19/11/1990 (27)
Married, 1 daughter

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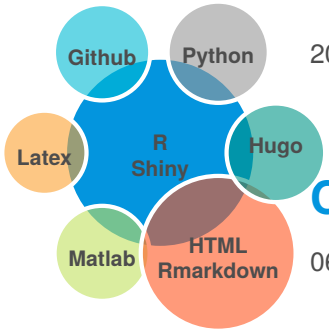
Personal Website

Programming



Languages

French ★★★★★
English ★★★★☆

Contacts

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+33 472 431 008

David Granjon

PhD in Mathematical Physiology

Education

2013 - 2016 **PhD in Life Sciences** Université Pierre et Marie Curie, Paris, Université de Lausanne, Switzerland
Title of the Thesis: "Modeling of Calcium Homeostasis in the Rat and its Perturbations".

Building of a mathematical model describing calcium homeostasis, including its analysis and simulation of pathologies.

Thesis advisors: Dr. Aurélie Edwards and Pr. Olivier Bonny.

2011 - 2013 **Master's Degree in Ecosiences, MIV** Université Claude Bernard (UCBL), Lyon
Main subjects: Mathematics, Theoretical Ecology and Programming.

2010 - 2011 **Licence (3 year degree) in Mathematics and Computer Sciences for the Living (MIV)** Université Claude Bernard (UCBL), Lyon
Main subjects: Mathematics, Ecology and Computer Sciences.

2008 - 2010 **Preparatory School for Engineers** Lycée Claude Fauriel, Saint Etienne
Main subjects: Mathematics, Physics, Biology, Geology.

Current Position

06/17 - Now **Post Doctoral Researcher**
The Interface Group, University of Zurich (UZH)

Two main projects:

- develop user-friendly interfaces of Calcium and Phosphate Homeostasis, using the R-Shiny package, javascript and C. Management of linux web servers. Design new interactive tools dedicated to teaching courses.
- build a model linking the cardiac and renal functions, to better undestand the interplay between chronic kidney disease as well as cardiac failure. Create virtual patient populations using Monte Carlo simulations and GPU computing.

Supervisors: Dr. Diane de Zélicourt, Pr. Vartan Kurtcuoglu.

Previous Experiences

01/17 - 03/17 **Post Doctoral Researcher**
CHUV | Lausanne university hospital, Switzerland

Improvements to the model developed during my doctoral thesis. Publication of a second article (see publications).

Supervisors: Dr. Aurélie Edwards and Pr. Olivier Bonny.

07/13 - 08/13 **Internship in a Team of Theoretical Physiology**

Centre for Applied Mathematics in Bioscience and Medicine (CAMBAM), Mc Gill University, Montreal, Canada

Improvements to the model developed during the previous internship.

Supervisors: Dr. Moisés Santillan, Pr. Michael Mackey.

01/13 - 07/13 **Internship in a Laboratory of Applied Mathematics**

Institut National de Recherche en Informatique et Automatique (INRIA), Team Dracula, Lyon

Title of the project: "Multiscale modeling of Zebrafish Somitogenesis"

Development of a model accounting for the intra-cellular oscillator in each cell during somitogenesis.

Supervisors: Dr. Laurent Pujo-menjouet (UCBL), Pr. Michael Mackey (Mc Gill, Canada).

03/12 - 07/12 **Internship in a Laboratory of Applied Mathematics**

Institut National de Recherche en Informatique et Automatique (INRIA), Team Dracula, Lyon

Title of the project: " Mathematical modeling of somitogenesis, reaction-diffusion systems".

Analysis of two mathematical models: cell-cycle and clock/wavefront models.

Supervisor: Dr. Laurent Pujo-Menjouet (UCBL).

06/11 - 08/11 **Internship in a Laboratory of Theoretical Ecology**

Laboratoire de Biométrie et Biologie Evolutive (LBBE), Team Modélisation et Ecotoxycologie Prédictive (MEPS), Lyon

Title of the project: " Ecotoxicology of Daphnia Magna ".

Study of the impact of pollution on the growth of Daphnia Magna through mathematical models.

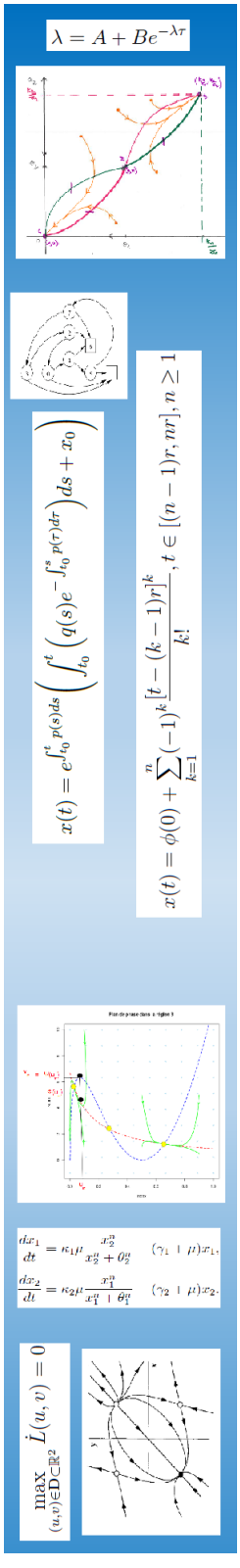
Supervisors: Pr. Sandrine Charles (UCBL), Pr. Marie Laure Delignette Muller (Ecole Nationale Vétérinaire de Lyon).

