Barbora Trubenová

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+41 44 632 39 13

WORK EXPERIENCE

2020-2022 **ETH:Postdoctoral researcher**
Modelling evolution of antimicrobial resistance in biofilms.

2020-2021 **University of Zurich: Postdoctoral researcher**
Kaleidoscope of adaptation: synthesizing different approaches to study adaptation in a changing environment. Awarded SNSF SPARK grant.

2019-2020 **University of Zurich: Visiting researcher**
Project FORGENET: Analysis of temporal and spatial data of silver fir abundance and diversity. Development of a software extension (in Python) to automatize the analysis for other species.

2019 **eduB, Slovakia: Founder and an acting member.** Publishing seminar and competition for high school students STEB (Selected Topics in Evolutionary biology). Overlooking and managing the publishing process.

2017-2020 **Institute of Science and Technology Austria: Postdoctoral researcher**
Project RACE: Mathematical modelling of adaptation in a changing environment. Simulations in Python. Awarded prestigious Marie Curie fellowship from European Union's Horizon 2020 research and innovation programme. Principal investigator; project design and management. Authored 3 publications published in high impact journals.

2017- **STEB: Founder and project manager of international competition in evolutionary biology.**
Leading a team of 20 volunteers (mostly scientists) in 4 countries. Grant acquisition and budgeting, popularisation, development of new collaborations.

2014-2016 **Institute of Science and Technology Austria: Postdoctoral researcher**.
Project SAGE: Runtime analysis of evolutionary algorithms. Simulations in Python. Developing a unifying framework for evolutionary processes. Interpretation of results in biological context. Part of an international and interdisciplinary consortium awarded funding from the European Union's Seventh Framework Programme for research, technological development, and demonstration. Co-authored several publications, presented results at international conferences.

2012-2014 **Martin Baron Lab, The University of Manchester: Mathematical modeller.** Mathematical modelling, simulations of signalling pathway and parameter optimization using Matlab. Developed a mathematical model that successfully explains complex pathways functioning, supported with experimental data. Published in high-impact journal *Cell*.

2011-2013 **The University of Manchester: Teaching assistant.** Teaching Statistics using R, Biomath practicals and other courses.

2011-2013 **The University of Manchester: Field course instructor.** Designed and taught course in statistics and experimental design in Belize, Ecuador and South Africa.

2010 **Hugh Piggins Lab, The University of Manchester: Data analysis using Matlab.** Employed various mathematical and statistical methods, such as singular value decomposition, data smoothing and Fourier transform to identify temporal and spatial patterns of neuronal activity in mice.

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EDUCATION

PhD 2014	**The University of Manchester.** *Evolutionary consequences of social interactions.* Supervisor: *Dr Reinmar Hager.* Mathematical modelling of social interactions. Analytical computations supported by agent based simulations.
MSc 2009	**Biophysics, Comenius University, Bratislava.** *Simulation of magnetic particles in magnetic field.* Awarded Dean's prize. Supervisor: *Prof. Peter Babinec.* Mathematical modelling using ordinary differential equations and finate element analysis, data analysis. Graduated 'with honours'.
2008	**ERASMUS** (European Community Action Scheme for the Mobility of University Students), Universiteit van Amsterdam. *Student exchange program, Biophysics.*
Bc 2008	**Genetics, Comenius University, Bratislava.**
2006	**CEEPUS** (Central European Exchange Program for University Studies), Charles University in Prague. *Student exchange program, Physics.*

TECHNICAL SKILLS

Programming languages	Python, R and Matlab
Research	Experimental design, data collection, data analysis, statistical hypothesis testing
Communication	Data visualisation, presentation skills at international scientific conferences, science communication to general public
Graphic software & Typography	Gimp, Inkscape, Corel Draw, Latex
Languages	Slovak (native), English (fluent), German and Spanish (beginner)

