Curriculum Vitae December 5, 2017

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EDUCATION and TRAINING

1/2001-12/2004	Postdoctoral Research Fellow in computational biology, Dept. of Genetics, Harvard Medical School, Advisor: Prof. George Church
1996-2002	Ph.D., Life Sciences, Weizmann Institute of Science, Israel (Dissertation title: The primordial emergence of compositional inheritance; Advisor: Prof. Doron Lancet)
1988-1994	Laurea (B.Sc-M.Sc.), Physics, University of Trieste, Italy (Dissertation title: Test of the Standard Model from b quark production at LEP1; Grade: 110/110 with honors)

ACADEMIC APPOINTMENTS

2015-present	Professor, Bioinformatics Graduate Program, Department of Biology, Department of Biomedical Engineering, and Department of Physics, Boston University
2016-present	Co-Director, Boston University Affinity Research Collaborative (ARC) on Systems Biology Approaches to Microbiome Research
2016-present	Co-Founder, Boston University Bioinformatics Hub
2016-present	Core Member of Boston University Biological Design Center
2013-present	Affiliated Faculty, Department of Physics, Boston University
2011-2015	Associate Professor (with tenure), Bioinformatics Graduate Program, Department of Biology, and Department of Biomedical Engineering, Boston University
2013-2015	Founding Associate Faculty Member, Boston University Center of Synthetic Biology
2011-present	Faculty Affiliate, Hariri Institute for Computing and Computational Science & Engineering, Boston University
2009-present	Member of the Boston University Genome Science Institute (GSI).
Fall 2012	Visiting Scholar, Department of Organismic and Evolutionary Biology, Harvard University (Sabbatical Leave)
2008-2012	Member of Center for BioDynamics, NSF Research and Training Grant, Boston University
7/2007	Visiting Professor, International Centre for Theoretical Physics, Trieste, Italy, Statistical Mechanics and Interdisciplinary Applications Research Group
2005-2008	Faculty Scholar, Lawrence Livermore National Laboratory, Microbial Systems Biology
2005-2011	Assistant Professor, Bioinformatics Graduate Program, Department of Biology, and Department of Biomedical Engineering, Boston University

HONORS AND FELLOWSHIPS

2017	Boston University Evans Center for Interdisciplinary Biological Research Excellent Research Collaborator Award
2016	Participant at NASA-NSF Origins of Life Ideas Lab, Cambridge MD
2016	Recipient of Human Frontiers Science Program research grant award

2016	Attendee at Launch of National Microbiome Initiative, The White House, Washington DC
2014	National Academies Keck Futures Initiative (NAKFI) workshop on Collective Behavior (organized by National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the Keck Foundation)
2013	DuPont's *Horizons in Biotechnology* distinguished speaker
2012	Keynote Speaker, Synthetic Ecology Symposium, University of Minnesota
2010	Panelist/Keynote speaker, Public debate on "The strategies of Life", Trieste, Italy (outreach event, III Conference of the Italian Society for Astrobiology)
2007	Best Poster Award, European Workshop on Efficiency and Productivity Analysis (EWEPA), Lille, France
2006	Keynote address, Annual Meeting of D-Cure (non-profit organization that promotes and funds research on diabetes in Israel)
2002	Prize of Distinction for Outstanding Ph.D. studies, Weizmann Institute of Science, Israel
2000	Best poster award, Israeli Society for Theoretical and Mathematical Biology 3rd meeting
1996– 2001	The Jack and Simon Djanogly Ph.D. Scholarship, Weizmann Institute
1999	Travel Grant, Theory and Mathematics in Biology and Medicine, Amsterdam
1999, 1996	Travel Grants, International Society for the Study of the Origin of Life
1999	NASA fellowship, Bioastronomy conference, Italy
1997	Complex Systems Summer School, Santa Fe Institute, New Mexico, USA
1997	Travel Grant, Aharon Katzir-Katchalsky Center, Rehovot, Israel
1993	*Fondazione Gregorio Ananian* Prize, for outstanding University merit, Trieste, Italy

