

Dr Angélique Perrillat-Mercerot

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in Angélique Perrillat

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French citizenship

Born April 15, 1992

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Research engineer in biomathematics, post-doctoral researcher

Profile Summary & Career objective

Profile Summary : Motivated research engineer in biomathematics with a strong interest in neurosciences and modeling. I am working on the modeling of brain substrates kinetics (*Etude dynamique du métabolisme énergétique cérébral par la modélisation mathématique.*) at the I3M Laboratory (CNRS-UP-CHU-SIEMENS), Poitiers (France).

Career objective : to work on the modeling of cells and proteins dynamics by using ODE (with or without delay) and PDE.

Education

2016 – present **PhD in biomathematics**, *University of Poitiers*, Poitiers (France).

"Study of models for energetic substrates kinetics". Defended on 10/22/19.

Supervisors : Miranville Alain and Guillevin Rémy.

Rapporteurs : Olivier Saut and Jean Noël-Vallée.

Examiners : Frédérique Clément, Jacques Demongeot, Jean-Pierre François 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 of 64h/year since october 2017 : oral examiner and teaching assistant.

2016 **Master's degree**, *with honors*.

2014 – 2016 **Master in applied mathematics**, *University Claude Bernard*, Lyon.

Specialization : mathematical applications in biology and medicine (probabilistic and deterministic models)

Extra course : Numerical analysis and optimization

Mach – Aug. 2016 • **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.

Feb. – June 2015 • **Project work**, *University Claude Bernard*, Lyon.

Image segmentation : explicit and level set methods. Supervisor : Masnou Simon.

2014 **Bachelor's degree**.

Language and skills

Computer skills $\LaTeX$, Office, Inkscape, Photofiltre

French Native speaker (CEF C2)

Italian Excellent (CEF C1)

CLES B2 Feb. 2019

Softwares Matlab, R, Scilab, Maple

English Excellent (CEF B2/C1)

TOEIC listening and reading : 790pts,

Jan. 2016

Miscellaneous

Passion for the Italian culture : extra classes in Italian - 2013 – 2014

Participation at many patisserie, drawing and writing contests - 2007 – 2017

Passion for pets : dog, cat and rodent owner

Sports including 5 years of dancing lessons (contemporary dance, rock, ballroom dancing)

Publications

- Upcoming Perrillat-Mercerot A., Miranville A., Agosti A., Grasselli M., Rocca E., Ciarletta P. and Guillevin R. *PDE system with irregular bounds conditions for lactate kinetics*, In revision.
- Dec. 2019 Perrillat-Mercerot A., Guillevin C., Guillevin R. and Miranville A. *How mathematics and MRI imaging can combine to enhance understanding glioma development*, Journal of Neuroradiology.
- Nov. 2019 Perrillat-Mercerot A., Guillevin C., Guillevin R. and Miranville A. *What mathematical models can or cannot do in glioma description and understading*, Discrete & Continuous Dynamical Systems - S .
- Aug. 2019 Perrillat-Mercerot A., Bourmeyster N., Guillevin C., Miranville A. and Guillevin R. *Analysis of a mathematical model for the glutamate/glutamine cycle*. Bulletin of Mathematical Biology, 81(10), 4251-4270.
- March 2019 Perrillat-Merceot A., Bourmeyster N., Guillevin C., Miranville, A., and Guillevin, R. (2019). Mathematical Modeling of Substrates Fluxes and Tumor Growth in the Brain. Acta Biotheoretica, 67(2), 149-175.
- April 2018 Helal, M., Igel-Egalon, A., Lakmeche, A., Mazzocco, P., Perrillat-Mercerot, A., Pujo-Menjouet, L., Rezaei H. & Tine, L. M. (2018). Stability analysis of a steady state of a model describing Alzheimer's disease and interactions with prion proteins. Journal of Mathematical Biology, 78(1-2), 1-25.
- Feb. 2018 Guillevin C., Guillevin, R., Miranville, A., and Perrillat-Mercerot, A. (2018). Analysis of a mathematical model for brain lactate kinetics. Mathematical Biosciences & Engineering, 15(5), 1225-1242.
- Jan. 2017 R. Guillevin, A. Miranville, & A. Perrillat-Mercerot, *On a reaction-diffusion system associated with brain lactate kinetics*. Electronic Journal of Differential Equations, 23 (2017), 1-16.

National talks

- Upcoming - Jan. 2020 Perrillat-Mercerot A., Miranville A., Guillevin R. *Lactate et gliome, une histoire d'opérations*, Workshop Oncosphère Nouvelle-Aquitaine, Poitiers (France).
- 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.

International talks

- 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).

Poster & E-poster

- Sep. 2019 Bourmeyster N., Perrillat-Mercerot A., Miranville A., Guillevin R., Guillevin C. *Let's make maths about lactate in the brain*, 23rd ESN Biennial Meeting – 7th Conference on Molecular Mechanisms of Regulation in the Nervous System, Milan (Italy).
- March 2018 Guillevin C., Guillevin R., Miranville A., and Perrillat-Mercerot A. *Modélisation mathématique des flux de glutamate intracérébraux intégrant les données RMN spectroscopiques*. Poster pour la Société Française de Neuroradiologie (SFNR), Paris (France).
- Oct. 2017 Guillevin C., Guillevin R., Miranville A., and Perrillat-Mercerot A. *Data Analysis and Computation Though Imaging and Modeling - Maths Image Santé*. Tenu d'un stand au village des innovations durant les journées francophones de radiologie. Paris (France)
- Sep. 2017 Guillevin C., Guillevin R., Miranville A., and Perrillat-Mercerot A. *Un modèle pour l'étude de la croissance tumorale*. Poster for the journée maths et cancer, Poitiers (France).
- June 2017 Guillevin C., Guillevin R., Miranville A., and Perrillat-Mercerot A. *Dynamique des substrats énergétiques dans le cerveau atteint d'un gliome*. Poster pour le congrès 2017 de l'Association des Neuro-Oncologies d'Expression Française (ANOCEF) 2017, Nancy (France).

Popularisation

- Jul. 2018 - present 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*, Microscop : magazine of the CNRS Centre Limousin Poitou-Charentes delegation, 78(2018), 14-15.
- 2017 - 2019 Attending stand during annual national event of mathematical popularisation : Fêtes de la science and Nuit des chercheurs at Poitiers, Sept. Oct. 2017 - 2019
- Sep. 2018 - June 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.

References

Alain MIRANVILLE, Professor.

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