

CURRICULUM VITAE

Gergely János Szöllősi

EMPLOYMENT

- 2017 - Assistant professor with tenure at the Dept. of Biological Physics, Eötvös Univ.**
2016 - Senior research associate PI, MTA-ELTE “Momentum” Evolutionary Genomics
2013 - 2016 Research associate and PI at MTA-TKI FP7-CIG [GENESTORY](#) project
Reconstructing ancestral system level phenotypes and ancient environments
2011 - 2013 Marie Curie fellow at Lyon, Univ. Claude Bernard, Lyon, France
Probabilistic models of genome evolution, FP7-IEF [GENEFOREST](#) project
2009 - 2011 ANR Postdoctoral fellow at CNRS UMR 5558, Lyon France, advisor: Vincent Daubin

EDUCATION

- 2009 Nov. 1. PhD in Biological Physics** from Eötvös University, Budapest
The effects of population structure and the genotype-phenotype map on evolutionary dynamics.
Grade: *summa cum laude*
2008 visiting PhD student at Rockefeller University, supervisor: Marcelo Magnasco,
topic: Damage and fluctuations in biological optimal transport networks
2007 visiting PhD student at the Lässig Group, University of Cologne
supervisor: Michael Lässig, topic: Adaptation under linkage
2005 - 2009 PhD student in Biological Physics at Eötvös University
(Hungarian State Scholarship for pursuing a PhD), supervisor: Imre Derényi
2004 M.Sc. in Physics from Eötvös University, Budapest
2004/05 European Physical Society scholarship Niels Bohr Institute, Copenhagen
2002/03 ERASMUS, Humboldt University, Berlin, Department of Physics
1994 - 98 Kossuth Lajos High School, (specialising in physics), Debrecen, Hungary
1993 - 94 Raoul Wallenberg High School, San Francisco, California

GRANTS & AWARDS

- 2017- H2020-ERC-StG [GENECLOCKS](#)**
Reconstructing a dated tree of life using phylogenetic incongruence € 1,453,542 as PI
2016- MTA “Momentum” Model based evolutionary genomics € 450,000 as PI
2013 - 2016 FP7-PEOPLE-CIG [GENESTORY](#) at MTA TKI, Budapest, HU € 87,500 as PI
2014 - 2015 MTA Bolyai Research Fellowship € 15,000 as PI
2013 - 2014 MTA Bolyai Research Fellowship € 15,000 as PI
2013 - 2014 Alber Szentgyörgyi Excellence Fellowship € 26,000 as PI
2011 - 2013 FP7-PEOPLE-IEF [GENEFOREST](#) at the LBBE, Lyon FR € 170,000 as PI
2017- WWTF “Mathematics and ...” call €597.400 with €68.600 in Hungary
PI: Carolin Kosiol, co-PI: Dr. Gergely J Szöllősi;
2014 Partnership for Advanced Computing in Europe (with Bastien Boussau) 36,000,000 CPU hours

MEMBERSHIP & SERVICE

- 2016- [PCI Evol. Biol.](#) Managing Board
Reviewer for MBE, Syst. Biol., PLoS Comp. Biol., PRL, Genetics, Bioinformatics
Member of SMBE, Hungarian Bioinformatics Society and Hungarian Biophysics Society
MASAMB 2018 Organising Committee
MASAMB 2019 Organising Committee

SELECTED PUBLICATIONS (TOP TEN)

Full list of publications at [ORCID](#) (ID 0000-0002-8556-845X) and below;

Citations: 1695, **h-index: 21** ([Google Scholar](#)) as of 12/31/2018.; Top five publications: ★★.