PROFESSIONAL ACTIVITIES

2017	Co-organizer, Joint ICGEB-ICTP-APCTP Workshop on *Systems Biology and Molecular Economy of Microbial Communities*, ICTP, Trieste, July 3-7 2017
2016-present	Member of the U.S. Department of Energy, Biological and Environmental Research Advisory Committee (BERAC)
2015	Participant at White House OSTP forum on *Microbiome Innovation: Roadmap to the Future*
2014	Instructor for Graduate Student Workshop on "Principles of Metabolism", co-organized by the Weizmann Institute of Science, and Harvard University. May 22-27 at Harvard University and Glen House, Maine.
2014	Organizer/Director, Workshop on *The Economy of the cell*, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy
2013	External Advisory Review Team, Pacific Northwest National Laboratory, Biological Systems Science
2010–present	Editorial Board, Journal of Statistical Mechanics: Theory and Experiment
2001-present	Peer reviewing for more than 20 journals (including Science, Nature, Nature Genetics, PLOS journals, Physical Review Letters, Proc. Natl. Acad. Sci. USA, Molecular Systems Biology)
2013	Review Panel, US Department Of Energy, Early Career Awards
2012	Participant in Colloquium on *How Microbes Can Help Feed the World*, The American Academy of Microbiology (honorific branch of the American Society for Microbiology), Washington DC
2011	NIH/NCI Study Section, Advanced *in vivo* Imaging to Understand Cancer Systems

2010	Review Panel, Department Of Energy, Role of Microbial Communities in Carbon Cycling
2010	Guest Editor, special focus issue of journal *Chaos* on Genetic Interactions
2009	Co-organizer, Summer School and Conference *From biological networks to cellular function: evolution, dynamics and spatial organization*, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy
2005-2008	Associate Editor, PLoS Computational Biology
2003, 2005	Advisory Board, EcoCyc (2005) and Pathway Tools Software (2003), Bioinformatics Research Group, SRI International, Menlo Park, CA, USA
2003	Voluntary work on Severe Acute Respiratory Syndrome (SARS) epidemics forecast software at MIT, endorsed by the US Center for Disease Control and Prevention

TEACHING

Boston University

2005- present	Seminar in Bioinformatics (graduate course, BF821)
2007- present	Dynamics and Evolution of Biological Networks (graduate and undergraduate, BF571)
2005-2013	Computational Genomics (graduate course, BE777)

Guest Lecturer (Boston University)

Molecular Biology and Biochemistry: Molecules and Processes (BF751)
Protein and Genomic Systems Engineering (BE767)
Biological Database Analysis (BE768)
Biomedical Engineering Seminar (BE790)
Research Opportunities in Bioinformatics (BF820)
Current Topics in Pharmacological Science (GMS PM 810)

Guest Lecturer (other universities)

Contemporary Systems Biology, Weizmann Institute, 2015
Summer Class in Systems Biology, Harvard University, 2010, 2011
Evolutionary Systems Biology, Harvard Medical School, 2012, 2013, 2015

Weizmann Institute (as Ph.D. student)

2000-2001	Early Evolution (graduate course), Feinberg Graduate School, Weizmann Institute, Israel
1998-1999	Computational and Biochemical Theories of the Origin of Life (newly introduced graduate course), Weizmann Institute, Israel

RESEARCH GRANTS

Current

2017-2020 NASA (Joint NASA-NSF Ideas Lab "Origins of Life")
The emergence of evolvable surface-associated interacting molecular ensembles: A chemical ecosystem selection approach (Role: Subcontract PI)

2017-2020 NSF (Joint NASA-NSF Ideas Lab "Origins of Life")
Collaborative Research: Biochemical, Genetic, Metabolic and Isotopic Constraints on an Ancient Thiobiosphere (PI in Multi-PI collaboration)

2017-2020 NASA (Joint NASA-NSF Ideas Lab "Origins of Life")
Understanding Translation through Experimental Evolution (Role: Subcontract PI)

2017-2019 NIH R01
A platform for mining, visualization and design of microbial interaction networks (Role: PI in Multi-PI Collaboration)

2017 BU Hariri Institute for Computing - Research Award
Social Networks at microscales (Role: Co-PI)

2017-2018 BU Interdisciplinary Biomedical Research Office - ARC (Affinity Research Collaborative)
Systems Biology Approaches to Microbiome Research (Role: Role: PI in Multi-PI Collaboration)

2016-2017 Kavli Foundation
Kavli Microbiome Coffee Hours (Role: PI)

