

Djordje Bajić

ASSISTANT PROFESSOR · DEPARTMENT OF BIOTECHNOLOGY · DELFT UNIVERSITY OF TECHNOLOGY

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Positions

Technical University Delft

ASSISTANT PROFESSOR IN COMPUTATIONAL BIOTECHNOLOGY

Delft, Netherlands

November 2022 - Present

Yale University

POSTDOCTORAL ASSOCIATE

• Advisor: Dr. Alvaro Sanchez

New Haven, Connecticut, USA

Jul. 2016 - Jul. 2022

Biological Research Center, Hungarian Academy of Science

RESEARCH ASSOCIATE

Szeged, Hungary

Feb 2015-Oct 2015

Education

Universidad Autonoma de Madrid

PHD BIOPHYSICS

• Advisor: Dr. Juan F. Poyatos

Madrid, Spain

Sep. 2010 - Feb. 2016

Universidad Autonoma de Madrid

M.Sc. BIOPHYSICS

Madrid, Spain

Sep. 2009 - Sep. 2010

Universidad Autonoma de Madrid

B.Sc. BIOCHEMISTRY

Madrid, Spain

Sep. 2003 - Sep. 2009

Publications

* shared first authorship; # co-corresponding authorship,

- [23] Chang, C-Y.#, Bajić D.#, D., Vila, J.C.C., Estrela, S. Sanchez A.# 2022. *Emergent coexistence in multispecies microbial communities*. **Science** (in press); preprint available at DOI:10.1101/2022.05.20.492860
- [22] Takano S., Vila J.C.C., Miyazaki R., Sanchez A., Bajić D. *The architecture of metabolic networks constrains the evolution of microbial resource hierarchies* **bioRxiv** 10.1101/2023.04.21.537789
- [21] Scott W.T., Benito-Vaquerizo S., Zimmerman J., Bajić D., Heinken A., Suarez-Diez M, Schaap P.J. *A structured evaluation of genome-scale constraint-based modeling tools for microbial consortia* **PLoS Computational Biology** (in press)
- [20] Diaz-Colunga J., Skwara A., Gowda K., Diaz-Uriarte R., Tikhonov M., Bajić D., Sanchez A. *Global epistasis on fitness landscapes* **Philosophical Transactions of the Royal Society B** 378 (1877), 20220053
- [19] Diaz-Colunga, J.*, Skwara, A.*, Vila, J.C.C., Bajić D.# Sanchez A.# 2022. *Global epistasis and the emergence of ecological function*. **BioRxiv** 10.1101/2022.06.21.496987
- [18] Sanchez A., Bajić D., Diaz-Colunga, J., Skwara, A., Vila, J.C.C. Kuehn S. 2022. *The community-function landscape of microbial consortia* **Cell Systems** 14 (2), 122-134

- [17] Estrela S.#, Vila J.C.C., Lu N., Bajić D., Rebolleda-Gomez M., Chang CY., Goldford J., Sanchez-Gorostiaga A., Sanchez A#. 2022. *Functional attractors in microbial community assembly*. **Cell Systems** S2405471221003793
- [16] Peralta-Marzal, Lucía N, Prince N, Bajić D., Roussin L, Naudon L, Rabot S, Garssen J, Kraneveld AD, and Perez-Pardo P. 2021. *The Impact of Gut Microbiota-Derived Metabolites in Autism Spectrum Disorders*. **International Journal of Molecular Sciences** 22, 18: 10052.
- [15] Dukovski I.*, Bajić D.*, Chacón J.M.*, Quintin M*, Vila J.C.C., Sulheim S., Pacheco A.R., Bernstein D., Korolev K., Sanchez A., Harcombe W.D., Segrè D. 2021. *A metabolic modeling platform for the computation of microbial ecosystems in time and space (COMETS)*. **Nature Protocols** 16, 5030–5082
- [14] Bajić, D.*#, Rebolleda-Gomez M., Muñoz MM, Sanchez A#. 2021. *The macroevolutionary consequences of niche construction in microbial metabolism*. **Frontiers in Microbiology** 12:718082
- [13] Lino F.S.O., Bajić D., Vila J.C.C., Sanchez A., Sommer M.O.A. 2021. *Complex yeast-bacteria interactions shape the yield of industrial ethanol fermentations*. **Nature Communications** 12 (1), 1-1[2]
- [12] Alonso-Lavin AJ, Bajić D., Poyatos J.F. 2021. *Tolerance to NADH/NAD⁺ imbalance anticipates aging and anti-aging interventions*. **iScience** 102697
- [11] Kovács K.*, Farkas Z.*, Bajić D.*, Kalapis D., Kintsés B., Notebaart R.A., Poyatos J.F., Kemmeren P., Holstege F.C.P., Pál C.#, Papp B#. 2020. *Suboptimal global transcriptional response increases the harmful effects of loss-of-function mutations in yeast*. **Molecular Biology and Evolution** msaa280
- [10] Chang C.*, Osborne M.L.*, Bajić, D. & Sanchez A. 2020. *Artificially selecting microbial communities using propagule strategies*. **Evolution** 74:10, 2392-2403 (<https://doi.org/10.1101/2020.05.01.066282>)
- [9] Bajić D. & Sanchez A. 2020. *The ecology and evolution of microbial metabolic decision-making*. **Current Opinion in Biotechnology**, 62:123–128.
- [8] Sanchez-Gorostiaga A.*, Bajić D.*, Osborne M.L., Poyatos J.F., Sanchez A. 2019. *High order interactions distort the functional landscape of microbial consortia*. **PLoS Biology** 17(12): e3000550
- [7] Bajić, D.*#, Vila, J.C.C.*, Blount, Z.D., Sanchez, A#. 2018. *On the deformability of an empirical fitness landscape by microbial evolution*. **Proceedings of the National Academy of Sciences, USA** 115(44):11286-11291
- [6] Goldford, J.*, Lu, N.*, Bajić, D., Estrela, S., Sanchez-Gorostiaga, A., Tikhonov, M., Segre, D., Mehta, P.#, Sanchez, A.#. 2018. *Emergent simplicity in microbial community assembly*. **Science** 361:469-74
- [5] Rodrigo G., Bajić D., Elola I., Poyatos J.F. 2017. *Deconstructing a multiple antibiotic resistance regulation through the quantification of its input function*. **NPJ Systems Biology and Applications** 3: Article number: 30
- [4] Rodrigo G., Bajić D., Elola I., Poyatos J.F. 2016. *Antagonistic autoregulation speeds up a homogeneous response in Escherichia coli*. **Scientific Reports** 6: Article number: 36196
- [3] Biología de sistemas. Book chapter in: Bioinformática con Ñ (editors: Sebastián A, Pascual-García A). 2014. Aguirre J., Bajić D., Guantes R. **Independently published**, ISBN:978-84-617-1976-X.
- [2] Bajić D., Moreno-Fenoll C., Poyatos J.F. 2014. *Rewiring of genetic networks in response to modification of genetic background*. **Genome biology and evolution** 6 : 3267–3280.
- [1] Bajić D., Poyatos J.F. 2012. *Balancing noise and plasticity in eukaryotic gene expression*. **BMC Genomics** 13: 343.