Gene transfers can date the tree of life

AA Davín, E Tannier, TA Williams, B Boussau, V Daubin, [GJ Szöllősi](#)

★★ **Nature ecology & evolution** 2 (5), 904, 2018

Hierarchical tissue organization as a general mechanism to limit the accumulation of somatic mutations

I Derényi, [GJ Szöllősi](#)

★★ **Nature Communications** 8, 14545, 2017

Integrative modeling of gene and genome evolution roots the archaeal tree of life

TA Williams, [GJ Szöllősi](#), A Spang, PG Foster, SE Heaps, B Boussau, TJG Ettema, TM Embley

Proceedings of the National Academy of Sciences, 201618463, 2017

Efficient exploration of the space of reconciled gene trees

[GJ Szöllősi](#), W Rosikiewicz, B Boussau, E Tannier, V Daubin

★★ **Systematic Biology** 62 (6), 901-912, 2013

Lateral gene transfer from the dead

[GJ Szöllősi](#), E Tannier, N Lartillot, V Daubin

Systematic Biology 62 (3), 386-397, 2013

Genome-scale coestimation of species and gene trees

B Boussau, [GJ Szöllősi](#), L Duret, M Gouy, E Tannier, V Daubin

★★ **Genome Research** 23 (2), 323-330, 2013

Phylogenetic modeling of lateral gene transfer reconstructs the pattern and relative timing of speciations

[GJ Szöllősi](#), B Boussau, SS Abby, E Tannier, V Daubin

★★ **Proceedings of the National Academy of Sciences**, 201202997, 2012

Emergent neutrality in adaptive asexual evolution

S Schiffels*, [G Szöllősi*](#), V Mustonen, M Lässig (*equal contrib.)

Genetics, 111.132027, 2011

Damage and fluctuations induce loops in optimal transport networks

E Katifori, [GJ Szöllősi](#), MO Magnasco

Physical Review Letters 104 (4), 048704, 2010

Congruent evolution of genetic and environmental robustness in micro-RNA

[GJ Szöllősi](#), I Derényi

Molecular Biology and Evolution 26 (4), 867-874, 2009

SELECTED MEDIA COVERAGE

[Chronological Clues to Life's Early History Lurk in Gene Transfers](#)—Quanta Magazine, 2018

[The Road To Frontier Research: Erasmus+, MARie SKŁOdwska-CURie, Erc](#)—Erc.Europa.Eu, 2017

[Balszerencsés események következménye vagy többsejtű létünk szükségszerű velejárója a rák?](#)

—MTA, 2017

[In Natural Networks, Strength in Loops](#)—ScientificAmerican.com, 2013

SELECTED TALKS

2018 Invited speaker Systems Genetics of Cancer, Portland, Oregon

2017 Invited speaker BCB Tumour Heterogeneity Workshop, Bertinoro, Italy

2017 Invited speaker Mathematical and Statistical Aspects of Molecular Biology, Vienna, Austria

2016 Invited keynote at Jacques Monod “50 years of molecular phylogeny” in Roscoff, France.
 2016 Invited speaker at Evolution 2016 Austin, Texas.
 2014 Selected Speaker at SMBE 2014 San Juan, Puerto Rico, USA.
 2014 Invited speaker at Statistical Methods for Post Genomic Data, SMPGD 2014. in Paris, France.
 2013 Selected speaker Jacques Monod “Advances in evolutionary genomics” Roscoff, France.
 2010 Selected Speaker at SMBE 2010 Lyon, France.

STUDENTS AND POSTDOCS

B.Sc.

2013 supervisor, B.Sc. thesis in Physics of **Zsófia Kéri**, Eötvös University
 2015 supervisor, B.Sc. thesis in Physics of **Márton Demeter** at Eötvös University
 2015 supervisor, B.Sc. thesis in Physics of **Máté Kiss** at Eötvös University
 2015 supervisor, B.Sc. thesis in Physics of **Dániel Grajczel** at Eötvös University
 2016 supervisor, B.Sc. thesis in Physics of **Judit Börcsök** at Eötvös University
 2017 supervisor, B.Sc. thesis in Physics of **Lénárd Szánthó** at Eötvös University
 2019- supervisor, B.Sc. thesis in Physics of **Kyra Menyhárt** at Eötvös University

M.Sc.