2016-2018 NSF-BSF
NSFOCE-BSF: Microbial ecosystems in silico, in the lab and in the field: understanding interactions between abundant marine bacterial taxa (Role: PI)

2016-2019 Human Frontiers Research Program (HFSP) Research Grant
Interactions among marine microbes as they grow and die: linking experiments and genome-scale models (Role: PI in Multi-PI Collaboration)

2015-2019 NSF
Collaborative Research: Molecular mechanisms and biogeochemical consequences of decomposer species interactions during succession in ecosystems (Role Co-PI)

2014-2019 NIH R01
Cultivation, Nature, Ecology & Pathogenicity of the Uncultivated Oral Microbiome (Role: PI in Multi-PI collaboration)

2015-2017 DARPA
ROBUST - Robust Operation of Bacterial Universes with Synthetic-biology Technologies (Role: Co-PI)

2012-2017 Department of Defense / MURI
Associating growth conditions with cellular composition in Gram-negative bacteria (Role: Subcontract PI)

Past

2017-2018 MIT Lincoln Laboratory (Prime: U.S. Air Force)
Artificial Gut for Engineering Microbial Communities (Role: PI)

2014-2017 Department of Energy
A high-throughput pipeline for mapping inter-species interactions and metabolic synergy relevant to next-generation biofuel production (Role: PI)

2011-2017 NIH R01
Visant-Predictome: A System for Integration, Mining, Visualization and Analysis (Role: PI)

2014-2015 Boston University-Joslin Diabetes Center Pilot and Feasibility Program
Systems biology approaches to study induced pluripotent stem cell metabolism (Role: PI)

2011-2014 Department of Energy
Modeling, patterning and evolving syntrophic communities that link fermentation to metal reduction (Role: Subcontract PI)

2010-2014 NIH R01
Computation and functional significance of multi-phenotype genetic interaction maps (Role: PI)

2010-2014 Department of Energy
An open source platform for multi-scale spatially distributed simulations of microbial ecosystems (Role: PI)

2007-2012 NIH R01
Systems-level physiological basis of selection and epistasis in adaptation (Role: subcontract PI)

2007-2012 NASA Astrobiology Institute
Requirements for the development and maintenance of multicellular life (Role: subcontract PI)

2009-2011 NIH, Grand Opportunities (GO)
RC2: *SciBay: A New Methodology for Scientific Collaboration and Gene Function Determination* (Role: Co-PI)

2007-2011 US Department of Energy
Integrated Genome-Based Studies of Shewanella Ecophysiology (Role: PI)

2007-2010 US Department of Energy
A Systems Biology Platform for Characterizing Regulatory and Metabolic Pathways that Influence and Control Microbial Hydrogen Control (Role: Co-PI)

2007-2009 National Science Foundation
Acquisition of a Linux Cluster for Bioinformatics Research and Education (Role: Co-PI)

INVITED LECTURES (2002 – present)

10/2017 116th International Titisee Conference, *From pathogen evolution to microbiome dynamics*, Titisee, Germany
09/2017 BacNet 2017, EMBO Bacterial Networks conference, Sant Feliu de Guixols, Spain
08/2017 Workshop on *Thermodynamics of Computation in Chemical and Biological Systems*, Santa Fe Institute, Santa Fe, New Mexico
08/2017 *Harold Morowitz Symposium*, Santa Fe Institute, Santa Fe, New Mexico
07/2017 Joint ICGEB-ICTP-APCTP Workshop on *Systems Biology and Molecular Economy of Microbial Communities*, Abdus Salam International Center for Theoretical Physics, Trieste, Italy
05/2017 GEARS (Gene Expression and RNA Series) Seminar, Harvard University
03/2017 CIFAR & Gordon and Betty Moore Foundation Workshop: *Message in a Bottle - Chemical Communication at Sea*, Eilat, Israel
03/2017 Research School on *Advances in Systems & Synthetic Biology (aSSB): Modelling complex biological systems in the context of genomics*, Lyon, France
01/2017 BU Data Science Day, Data Science Initiative
12/2016 EMBL practical course *Microbial Communities: Modelling Meets Experiment*, EMBL, Heidelberg, Germany
11/2016 Banbury Center meeting on *Evolution of the Translational Apparatus: Implications for the Origin and History of the Genetic Code*, Cold Spring Harbor Laboratory
08/2016 Workshop on *Networks with application to Economy, Sociology and Biology*, Lipari, Italy

