

# PERRILLAT-MERCEROT ANGÉLIQUE

## Modeling Research Fellow & Scientific Dissemination Technical Leader

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## WORK EXPERIENCE

### Modeling Research Fellow & Scientific Dissemination Technical Leader

#### Novadiscovery

- Nov. 2020 – Ongoing Lyon (France)
- Modeling Research Fellow (Biomodeler)
  - Development of an ODE model in Haskell toward neoangiogenesis from literature review to calibration. integration of the model in a lung cancer collaborative approach (12 biomodelers)
  - Project manager of a knowledge-based model credibility evaluation
- Leader in scientific dissemination and management intermediary
  - Definition, implementation and monitoring of actions in accordance with the company roadmap and reported needs. Alignment of the actions for coherency purposes. Set up and update of tracking files and storage
  - Set up and maintain the organization and animation of internal events (up to 90 participants)
  - Facilitator for exposure and knowledge sharing actions
  - Member of the IUB for the knowledge module of Jinko
- Vocational Trainings
  - Scientific publication and copyright, URFIST Paris, remote - June 2023
  - Leadership training week, SIS-UP, Lyon - April 2022

### Research engineer, post-doctoral researcher

#### Laboratory I3M (CNRS-UP-CHU-SIEMENS)

- Oct. 2019 – Nov. 2020 Poitiers (France)
- Study of the cerebral energy metabolism through mathematical modeling using Matlab, R and Python.
- Partnering with the STIM laboratory, ERL CNRS 7003
- Teaching contract 64h/year: Teaching assistant, University of Poitiers - Sept. 2019 to Sept. 2020.

## EDUCATION

### PhD in biomathematics

#### LMA laboratory, University of Poitiers

- Sept. 2016 – Oct. 2019 Poitiers (France)
- "Study of models for energetic substrates kinetics".
  - Defended on 10/22/19
  - Supervisors: Miranville Alain and Guillemin Rémy.
  - Rapporteurs: Olivier Saut and Jean Noël-Vallée. Examiners: Frédérique Clément, Jacques Demongeot, Jean-Pierre Françoise and Luc Pellerin. Special guests: Nicolas Bourmeyster and Anne-Karine Bouzier-Sore.
- Representative of PhD students at "Ecole doctorale SISMI" from July 2017 to October 2019.
- Teaching contract 64h/year: Oral examiner and teaching assistant, University of Poitiers - Sept. 2017 to Sept. 2019.

## ABOUT ME

31-years old french & italian researcher

Agile critical-thinking and creative problem-solving

Inclusive leadership and operative organization

## SKILLS

Applied Mathematics Neuroscience  
Modeling: ODE, PDE, DDE Communication  
In Silico Clinical Trial Model credibility  
Scientific watch Regulatory

Linux  $\LaTeX$  Google's suite Matlab  
R Python GitLab Miro Jinko

Leadership Management  
Problem anticipation Organization  
Adaptability Critical-Thinking  
Problem-solving Pro-activity

## LANGUAGES

**French** ● ● ● ● ●  
Native language.  
**English** ● ● ● ● ●  
Excellent, CEF C1.  
**Italian** ● ● ● ● ●  
Excellent, CEF C1. CLES B2 Feb. 2019.

## CNU QUALIFICATIONS

25 - Mathematics 69 - Neurosciences  
26 - Applied Mathematics

## MISCELLANEOUS

Not just half italian  
Passion for the italian culture.  
Extra classes in italian - 2013 – 2014

- Vocational trainings
  - ▷ Summer School: Mathematical Biology on the Mediterranean Conference University of Aegean, Samos (Greece) - Sept. 2019
  - ▷ Summer School CEMRACS: Numerical and mathematical modeling for biological and medical applications: deterministic, probabilistic and statistical descriptions, Centre International de Rencontres Mathématiques (CIRM), Marseille (France) - Juil. 2018
  - ▷ Winter School: Méthodes Déterministes et Stochastiques en Neurosciences, Centre International de Mathématiques et d'Informatique (CIMI), Toulouse (France) - Dec. 2017
  - ▷ Doctoral trainings: Conduite de thèse, Team management, Teaching, University lecturing and pedagogy, and Spanish, University of Poitiers, Chasseneuil du Poitou (France)

## Master in applied mathematics

### University Claude Bernard

📅 Sept. 2014 – Sept. 2016      📍 Lyon (France)

- Specialization: mathematical applications in biology and medicine (probabilistic and deterministic models)
- Extra course: Numerical analysis and optimization
- Internship, Inria team Dracula, Lyon.
  - ▷ Contribution to the analysis of a mathematical model incorporating the role of prions in Alzheimer's disease.
  - ▷ Supervisors: Pujo-Menjouet Laurent, Tine Léon-Matar, Mazzocco Pauline, Rezaei Human.