2014 co-supervisor, M.Sc. thesis in Bioinformatics of **Benjamin Horvilleur**, LBBE in Lyon
 2016 supervisor, M.Sc. thesis in Biological Physics of **Zsófia Kéri**, Eötvös University
 2018 supervisor, M.Sc. thesis in Biological Physics of **Márton Demeter** at Eötvös University
 2018 supervisor, M.Sc. thesis in Biological Physics of **Máté Kiss** at Eötvös University
 2019- supervisor, M.Sc. thesis in Biological Physics of **Dániel Grajczel** at Eötvös University
 2019- supervisor, M.Sc. thesis in Biological Physics of **Lénárd Szánthó** at Eötvös University

PhD

2015- supervisor, PhD Biological physics **Zsófia Kéri** at Eötvös University
 2018- supervisor, PhD Biological physics **Márton Demeter** at Eötvös University
 2018- supervisor, PhD Biological physics **Máté Kiss** at Eötvös University
 2018- supervisor, PhD Biological physics **Mario Perez Jiminez** at Eötvös University

Postdocs

2017- **Dr. Gergely Tibély**, topic: “Model based cancer genomics”
 2017- **Dr. Rui Borges**, topic “Developing a population genetics aware molecular clock”
 (co-supervised at the Vet. Med. Uni. in Vienna with Carolin Kosiol)
 2018- **Dr. Dominik Schrempf**, topic “Species-tree aware phylogenomics methods”
 2018- **Dr. Gábor Guta**, topic “next generation reconciliation methods in ALE”

TEACHING

2005-2008 4 semesters Molecular Modelling practical course in Biological Physics M.Sc. students
 2014- 8 semesters “Reconstructing evolutionary history from molecular sequences” 1&2
 Biological Physics M.Sc. & Evolutionary Biology M.Sc. students
 2019- “Phylogenetics” for the new Bioinformatics M.Sc. starting at Eötvös University

PUBLICATIONS

List automatically generated based on [ORCID](#) (ID 0000-0002-8556-845X) on 12.31.2018.

Top ten publications indicated by '★' and '★★'; Top five publications by '★★★';

Lead authorship (first or last) indicated by bold; Open Access publications by '+' at the start of the reference.