03/2016 American Physical Society, Invited speaker, *Focus Session: Evolutionary Design Principles of Bio-networks*, Baltimore, MD

12/2015 Weizmann Institute of Science seminar, Department of Molecular Genetics

09/2015 Brandeis University Molecular & Cellular Biology Department Graduate Students Symposium on *Microbiome: host and environmental interactions*

09/2015 4th Conference on Constraint-Based Reconstruction and Analysis (COBRA 2015), Heidelberg, Germany

08/2015 Foundations of Systems Biology in Engineering (FOSBE) conference, Cambridge, MA

07/2015 Keynote speaker at JOBIM (Open Days in Biology, Computer Science & Mathematics), Clermont-Ferrand, France

06/2015 Plenary Session speaker at Annual General Meeting of the American Society for Microbiology

04/2015 Forsyth Institute Seminar Series, Cambridge, MA

03/2015 COBRA Workshop on Modeling Microbial Communities, University of Luxembourg

02/2015 US Department of Energy Genomic Science Grantee Meeting, invited speaker for session on *Computational Biology: Analysis and Modeling in Genomic Science*, Tysons, VA

02/2015 Parsons Microbial Systems Seminar, MIT

12/2014 Systems Biology Seminar, Microbiome Program, Center of Individualized Medicine, Mayo Clinic

10/2014 Workshop on *Structure, Function and Dynamics in Microbial Communities*, Isaac Newton Institute for Mathematical Sciences, Cambridge University, Cambridge, UK

10/2014 First Symposium on the Control of Network Systems (SCONES), IEEE Control Systems Society, Boston, MA

04/2014 40th Annual Northeast Bioengineering Conference, Northeastern University, Boston

04/2014 *Frontiers in Biological Sciences* seminar series, Pacific Northwest National Laboratory, Richland, WA

03/2014 Cell Press Lab Links meeting on *Gene Circuits: Molecular and Synthetic Biology*, Broad Institute, Cambridge, MA

10/2013 Joint Molecular & Cellular Biology, Cellular & Molecular Medicine, and Biochemistry Seminar Series, University of Arizona, Tucson

10/2013 *Cross Disciplinary Genomics* meeting, Université Pierre et Marie Curie, Paris

09/2013 DuPont's *Horizons in Biotechnology* seminar, Wilmington, Delaware

05/2013 Beyond Center Workshops on the Physics of Living Matter - NASA Astrobiology Institute, *Engines of Life: thermodynamic pathways to metabolism*, Tempe, Arizona

04/2013 Center for Cancer Computational Biology Seminar Series, Dana Farber Cancer Institute, Harvard Medical School

03/2013 Systems Biology Special Symposium *One2many: From Single Cells to Populations*, Weizmann Institute of Science, Israel

12/2012 Winter School on Quantitative Systems Biology, International Center for Theoretical Physics, Trieste, Italy

10/2012 Molecular Biosciences Program student-organized seminar series, Montana State University, Bozeman

10/2012 Life Science Division seminar series, Lawrence Berkeley National Laboratory

08/2012 Gordon Research Conference on Molecular Basis of Microbial One-Carbon Metabolism, Bates College, Maine

07/2012 Seminar at Summer Course on Quantitative Methods in Diabetes Research, Joslin Diabetes Center, Harvard Medical School

05/2012 Conference on *Statistical Mechanics in Systems Biology: Regulation, Inference, Optimization*, Anacapri, Italy

04/2012 Keynote Lecture, Synthetic Ecology Symposium, University of Minnesota

04/2012 NASA Astrobiology Conference, AbSciCon, Georgia Tech, Atlanta

01/2012 Marine Biology Laboratory, Bay Center Seminar Series, Woods Hole, MA

06/2011 1st Conference on Constraint-based Reconstruction and Analysis, Reykjavik, Iceland

