

Thomaz F S Bastiaanssen, PhD

*Bioinformatics, Microbiome-Gut-Brain Axis,
Theoretical Ecology, Medical Ecology*

Curriculum Vitae



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Professional Summary

I am a bioinformatician interested in the interplay between the gut microbiome and host mood and mental health. The focus of my research currently lies in understanding microbiome-gutbrain communication from a theoretical ecology/bioinformatics perspective. In particular, I am interested in understanding the role of stability and volatility of the gut microbiome in anxiety and depression and in integrating different types of 'omics data in a biologically interpretable manner. As a bioinformatician, I value clear and easily interpretable analysis of complex data in order to promote interdisciplinary collaboration. It fills me with joy that my bioinformatics tools and guides are used by researchers and lecturers at numerous institutes.

Employment

2021 - Present **Postdoctoral Researcher**, *University College Cork, Cork*
Lead bioinformatician for the Cryanlab
- Awarded the '21/'22 APC Scientific Excellence award

Education

2018 - 2021 **PhD**, *University College Cork, Cork*
Thesis Title: Mining the Microbiome for Markers of Microbiota-Gut-Brain Communication and Mental Health
- Supervised by Prof. JF Cryan, Prof. TG Dinan and Dr. MJ Claesson

2014 - 2017 **MSc**, *Utrecht University, Utrecht*
Research Trajectory: Molecular and Cellular Life Sciences - Bioinformatics

2010 - 2013 **BSc**, *Utrecht University, Utrecht*
Majored in Biology with a Minor in Art History

Research Skills

Academic: Study development • Mentoring • Grantsmanship • Scientific writing
Bioinformatics: 16S analysis • metagenomic shotgun analysis • RNAseq analysis • Metabolomics analysis • Microbiome functional inference • Volatility analysis • Multi-omics integration
General Programming: R • tidyverse • R package development • Python • Bash • Server management
Statistics: Experimental design • Data analysis • Generalised linear models • Generalised linear mixed effects models • Principal component analysis • Compositional data analysis

Mentorship

2022 - Present **Emma Todd**, *PhD candidate, Deakin University, Australia*
2021 - 2022 **Alessandro Atzeni**, *PhD candidate, University of Rovira i Virgili, Spain*
2021 - 2022 **Samuele Laudani**, *PhD candidate, University of Catania, Italy*
2019 - 2020 **Simon Spichak**, *MSc candidate, University College Cork, Ireland*

Honours & Awards

2021 - 2022 **APC Microbiome Ireland Scientific Excellence award**

Publications

Selected first author publications

- 2023 **Treating Bugs as Features: A compositional guide to the statistical analysis of the microbiome-gut-brain axis**, TFS Bastiaanssen, TP Quinn, A Loughman, arXiv
- 2021 **Microbiota from young mice counteracts selective age-associated behavioral deficits**, M Boehme, KE Guzzetta, TFS Bastiaanssen, M Van De Wouw, ..., JF Cryan, Nature Aging
- 2021 **Volatility as a Concept to Understand the Impact of Stress on the Microbiome**, TFS Bastiaanssen, A Gururajan, M van de Wouw, GM Moloney, NL Ritz, ..., JF Cryan, Psychoneuroendocrinology
- 2020 **Gutted! Unraveling the role of the microbiome in major depressive disorder**, TFS Bastiaanssen, S Cusotto, MJ Claesson, G Clarke, TG Dinan, JF Cryan, Harvard Review of Psychiatry
- 2019 **Making sense of ... the microbiome in psychiatry**, TFS Bastiaanssen, CSM Cowan, MJ Claesson, TG Dinan, JF Cryan, International Journal of Neuropsychopharmacology

Selected contributing author publications

- 2019 **The microbiota-gut-brain axis**, JF Cryan, KJ O'Riordan, CSM Cowan, KV Sandhu, TFS Bastiaanssen, ... TG Dinan, Physiological reviews
- 2020 **Mid-life microbiota crises: middle age is associated with pervasive neuroimmune alterations that are reversed by targeting the gut microbiome**, M Boehme, M van de Wouw, TFS Bastiaanssen, L Olavarria-Ramirez, ..., JF Cryan, Molecular psychiatry
- 2019 **Preventing adolescent stress-induced cognitive and microbiome changes by diet**, G Provensi, SD Schmidt, M Boehme, TFS Bastiaanssen, B Rani, A Costa, ..., MB Passani, Proceedings of the National Academy of Sciences
- 2023 **Critical windows of early-life microbiota disruption on behaviour, neuroimmune function, and neurodevelopment**, CMK Lynch, CSM Cowan, TFS Bastiaanssen, ..., JF Cryan, Brain, Behavior, and Immunity

Talks & Presentations

Selected Talks

- 2022 **How Microbes Drive Brain Disorders**, Drug Discovery News Webinar
- 2021 **The Brain-Body Connection**, The Beyond Addiction Show Radio & Podcast

Selected Poster Presentations

- 2018 **Don't push me cause I'm close to the edge: Stress-Induced Effects on the Stability of the Gut Microbiome in Mice**, 4th Intl Symposium on Resilience Research
Awarded Poster Prize