

Daniel Bojar, PhD

Curriculum Vitae

Employment

- 01/2021 - present - **Tenure-track Assistant Professor** (Associate Senior Lecturer) at the Department of Chemistry and Molecular Biology & the Wallenberg Centre for Molecular and Translational Medicine of the **University of Gothenburg**.
- 09/2019 - 12/2020 - **Postdoctoral Researcher** in the research group of Dr. James J. Collins at **MIT** and the Wyss Institute for Biologically Inspired Engineering of **Harvard University**.
- 05/2016 - 07/2019 - **PhD in Mammalian Synthetic Biology** (defended February 14th, graduated June 3rd) in the research group of Dr. Martin Fussenegger at the D-BSSE of **ETH Zurich**.
- 09/2012 - 03/2016 - **Research assistant** at **ETH Zurich** (Dr. M. Fussenegger), **University of Zurich** (Dr. M. Jinek, Dr. A. Plueckthun), and the **Max Planck Society** (Dr. M. Hothorn).

Education

- 09/2014 - 03/2016 - **Master of Science ETH** in 'Structural Biology and Biophysics' at ETH Zurich, final grade: 5.78 / 6.0 [Swiss Grades]. Graduated with Distinction.
- 10/2011 - 07/2014 - **Bachelor of Science** 'Biochemistry' at Eberhard-Karls-University Tuebingen, final grade: 1.1 / 1.0 [German Grades]. Awarded for graduating at the top of the program.

Scientific Publications (ORCID: 0000-0002-3008-7851; [Full List](#))

- 05/2021 - **Bojar, D.** Construction of caffeine-inducible gene switches in mammalian cells. *Meth Mol Biol*, doi:[10.1007/978-1-0716-1441-9](https://doi.org/10.1007/978-1-0716-1441-9).
- 01/2021 - Uhlich, M. and **Bojar, D.** DeepConnection: Classifying Relationship State from Images of Romantic Couples. *J Comput Soc Sci*, doi:[10.1007/s42001-021-00102-2](https://doi.org/10.1007/s42001-021-00102-2).
- 01/2021 - **Bojar, D.**, Powers, R.K., Camacho, D.M., and Collins J.J. Deep-Learning Resources for Studying Glycan-Mediated Host-Microbe Interactions. *Cell Host Microbe*, 29:[132-144](https://doi.org/10.1016/j.chom.2021.01.001).
- 04/2020 - **Bojar, D.**, Powers, R.K., Camacho, D.M., and Collins J.J. SweetOrigins: Extracting Evolutionary Information from Glycans. *bioRxiv*, doi:[10.1101/2020.04.08.031948](https://doi.org/10.1101/2020.04.08.031948).
- 01/2020 - **Bojar, D.**, Camacho, D.M., and Collins J.J. Using Natural Language Processing to Learn the Grammar of Glycans. *bioRxiv*, doi:[10.1101/2020.01.10.902114v1](https://doi.org/10.1101/2020.01.10.902114v1).
- 11/2019 - Saxena, P., **Bojar, D.**, Zulewski, H., and Fussenegger, M. Synthetic Biology Technologies for Beta Cell Generation. *Transplantation, Bioengineering, and Regeneration of the Endocrine Pancreas*, ISBN:[9780128148310](https://doi.org/10.1007/978-1-4939-9831-0).
- 10/2019 - **Bojar, D.** and Fussenegger, M. The Role of Protein Engineering in Biomedical Applications of Mammalian Synthetic Biology. *Small*, doi:[10.1002/sml.201903093](https://doi.org/10.1002/sml.201903093).
- 04/2019 - Kim, H. *, **Bojar, D.** *, and Fussenegger, M. A CRISPR/Cas9-based central processing unit to program complex logic computation in human cells. *Proc Natl Acad Sci USA*, 9:[7214-7219](https://doi.org/10.1073/pnas.181211496). Co-first authorship.
- 03/2019 - **Bojar, D.**, Fuhrer, T., and Fussenegger, M. Purity by design: Reducing impurities in bioproduction by stimulus-controlled global translational downregulation of non-product proteins. *Metab Eng*, 52:[110-123](https://doi.org/10.1016/j.ymben.2018.11.001).
- 12/2018 - **Bojar, D.** Updating the in silico human surfaceome with meta-ensemble learning and feature engineering. *bioRxiv*, doi:[10.1101/499780](https://doi.org/10.1101/499780).
- 07/2018 - **Bojar, D.** and Fussenegger, M. Programming mammalian gene expression with the antibiotic simocyclinone D8 and the flavonoid luteolin. *AIChE J*, 64:[4237-4246](https://doi.org/10.1002/aic.14446).

