GERMAN PRECIAT, PHD

AI Specialist for Health Sciences

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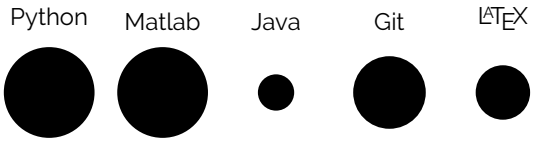
PROFESSIONAL PROFILE

I am a specialist in machine learning, with a focus on Health Sciences. I possess extensive experience in multidisciplinary scientific programming, research, and education. My primary expertise lies in the analysis of biological data using machine learning, mathematical optimization, and software development for multiple therapeutic areas. With effective communication skills and a passion for my field, I can articulate scientific concepts clearly and concisely to various audiences.



EXPERIENCE

2023-Present — **Principal Investigator** — **University of Guadalajara**
Supervising three thesis projects for the Master's in Bioengineering and Intelligent Computing | Working on personalised medicine development using Artificial Intelligence | Teaching classes on metabolic engineering | Conducting research seminars.
`Machine Learning / Biological Data Analysis / Supervision / Research`

2022-Present — **Consultant**
Specialising in providing Artificial Intelligence and genome-scale modelling solutions to optimize processes and make strategic decisions | Collaborating with multidisciplinary teams to implement innovative solutions.
`Machine Learning / Biological Data Analysis / Software Development / Python / Matlab`

2018-2022 — **Researcher** — **Leiden University**
Leading projects using omics data and artificial intelligence to create genomic-scale models of dopaminergic neurons derived from induced pluripotent stem cells to understand Parkinson's disease | Research cited in 1,402 peer-reviewed articles as measured by Google Scholar | Developer of the Constraint-Based Reconstruction and Analysis Toolbox for MATLAB (COBRA Toolbox) | Developed functions for multidimensional data integration | Presented findings at national and international professional conferences and meetings | Participated in international courses as a speaker.
`Biological Data Analysis / Software Development / Machine Learning / Mathematical Optimization / Python / Matlab`

EDUCATION

2018-2022 — **Ph.D. in Mathematics and Natural Sciences** — **Leiden University, Netherlands**
Thesis: Integration of omics data with genomic-scale modeling of dopaminergic neuronal metabolism.

2014-2016 — **Master's in Integrated Systems Biology** — **University of Luxembourg, Luxembourg**

2007-2012 — **Biomedical Engineering** — **University of Guadalajara, Mexico**

PUBLICATIONS

In progress

Luojiao Huang, German Preciat, Jesus Alarcon-Gil. **fluxTrAM: Integration of tracer-based metabolomics data into atomically-resolved genome-scale metabolic networks for metabolic flux analysis**.

Under consideration

German Preciat, Agnieszka B Wegrzyn, Edinson Lucumi Moreno, et al. **Mechanistic model-driven exometabolomic characterisation of human dopaminergic neuronal metabolism**. *Nat Commun.*

Under editorial consideration

German Preciat, Agnieszka Wegrzyn, Ines Thiele, Thomas Hankemeier, Ronan Fleming,. **XomicsToModel: Multiomics data integration and generation of thermodynamically consistent metabolic models**. *Nat Protoc.*

2023

Almut Heinken, Geeta Acharya, Dmitry Ravcheev, Johannes Hertel, Malgorzata Nyga, Onyedika Emmanuel Okpala, Marcus Hogan, Stefanía Magnúsdóttir, Filippo Martinelli, German Preciat, et al. **Genome-scale metabolic reconstruction of 7,302 human microorganisms for personalized medicine**. *Nat Biotechnol.*

2022

Ines Thiele, German Preciat y Ronan M.T. Fleming, **MetaboAnnotator: an efficient toolbox to annotate metabolites in genome-scale metabolic reconstructions**. *J Bioinform.*

2019

Laurent Heirendt, Sylvain Arreckx, Thomas Pfau, Sebastian N. Mendoza, Anne Richelle, Almut Heinken, Hulda S. Haraldsdóttir, Sarah M. Keating, Vanja Vlasov, Jacek Wachowiak, Stefania Magnusdottir, Chiam Yu Ng, German Preciat, et al. **Creation and analysis of biochemical constraint-based models:the COBRA Toolbox v3.0**. *Nat Protoc.*

