, M.W. (2018) *Generation of variation and a modified mean fitness principle: Necessity is the mother of genetic invention*. Theoretical Population Biology, 123:1-8. DOI: [10.1016/j.tpb.2018.02.004](https://doi.org/10.1016/j.tpb.2018.02.004).

Harari, Y., **Ram, Y.**, Rappoport, N., Hadany, L., Kupiec, M. (2018) *Spontaneous changes in ploidy are common in yeast*. Current Biology, 28:111. DOI: [10.1016/j.cub.2018.01.062](https://doi.org/10.1016/j.cub.2018.01.062).

Harari, Y., **Ram, Y.**, Kupiec, M. (2018) *Frequent ploidy changes in growing yeast cultures*. Current Genetics, 0:14.. DOI: [10.1007/s00294-018-0823-y](https://doi.org/10.1007/s00294-018-0823-y).

Obolski, U.*, **Ram, Y.***, Hadany, L. (2018) *Evolution on rugged adaptive landscapes*. Reports on Progress in Physics, 81: 12602. DOI: [10.1088/1361-6633/aa94d4](https://doi.org/10.1088/1361-6633/aa94d4).

Dellus-Gur, E., **Ram, Y.**, Hadany, L. (2017) *Errors in mutagenesis and the benefit of cell-to-cell signalling in the evolution of stress-induced mutagenesis*. Royal Society Open Science, 4:170529. DOI: [10.1098/rsos.170529](https://doi.org/10.1098/rsos.170529).

Obolski, U., Lewin-Epstein, O., Even-Tov, E., **Ram, Y.**, Hadany, L. (2017) *With a little help from my friends: cooperation can accelerate the rate of adaptive valley crossing*. BMC Evolutionary Biology, 17:143. DOI: [10.1186/s12862-017-0983-2](https://doi.org/10.1186/s12862-017-0983-2).

Rougier, N.P., ... , **Ram, Y.**, et al. (2017) *Sustainable computational science: the ReScience initiative*. PeerJ Computer Science, 3: e142. DOI:[10.7717/peerj-cs.142](https://doi.org/10.7717/peerj-cs.142).

Ram, Y., Hadany, L. (2016) *Condition-dependent sex: who does it, when, and why?*. Philosophical Transactions of the Royal Society B, 371: 20150539. DOI: [10.1098/rstb.2015.0539](https://doi.org/10.1098/rstb.2015.0539).

Ram, Y., Hadany, L. (2015) *The probability of improvement in Fisher's geometric model: a probabilistic approach*. Theoretical Population Biology, 99: 1-6. DOI: [10.1016/j.tpb.2014.10.004](https://doi.org/10.1016/j.tpb.2014.10.004).

Ram, Y., Hadany, L. (2014) *Stress-induced mutagenesis and complex adaptation*. Proceedings of the Royal Society B. 281: 20141025. DOI: [10.1098/rspb.2014.1025](https://doi.org/10.1098/rspb.2014.1025).

Gueijman, A., Ayali, A., **Ram, Y.**, Hadany, L. (2013) *Dispersing away from bad environments: The evolution of fitness-associated dispersal (FAD) in homogeneous environments*. BMC Evolutionary Biology, 13:125. DOI: [10.1186/1471-2148-13-125](https://doi.org/10.1186/1471-2148-13-125).

**Datasets
& Software**

Ram, Y., Hadany, L. (2012) *The evolution of stress-induced hypermutation in asexual populations*. Evolution 66: 2315-2328. DOI: [10.1111/j.1558-5646.2012.01576.x](https://doi.org/10.1111/j.1558-5646.2012.01576.x).

Ram, Y., Hadany, L. (2019) *Data from: Evolution of Stress-Induced Mutagenesis in the Presence of Horizontal Gene Transfer*. Dryad Digital Repository. DOI:[10.5061/dryad.5t9211b](https://doi.org/10.5061/dryad.5t9211b).

Ram, Y., Hadany, L. (2019) *Curveball: Predicting microbial growth in a mixed culture from growth curve data*. Zenodo. [10.5281/zenodo.3263379](https://doi.org/10.5281/zenodo.3263379).

Ram, Y., Hadany, L. (2019) *Mamba: Version Baptiste*. Zenodo. [10.5281/zenodo.2563549](https://doi.org/10.5281/zenodo.2563549).

Ram, Y., Zinger, E., Hadany, L. (2017) *Sid: Image processing for seed images*. Zenodo. DOI: [10.5281/zenodo.344898](https://doi.org/10.5281/zenodo.344898).

Ram, Y., Hadany L. (2014) *Data from: Stress-induced mutagenesis and complex adaptation*. Dryad Digital Repository. DOI: [10.5061/dryad.3066j](https://doi.org/10.5061/dryad.3066j).

Ram, Y., Guiejman, A. and Hadany L. (2014) *proevolution simulation: Version Dobzhansky*. ZENODO. DOI: [10.5281/zenodo.11400](https://doi.org/10.5281/zenodo.11400).

Ram, Y., Hadany, L. (2014) *proevolution simulation: Version Charles*. ZENODO. DOI: [10.5281/zenodo.11401](https://doi.org/10.5281/zenodo.11401).