- 06/2018 **Bojar, D.**, Scheller, L., Charpin-El Hamri, G., Xie, M., and Fussenegger, M. Caffeine-inducible gene switches controlling experimental diabetes. *Nat Commun*, 9:2318.
- 04/2018 Scheller, L., Strittmatter, T., Fuchs, D., **Bojar, D.**, and Fussenegger, M. Generalized extracellular molecule sensor (GEMS) platform for programming cellular behavior. *Nat Chem Biol*, 14:723-729.
- 04/2018 Kojima, R.* , **Bojar, D.*** , Rizzi, G., Charpin-El Hamri, G., El Baba, M., Saxena, P., Auslaender, S., Tan, K.R., and Fussenegger, M. Designer exosomes produced by implanted cells intracerebrally deliver therapeutic cargo for Parkinson's disease treatment. *Nat Commun*, 9:1305. Co-first authorship.
- 11/2017 Hansen, S., Stueber, J., Ernst, P., Koch, A., **Bojar, D.**, Batyuk, A., and Plueckthun, A. Design and applications of a clamp for green fluorescent protein with picomolar affinity. *Sci Rep*, 7:16292.
- 10/2017 Saxena, P., **Bojar, D.**, Zulewski, H., and Fussenegger, M. Generation of glucose-sensitive insulin-secreting beta-like cells from human embryonic stem cells by incorporating a synthetic lineage-control network. *J Biotechnol*, 259:39-45.
- 08/2017 Saxena, P., **Bojar, D.**, and Fussenegger, M. Design of synthetic promoters for gene circuits in mammalian cells. *Meth Mol Biol*, 1651:263-273.
- 06/2016 **Bojar, D.** and Fussenegger, M. The best of both worlds: Reaping the benefits from mammalian and bacterial therapeutic circuits. *Curr Opin Chem Biol*, 34:11-19.
- 01/2014 **Bojar, D.**, Martinez, J., Santiago, J., Rybin, V., Bayliss, R., and Hothorn, M. Crystal structures of the phosphorylated BRI1 kinase domain and implications for brassinosteroid signal initiation. *Plant J*, 78:31-43.

Patents and licenses

- 01/2020 Fussenegger, M., Scheller, L., Strittmatter, T., Fuchs D. and **Bojar, D.** Generalized Extracellular Molecule Sensor System. U.S. Application No. 16/737,076, filed January 8th, 2020

Associations/Boards/Committees

- 11/2019 - Member of the Engineering Biology Research Consortium - Student and Postdoc Association present
- 06/2018 - Member of the Society for Biological Engineering present
- 02/2018 - Selected Member of the Academic Jury for the St. Gallen Wings of Excellence Award
05/2018
- 10/2016 - Active Member of the Student Association of the Department of Biosystems Science and
07/2019 Engineering at ETH Zurich

External Funding & Awards

- 06/2020 - Branco Weiss Fellowship – Society in Science. Funding of **500,000 CHF** over five years; present success rate: 1.4%
- 04/2020 - Foresight Fellow in Health & Longevity. Foresight Institute, CA, USA. present
- 06/2018 Selected Young Scientist at the 68th Lindau Nobel Laureate Meeting (600 most promising young physiology / medicine scientists worldwide)
- 11/2017 One of six finalists for the Lopez-Loreta Prize 2018 (funding of 1,000,000 €)
- 12/2016 ETH silver medal for outstanding Master's thesis by ETH Zurich

- 09/2014 - Fellow of the „Excellence Scholarship and Opportunity Program“ of ETH Zurich (most
02/2016 talented 2-3% of their year)
- 07/2014 Award for outstanding academic achievements in the Bachelor of Science – Biochemistry
by the Eberhard-Karls-University Tuebingen (best student of their year)
- 04/2013 - Fellow of the German Academic Scholarship Foundation (best 10% of their year)
03/2016
- 03/2013 Deutschlandstipendium. Granted for one year. Gratefully declined.
- 05/2011 - Fellow of e-fellows (best 10% of their year)
10/2016

