Djordje Bajić

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Positions

Technical University Delft — *Delft, Netherlands*
Assistant Professor — *November 2022 - Present*

Yale University — *New Haven, Connecticut, USA*
Postdoctoral Associate — *Jul. 2016 - Jul. 2022*
- Advisor: Dr. Alvaro Sanchez

Biological Research Center, Hungarian Academy of Science — *Szeged, Hungary*
Research Associate — *Feb 2015-Oct 2015*

Education

Universidad Autonoma de Madrid — *Madrid, Spain*
PhD Biophysics — *Sep. 2010 - Feb. 2016*
- Advisor: Dr. Juan F. Poyatos

Universidad Autonoma de Madrid — *Madrid, Spain*
M.Sc. Biophysics — *Sep. 2009 - Sep. 2010*

Universidad Autonoma de Madrid — *Madrid, Spain*
B.Sc. Biochemistry — *Sep. 2003 - Sep. 2009*

Publications

** shared first authorship; # co-corresponding authorship,*

[26] Stroek, R.*, Gabriëls M.*, Winkelhorst, M., van den Broek, M., Pabst, M., Jourdin, L., Daran, J.M., Bajić D., 2025. *Linking structure to function in high performing electrosynthetic biofilm communities* ***BioRxiv*** DOI:10.64898/2025.12.16.694578

[25] Bajić D.#, van Oort M., Gabriëls M., Gojković Uroš. 2025. *Structuring complexity by mapping the possible in microbial ecosystems.* ***Current Opinion in Microbiology*** (88), 10265812

[24] Diaz-Colunga, J.*, Skwara, A.*., Vila, J.C.C., Bajić D.#, Sanchez A.# 2024. *Global epistasis and the emergence of ecological function.* ***Cell*** (12), 3108-3119. e30

[23] Chang, C-Y.#, Bajić D.#, D., Vila, J.C.C., Estrela, S., Sánchez A.# 2023. *Emergent coexistence in multispecies microbial communities.* ***Science*** 381 (6655), 343-348

[22] Takano S., Vila J.C.C., Miyazaki R., Sanchez A., Bajić D. 2023. *The architecture of metabolic networks constrains the evolution of microbial resource hierarchies* ***Molecular Biology and Evolution*** 40 (9), msad187

[21] Scott W.T., Benito-Vaquerizo S., Zimmerman J., Bajić D., Heinken A., Suarez-Diez M, Schaap P.J. 2023. *A structured evaluation of genome-scale constraint-based modeling tools for microbial consortia* ***PLoS Computational Biology*** 19 (8), e1011363

[20] Diaz-Colunga J., Skwara A., Gowda K., Diaz-Uriarte R., Tikhonov M., Bajić D., Sanchez A. 2023. *Global epistasis on fitness landscapes* ***Philosophical Transactions of the Royal Society B*** 378 (1877), 20220053

[19] Vila, J.C.C.#, Goldford J, Estrela S., Bajić D., Sánchez-Gorostiaga A., Damian-Serrano A., Lu N., Marsland III, R., Rebolleda-Gómez M., Mehta P., & Sánchez A.# 2022. *Metabolic similarity and the predictability of microbial community assembly.* ***biorxiv*** https://doi.org/10.1101/2023.10.25.564019

[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., Kintses 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*

Selected Talks

Invited Talks at Conferences and Workshops

Jan 2026. **33rd International Symposium of Rhizosphere Microbial Ecology - LorMe**, *Keynote Speaker*. Nanjing Agricultural University, Nanjing, PR China

Oct 2025. **Symposium "Modeling metabolism: successes, challenges, and prospects"**, VU Amsterdam, Amsterdam, The Nethelands

Sep 2025. **School of Artificial Intellignece Applied to Microbiomes**, INRAE and Universite Paris-Saclay, Paris, France

Sep 2025. **Summer School Data integration with Microbial Networks and Community Models**, KU Leuven, Leuven, Belgium

Feb 2025. **International Water Association: Innovative modelling approaches for microbial ecosystem engineering**, Online

Oct 2024. **Principles in Cell Physiology Forum**, Online seminar

May 2024. **Start up - Stand up event, Innovation Incubator Faculty of Biology**, Belgrade, Serbia

Apr 2024. **Congress of Microbiologists Serbia - From Biotechnology to Human and Planetary Health**, Belgrade, Serbia

