A personal view on supervision

LivingMaterials

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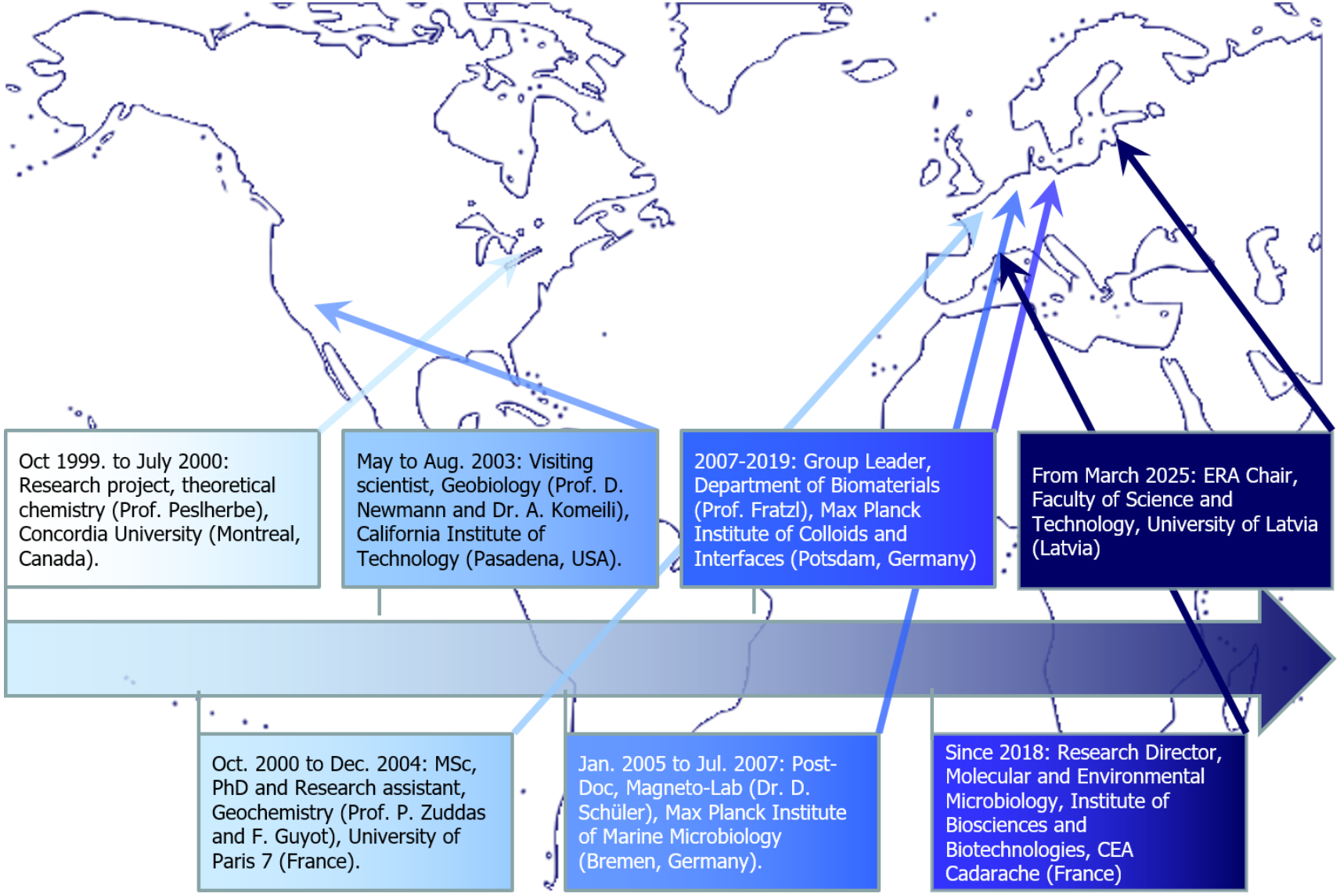
Introduction