05/2011 Opening seminar for Microbiome Research in the Boston Area (MiRiBA) initiative, Broad Institute, Cambridge MA
04/2011 Graduate Center of the City University of NewYork, Initiative for the Theoretical Sciences Workshop on *Metabolic control and related problems*, NY
01/2011 Workshop: *Cells, Circuits, and Computation 2011*, Harvard University, Cambridge MA
12/2010 Microsoft Research: Computational Aspects of Biological Information 2010, Cambridge, MA
12/2010 Workshop: *Applications of Optimization in Science and Engineering*, IPAM, UCLA
09/2010 Conference: *Quantitative Biology: From Complex Networks to Simple Models*, Montauk, NY
07/2010 Yeast Genetics and Molecular Biology Meeting, Univ. of British Columbia, Vancouver, Canada
06/2010 BioMaPS School, *New Directions in Evolutionary and Population Genetics*, Rutgers University
05/2010 3rd Workshop of the Italian Astrobiology Society, *When Darwin meets Copernicus*, Duino, Italy
03/2010 Tri-institutional Seminar, Memorial Sloan Kettering Cancer Center, New York
02/2010 Seminar, University of Toronto, Donnelly Centre for Cellular and Biomolecular Research
12/2009 Computational Biology and Bioinformatics seminar, Broad Institute, Cambridge, MA
06/2009 Physics Department Seminar, University La Sapienza, Rome, Italy
04/2009 Systems Biology Seminar, University of Massachusetts Medical School, Worchester, MA
10/2008 Systems Biology Seminar, University of Michigan, Ann Arbor, MI
09/2008 Center for Complexity Science Open Day Seminar, Hebrew University, Jerusalem, Israel
09/2008 Fifth European Conference on Complex Systems, Jerusalem, Israel
06/2008 *Compartmentation, Phase Separation and the Origin of Life*, Santa Fe Institute, NM
02/2008 Annual Contractor-Grantee Workshop, US Department of Energy, Bethesda, Maryland
12/2007 Synthetic Biology Engineering Research Center seminar, MIT
09/2007 Annual meeting of the American Biomedical Engineering Society, Los Angeles, CA
06/2007 Condensed Matter Physics Seminar, International Center for Theoretical Physics, Trieste
06/2007 Workshop on *Physical and Chemical Foundations of Bioinformatics Methods,* Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
12/2006 Keynote, Diabetes (D-Cure) Working Groups Annual Symposium, Weizmann Institute, Israel
12/2006 Bauer Forum, Harvard Center for Systems Biology, Harvard University, Cambridge, MA
09/2006 Opening lecture for Origins Forum, Harvard Origins of Life Initiative, Cambridge, MA
08/2006 Gordon Research Conference, *Macromolecular Organization and Cell Function: Cellular Systems Biology*, USA
06/2006 *Optimization in Complex Networks*, Center for Nonlinear Studies, Los Alamos Natl. Lab
05/2006 Workshop *From vent chemistry to biochemistry,* Santa Fe Institute, NM
05/2006 American Society for Microbiology, 106th General Meeting, Orlando, FL
04/2006 Interdisciplinary Seminar series in Nonlinear Science, Northwestern University
10/2005 MIT, Chemical Oceanography seminar
06/2005 Intelligent Systems for Molecular Biology (ISMB), BioPathways session, Detroit, MI
05/2005 Workshop on Structure and Function of Complex Networks, ICTP, Trieste, Italy
05/2005 Workshop on Biological Networks, Bertinoro (BO), Italy
02/2005 Symposium on Network Dynamics and Biological Function, Boston University
12/2004 Networking Systems Biology symposium, Weizmann Institute of Science, Israel
12/2004 Erice International School on Complexity, *Towards the minimal cell*, Erice, Italy
11/2004 *Genomes, Chromosomes, Cells and Developm. Biology*, University C. Bernard, Lyon, France
09/2004 BioThermoKinetics workshop, Oxford University, UK
05/2004 Brandeis Adult Learning Institute, Brandeis University, Boston, MA
11/2003 Lawrence Livermore National Laboratory, ISCR and CASC seminar
06/2003 Harvard Bauer Center for Genomics Research, Genomics Talk
05/2003 Radcliffe Inst. for Advanced Study, Computational Biology conference
04/2003 University of Pennsylvania, Condensed Matter Physics seminar
11/2002 MIT Mathematics Department, Bioinformatics seminar
04/2002 DARPA BioComp PI meeting, San Diego, CA
06/2002 University of Alaska, International Conference on Emergence in Chemical Systems
11/2002 Harvard University, Fourth international Conference on the Evolution of Language

PUBLICATIONS

JOURNAL ARTICLES

Joshua E. Goldford*, Nanxi Lu*, Djordje Bajic, Sylvie Estrela, Mikhail Tikhonov, Alicia Sanchez-Gorostiaga, **Daniel Segrè**, Pankaj Mehta, Alvaro Sanchez: Emergent Simplicity in Microbial Community Assembly, BioRxiv (2017), https://doi.org/10.1101/205831.

