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http://www.sommerlab.org/research/evolutionary-genomics-and-bioinformatics.html

Research

My current research revolves around understanding the importance of phenotypic plasticity in evolution and the causes of environmental robustness using different species of *Pristionchus* - a genus of nematodes - at Ralf Sommer's lab in Tübingen. In addition, I utilise toy models, such as computational model of RNA folding, to investigate evolutionary questions.

Academic Positions

March 2020 - Present	Postdoctoral Fellow, Department for Integrative Evolutionary Biology, Max-Planck-Institut für Biologie Tübingen, Tübingen, Germany

Past Academic Positions

Feb 2019 - Feb 2020	Postdoctoral Fellow, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran
Oct 2017 - Jan 2018	Research Fellow, Institute for Research in Fundamental Sciences (IPM), Funded by Iran's National Elites Foundation

Education

2011 - Dec 2016	PhD, Department of Biology and Biochemistry, University of Houston, TX, USA
2008 - 2011	BSc, Department of Biology, University of Tehran, Iran

Publications

2022	**A. Kalirad** and R. J. Sommer, *The art of mechanistic modeling in biology***,** Nature Computational Science*,* doi: https://doi.org/10.1038/s43588-021-00187-9
	M. Dardiry, V. Piskobulu, **A. Kalirad**, and R. J. Sommer, *Experimental and theoretical support for costs of plasticity and phenotype in a nematode cannibalistic trait*, bioRxiv, doi: https://doi.org/10.1101/2022.02.28.482339
2021	J. W. Lightfoot, M. Dardiry, **A. Kalirad**, S. Giaimo, G. Eberhardt, H. Witte, M. Wilecki, C. Rödelsperger, A. Traulsen, R. J. Sommer, *Sex or cannibalism: Polyphenism and kin recognition control social action strategies in nematodes*, Science Advances, doi: 10.1126/sciadv.abg8042

H. Safdari, **A. Kalirad**, and M. Sadeghi, *Population-level heterogeneity as a reflection of mixed strategy: A computational perspective on the Crabtree effect*, Journal of Theoretical Biology, doi: https://doi.org/10.1016/j.jtbi.2021.110912 (Co-first author)

S. Vafadar, M. Shahdoust, **A. Kalirad**, P. Zakeri, and Mehdi Sadeghi, *Competitive exclusion during co-infection as a strategy to prevent the spread of a virus: a computational perspective,* PLOS ONE, doi: https://doi.org/10.1371/journal.pone.0247200
(All author contributed equally)

2020 H. Safdari, **A. Kalirad**, C. Picioreanu, R. Tusserkani, B. Goliaei, M. Sadeghi, *Noise-driven cell differentiation and the emergence of spatiotemporal patterns*, PLOS ONE, doi: https://doi.org/10.1371/journal.pone.0232060 (Co-first author)

S. Vafadar, K. Kavousi, H. Safdari, **A. Kalirad**, M. Sadeghi, *From indication to decision: A hierarchical approach to model the chemotactic behavior of Escherichia coli*, Journal of Theoretical Biology, doi: https://doi.org/10.1016/j.jtbi.2020.110253

2016 **A. Kalirad** and R. B. R. Azevedo, *Spiralling complexity: a test of the snowball effect in a computational model of RNA folding*, Genetics, doi: https://doi.org/ 10.1101/076232. 2017 (chosen by the editors as one of the May 2017 Highlights)

2011 H. Asgharian, E. Elahi, **A. Kalirad**, and H. Hosseinzadeh Saha , *Sequence data on four genes suggest nominal Gerres lamentosus specimens from Nayband National Park in the Persian Gulf represent two distinct species*, Iranian Journal Of Animal Biosystematics 6(2): 1-11.

Books

2021 *How to Tame a Fox (and Build a Dog)*, Lee Dugatkin & Lyudmila Trut, Translated into Farsi by Ata Kalirad, Fatemi Publication, Tehran (authorized translation)

Other Professional Positions

2018 - Present Member of the Genetics & Biotechnology Committee at the Academy of Persian Language and Literature, Tehran, Iran

2017 - 2020 Member of the Scientific Committee for the Iranian Biology Olympiad (irBO) at the National Center for Development of Exceptional Talents, Tehran, Iran

2017 - 2018 Member of the Scientific Committee for the 29th International Biology Olympiad (IBO), Tehran, Iran

Teaching

Courses

2019	*Species and speciation*, Graduate-level course, University of Tehran, School of Biology (Department of Zoological Sciences), Spring 2019
	General Biology 2, Undergraduate-level course, University of Tehran, School of Biology (Department of Biotechnology), Spring 2019
2017 - 2020	Teaching various courses on evolution at the National Center for Development of Exceptional Talents, Tehran, Iran