

The Seed Biology Paris Summer School

Next generation seeds : green factories and time capsules

Programme

June 28th - July 3rd 2015
Paris, France



Summary

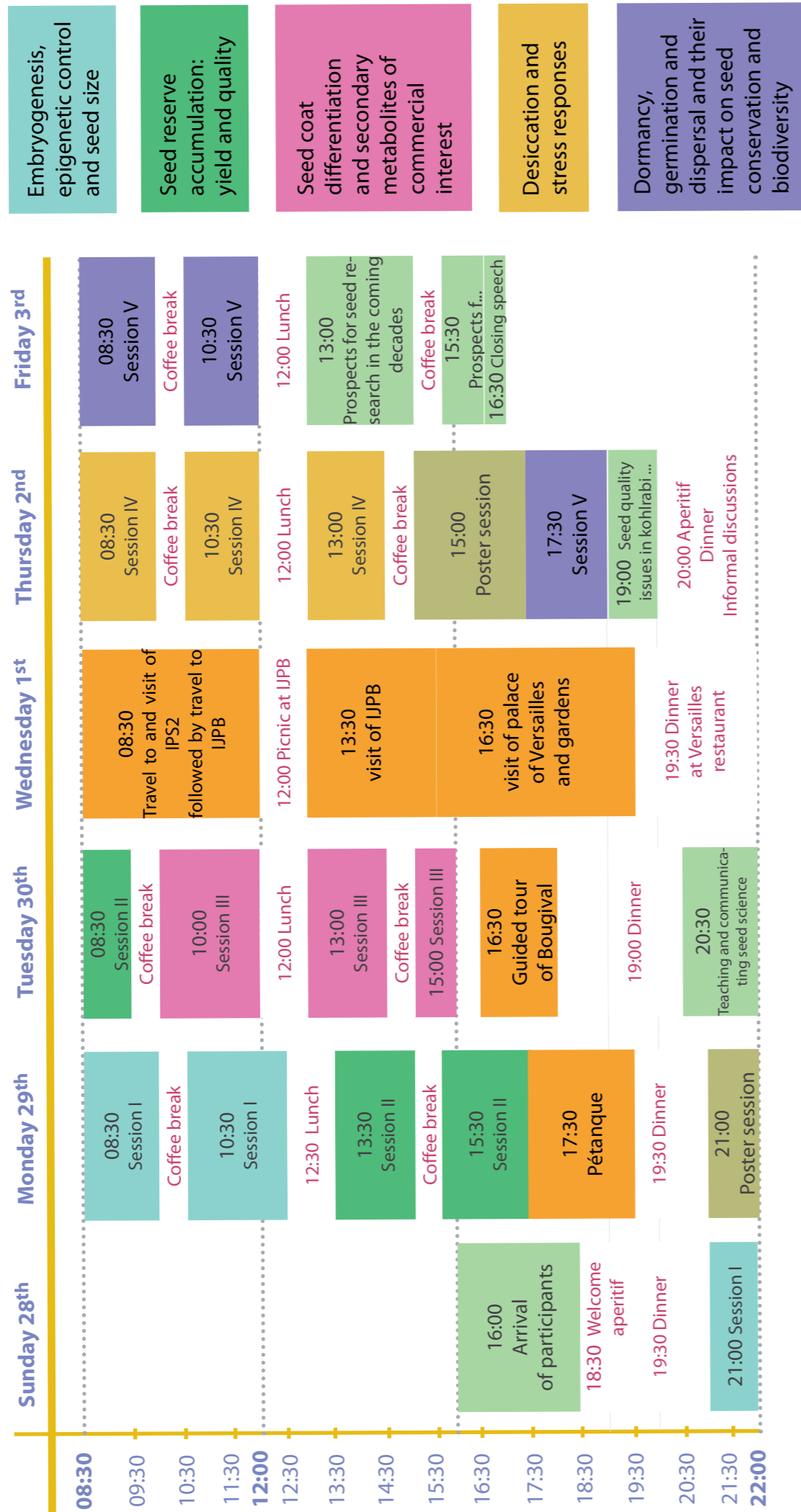
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Sponsors





The Seed Biology Paris Summer School Planning



Embryogenesis, epigenetic control and seed size

Seed reserve accumulation: yield and quality

Seed coat differentiation and secondary metabolites of commercial interest

Desiccation and stress responses

Dormancy, germination and their impact on seed conservation and biodiversity

Sunday 28th of June

16:00 - 18:30 - Welcome and registration of participants
Villa des Impressionnistes - Bougival