Ali Zomorrodi and **Daniel Segrè**: Intracellular metabolic circuits shape inter-species microbial interactions, *Nature Communications*, 2017, 8:1563.

Ed Reznik, Dimitris Christodoulou, Joshua Goldford, Emma Briars, Uwe Sauer, **Daniel Segrè**, Elad Noor: Genome-scale analysis of small molecule regulatory networks reveals principles of metabolic regulation, *Cell Reports*, 20, 2666–2677.

Joshua E. Goldford, Hyman Hartman, Temple F. Smith, and **Daniel Segrè**: Remnants of an ancient metabolism without phosphate, *Cell,* 2017, 168, 1126–1134. *[Cover story, Commentary in same issue, Featured in Faculty of 1000]*

Christopher Jacobs, Luke Lambourne, Yu Xia and **Daniel Segrè**: Upon accounting for the impact of isoenzyme loss, gene deletion costs anticorrelate with their evolutionary rates, *PLOS ONE*, 2017, 12(1): e0170164.

Qi Zhao, **Daniel Segrè** and Ioannis Ch. Paschalidis: Optimal allocation of metabolic functions among organisms in a microbial ecosystem, *IEEE*, 2016, DOI: 10.1109/CDC.2016.7799357, 2016 IEEE 55th Conference on Decision and Control (CDC).

Lorenzo Castelli, Raffaele Pesenti and **Daniel Segrè**: The cell as a decision-making unit, 2016, *IEEE Life Science Letters*, Volume 2, Issue 3, Pages 27 – 30. DOI: 10.1109/LLS.2016.2644648.

Qi Zhao*, Arion Stettner*, Ed Reznik, Ioannis Ch. Paschalidis[#], and **Daniel Segrè**[#]: Mapping the landscape of metabolic goals of a cell, *Genome Biology*, 2016, 17:109, DOI: 10.1186/s13059-016-0968-2. (*Equally Contributing Authors; #Corresponding Authors) *[Research Highlight in Genome Biology, same issue]*

Brian Granger*, Yi-Chien Chan*, Yan Wang, Charles DeLisi, **Daniel Segrè**[#] and Zhenjun Hu[#]: Visualization of Metabolic Interaction Networks in Microbial Communities using VisANT 5.0, *PLOS Computational Biology*, 2016, 12(4): e1004875. doi:10.1371/journal.pcbi.1004875. (*Equally Contributing Authors; #Corresponding Authors)

Ali Zomorrodi and **Daniel Segrè**: Synthetic ecology of microbes: mathematical models and applications, *Journal of Molecular Biology*, 2016, 428, 837-861.

Lon M. Chubiz, Brian Granger, **Daniel Segrè** and William Harcombe: Species interactions differ in their genetic robustness, *Frontiers in Microbiology*, 2015, 6:271. doi: 10.3389/fmicb.2015.00271.

Viswanadham Sridhara, Austin G. Meyer, Piyush Rai, Jeffrey E. Barrick, Pradeep Ravikumar, **Daniel Segrè**, Claus O Wilke: Predicting growth conditions from internal metabolic fluxes in an *in-silico* model of *E. coli*, *PLOS ONE,* 2014, 9(12): e114608.

Shaun R. Brinsmade, Elizabeth L. Alexander, Jonathan Livny, Arion I. Stettner, **Daniel Segrè**, Kyu Y. Rhee and Abraham L. Sonenshein: Hierarchical expression of the *Bacillus subtilis* CodY regulon, *Proc. Natl. Acad. Sci. USA,* 2014, 111 (22), 8227–8232.

William R. Harcombe, William J. Riehl, Ilija Dukovski, Brian R. Granger, Alex Betts, Alex H. Lang, Gracia Bonilla, Amrita Kar, Nicholas Leiby, Pankaj Mehta, Christopher J. Marx, **Daniel Segrè**: Metabolic resource allocation in individual microbes determines ecosystem interactions and spatial dynamics, *Cell Reports*, 2014, 7, 1–12. *[Featured on journal homepage, with invited video abstract]*

Antonio L. C. Gomes, James E. Galagan and **Daniel Segrè**: Resource competition may lead to effective treatment of antibiotic resistant infections, *PLOS ONE*, 2013, 8(12): e80775.