### Pet lover

Passion for pets: dog, cat and rodent owner (currently 3 cats and 2 fish).  
ACACED Chien, Chat & NAC - 2023



### Online player

League of Legends

## REFEREES

### Vice President of Science Emmanuel PHAM

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### Executive Manager Claudio MONTEIRO

@ Novadiscovery, Lyon

✉ claudio.monteiro@novadiscovery.com

### Prof. Alain MIRANVILLE

@ LMA laboratory UMR 7348,  
University of Poitiers

✉ alain.miranville@math.univ-poitiers.fr

### PU-PH Nicolas BOURMEYSTER

@ STIM laboratory, ERL CNRS 7003,  
Hospital of Poitiers

✉ email: nicolas.bourmeyster@univ-poitiers.fr

## PUBLICATIONS

<b>Accepted</b>	L'Hostis, A., Palgen, J. L., Perrillat-Mercerot, A., Peyronnet, E., Jacob, E., Bosley J. R., Duruisseaux M., Toueg R., Lefèvre L., Kahoul R., Ceres, N. & Monteiro, C. (2023). Knowledge-based mechanistic modeling accurately predicts disease progression with gefinitib in EGFR-mutant lung adenocarcinoma. Accepted by npj Systems Biology and Applications.
<b>Accepted</b>	Jacob, E., Perrillat-Mercerot, A., Palgen, J. L., L'Hostis, A., Ceres, N., Boissel, J. P., Bosley J., Monteiro C. & Kahoul, R. (2023). Empirical methods for the validation of Time-To-Event mathematical models taking into account uncertainty and variability: Application to EGFR+ Lung Adenocarcinoma. Accepted by BMC Bioinformatics.
<b>April 2022</b>	Perrillat-Mercerot A., Deliot N., Miranville A., Guillevin R., & Constantin B. (2022). <i>Mathematical Analysis of Membrane Transporters Dynamics: A Calcium Fluxes Case Study</i> . Acta Biotheoretica, 70(2), 1-32.
<b>Jan. 2022</b>	Palgen J. L., Perrillat-Mercerot A., Ceres N., Peyronnet E., Coudron M., Tixier E., Illigens B., Bosley J., L'Hostis A. & Monteiro C. (2022). <i>Integration of heterogeneous biological data in multiscale mechanistic model calibration: application to lung adenocarcinoma</i> . Acta biotheoretica, 70(3), 1-24.
<b>Jan. 2021</b>	Perrillat-Mercerot A., Miranville A., Agosti A., Rocca E., Ciarletta P., & Guillevin R. (2021). <i>Partial differential model of lactate neuro-energetics: analytic results and numerical simulations</i> . Mathematical Medicine and Biology: A Journal of the IMA.
<b>Dec. 2019</b>	Perrillat-Mercerot A., Guillevin C., Guillevin R. et Miranville A. (2019). <i>Using mathematics in MRI data management for glioma assesment</i> , Journal of Neuroradiology.
<b>Nov. 2019</b>	Perrillat-Mercerot A., Guillevin C., Guillevin R. and Miranville A. (2019). <i>What mathematical models can or cannot do in glioma description and understading</i> , Discrete & Continuous Dynamical Systems - S.
<b>Aug. 2019</b>	Perrillat-Mercerot A., Bourmeyster N., Guillevin C., Miranville A. and Guillevin R. (2019). <i>Analysis of a mathematical model for the glutamate/glutamine cycle</i> . Bulletin of Mathematical Biology, 81(10).
<b>March 2019</b>	Perrillat-Merceot A., Bourmeyster N., Guillevin C., Miranville, A., and Guillevin, R. (2019). <i>Mathematical Modeling of Substrates Fluxes and Tumor Growth in the Brain</i> . Acta Biotheoretica, 67(2), 149-175.
<b>April 2018</b>	Helal, M., Igel-Egalon, A., Lakmeche, A., Mazzocco, P., Perrillat-Mercerot, A., Pujo-Menjouet, L., Rezaei H. & Tine, L. M. (2018). <i>Stability analysis of a steady state of a model describing Alzheimer's disease and interactions with prion proteins</i> . Journal of Mathematical Biology, 78(1-2), 1-25.
<b>Feb. 2018</b>	Guillevin C., Guillevin, R., Miranville, A., and Perrillat-Mercerot, A. (2018). <i>Analysis of a mathematical model for brain lactate kinetics</i> . Mathematical Biosciences & Engineering, 15(5), 1225-1242. (alphabetical order)