Awards

2/02/18

NCCR Kidney.CH Retreat 2018.

Best Poster Award, 2nd price: *A web-based application of Calcium and Phosphate Homeostasis.*



Publications

Coupling between Phosphate and Calcium Homeostasis: A Mathematical Model
D. Granjon, O. Bonny, A. Edwards
American Journal of Physiology-Renal Physiology, 2017.

A Model of Calcium Homeostasis in the Rat
D. Granjon, O. Bonny, A. Edwards
American Journal of Physiology-Renal Physiology, 311 (5), 2016.

Conferences and Talks

09/09/18
- 12/09/18 **NCCR Kidney.CH Summer School 2018** Zurich, Switzerland
Poster first author: "Web-based e-learning tools of Calcium and Phosphate Homeostasis".

08/07/18
- 12/07/18 **World Congress of Biomechanics 2018** Dublin, Ireland
Poster first author: "Addressing biomedical diversity via eLearning, an example from a physiology curriculum".

01/02/18
- 02/02/18 **NCCR Kidney.CH Retreat 2018** Murten, Switzerland
Poster first author: "A web-based application of Calcium and Phosphate Homeostasis".

17/10/17 **Bachelor–Themenworkshops 5. Semester HS 2017** Zurich University of the Arts, Switzerland
Oral presentation: Computational Physiology.

5/05/17 **Lunch Seminar** Institute of Physiology, Zurich (UZH)
Oral presentation: "A mathematical model of calcium and phosphate homeostasis in the rat and its perturbations".

29/06/16
- 1/07/16 **Meeting of the Federation of Physiological Societies and the French Physiological Society** Centre de Recherche des Cordeliers, Paris
Poster presentation: "Role of the rapidly exchangeable calcium pool in bone in calcium homeostasis".

23/03/16
- 24/03/16 **Annual Franco-Swiss Meeting on Electrolytes Metabolism and Renal Physiology** Inselspital, Bern
Oral presentation: "A model of Ca/P_i homeostasis in the Rat".

25/02/16
- 27/02/16 **NCCR Kidney.CH Retreat 2016** Murten, Switzerland
Poster first author:”Role of the bone rapidly exchangeable calcium pool in calcium homeostasis”.

29/09/15
- 02/10/15 **Société Francophone de Dialyse/Société de Néphrologie** Lyon, France
Poster first author: ”Consequences of primary hyperparathyroidism on renal calcium excretion”.

19/03/15
- 20/03/15 **Annual Franco-Swiss Meeting on Electrolytes Metabolism and Renal Physiology** Centre de Recherche des Cordeliers, Paris
Oral presentation: ”A Model of Calcium Homeostasis in the Rat”.

6/02/15 **Groupe de travail Modélisation Numérique et Images** MAP5, Paris Descartes
Oral presentation: ”Calcium Homeostasis modeling and perturbations”.

19/03/14
- 20/03/14 **Annual Franco-Swiss Meeting on Electrolytes Metabolism and Renal Physiology** CHUV, Lausanne
Oral presentation: ”A Simplified Model of Plasma Calcium Regulation by PTH”.

3/06/13
- 6/06/13 **Conference " In honour of Michael Mackey's 70th birthday "** Lyon, France
Oral presentation: ”Oscillatory dynamic during zebrafish somitogenesis”.

Mentoring

08/18
- 08/19 **Master Student supervisor** Zurich, Switzerland
Supervised a master student in computational physiology: ”Turn a physiological mathematical model into a gaming engine”.

02/18
- 07/18 **Master Student Co-Supervisor** Zurich, Switzerland
Co-supervised a master student in applied mathematics: ”Computational modeling of flow and solute transport in the nephrons of a kidney”.

11/15
- 06/16 **Student Supervisor** Centre de Recherche des Cordeliers, Paris
Supervised a high school student for the ”Young Researchers” program. Introduction to modeling and experimentations.

Teaching

10/18
- 11/18 **Teaching assistant** Zurich, Switzerland
Practical courses about : ”Blood formation”, 20h.

04/18
- 05/18 **Teaching assistant** Zurich, Switzerland
Practical courses about : ”Hearing”. Absolute audiometry, determination of isophones, clinical audiometry, auditory localization and otoacoustic emissions, 30h.

Detailed Knowledge

- **Web-based Application Development** ★★★★★
Expert in the development of R-Shiny web-applications (as well as HTML, CSS, Javascript).
- **Web-server Management** ★★★★★
Expert in creating and managing virtual machines, dedicated to host web servers or speed up simulations.
- **R Language** ★★★★★
Expert in R development for dynamical system analysis.
- **Version Control** ★★★★★
Git/Github as version control software.

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- **Dynamical Systems Analysis** ★★★★★
Steady states, linearization, stability, Lyapunov theory, limit cycle existence (Poincaré-Bendixon theorem), bifurcation analysis (Hopf bifurcation), sensitivity analysis and some control theory.
- **Differential Equations Theory** ★★★★☆
Ordinary differential equations, partial differential equations, delay differential equations basic properties and important results.
- **Algebra and Analysis** ★★★★☆

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- **Physiology** ★★★★☆
Calcium and phosphate metabolism, renal physiology.

- **Ecology** ★★★★☆
Basic properties of ecosystems, evolution theory, prey-predators interactions, host-parasites systems.

Updated: 13/09/2018