

Digital summer school, 7- 9 July 2021  
*From Bones to Oceans and Space:  
the untold stories of Biomineralization*



## PROGRAM

### Wednesday July 7

#### 9h45-10.00- Welcome and introduction of the virtual course

#### 10.00-12.00: Fundamental aspects of Biomineralization

##### Part 1

10.00-10.05 : Presentation of speakers by the chairs David Magne and Alexander Venn

10.05-10.25: *Biomineralization and Evolution: Biomineral diversity and functions*: Frederic Marin, France

10.25-10.45: *Fundamentals of calcium-carbonate mineralization: the coral example*, Sylvie Tambutté, Monaco

10.45-11.00: Live discussion

##### Part 2

11.00-11.05: Presentation of speakers by the chairs Cristina Sobacchi and Frederic Marin

11.05-11.25: *Fundamentals of calcium-phosphate mineralization*: David Magne, France

11.25-11.45: *Fundamentals of demineralization: bone resorption*, Teun de Vries, Netherlands

11.45-12.00: Live discussion

#### 12.00-14.00: Break

#### 14.00-15.00: Workshop 1

*In vivo cell imaging by confocal microscopy with pH measurements.*

Contributors: Alexander Venn, Philippe Ganot, Sylvie Tambutté

#### 15.00- 15.45: Round Table Discussion 1

*Original models in mineralization (coral, egg, sponge, mollusk, fish...)*

Contributors: Alexander Venn, Joël Gautron, Leonor Cancela, Frédéric Marin

#### 15.45- 16.00: Break

#### 16.00- 17.15: Student's presentations group 1

Chairs: David Magne, Joël Gautron, Leonor Cancela, Teun de Vries

16.00-16.06: *Bone Beyond Borders – Monetite-Based Calcium Phosphate Induces Bone Formation Outside the Skeletal Envelope in Ovis aries Occipital Bone Model*, Martina Jolic, Sweden

Followed by 5 min Discussion

16.11-16.17: *Role of the Matrix Gla Protein (MGP) in skeletal development*, Alexandre Marano, France

Followed by 5 min Discussion

16.22-16.28: *Novel Hierarchical Structures in Bone: Mineral-Rich Ellipsoids*, Chiara Micheletti, Sweden

Followed by 5 min Discussion

16.33-16.39: *Ammonium transporters and coral calcification*, Laura Capasso, Monaco

Followed by 5 min Discussion

16.44-16.50: *Elastic fibre calcification in Pseudoxanthoma elasticum*, Francesco Demetrio Lofaro, Italy

Followed by 5 min Discussion

16.55-17.01: *Micro-computed tomography ( $\mu$ CT) analysis of dental enamel in Cldn16 knock-in mice*, Elis Lira Dos Santos, France

Followed by 5 min Discussion

17.01-17.15: general discussion

#### 17.15-17.45: Informal discussion, meet the mentor

Panelists: David Magne, Joël Gautron, Teun de Vries, Frédéric Marin, Sylvie Tambutté, Alexander Venn

## Thursday July 8

### 10.00-12.00: Clinical aspects of Biomineralization

#### Part 1

10.00-10.05 : Presentation of speakers by the chairs Teun de Vries and Didier Zoccola

10.05-10.25- *X-linked hypophosphatemia: from pathophysiological mechanisms to therapeutic strategies*, Claire Bardet, Paris, France

10.25-10.45- *Lessons from rare bone diseases to understand the pathophysiology of common bone diseases* Cristina Sobacchi, Italy

10.45-11.00: Live discussion

#### Part 2

11.00-11.05 : Presentation of speakers by the chairs Leonor Cancela and Georges Leftheriotis

11.05-11.25: *Metabolic diseases and cardiovascular calcifications*, Said Kamel, France

11.25-11.45: *Ectopic calcifications and their impact on the cardiovascular function*, Magnus Bäck, Sweden