Sep 2023. **2nd Dutch Symposium on Quantitative Microbial Ecology**, TU Delft, Delft, The Netherlands

Sep 2023. **Joint NLSEB/BioSB symposium on Evolution in and of cell communities**, Amsterdam, The Netherlands

Sep 2023. **ICGEB Workshop on Trends in Microbial Solutions for Sustainable Agriculture**, Belgrade, Serbia

Apr 2022. **Principles in Cell Physiology Forum**, Online seminar

Invited Department Seminars

Feb 2025. **Centro de Biotecnologia y Genomica de Plantas (CBGP Seminar Series)**, Madrid, Spain

Dec 2023. **Wageningen Evolution and Ecology Seminars**, Wageningen, The Netherlands

Feb 2023. **Department of Pharmacology, Utrecht University**, Utrecht, Netherlands

Dec 2022. **Section of Industrial Microbiology, Depatment of Biotechnology, Technical University of Delft**, Delft, The Netherlands

Oct 2022. **Biological Research Center, Hungarian Academy of Sciences**, Szeged, Hungary

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

Contributed Talks at Meetings and Conferences

Jul 2024. **European Conference on Biotechnology**, Rotterdam, The Netherlands

Jan 2024. **Microbial Ecology and Evolution Hubs (MEEHubs24) Conference**, Online talk

Jun 2021. **EMBO Predicting Evolution Workshop**, Heidelberg 2021 (Online talk)

Oct 2020. **bioSB2020 - 6th Bioinformatics & Systems Biology Conference**, Netherlands, 2020 (Online)

Jun 2018. **Wellcome Trust Conference on Evolutionary Systems Biology**, Hinxton, UK, 2018

Teaching Experience

TU Delft

LM3432 Analysis of Metabolic Networks. Coordinator. 1 quarter, 8h/week (6 ECTS), 2022–present

Invited Lecturer

2024, 2025. Invited Lecturer, Advanced Course on Microbial Physiology and Fermentation Technology, **TU Delft**, 3 hr

2018. Invited Lecturer, Course: Evolutionary Biology (EEB225), **Yale University**, 1 hr

2012. Guest Lecture. Master in Biomedicine, **Universidad Autonoma de Madrid**, 2 hr

Mentoring

At TU Delft

2025	**Timothy Paez Watson**, Postdoc (4 mo.), Collaboration with Unilever
2023-2027	**Uroš Gojković**, PhD Candidate
2023-2027	**Minke Gabriëls**, PhD Candidate
2023 -	**5 Master End Projects**, (8-9 mo. each)
2023 -	**7 Bachelor End Projects**, (3 mo. each)
2024 -	**1 ERASMUS Master Internship** , (4 mo.)

At Yale

2019-2020	**Sotaro Takano**, Visiting postdoc (6 mo), co-supervised project (1 paper together)
2019	**Felipe Lino**, Visiting PhD Student (4 mo), co-supervised project (1 paper together)
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 (1 paper in prep.)

Professional Service

Commisions of trust

2026	**Graduate Women in Science National Fellowship Program, USA**, External reviewer
2025	**Polytechnic University of Madrid**, Member of PhD committee Inssaf Nedjari
2024	**XIII Congress of Microbiologists Serbia**, Scientific Committee Member
2023	**Wageningen University & Research**, Member of PhD committee Ivette Parera-Olm
2023	**Swiss National Science Foundation**, External Reviewer for SNF Consolidator Grant
2022	**UK Research and Innovation**, External Reviewer for ”NERC Highlight Topics” Grant
2020	**NASA**, Panel Member for Grant Evaluation - Exobiology Solicitation

Organization of Meetings and Workshops

2025. **FEMS Workshop ”BiomeFUN 2025 - From Genomic Analysis to Functional Models in Microbiomes and Synthetic Consortia”**, Scientific and Organizing Committee Co-chairperson, Belgrade, Serbia.

2024 - . **Advanced course ”Multi-Omics approaches for Improvement of Industrial Microbes”**, Board Member. Delft, The Netherlands.

2024, 2025. **Session on ”Structure and Function of Microbial Communities”, KNVM Spring Meeting**, Co-convenor with Matti Gralka. Arnhem, The Netherlands.

2023. **II Dutch Symposium on Quantitative Microbial Ecology**, Co-organization with Rebeca González-Cabaleiro.

2023. **Zero emission Biotechnology Industry Day**, Member of Organizing Committee. TU Delft, Delft, The Netherlands.

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