ACADEMICAL ACHIEVEMENTS AND AWARDS

2020	SSE Small Grants Program for Local and Regional Outreach Promoting the Understanding of Evolutionary Biology
2018	SSE Small Grants Program for Local and Regional Outreach Promoting the Understanding of Evolutionary Biology
2017	ESEB Outreach grant: STEB (Selected Topics in Evolutionary Biology)
2016	Marie Sklodowska Curie Individual Fellowship
2010	Grant of Comenius University: UK/432/2010
2009	International Student Science Conference. 1st prize
2008	University merit scholarship awarded to top 5% of students
2008	LPP/Erasmus (European Community Action Scheme for the Mobility of University Students) award
2006	University merit scholarship awarded to top 10% of students
2006	CEEPUS (Central European Exchange Program for University Studies) mobility award

VOLUNTARY WORK AND OTHER RELEVANT EXPERIENCE

2019	Teachers workshop at IST Austria: Co-organised workshop for biology teachers about teaching evolution.
2017-	Organizing Correspondence seminar and competition for high school students
2017-	Reviewer for Heredity, Evolution, Molecular Ecology and GECCO
2016-2017	Organised a series of volunteering events for IST employees, in collaboration with Austrian Red Cross, Medecins Sans Frontieres, PatInnen fuer Alle, WWF Austria and Missing Maps
2016	IST Austria Open Campus Day: *Breeding of dragons.*
2000-2009	volunteering for various science-focused non-profit organisations, e.g. *Trojsten*, *P-Mat*: organizing competitions in physics for talented high school students (International Young Physicists Tournament, Corresponding seminar in Physics), lecturing and supervising at science oriented camps.

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PUBLICATIONS

Peer reviewed publications:

2019 **Trubenová, B.** and Hager, R. Green beards in the light of indirect genetic effects. *Ecol Evol.*:00, 1–12.

2019 **Trubenová, B.**, Krejca, M.S., Lehre, P.K., Kötzing, T. Surfing on the seascape: Adaptation in a changing environmen. *Evolution*: 73, 1356-1374.

2018 Oliveto, P.S., Paixão, T., Pérez Heredia, J., Sudholt, D., and **Trubenová, B.** How to Escape Local Optima in Black Box Optimisation: When Non-Elitism Outperforms Elitism. *Algorithmica*: 80 (5), 1604-1633.†

2017 Perez-Heredia, J.*, **Trubenová, B.***, Sudholt, D., and Paixão, T. Selection limits to adaptive walks on correlated landscapes. *Genetics*: 205 (2), 803-825

2017 Paixão, T., Pérez Heredia, J., Sudholt, D., and **Trubenová, B.** Towards a runtime comparison of natural and artificial evolution. *Algorithmica*: 78 (2), 681-713†

2016 Oliveto, P.S. Paixão, T., Perez-Heredia, J., Sudholt, D., and **Trubenová, B.** When Non-Elitism Outperforms Elitism for Crossing Fitness Valleys. *GECCO 2016 Proceedings.* ACM Press.†

2015 Paixão, T., Badkobeh G., Barton, N., Çörüş, D., Dang, D., Friedrich, T., Lehre, P.K., Sudholt, D., Sutton, A.M. and **Trubenová, B.** Toward a unifying framework for evolutionary processes. *Journal of Theoretical Biology*: 383.‡

2015 Paixão, T., Perez-Heredia, J., Sudholt, D., and **Trubenová, B.** First Steps Towards a Runtime Comparison of Natural and Artificial Evolution. *GECCO 2015 Proceedings.* ACM Press. †

2015 **Trubenová, B.**, Novak, S. and Hager, R. Indirect genetic effects: Dynamics of interactions. *PLOS ONE*: 10(5), e0126907.

2014 Shimizu, H., Woodcock, S.A., Wilkin, M.B., **Trubenová, B.**, Monk, N.A.M. and Baron, M. Compensatory flux changes within an endocytic trafficking network maintain thermal robustness of Notch signaling. *Cell*: 157(5).1160-74.

2014 **Trubenová, B.** and Hager, R. Social selection and indirect genetic effects in structured populations. *Evolutionary Biology*: 41(1). 123-133.

2012 **Trubenová, B.** and Hager, R. Phenotypic and evolutionary consequences of social behaviours: Interactions among individuals affect direct genetic effects. *PLOS ONE*: 7(10), e476640.