11.45-12.00: Live discussion

### 12.00-14.00: Break

### 14.00-15.00: Workshop 2

*Cytometry for the characterization of cells from bone and mineralized tissues*

Contributors: Julie Cazareth, Matthieu Rouleau, Didier Zoccola, Claudine Blin

### 15.00- 15.45: Round Table Discussion 2

*Is there a link between bone and ectopic calcifying diseases? From gene to therapeutic issues"*

Contributors: Georges Leftheriotis, Magnus Back, Said Kamel

### 15.45-16.00: Break

### 16.00- 17.00: Workshop 3

*How to quantify biomineralization by imaging techniques in preclinical and clinical models*

Contributors: Georges Leftheriotis, Didier Pisani

#### 17.00-17.45: Informal discussion, meet the mentor

Panelists: Cristina Sobacchi, Didier Zoccola, Georges Leftheriotis, Said Kamel,

## Friday July 9

## 10.00-12.00: Societal/environmental aspects

### Part 1

- 10.00-10.05** : Presentation of speakers by the chairs Sylvie Tambutté et Claudine Blin  
**10.05-10.25**: *Societal impact of biomineralization in eggshells*, Joel Gautron, France  
**10.25-10.45**: *Fish as a model to study biomineralization*, Leonor Cancela, Portugal  
**10.45-11.00**: Live discussion

### Part 2

- 11.00-11.05**: Presentation of speakers by the chairs Joël Gautron et Philippe Ganot  
**11.05-11.25**: *Ocean acidification and its impact on biomineralizing organisms*, Alex Venn, Monaco  
**11.25-11.45**: *Impact of space travels on bones*, Laurence Vico, France  
**11.45-12.00**: Live discussion

## 12.00-14.00: Break

### 14.00-15.00: Debriefing by the students

*Interactive discussion and feedback from the attendees on the workshops*

Contributors: Cristina Sobacchi, Didier Zoccola, Leonor Cancela, Sylvie Tambutté, Claudine Blin, Alexander Venn, David Magne, Joël Gautron, Georges Leftheriotis

### 15.00-15.45: Round Table Discussion

*From ideas to drugs - A startup's story*  
Piero Mendez, Georges Leftheriotis

## 15.45-16.00: Break

### 16.00-17.15: Student's presentations group 2

Chairs: Cristina Sobacchi, Magnus Back, Claire Bardet, Piero Mendez

**16.00-16.06**: *Minocycline attenuates excessive DNA damage response and reduces ectopic calcification in pseudoxanthoma elasticum*, Lukas Nollet, Belgium

[Followed by 5 min Discussion](#)

**16.11-16.17**: *Longitudinal study on the geometrical, structural and material properties of Type-2 diabetic bone using a Zucker diabetic fatty (ZDF) rat model*, Genna Monahan, Ireland

[Followed by 5 min Discussion](#)

**16.22-16.28**: *Characterization and impact on osteoblastogenesis of the extracellular matrix produced in vitro by bone marrow adipocytes in hyperglycemic condition*, Laura Entz, France

[Followed by 5 min Discussion](#)

**16.33-16.39**: *Osteoblast populations and bone extracellular matrix proteins during skeletal development in zebrafish*, Ratish Raman, Belgium

[Followed by 5 min Discussion](#)

**16.44-16.50**: *Super-enhancer induced genes as molecular targets to stimulate osteoformation in osteodegenerative diseases*, Robel Tesfaye, France

[Followed by 5 min Discussion](#)

**16.55-17.01**: *Glucose directly effects the calcification process in smooth muscle cells*, Marina Heuschkel, Germany

[Followed by 5 min Discussion](#)

**17.01-17.15**: general discussion

### 17.15-18.00: Informal discussion, meet the mentor and close of the course

Panelists: Joël Gautron, Alexander Venn, Leonor Cancela, Laurence Vico, Magnus Back, Piero Mendez  
Close of the course Georges Leftheriotis, Sylvie Tambutté, Claudine Blin