Awards, Fellowships, & Grants

2015	Short-Term Fellowship, European Molecular Biology Organization	€ 7,940
2009	Master Scholarship, Universidad Autónoma de Madrid	€ 5,000
2008	Undergraduate Collaboration Scholarship, Spanish Ministry of Education	€ 2,700
2006	Erasmus Scholarship, European Commission	€ 3,500

Presentations

INVITED TALKS AND SEMINARS

Sep 2023. **ICGEB Workshop on Trends in Microbial Solutions for Sustainable Agriculture**, Belgrade, Serbia
Feb 2023. **bioSB + NLSEB Symposium on Evolution in Communities**, Amsterdam, Netherlands
Oct 2022. **Invited Seminar**, Biological Research Center, Hungarian Academy of Sciences, Szeged, Hungary
Apr 2022. **Principles in Cell Physiology Forum**, Online
Sep 2020. **AEEB Evolutionary Biology Meeting**, Marseille, France [postponed]
Jun 2020. **Max Planck Institute for Evolutionary Biology Seminar Series**, Plön, Germany
Jul 2019. **"Impact of horizontal gene transfer on natural microbiomes" HFSP Project Meeting**, Tokyo, Japan.
Mar 2019. **COMETS Hackathon**, Boston University, Boston, USA
Mar 2019. **"Impact of horizontal gene transfer on natural microbiomes" HFSP Project Meeting**, Lausanne, Switzerland.
Mar 2018. **SMAL Talk**, Yale University, New Haven, USA
Dec 2017. **Department Seminar**, Ramon y Cajal University Hospital, Microbiology Research Unit, Madrid, Spain
Dec 2013 **XXI National Center for Biotechnology Scientific Workshop**. CNB-CSIC, Madrid, Spain

Teaching Experience

INVITED LECTURER

2018. Invited Lecturer, Course: Evolutionary Biology (EEB225), **Yale University**, 1 hr
2012. Guest Lecture. Master in Biomedicine, **Universidad Autonoma de Madrid**, 2 hr

Mentoring

2023 **Daan Nolde**, Bachelor End Project (3 mo.) (TU Delft, Dept. of Biotechnology)
2023 **Julia Verbeek**, Bachelor End Project (3 mo.) (TU Delft, Dept. of Biotechnology)
2019-2020 **Sotaro Takano**, Visiting postdoc (6 mo), co-supervised project (paper in prep.)
2019 **Felipe Lino**, Visiting PhD Student (4 mo), co-supervised project (Nat. Commun. 2021)
2016-2022 **Jean C.C. Vila**, PhD Student, co-supervised Thesis (EEB, Yale University)
2019-2020 **Madeline Bender**, Co-directed Senior Thesis, EEB, Yale University (paper in prep.)

Professional Service

COMMISSIONS OF TRUST

2020 **NASA Exobiology Solicitation**, Grant Evaluation Panel Member
2022 **UKRI NERC Highlight Topics**, Grant External Reviewer

REVIEWER FOR SCIENTIFIC JOURNALS

Science Advances, PLoS Biology, Nature Communications, eLife, Nature Ecology and Evolution, Genome Biology, ISME Journal, PLoS Computational Biology, BMC Systems Biology, Proceedings of the Royal Society B: Biological Sciences, Proceedings of the Royal Society: Interface, mSystems