16:00 - Pick-up point
RER A Station : Le Vésinet - Le Pecq

18:30 - Welcome aperitif - Chez Clément at Bougival

19:30 - 21:00 - Dinner - Chez Clément at Bougival

Session I

Embryogenesis, epigenetic control and seed size

Lucia Colombo (University of Milan) - Jean-Denis Faure (LabEx SPS)
Loïc Lepiniec (LabEx SPS) - Jean-Christophe Palauqui (LabEx SPS)

21:00 - 22:00 - Genetic network controlling seed number in Arabidopsis - Lecture Lucia Colombo

Monday 29th of June

Session I continued

- 8:30 – 9:15** - Functional genomics for analysing seed development - Lecture Loic Lepiniec
9:15 – 10:00 - Transcription factors controlling seed size in Arabidopsis - Lecture Lucia Colombo
10:00 - 10:30 - **Coffee break**
10:30 - 11:30 - Cellular determinants of early embryo development: seeing what is hidden
Lecture Jean-Christophe Palauqui & Jean-Denis Faure
11:30 – 12:30 - General discussion
12:30 - 13:30 - **Buffet Lunch - Villa des Impressionnistes**

Session II

Embryogenesis, Seed reserve accumulation : yield and quality

John Harada (University of California) - Sébastien Baud (LabEx SPS)
Bertrand Dubreucq (LabEx SPS) - Sophie Jasinski (LabEx SPS)

- 13:30 – 14:00** - Introduction: Seed reserve accumulation among species. Definitions of terms, yield, quality, overview of the session - Lecture Bertrand Dubreucq
14:00 - 15:00 - Gene expression throughout seed development - Lecture John Harada
15:00 - 15:30 - **Coffee break**
15:30 - 17:30 - Use of natural variability in studying seed filling - Lecture Sophie Jasinski
16:00 - 17:00 - Seed storage compounds: biosynthetic pathways and their regulation.
Lecture Sébastien Baud
17:00 - 17:30 - Conservation of networks and differences between monocots and dicots for reserve accumulation - Lecture Bertrand Dubreucq
17:30 - 19:30 - **Pétanque - Île de la Chaussée, Bougival**
19:30 - 21:00 - **Dinner - Chez Clément**

21:00 - 22:00 Poster session

Tuesday 30th of June

Session II continued

- 08:30 - 09:30** - Biotechnological aspects of seed filling - Lecture Sébastien Baud & Bertrand Dubreucq
9:30 - 10:00 - **Coffee break**

Session III

Seed coat differentiation and secondary metabolites of commercial interest

George Haughn - Helen North (LabEx SPS)
Isabelle Debeaujon (LabEx SPS)

- 10:00 - 11:15** - **Part I** - What makes a good seed coat? - Discussion chaired by George Haughn
Part II - How does the seed coat differentiate to fulfil its roles? - Discussion chaired by Isabelle Debeaujon
11:15 – 12:00 - Exploring the structure and function of seed coat mucilage - Lecture George Haughn
12:00 - 13:00 - **Buffet Lunch - Villa des Impressionnistes**
13:00 - 13:45 - Seed coat polyphenols: beyond colour - Lecture Isabelle Debeaujon
13:45 – 14:30 - Right place, right time; transcriptional regulation of seed coat differentiation
Lecture Helen North
14:30 - 15:00 - **Coffee break**
15:00 - 16:00 - The seed coat as a molecular factory - Discussion chaired by Helen North
16:30 - 18:00 - **Guided tour of Bougival**
Leaving from the Villa des Impressionnistes
19:00 - 20:30 - **Dinner - Chez Clément**

20:30 - 22:00 - Teaching and communicating seed science - Lecture George Haughn

Wednesday 1st of July

8:30 - 9:30 - Travel from Bougival to Orsay

9:30 - 11:30 - Visit of the Institute of Plant Sciences Paris-Saclay (IPS2)

9:30 - 10:00 - Presentation of the LabEx SPS - Loïc Lepiniec

10:15 - 11:15 - Presentation and visite of the IPS2 - Martin Crespi



11:30 - 12:00 - Travel to IJPB

12:00 - 13:30 - Picnic at the Jean Pierre Bourgin Institute (IJPB)



13:30 - 16:00 - Visit of the Jean Pierre Bourgin Institute (IJPB)

13:30 - 14:00 - Presentation of the IJPB : Herman Höfte

14:30 - 16:00 - Visite of the Plant Observatory (2x 45 min) Bertrand Dubreucq and Sébastien Bénard