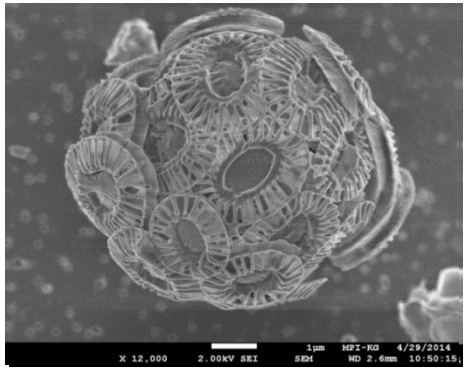
3 slides introducing myself

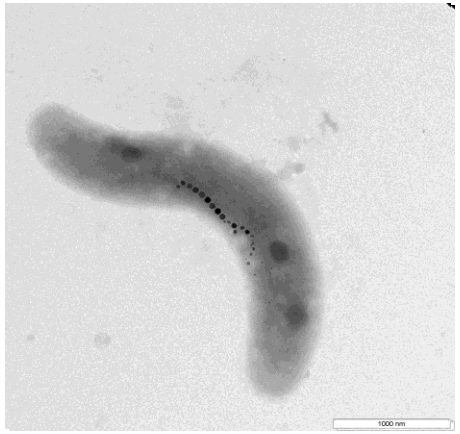
My Research Path



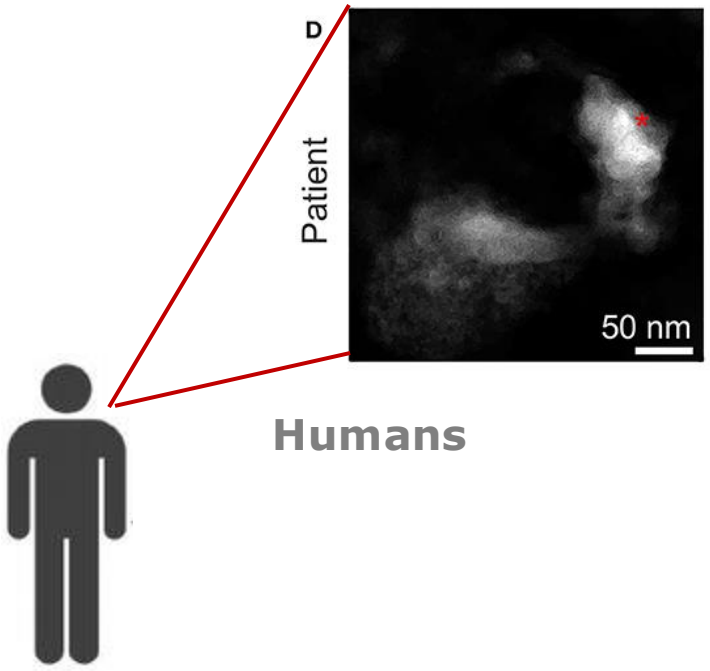
The Group's Research: From (Bio)mineralization to (Nano)Swimmers and Medical Applications

Coccolithophore algae



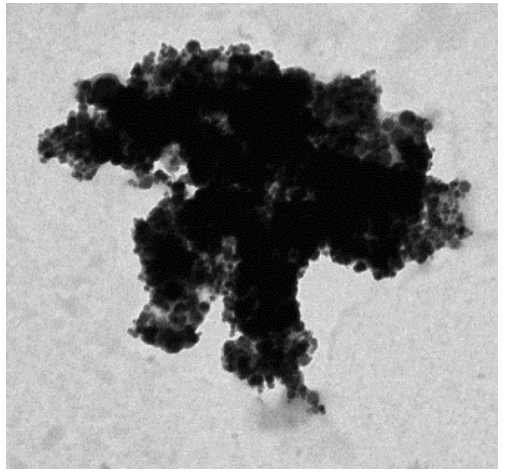


Magnetotactic bacteria



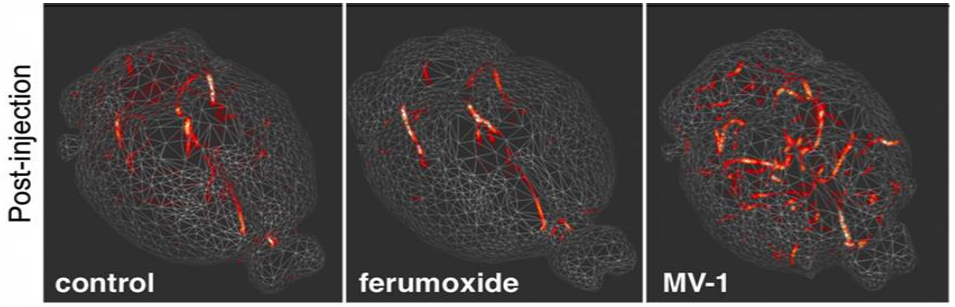
Humans

Nanoparticles



Microswimmers

Medical applications



A Snapshot of Supervised Personnel

How I see…

My interactions with coworkers

My organization as mentor

Doctoral students should become the best expert in their field

- Independent
- Master lab skills
- Master writing skills

How I do / what I expect

- Weekly 1 to 1 meeting with lab book (to learn discuss research results, to check short term advancements, discuss problems in and outside the lab)
- Weekly / bi-monthly group meeting (to foster discussion, to get help from each other expertise, to discuss literature)
- 3 monthly intermediate 1 to 1 discussion (to keep the long-term goals in mind, to make students aware what is achievable in such period)

What I do…

… Interdisciplinary research

And what it means for supervision

Examples of my research

nature materials

Explore content | About the journal | Publish with us | Subscribe

nature > nature materials > letters > article

Letter | Published: 03 February 2013

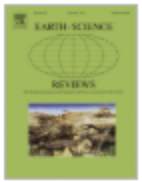
Nucleation and growth of magnetite from solution