Selected Invited Talks

- 05/2021 Sugar, Sugar – Unraveling the Roles of Glycans in Biology via Machine Learning. Gothen-
burg Bioinformatics Network (GOTBIN), May 25th.
- 05/2020 SweetOrigins: Extracting Evolutionary Information from Glycans. Department of Biostati-
stics, Harvard University, May 18th.
- 03/2020 Sequence-to-Function Models for Glycobiology Using Machine Learning. Harvard School of
Public Health, March 6th.
- 02/2020 SweetTalk: A Machine Learning-Based Language Model for Glycans. ETH Zurich, Feb. 11th.

Conference Activity

- 06/2020 Sequence-to-Function Models for Glycobiology Using Machine Learning (Poster). 12th
International Symposium on Glycosyltransferases, Boston, MA, USA.
- 06/2020 Using Glycan-Focused Machine Learning for Functional Glycomics. 4th annual New England
Glyco-Chemistry Meeting, Boston, MA, USA.
- 09/2018 Treating Diabetes with a Cup of Coffee. 3rd Bioengineering & Translational Medicine
Conference, Boston, MA, USA.
- 09/2018 Treating Diabetes with a Cup of Coffee. Cell Therapies and Bioengineering Conference,
UCSF, San Francisco, CA, USA.
- 11/2017 Synthetic Biology-inspired Differentiation of Human Embryonic Stem Cells into Beta-
like Cells. EuroTech Winter School, Eindhoven University of Technology, Eindhoven,
Netherlands.
- 05/2014 Mechanistic insights into brassinosteroid signalling initiation (Poster). Interdisciplinary
Plant Group Symposium "Plant Protein Phosphorylation", Columbia, MO, USA.

Campus Talks

- 01/2021 Sugar, Sugar – Unraveling the Roles of Glycans in Biology via Machine Learning.
Wallenberg Centre for Molecular and Translational Medicine Yearly Event, University of
Gothenburg, Jan 28th.
- 05/2020 SweetOrigins: Extracting Evolutionary Information from Glycans. Microbiome Epidemiolo-
gy Working Group, Department of Biostatistics, Harvard University, May 18th.
- 03/2020 Sequence-to-Function Models for Glycobiology Using Machine Learning. Harvard School of
Public Health, March 6th.
- 01/2020 SweetTalk: A Machine Learning-Based Language Model for Glycans. MIT Glycobiology
Club, January 30th.

Teaching

- 03/2021 - CRISPR/Cas9 knockout screen lecture and seminar in the Experimental Systems Biology
present course (BIO448) at the University of Gothenburg.

- 02/2021 - Glycobioinformatics lecture in the Bioinformatics and Functional Genomics course (BIO210) present at the University of Gothenburg.
- 06/2016 - Cellular Engineering Mammalian Cells course at ETH Zurich.
- 06/2019

Community Service

- 2019 News & Views articles for OUP *Synthetic Biology*: [1](#), [2](#), [3](#), [4](#), [5](#)
- Reviewer for *Nature Machine Intelligence*, *Biotechnology and Bioengineering*, *IEEE Open Journal of Engineering in Medicine and Biology*, *ACS Synthetic Biology*, *PLoS One*, OUP *Synthetic Biology*, and *Critical Reviews in Biotechnology*.

Outreach & Communication

- Writing in-depth and compelling science communication articles for [Times Higher Education](#), [Towards Data Science](#), [Nautilus Magazine](#), [Medium](#), [Massive Science](#), [ASBMB](#), [PLOS Synbio](#), [Tales of the Cocktail](#), [Spektrum der Wissenschaft](#), [GenoFAB](#), etc.
- Reviewing popular science books for the [Royal Society of Biology](#).
- Communicating science to diverse audiences through invited public talks (750+ attendees) and selected talks at several international scientific conferences (100+ attendees).
- 01/2018 - Communications Officer on the [EUSynBioS](#) (European association of synthetic biology)
- 04/2019 Steering Committee; organized an international conference in Toulouse (100+ attendees).

Further Information: [LinkedIn](#), [GitHub](#), [Google Scholar](#)