Varun Mazumdar, Salomon Amar and **Daniel Segrè**: Metabolic proximity reflects the order of colonization in a microbial biofilm, *PLOS ONE,* 2013, 8(10): e77617.

Ed Reznik, Pankaj Mehta and **Daniel Segrè**: Flux imbalance analysis and the sensitivity of cellular growth to changes in metabolite pools, *PLOS Computational Biology*, 2013, 9(8): e1003195.

Ed Reznik, Osman Chaudhary and **Daniel Segrè**: The average enzyme principle, *FEBS Letters*, 2013, 587, 2891–289. *[Special celebratory issue on "A century of Michaelis-Menten kinetics"]*

Brian J. Anton, Yi-Chien Chang, …[66 authors]…, **Daniel Segrè**, Charles DeLisi, Richard J. Roberts, Martin Steffen, Simon Kasif: COMBREX: Design, Methodology, and Initial Results, *PLOS Biology*, 2013, 11(8): e1001638.

Arion Stettner and **Daniel Segrè**: The cost of efficiency in energy metabolism, *Proc. Natl. Acad. Sci. USA*, 2013, Vol. 110, no. 24, 9629-9630.

Ed Reznik, Stefan Yohe and **Daniel Segrè**: Invariance and optimality in the regulation of an enzyme, *Biology Direct*, 2013, 8:7.

Ed Reznik, Tasso Kaper and **Daniel Segrè**: The dynamics of hybrid metabolic-genetic oscillators, *Chaos*, 2013, 23, 013132**.** *[Top research highlight in Chaos journal homepage]*

Sara B. Collins*, Ed Reznik* and **Daniel Segrè**: Temporal expression-based analysis of metabolism, *PLoS Computational Biology*, 2012, 8(11): e1002781. (*Equally contributing authors)

David Byrne, Alexandra Dumitriu and **Daniel Segrè**: Comparative multi-goal tradeoffs in systems engineering of microbial metabolism, *BMC Systems Biology*, 2012, 6:127.

Hsuan-Chao Chiu, Christopher J. Marx, and **Daniel Segrè**: Epistasis from functional dependence of fitness on underlying traits, *Proceedings of the Royal Society B: Biological Sciences*, 2012, 279, 4156–4164.

Bo Liu*, Lina Faller*, Niels Klitgord*, Varun Mazumdar*, Mohammad Ghodsi, Dan D. Sommer, Ted Gibbons, Todd Treangen, Shan Li, O. Colin Stine, Hatice Hastuk, Simon Kasif, **Daniel Segrè**[#], Mihai Pop[#], Salomon Amar[#]: Deep sequencing of the oral microbiome reveals metabolic signatures of periodontal disease, *PLOS ONE*, 2012, 7(6): e37919. (*Equally Contributing Authors; [#]Corresponding Authors)

Qasim Beg*, Mattia Zampieri*, Sara Baldwin, Niels Klitgord, Margrethe Serres, Claudio Altafini and **Daniel Segrè**: Detection of transcriptional triggers in the dynamics of microbial growth: application to a respiratory-versatile bacterium, *Nucleic Acids Research*, 2012, 40 (15): 7132-7149.ww (*Equally contributing authors)

Miriam A Rosenbaum , Haim Y Bar , Qasim K Beg , **Daniel Segrè**, Dr. James Booth , Michael A Cotta, Largus T Angenent: Transcriptional analysis of *Shewanella oneidensis* MR-1 with an electrode compared to soluble Fe(III) or oxygen as terminal electron acceptor, *PLOS ONE*, 2012;7(2):e30827.

Mattia Zampieri, Giuseppe Legname, **Daniel Segrè** and Claudio Altafini: Inferring systemic response to prions infection from a transcriptional genetic network, *Bioinformatics*, 2011, 27(24):3407-14.