2019

Miguel Oliveira, Silvain Arreckx, Donato Di Monte, German Preciat, Ayse Ulusoy y Ronan Fleming. **The connectome is necessary but not sufficient for the spread of alpha-synuclein pathology in rats**. *bioRxiv.*

2019

Alberto Noronha, Jennifer Modamio, Yohan Jarosz, Elisabeth Guerard, Nicolas Sompairac, German Preciat, et al. **The Virtual Metabolic Human database: integrating human and gut microbiome metabolism with nutrition and disease**. *Nucleic Acids Res.*

2018

Elizabeth Brunk, Swagatika Sahoo, Daniel C. Zielinski, Ali Altunkaya, Andreas Dräger, Nathan Mih, Andreas Prlić, Anand Sastry, German Preciat, et al. **Recon 3D: A Three-Dimensional View of Human Metabolism and Disease**. *Nature Biotechnol.*

2017

German Preciat, Lemmer El Assal, Alberto Noronha, Ines Thiele, Hulda S. Haraldsdóttir y Ronan M.T. Fleming. **Comparative evaluation of atom mapping algorithms for balanced metabolic reactions: application to Recon 3D**. *J Cheminform.*

ORAL PRESENTATIONS

2019 **Metabolic Pathway Analysis (MPA)** **Riga, Latvia**
Conserved moieties for genome-scale metabolic network reconstructions; Application in human dopaminergic neuronal metabolism.

2019 **Recent Developments in Mathematical and Computational Biomedicine** **Oaxaca, Mexico**
Atomically resolved metabolic network and constraint-based modeling in Parkinson's disease.

2018 **18th International Study Group for Systems Biology (ISGSB) Conference** **Tromsø, Norway**
Mechanistic model-driven exometabolomic characterization of human dopaminergic neuronal metabolism.

2018 **13th Pharmacometrics Network Benelux (PNB) Meeting** **Breda, Netherlands**
Mechanistic model-driven exometabolomic characterization of human dopaminergic neuronal metabolism.

2013 **9th National Meeting on Mathematical Biology** **Sonora, Mexico**
Somatosensory and Motor Systems in Petri Neural Networks.

POSTER PRESENTATIONS

2017 **OpenMultiMed Cost Training School in Systems Bioinformatics** **Nicosia, Cyprus**
Exometabolomic predictions from an iHNESC derived DN in silico model.

2017 **Metabolic Pathway Analysis (MPA)** **Bozeman, United States**
Decomposition of the mitochondrial metabolic network based on atom mapping data.

2017 **Department of Energy (DOE)** **Washington, United States**
Comparison of atom mapping algorithms for metabolic reactions: application to Recon 3D.

2012 **Annual Congress of Science and Technology** **Jalisco, Mexico**
Dynamic model of neuroanatomical connections based on Petri neural networks.

2012 **Annual Congress of Science and Technology** **Jalisco, Mexico**
Vulnerable Hippocampal Region to Alzheimer's: Relationship with Acetylcholine and Gliosis in the Triple Transgenic Model (3xTg-AD).

COURSES TAUGHT

2023-Present **University of Guadalajara** **Jalisco, Mexico**
Metabolic Engineering.

2022-Present **University of Guadalajara** **Jalisco, Mexico**
Research Seminar.

2021 **Leiden University** **Leiden, Netherlands**
ELIXIR Fluxomics Training School.

2019 **Leiden University** **Leiden, Netherlands**
BioSB Course Constraint-based modelling: introduction and advanced topics.

AWARDS

2018 **The Cyprus Institute of Neurology & Genetics** **Nicosia, Cyprus**
3rd place in best poster presentation.

2016 **University of Luxembourg** **Luxembourg City, Luxembourg**
Merit scholarship.

2014 **University of Guadalajara** **Jalisco, Mexico**
Scholarship for Master's studies.

LANGUAGES

Spanish - native
English - advanced
French - fluent
Luxembourgish - basic

CERTIFICATES

Management Skills 2023
French B2

HOBBIES

I love traveling the world and learning new languages. I also enjoy creating useful software for my daily life, such as managing my investments or analysing helpful data.