1. + **Gergely J. Szöllősi**, I. Derényi, J. Vörös (2004). Reversible mesoscopic model of protein adsorption: From equilibrium to dynamics. *Physica A: Statistical Mechanics and its Applications* , **343** , 359-375 [doi:10.1016/j.physa.2004.06.062](https://doi.org/10.1016/j.physa.2004.06.062)
2. + B. Szabó, Gergely J. Szöllősi, B. Gönci, Zs. Jurányi, D. Selmeczi, Tamás Vicsek (2006). Phase transition in the collective migration of tissue cells: Experiment and model. *Physical Review E* , **74** [doi:10.1103/physreve.74.061908](https://doi.org/10.1103/physreve.74.061908)
3. + **Gergely J. Szöllősi**, I. Derényi, T. Vellai (2006). The Maintenance of Sex in Bacteria Is Ensured by Its Potential to Reload Genes. *Genetics* , **174** , 2173-2180 [doi:10.1534/genetics.106.063412](https://doi.org/10.1534/genetics.106.063412)
4. + **Gergely J. Szöllősi**, Imre Derényi (2008). Evolutionary games on minimally structured populations. *Physical Review E* , **78** [doi:10.1103/physreve.78.031919](https://doi.org/10.1103/physreve.78.031919)
5. + **Gergely J. Szöllősi**, Imre Derényi (2008). The effect of recombination on the neutral evolution of genetic robustness. *Mathematical Biosciences* , **214** , 58-62 [doi:10.1016/j.mbs.2008.03.010](https://doi.org/10.1016/j.mbs.2008.03.010)
6. + András Czövek, Gergely J. Szöllősi, Imre Derényi (2008). The relevance of neck linker docking in the motility of kinesin. *Biosystems* , **93** , 29-33 [doi:10.1016/j.biosystems.2008.04.006](https://doi.org/10.1016/j.biosystems.2008.04.006)
7. ★+ **Gergely J. Szöllősi**, I. Derényi (2009). Congruent Evolution of Genetic and Environmental Robustness in Micro-RNA. *Molecular Biology and Evolution* , **26** , 867-874 [doi:10.1093/molbev/msp008](https://doi.org/10.1093/molbev/msp008)
8. Jean-Philippe Doyon, Celine Scornavacca, K. Yu. Gorbunov, **Gergely J. Szöllősi**, Vincent Ranwez, Vincent Berry (2010). An Efficient Algorithm for Gene/Species Trees Parsimonious Reconciliation with Losses, Duplications and Transfers. *Comparative Genomics, Lecture Notes in Computer Science* , 93-108 [doi:10.1007/978-3-642-16181-0_9](https://doi.org/10.1007/978-3-642-16181-0_9)
9. ★+ Eleni Katifori, Gergely J. Szöllősi, Marcelo O. Magnasco (2010). Damage and Fluctuations Induce Loops in Optimal Transport Networks. *Physical Review Letters* , **104** [doi:10.1103/physrevlett.104.048704](https://doi.org/10.1103/physrevlett.104.048704)
10. ★+ Stephan Schiffels*, **Gergely J. Szöllősi***, Ville Mustonen, Michael Lässig (2011). Emergent Neutrality in Adaptive Asexual Evolution. *Genetics* , **189** , 1361-1375 [doi:10.1534/genetics.111.132027](https://doi.org/10.1534/genetics.111.132027) (* equal contrib.)
- 11.+ András Czövek, Gergely J. Szöllősi, Imre Derényi (2011). Neck-Linker Docking Coordinates the Kinetics of Kinesin's Heads. *Biophysical Journal* , **100** , 1729-1736 [doi:10.1016/j.bpj.2011.01.039](https://doi.org/10.1016/j.bpj.2011.01.039)