Niels Klitgord and **Daniel Segrè**: Ecosystems biology of microbial metabolism, *Current Opinions in Biotechnology*, 2011, 22:1-6. *[Reviewed at Faculty of 1000 Prime]*

Hsin-Hung Chou, Hsuan-Chao Chiu, Nigel F. Delaney, **Daniel Segrè** and Christopher J. Marx: Diminishing returns epistasis among beneficial mutations decelerates adaptation, *Science*, 2011, 332, 1190. *[Featured in Perspective Article, Science, same issue]*

Evan Snitkin and **Daniel Segrè**: A multi-phenotype map of epistatic interactions and its evolutionary implications, *PLOS Genetics*, 2011, 7(2): e1001294. *[Listed as one of Most Viewed articles, Mar 3, 2011]*

Richard J. Roberts, Yi-Chien Chang, Zhenjun Hu, John N. Rachlin, Brian P. Anton, Revonda M. Pokrzywa, Han-Pil Choi, Lina L. Faller, Jyotsna Guleria, Genevieve Housman, Niels Klitgord, Varun Mazumdar, Mark G. McGettrick, Lais Osmani, Rajeswari Swaminathan, Kevin R. Tao, Stan Letovsky, Dennis Vitkup, **Daniel Segrè**, Steven L. Salzberg, Charles Delisi, Martin Steffen and Simon Kasif: COMBREX: a project to accelerate the functional annotation of prokaryotic genomes, *Nucleic Acids Research*, 2011, 39 (suppl 1): D11-D14.

Miriam Rosenbaum, Haim Y. Bar, Qasim Beg, **Daniel Segrè**, James Booth, Michael A. Cotta, Largus T. Angenent: *Shewanella oneidensis* in a lactate-fed pure-culture and a glucose-fed co-culture with *Lactococcus lactis* with an electrode as electron acceptor, *Bioresource Technology*, 2011**,** 102, 2623-2628 *[Journal Cover]*.

Niels Klitgord and **Daniel Segrè**: Environments that induce synthetic microbial ecosystems, *PLOS Computional Biology*, 2010, 6(11): e1001002. *[Featured in Faculty of 1000, Hidden Jewels]*

Moritz Schuette, Alexander Skupin, **Daniel Segrè** and Oliver Ebenhoeh: Modeling the complex dynamics of enzyme-pathway coevolution, *Chaos*, 2010, 20, 045115.

Ed Reznik and **Daniel Segrè**: On the stability of metabolic cycles, *Journal of Theoretical Biology*, 2010, 266, 536-549.

William Riehl, Paul Krapivsky, Sidney Redner and **Daniel Segrè**: Signatures of arithmetic simplicity in metabolic network architecture, *PLOS Computational Biology*, 2010, 6(4): e1000725.

Varun Mazumdar, Evan Snitkin, Salomon Amar***** and **Daniel Segrè***: Metabolic network model of a human oral pathogen, *Journal of Bacteriology*, 2009, 191(1), 74-90. (*Equally contributing authors) *[Issue cover, Featured in annual Boston University Research brochure]*.

Evan S. Snitkin, Aimée M. Dudley, Daniel M. Janse, Kaisheen Wong, George M. Church, and **Daniel Segrè**: Model-driven analysis of experimentally determined growth phenotypes for 465 yeast gene deletion mutants under 16 different conditions, *Genome Biology*, 2008, Sep 22;9(9):R140. *[Labeled as Highly Accessed]*.

Matthew A. Wright, Peter Kharchenko, George M. Church and **Daniel Segrè**: Chromosomal periodicity of evolutionarily conserved gene pairs, *Proc. Natl. Acad. Sci. USA*, 2007, 104 (25), 10559-10564. *[Featured in the blog of the Nature/EMBO journal Molecular Systems Biology]*

Jason Raymond and **Daniel Segrè**, The effect of oxygen on biochemical networks and the evolution of complex life, *Science*, 2006, 311, 1764-1767.*[Featured in: The Scientist, Seed Magazine, Astrobiology Magazine, La Stampa (Italy), Chemical and Engineering News, Front webpage of Lawrence Livermore National Laboratory]*

Daniel Segrè, Alexander De Luna, George M. Church and Roy Kishony: Modular epistasis in yeast metabolism, *Nature Genetics*, 2005, 37(1), 77-83. *[Featured in News & Views and Editorial, same issue; Highlighted in Nature Reviews Genetics]*

Daniel Segrè: The regulatory software of cellular metabolism, *Trends in Biotechnology*, 2004, 22(6), 261-265.

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