2012 **Trubenová, B.** and Hager, R. Reproductive skew theory. *Encyclopedia of Life Sciences.* 1-9. Chichester: Wiley.

2010 Krajčovič, J., **Trubenová, B.**, Záhonová, K., Mateášiková, B., Vesteg, M. Copies of organellar genes in the nucleus: are Protista in this respect somehow unique? *Proceedings of Jirovec protozoa days.*

2010 **Trubenová, B.** Copies of chloroplast genes in the nucleus of the flagellate Euglena gracilis. *Proceedings of student science conference FNS UK.*

2009 **Trubenová, B.** Systems biology. *Biology Ecology Chemistry*: 13. 16-20. (In Slovak).

Science popularisation publications:

2017-2020 **STEB series:**
Uecker, H. and **Trubenová, B.** Viruses in the world of bacteria.
Hledík, M., Sachdeva, H. **Trubenová, B.** Complex genetics of complex traits.
Uecker, H. and **Trubenová, B.** A glimpse into the world of human viruses.
Hledík, M., Hudáková, K., Sachdeva, H. **Trubenová, B.** The genetic basis of traits.
Trubenová, B., Hudáková, K., Sachdeva, H. and Uecker, H. DNA, mutations and evolution.
Kelemen, R., Sachdeva, H., Hudáková, K. and **Trubenová, B.** Let's talk about sex!
Trubenová, B., Sachdeva, H. and Hudáková, K. Out of Africa: The story of human origin.
Sachdeva, H., **Trubenová, B.** and Hudáková, K. Evolution in action.

2016 Hudáková, K. and **Trubenová B.** Collection of evolutionary activities for high school students. Self published book, 152 pages. Partly available in English and German. §

2008 Young Scientist magazine. *Published a series of science popularizing articles (in Slovak).*

[1] Authors contributed equally.

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CONFERENCE CONTRIBUTIONS

Scientific oral presentations:

2019 **European Society for Evolutionary Biology meeting, Turku:** Understanding contemporary levels of genetic diversity in populations of silver.
2018 **SMEEB, Venice:** Hiking, jumping, surfing: Analysis of adaptive walks in various classes of fitness landscapes. *Invited talk*
2017 **PopGroup, Cambridge:** Surfing on a seascape: When frequent environmental change prevents extinction.
2015 **European Society for Evolutionary Biology meeting, Lausanne:** Running faster or jumping further? Analysis of adaptive walks in various classes of fitness landscapes.
2012 **Congress on Evolutionary Biology, Ottawa:** Evolutionary consequences of social Interactions: Comparison of indirect genetic effects and social selection.
2011 **European Conference on Complex Systems, Vienna:** Evolutionary consequences of social interactions among individuals.
2011 **Manchester Organismal Biology Meeting, Manchester:** Phenotypic and evolutionary consequences of social interactions.
2010 **Student Science Conference in Biology, Bratislava:** Copies of chloroplast genes in the nucleus of the flagellate *Euglena gracilis*.
2009 **International Student Science Conference in Physics, Bratislava:** Simulation of the movement of magnetic particles in magnetic field: Suggestion for the separation and the transformation of cells.

Scientific posters:

2019 **Evolutionary Knowledge for Everyone, Split:** Teaching evolution via competition.
2019 **European Society for Evolutionary Biology meeting, Turku:** Competition in Evolution.
2017 **EVOKE:** Teaching Evolution within the Slovak Biology Curriculum
2015 **PopGroup, Sheffield:** Running faster or jumping further? Analysis of adaptive walks in various classes of fitness landscapes.
2013 **Life Sciences PhD Conference, Manchester:** Indirect genetic effects can explain the evolution of altruism.
2011 **Inter-DTC Conference, Manchester:** Emergent properties of indirect genetic effects.

Science popularisation presentations:

2018 Slovak Oxford Science conference, Hostačov: *Adam, Eve and the migration of their children.*
2016 Slovak Oxford Science conference, Hostačov: *Sustainability.*
2015 Slovak Oxford Science conference, Eigen: Evolution of altruism. *Invited talk.*
2014 Alumni talks for high school students, GJH Bratislava. *Pop-science talk about the evolution of social behaviours.*