12. Anna Á. Rauscher, Zoltán Simon, Gergely J. Szöllősi, László Gráf, Imre Derényi, Andras Malnasi-Csizmadia (2011). Temperature dependence of internal friction in enzyme reactions. *The FASEB Journal* , **25** , 2804-2813 [doi:10.1096/fj.11-180794](https://doi.org/10.1096/fj.11-180794)
13. ★★+ B. Boussau, Gergely J. Szöllősi, L. Duret, M. Gouy, E. Tannier, V. Daubin (2012). Genome-scale coestimation of species and gene trees. *Genome Research* , **23** , 323-330 [doi:10.1101/gr.141978.112](https://doi.org/10.1101/gr.141978.112)
- 14.+ Sèverine Bérard, Coralie Gallien, Bastien Boussau, Gergely J. Szöllősi, Vincent Daubin, Eric Tannier (2012). Evolution of gene neighborhoods within reconciled phylogenies. *Bioinformatics* , **28** , i382-i388 [doi:10.1093/bioinformatics/bts374](https://doi.org/10.1093/bioinformatics/bts374)
15. **Gergely J. Szöllősi**, Vincent Daubin (2012). Modeling Gene Family Evolution and Reconciling Phylogenetic Discord. *Methods in Molecular Biology, Evolutionary Genomics* , 29-51 [doi:10.1007/978-1-61779-585-5_2](https://doi.org/10.1007/978-1-61779-585-5_2)
16. ★★+ **Gergely J. Szöllősi**, B. Boussau, S. S. Abby, E. Tannier, V. Daubin (2012). Phylogenetic modeling of lateral gene transfer reconstructs the pattern and relative timing of speciations. *Proceedings of the National Academy of Sciences* , **109** , 17513-17518 [doi:10.1073/pnas.1202997109](https://doi.org/10.1073/pnas.1202997109)
17. ★★+ **Gergely J. Szöllősi**, Wojciech Rosikiewicz, Bastien Boussau, Eric Tannier, Vincent Daubin (2013). Efficient Exploration of the Space of Reconciled Gene Trees. *Systematic Biology* , **62** , 901-912 [doi:10.1093/sysbio/syt054](https://doi.org/10.1093/sysbio/syt054)
18. ★+ **Gergely J. Szöllősi**, Eric Tannier, Nicolas Lartillot, Vincent Daubin (2013). Lateral Gene Transfer from the Dead. *Systematic Biology* , **62** , 386-397 [doi:10.1093/sysbio/syt003](https://doi.org/10.1093/sysbio/syt003)
- 19.+ Murray Patterson, Gergely J. Szöllősi, Vincent Daubin, Eric Tannier (2013). Lateral gene transfer, rearrangement, reconciliation. *BMC Bioinformatics* , **14** , S4 [doi:10.1186/1471-2105-14-s15-s4](https://doi.org/10.1186/1471-2105-14-s15-s4)
- 20.+ Celine Scornavacca, Edwin Jacox, **Gergely J. Szöllősi** (2014). Joint amalgamation of most parsimonious reconciled gene trees. *Bioinformatics* , **31** , 841-848 [doi:10.1093/bioinformatics/btu728](https://doi.org/10.1093/bioinformatics/btu728)
- 21.+ **Gergely J. Szöllősi**, Eric Tannier, Vincent Daubin, Bastien Boussau (2014). The Inference of Gene Trees with Species Trees. *Systematic Biology* , **64** , e42-e62 [doi:10.1093/sysbio/syu048](https://doi.org/10.1093/sysbio/syu048)
- 22.+ Mathieu Groussin, Joanne K. Hobbs, Gergely J. Szöllősi, Simonetta Gribaldo, Vickery L. Arcus, Manolo Gouy (2014). Toward More Accurate Ancestral Protein Genotype–Phenotype Reconstructions with the Use of Species Tree-Aware Gene Trees. *Molecular Biology and Evolution* , **32** , 13-22 [doi:10.1093/molbev/msu305](https://doi.org/10.1093/molbev/msu305)
- 23.+ Mathieu Groussin, Bastien Boussau, Gergely Szöllősi, Laura Eme, Manolo Gouy, Céline Brochier-Armanet, Vincent Daubin (2015). Gene Acquisitions from Bacteria at the Origins of Major Archaeal Clades Are Vastly Overestimated. *Molecular Biology and Evolution* , **33** ,

305-310 [doi:10.1093/molbev/msv249](https://doi.org/10.1093/molbev/msv249)

