Paul Lemarre

QSP modeler at Nova In Silico

Professional experience

- QSP modeler and project manager @ Nova In Silico (formerly Novadiscovery)
  — 2021 - today, Lyon, France

Biological modeling	Pharmacalogical model development for in silico trial simulations. Literature review and scientific watch with an expertise in hematological diseases, antibody-based immunotherapies, PBPK models, in vitro to in vivo translation
In silico trial simulation	Knowledge management, mathematical model formulation (ODEs), implementation (Haskell), calibration (data processing and curation, parameter optimization), results reparation and presentation, technical report writing
Technical project manager	Team organization and planning, codebase maintenance (code review, CI tests, refactoring and architecture design), interns advising and newcomers training
Client project manager	Main contact point for clients, preparation and organization of external presentations, issue troubleshooting and data management
R&D engineer	Development of custom calibration methods for QSP models (virtual population calibration and individual patients calibration) with ad-hoc scripting in Python, implementing bayesian methods, evolutionnary agorithms. Interactions with core dev and product teams to participate in the development of user features

- Teaching Assistant @ Ecole Centrale de Lyon
  — 2020 - 2021, Lyon, France

  Linear algebra classes, both theoretical and practical workshops in Matlab

- Teaching Assistant @ University of California, Merced
  — 2019- 2020, Merced, California

  Numerical Linear Algebra and Real Analysis

- Computational Engineer intern @ DrillScan, Lyon
  — 2017, Lyon, France

  Participate in the development of a simulation tool for drillbit simulation and predictions (FORTRAN)

Education

- PhD in Applied Mathematics
  — 2017 - 2021, Université Claude Bernard Lyon 1 and University of California, Merced

  Build and analyze models (dynamical systems) to study protein aggregation problems, both in the context of neurodegenerative diseases and in yeast.

  Manuscript: Prions come in all shapes and sizes: Mathematical modeling of protein self-aggregation and conversion, 2021

- MSc in Applied Mathematics
  — 2016-2017, Université Claude Bernard Lyon 1

  Major in mathematics for biology and medicine

- Engineering degree
  — 2014- 2017, Ecole Centrale de Lyon

  Major in applied mathematics and computational science

Skills

Programming languages	Haskell | Python | C++ | R | JavaScript | HTML

Python	NumPy | SciPy | pandas | PyTorch | plotly | seaborn
R	tidyverse | ggplot
Computational science	Matlab | OpenMP
Mathematics	Differential equations | dynamical systems | bayesian optimization | evolutionary algorithm | statistics | numerical approximation | linear algebra
Communication	Results presentation | Visual abstracts
Dev	Git | Nix
Languages	French (native) | English (bilingual)
Misc	LaTeX | Office/Google Suite

Publications

Articles

- Kulesza, A., Couty, C., Lemarre, P. et al (2024)
  Advancing cancer drug development with mechanistic mathematical modeling: bridging the gap between theory and practice. J Pharmacokinet Pharmacodyn 51, 581-604, DOI
- Andrade-Restrepo, M., Ciuperca, S.I., Lemarre, P. et al. (2021)
  A reaction-diffusion model of spatial propagation of A-beta oligomers in early stage Alzheimer's disease. J. Math. Biol. 82, 39, DOI
- Lemarre, P., Pujo-Menjouet, L., Sindi, S.S. (2020)
  A unifying model for the propagation of prion proteins in yeast brings insight into the [PSI+] prion. PLOS Computational Biology 16(5): e1007647, DOI
- Andrade-Restrepo, M., Lemarre, P., Pujo-Menjouet, L., Matar Tine, L. and Ciuperca, S.I. (2020)
  Modeling the spatial propagation of Aβ oligomers in Alzheimer's Disease ESAIM: ProcS, 67 30-45 DOI
- Lemarre, P., Pujo-Menjouet, L. & Sindi, S.S. (2019)
  Generalizing a mathematical model of prion aggregation allows strain coexistence and co-stability by including a novel misfolded species. J. Math. Biol. 78, 465–495 (2019) DOI

Conferences

- Pharmacometrics Network Benelux (PNB) Fall Event 2024: short talk given at the PNB gathering in Utrecht, Nov 11 2024, on behalf of Nova In Silico.
- SMB Annual Meeting 2019: short talk given at the Annual Meeting of the Society for Mathematical Biology (Montreal, Canada, July 22-26 2019, see program here)
- CEMRACS 2018: participation in the summer school CEMRACS 2018. Joint work with Martin Andrade Restrepo, advised by L. Pujo-Menjouet, L. Matar-Tine et I.S. Ciuperca. Project on modeling the spatial propagation of Aβ oligomers during the early stages of Alzheimer's disease.