Teaching Experience

2018–2020	Senior Lecturer , Reichman University Introduction to Computer Science (undergraduate mandatory course) Scientific Computing with Python (advanced course) Computational Models in Biology (graduate seminar)
2016–	Technical Instructor , Industry Designed and developed multiple scientific programming workshops Taught 1-5 day workshops in Israel and in California python.yoavram.com
2013-2015	Lecturer , Tel Aviv University Python Programming for Engineers (Engineering Faculty) Python Programming for Biologists (Life Sciences Faculty) Introduction to Programming for Engineers (summer introductory course) Gentle Introduction to Programming (summer introductory course)
2013-2016	Mentoring of undergraduate and graduate students at Hadany Lab Supervised five undergraduate students doing research projects Participated in mentoring of three postgraduate students
2011-2015	Teaching Assistant , Python Programming for Engineers, Tel Aviv University Python Programming for Engineers (Engineering Faculty) Extended Introduction to Computer Science (School of Computer Science) Evolution (Life Sciences Faculty)

Selected Presentations

- 2021 Invited speaker, *Israeli Society for Evolutionary Biology conference*, Weizmann Institute
 - * Oral presentation, *Culture Conference 2021*, virtual conference
 - * Oral presentation, *Society of Mathematical Biology 2021*, virtual conference
- 2020 Invited speaker, *Gruter Institute Squaw Valley Conference on The Evolution of Cooperation*, virtual conference
 - * Poster presentation, *EMBL Conference on Molecular Mechanisms in Evolution and Ecology*, virtual conference
 - * Invited speaker, *TAU Theory-fest*, Tel Aviv University
 - * Invited speaker, *The Language of Evolution & Evolution of Language conference*, Weizmann Institute
 - * Oral presentation, *FISEB / ILANIT*, Eilat.
- 2019 Oral presentation, ***Gordon Research Conference*** on Molecular Mechanisms in Evolution, Stonehill College, Easton, MA, USA
 - * Oral presentation, *Israel Society for Microbiology* annual meeting, Weizmann Institute
 - * Invited speaker, *Socio-Technological Evolution of the Human Species* workshop, Safed, Israel
 - * Seminar, *Center for Genomics and Systems Biology*, New York University, New York
 - * Session chair & Oral presentation, the ***First Meeting of the Israeli Society for Evolutionary Biology***, Steinhardt Museum of Natural History, Tel Aviv
 - * Poster presentation by student, the *Israeli Society for Evolutionary Biology conference*, Steinhardt Museum of Natural History, Tel Aviv
 - * Poster presentation by student, *Genetics, Genomics & Evolution*, Tel Aviv University
- 2018 Invited speaker, *Genome Evolution Conference*, Weizmann Institute
- 2017 Oral presentation, *Evolgenome* seminar, Stanford University
 - * Poster, *Gordon Research Conference on Biological Mechanisms in Evolution*, Stonehill College, Easton, MA, USA
 - * Oral presentation, *Israel Society for Microbiology* annual meeting.
 - * Oral presentation, *FISEB / ILANIT*, Eilat.
- 2016 Seminar, the *Instituto Gulbenkian de Ciência*, Portugal.
- 2015 Oral presentation, ***Gordon Research Conference*** on Biological Mechanisms in Evolution, Stonehill College, Easton, MA, USA
 - * Poster at the *"Forecasting Evolution?"* SFB 680 conference in Lisbon, Portugal
 - * Seminar, *Institute of Science and Technology*, Austria
 - * Short oral presentation, *Two2Many* Systems Biology Conference, Weizmann Institute
- 2013 Poster, *ESEB 2013* in Lisbon, Portugal
 - * Poster, *Gordon Research Conference on Biological Mechanisms in Evolution*, Stonehill College, Easton, MA, USA
 - * Oral presentation, 5th Annual *SIDEER Graduate Symposium*, Ben-Gurion University of the Negev, Sede-Boqer Campus

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| 2012 | Oral presentation, <i>Genetics, Genomics, and Evolution</i> , Ben-Gurion University of the Negev. DOI: 10.6084/m9.figshare.96049 . |
| * 2012 | Oral presentation, PopGroup 45 in Nottingham, UK. DOI: 10.6084/m9.figshare.95939 . |
| 2011 | Poster, <i>ESEB 2011</i> in Tübingen, Germany. F1000 Posters 2011, 2: 1484. |
| 2010 | Poster, <i>SMBE 2010</i> in Lyon, France. |
| as undergrad | Poster, <i>MMSB</i> in Tel Aviv, Israel, 2010 – Best poster award |

Other Academic Activities

Service	
2020	Program committee & Session chair, <i>Second Meeting of the Israeli Society for Evolutionary Biology</i>
*	<i>ISF</i> proposal reviewer
*	<i>BSF</i> proposal reviewer
*	MSc referee, The Hebrew University of Jerusalem & Tel Aviv University
*	PhD committee, Tel Aviv University
2019	Program committee & Session chair, <i>First Meeting of the Israeli Society for Evolutionary Biology</i>
*	PhD committee, Technion Israel Institute of Technology
2011-2014	Co-organizer, BioMath Student Journal Club , Tel Aviv University
Outreach	
2020	European Researchers' Night, Steinhardt Museum of Natural History
2019	Mentoring at DjangoGirls Ra'anana
2017	<i>Dive into Scientific Python</i> — Oral presentation, DataTalks meetup, Herzliya — YouTube
2016	<i>How to study evolution using Scientific Python</i> — Oral presentation, PyCon Israel , Tel Aviv — YouTube
2013	<i>Evolution and mutation in stressful times</i> — Oral presentation, The Evolution Series, Tel Aviv University Botanical Gardens — PDF
Popular Media	
	Even-Tov, E., Obolski, U., Gueijman, A., Ram, Y. , Hadany, L. (2010) <i>The Evolutionary Riddle of Sexual Reproduction</i> . Galileo, an Israeli journal for popular science: June, 32-41
Reviewer	
2011–	PLOS Genetics Proceeding of the Royal Society B Proceeding of the National Academy of Sciences USA Evolution Journal of Evolutionary Biology PLOS ONE Theoretical Population Biology Integrative Zoology Quarterly Review of Biology ReScience Israel Journal of Ecology & Evolution