- 24.+ Imre Derényi, **Gergely J. Szöllősi** (2015). Effective Temperature of Mutations. *Physical Review Letters* , **114** [doi:10.1103/physrevlett.114.058101](https://doi.org/10.1103/physrevlett.114.058101)
- 25.+ Blandine Bril, Ross Parry, Gilles Dietrich (2015). How similar are nut-cracking and stone-flaking? A functional approach to percussive technology. *Philosophical Transactions of the Royal Society B: Biological Sciences* , **370** , 20140355 [doi:10.1098/rstb.2014.0355](https://doi.org/10.1098/rstb.2014.0355)
- 26.+ Edwin Jacox, Cedric Chauve, Gergely J. Szöllősi, Yann Ponty, Celine Scornavacca (2016). ecceTERA: comprehensive gene tree-species tree reconciliation using parsimony: Table 1.. *Bioinformatics* , **32** , 2056-2058 [doi:10.1093/bioinformatics/btw105](https://doi.org/10.1093/bioinformatics/btw105)
- 27.+ Vincent Daubin, **Gergely J. Szöllősi** (2016). Horizontal Gene Transfer and the History of Life. *Cold Spring Harbor Perspectives in Biology* , **8** , a018036 [doi:10.1101/cshperspect.a018036](https://doi.org/10.1101/cshperspect.a018036)
- 28.+ Adrian A. Davin, Eric Tannier, Tom A. Williams, Bastien Boussau, Vincent Daubin, **Gergely J. Szöllősi** (2017). Gene transfers, like fossils, can date the Tree of Life. *bioRxiv* [doi:10.1101/193813](https://doi.org/10.1101/193813)
- 29.+ Cedric Chauve, Akbar Rafiey, Adrian A. Davin, Celine Scornavacca, Philippe Veber, Bastien Boussau, Gergely J. Szöllősi, Vincent Daubin, Eric Tannier (2017). MaxTiC: Fast Ranking Of A Phylogenetic Tree By Maximum Time Consistency With Lateral Gene Transfers. *bioRxiv* [doi:10.1101/127548](https://doi.org/10.1101/127548)
- 30.László G. Nagy, **Gergely J. Szöllősi** (2017). Fungal Phylogeny in the Age of Genomics: Insights Into Phylogenetic Inference From Genome-Scale Datasets. *Fungal Phylogenetics and Phylogenomics, Advances in Genetics* , 49-72 [doi:10.1016/bs.adgen.2017.09.008](https://doi.org/10.1016/bs.adgen.2017.09.008)
- 31.☆☆+ Imre Derényi, **Gergely J. Szöllősi** (2017). Hierarchical tissue organization as a general mechanism to limit the accumulation of somatic mutations. *Nature Communications* , **8** , 14545 [doi:10.1038/ncomms14545](https://doi.org/10.1038/ncomms14545)
- 32.+ Marc Bailly-Bechet, Patricia Martins-Simões, Gergely J. Szöllősi, Gladys Mialdea, Marie-France Sagot, Sylvain Charlat (2017). How Long Does Wolbachia Remain on Board?. *Molecular Biology and Evolution* , **34** , 1183-1193 [doi:10.1093/molbev/msx073](https://doi.org/10.1093/molbev/msx073)
- 33.☆+ Tom A. Williams, Gergely J. Szöllősi, Anja Spang, Peter G. Foster, Sarah E. Heaps, Bastien Boussau, Thijs J. G. Ettema, T. Martin Embley (2017). Integrative modeling of gene and genome evolution roots the archaeal tree of life. *Proceedings of the National Academy of Sciences* , **114** , E4602-E4611 [doi:10.1073/pnas.1618463114](https://doi.org/10.1073/pnas.1618463114)
- 34.+ Siri Kellner, Anja Spang, Pierre Offre, Gergely J. Szöllősi, Celine Petitjean, Tom A. Williams (2018). Genome size evolution in the Archaea. *Emerging Topics in Life Sciences* , **2** , 595-605 [doi:10.1042/etls20180021](https://doi.org/10.1042/etls20180021)
- 35.+ Rui Borges, Gergely J. Szöllősi, Carolin Kosiol (2018). Quantifying GC-biased gene conversion in great ape genomes using polymorphism-aware models. *bioRxiv* [doi:](https://doi.org/10.1101/2018021)

- 36.+ Adrian A. Davin, Theo Tricou, Eric Tannier, Damien M. de Vienne, **Gergely J. Szöllősi** (2018). Zombi: A simulator of species, genes and genomes that accounts for extinct lineages. *bioRxiv* [doi:10.1101/339473](https://doi.org/10.1101/339473)
37. ★★ Adrián A. Davín, Eric Tannier, Tom A. Williams, Bastien Boussau, Vincent Daubin, **Gergely J. Szöllősi** (2018). Gene transfers can date the tree of life. *Nature Ecology & Evolution* , **2** , 904-909 [doi:10.1038/s41559-018-0525-3](https://doi.org/10.1038/s41559-018-0525-3)
- 38.+ Wandrille Duchemin, Guillaume Gence, Anne-Muriel Arigon Chifolleau, Lars Arvestad, Mukul S Bansal, Vincent Berry, Bastien Boussau, François Chevenet, Nicolas Comte, Adrián A Davín, et al (2018). RecPhyloXML: a format for reconciled gene trees. *Bioinformatics* , **34** , 3646-3652 [doi:10.1093/bioinformatics/bty389](https://doi.org/10.1093/bioinformatics/bty389)