Jens Baumgartner, Archan Dey, Paul H. H. Bomans, Cécile Le Coadou, Peter Fratzl, Nico A. J. M. Sommerdijk & Damien Faivre

ELSEVIER

Earth-Science Reviews

Volume 150, November 2015, Pages 520-530



Iron solubility, colloids and their impact on iron (oxyhydr)oxide formation from solution

Jens Baumgartner, Damien Faivre

ORIGINAL RESEARCH article

Front. Microbiol., 29 March 2019

Sec. Microbiotechnology

Volume 10 - 2019 | https://doi.org/10.3389/fmicb.2019.00582

Reducing Conditions Favor Magnetosome Production in *Magnetospirillum magneticum* AMB-1

Agata Olszewska-Widdrat [1†] Gabriele Schiro [1†]

Victoria E. Reichel [1†] Damien Faivre [1,2*]

Physical Review Letters

Highlights | Recent | Accepted | Collections | Authors | Referees | Press | About | Editorial Team

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Driven Shear Flow in Biological Magnetoactive Fluids

M. Marmol [1,2], C. Cottin-Bizonne [2], A. Cēbers [3], D. Faivre [1,4,*], and C. Ybert [2,†]

Interdisciplinary research for a mentor

As a mentor performing interdisciplinary research

- I cannot be an expert in all fields
- I need to continuously learn myself
- I need to rely on expert colleagues / important scientific network
- I need to know and accept my limits (and not take students too far away from my core expertise / with project where my input can be important)

Multicultural environments…

… and what it means for supervision

Multiculture for a mentor

As a mentor working with people from different origin

- I need to be a minimum aware of cultural differences (what does mean yes in Europe / US vs. Asia?)
- I speak 3 languages and learn a 4th one, I know tons of expressions in other languages
- I traveled around the world thanks to science, but I try each time to also learn more about the countries I am visiting, their history, culture, and language.
- Interactions need to be specific for each person and cannot rely on established schemes

Difference in Graduate Schools

In Germany… and in France

Germany

International Max Planck Research School (IMPRS)

The IMPRS on Multiscale Bio-Systems is a graduate program, where young talented doctoral students can work on a challenging research project and develop their scientific communication and management skills.

Scientific Scope

The IMPRS on Multiscale Bio-Systems addresses the fundamental levels of biosystems as provided by macromolecules in aqueous solutions, molecular recognition between these building blocks, free energy transduction by molecular machines as well as structure formation and transport in cells and tissues. The research activities are focused on four core areas:

- Recognition of Biopolymers
- Photo-induced Molecular Processes
- Cell-like Systems and Processes
- Tissue-like Systems and Processes

Objectives

One general objective is to understand, in a quantitative manner, how the processes on supramolecular and mesoscopic scales between a few nanometers and many micrometers arise from the structure and dynamics of the molecular building blocks. To achieve this goal, our interdisciplinary research combines bottom-up with top-down approaches, which are pursued by several groups from theoretical and experimental biophysics, from physical and colloid chemistry as well as from biochemistry and molecular biology.

Germany (Potsdam- Science Faculty)

Organization of the school

- 2 supervisors, 1 mentor
- You can have an official supervisor which is not the effective supervisor because of interdisciplinary research (you want a title in biology and the effective supervisor is affiliated with chemistry)
- No limitation in the number of supervised doctoral students
- No official expectation in term of paper publication
- A doctoral student is expected to give a course at university (typically lab supervision)
- Plan is 3 years PhD, typically last a bit longer, also faculty dependent (longer in biology, shorter in materials science)
- The thesis should not exceed 100 pages
- PhD defense is 30 minutes talk, 30 minutes questions on project, 30 minutes general questions

France

Aix Marseille Université

École Doctorale
Sciences chimiques
ED 250

France (Marseille, Chemistry)

Organization of the school

- Mostly 1 supervisor
- 1 comite de suivi individual with 2 researcher, 1 outside the original research field, yearly discussions
- About 50 h of soft skills training and 50 hours of hard skills training, encompassing ethics and scientific integrity
- 2 conference participations (1 international, 1 national)
- 1 conference is organized by the students of the graduate school every year
- At least 1 paper published
- Typically, 2 students supervised at the same time at max
- The supervisor can only be affiliated with 1 graduate school, and with the above-mentioned limitation, it is difficult for interdisciplinary research to find colleagues to co-supervise
- Plan is 3 years PhD, difficult to make longer due to administrative issues related to time contracts
- PhD defense is 45 minutes talk, up to 2 hours questions on project

Summary

And conclusion

Take Home

1

- Supervision mentoring is a great part of a researchers work

It is a living field and needs flexibility and adaptability

- Thank you!
- Questions?