Jan. 2017      Guillevin R., Miranville A. & Perrillat-Mercerot A. *On a reaction-diffusion system associated with brain lactate kinetics*. Electronic Journal of Differential Equations, 23 (2017), 1-16. (alphabetical order)

## INTERNATIONAL TALKS

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Sep. 2019      Perrillat-Mercerot A., Miranville A., Guillevin R. *Investigation on complex nutrient fluxes*, International Workshop Mathematical Biology on the Mediterranean Conference (MBMC), Samos (Greece)

May. 2019      Perrillat-Mercerot A, Miranville A, Guillevin R. *Substrate fluxes between cells and capillaries*, Workshop Recent advances in Phase-Field modeling: from Engineering to Biology, Pavia (Italy).

Jul. 2018      Guillevin C., Guillevin R., Miranville A. and Perrillat-Mercerot A. *What about lactate kinetic in a (gliomatous) brain ?*, Invited speaker for a special session at The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Taipei (Taiwan).

## NATIONAL TALKS

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Sept. 2020      Perrillat-Mercerot A., Miranville A., Guillevin R. *From MRS data to mathematical equations and back*, Internal presentation, Grenoble.

Mars 2020      Perrillat-Mercerot A., Miranville A., Guillevin R. *Modélisation et étude du métabolisme énergétique cérébral*, Internal presentation, Strasbourg.

June 2019      Perrillat-Mercerot A, Miranville A., Guillevin R. *Approche des flux de lactate cérébral, du 1D au 3D*, 39ème Colloque de la Société Francophone de Biologie Théorique, Poitiers (France).

June 2019      Perrillat-Mercerot A, Miranville A., Guillevin R. *Mathématiques et gliome, une histoire d'opération*, 39ème Colloque de la Société Francophone de Biologie Théorique, Poitiers (France).

June 2019      Perrillat-Mercerot A, Miranville A., Guillevin R. *Modèles mathématiques en neuro-onco imagerie*, Congrès annuel de l'Association de Neuro-OnCologues d'Expression Française, Poitiers (France).

May 2019      Perrillat-Mercerot A, Miranville A, Guillevin R. *How MRI and mathematics can get together*, Invited talker by the university of Pavia, Pavia (Italy).

Nov. 2018      Perrillat-Mercerot A, Miranville A, Guillevin R. *Quand les mathématiques usent d'opérations contre les gliomes*, Talk during the Forum Jeunes Mathématiciennes et Mathématiciens, Mathématiques et Sciences du Vivant, Orléans (France).

Nov. 2018      Perrillat-Mercerot A, Bourmeyster N., Guillevin C., Guillevin R. and Miranville A., *What about nutrient kinetic in a (gliomatous) brain ?*, Invited by the University of Pavia and Polytechnique of Milan for a laboratory collaboration, Pavia/Milan (Italy).

Sep. 2017      Guillevin C., Guillevin R., Miranville A., and Perrillat-Mercerot A. *Un modèle pour l'étude de la croissance tumorale*. Talk during the journée maths et cancer, Poitiers (France).

June 2017      Guillevin C., Guillevin R., Miranville A., and Perrillat-Mercerot A. *Modèle réduit pour la cinétique des lactates*. 37ème Colloque de la Société Francophone de Biologie Théorique, Poitiers (France). Rewarded by the Prix Delattre.

...and 5 posters and e-posters (detailed on my website)

## MAKE MATHEMATICS ACCESSIBLE

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2023      Mentoring for a M1 student in bio-informatics

2018 - 2019      Two publications of popularisation:  
     ▷ (cowritten with Paul Dequidt) *Des données biologiques aux modèles et inversement*, Website Image Des Mathématiques, session échos de la Recherche.  
     ▷ *En tête à tête*, Microscoop: magazine of the CNRS Centre Limousin Poitou-Charentes delegation, 78(2018), 14-15.

2017 - 2019      Organizing stand during annual national event of mathematical popularisation: Fêtes de la science and Nuit des chercheurs at Poitiers, Sept. Oct. 2017 - 2019

2018 - 2019      56h of volunteering, helping young students to prepare the bachelor's degree in mathematics

2017 - 2018      Interventions in schools and associations for young students: Femmes & Sciences (Montmorillon - March, April 2017), Nombredor (Chasseneuil du Poitou, April 2018), exchanges with 9 years old pupils (Saint-Agnès, June 2018)

March 2018      Coorganisation of the Maths-En-Jeans 2018 congress at Poitiers (700 participants).