16:00 - 16:30 - Travel to the Palace of Versailles

16:30 - 18:00 - Visit of the Palace of Versailles (Entrance B)

18:00 - 19:15 - Free time to visit the palace gardens

19:15 - Rendez-vous for walk to restaurant (Entrance B)

19:30 - Dinner at Chez César Restaurant, Versailles

Chez César
8 Avenue du Général de Gaulle
78000 Versailles
Tél. : 01 39 53 69 00

Thursday 2nd of July

Session IV

Desiccation and stress responses

Julia Buitink (INRA Angers), Christophe Bailly, (UPMC Paris),
Emmanuelle Issakidis-Bourguet (LabEx SPS)

08:30 - 8:40 - Introduction to the session - Emmanuelle Issakidis-Bourguet

Part I: Tolerance to desiccation

08:40 - 9:00 - Overview of desiccation tolerance - Lecture Julia Buitink

09:00 - 9:20 - What mechanisms do seeds need to survive the dry state?

Discussion chaired by Julia Buitink and Christophe Bailly

09:20 - 10:00 - Protective mechanisms - Lecture Julia Buitink

10:00 - 10:30 - Coffee break

10:30 - 11:00 - Surviving the desiccated state - Lecture Christophe Bailly

Part II: Effect of environmental stress on seeds

11:00 - 11:30 - Overview of stress in seeds - Lecture Emmanuelle Issakidis-Bourguet

11:30 - 12:00 - Impacts of stress on seed physiology - Lecture Christophe Bailly

12:00 - 13:00 - Buffet Lunch - Villa des Impressionnistes

Part II: Effect of environmental stress on seeds

13:00 - 13:30 - Overview of stress during germination - Lecture Christophe Bailly

13:30 - 14:00 - Highlight on thiol-based mechanisms - Lecture Emmanuelle Issakidis-Bourguet

14:00 - 14:30 - Applications for agronomy in a changing environment - Discussion

14:30 - 15:00 - Coffee break

15:00 - 17:30 Poster session

Session V

Dormancy, germination and dispersal and their impact on seed conservation and biodiversity

Kathleen Donohue (Duke University), Annie Marion-Poll (LabEx SPS),
Loïc Rajjou (LabEx SPS)

17:30-18:50 - Seed dormancy: Its effects on plant life cycles and diversification
Lecture and discussion Kathleen Donohue

18:50-19:00 - Presentation by Loïc Rajjou of the Friday interactive session
(Organization of student groups and short introduction)

19:00-20:00 - Seed quality issues in kohlrabi (*Brassica oleracea*) - Fernando Goffman (Enza Zaden)

20:00 - 22:00 - Aperitif and Dinner - Chez Clément - Informal discussions



Session V Continued

Dormancy, germination and dispersal and their impact on seed conservation and biodiversity

Kathleen Donohue (Duke University) , Annie Marion-Poll (LabEx SPS),
Loïc Rajjou (LabEx SPS)

08:30-09:00 - Hormonal control of seed germination - Lecture Annie Marion-Poll

09:00-09:30 - Seed longevity - Lecture Loïc Rajjou

09:30-10:00 - Interactive session

Each group of students will prepare a short presentation on a given scientific question related to environmental/societal/agricultural issues, with the help of the organizers.

10:00 - 10:30 - Coffee break

10:30-12:00 - Interactive session

11:00-12:00 - Student presentations (on white board) and discussion

12:00 - 13:00 - Buffet Lunch - Villa des Impressionnistes

Prospects for seed research in the coming decades

13:00-15:00 - What will be THE major challenge for seed science in the coming decade?
Chaired by Bertrand Dubreucq

Part I - New technologies and opportunities for the coming decade

13:10 - 13:25 - Seed priming. - Lecture Loic Rajjou

13:25 - 13:40 - Post harvest seed treatments - Lecture Carole Desbois Vimont, HM Clause

13:40 - 13:55 - Site directed mutagenesis - Bertrand Dubreucq

Part II - Industrial challenges for seed production in the coming decade

14:00 - 14:20 - Seed physiology traits - Fernando Goffman Enza Zaden

14:20 - 14:40 - Markets – supply and demand - Bertrand Dubreucq

14:40 - 15:00 - Legislation controlling seed production, movement and distribution -
Anne-Céline Contamine UFS and Carole Desbois Vimont (HM.CLAUSE)

15:00 - 15:30 - Coffee break

15:30-16:30 - Round table: Orientating our research toward the future challenges for seed science

16:30 - 17:00 - Closing speech - Helen North

17:30 - Bus departure - RER A Station : Le Vésinet - Le Pecq

