

Monday, March 21<sup>st</sup>

# Quantitative Viral Dynamics Across Scales – PSL-Qlife Winter School – March 21<sup>th</sup>–25<sup>th</sup>, 2022

8:15 - 8:30 am Welcome coffee - Room 305

Tuesday, March 22<sup>nd</sup>

Wednesday, March 23<sup>rd</sup>

Thursday, March 24<sup>th</sup>

Friday, March 25<sup>th</sup>

8:30 - 9:00 am **J. Weitz, P. Charnay**  
Introduction - Room 316

8:45 - 9:00 am Coffee  
Room 305

8:45 - 9:00 am Coffee  
Room 305

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Room 305

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Room 305

9:00 - 10:15 am **Anne Chevallereau**  
How bacteria defend against their viral parasites and how viruses fight back? The tale of bacterial CRISPR immunity and phage anti-CRISPR proteins  
Room 316

9:00 - 10:15 am **Laurent Debarbieux**  
Principles of in vivo phage therapy  
Room 316

9:00 - 10:15 am **Namiko Mitarai**  
Space matters: phage vs bacteria in a structured environment  
Room 316

9:00 - 10:15 am **Michael Hochberg**  
Phage Therapy Through the Lens of Evolution  
Room 316

9:00 - 10:15 am **Joshua Weitz**  
Phage Impacts on Marine Microbes and Ecosystem Functioning  
Room 316

10:15 - 10:45 am Coffee break - Room 305

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10:45 - 12:00 am **François Blanquart**  
Within-host viral dynamics and evolution: from HIV to SARS-CoV-2  
Room 316

10:45 - 12:00 am **Thierry Mora**  
Antigenic waves in host-pathogen co-evolution  
Room 316

10:45 - 12:00 am **Chiara Poletto**  
Network epidemiology to understand COVID-19 dissemination  
Room 316

10:45 - 12:00 am **Igor M. Rouzine**  
HIV latency and HIV controllers  
Room 316

10:45 - 12:00 am **Eugenio Valdano**  
The impact of human mobility and behavior on the spatial spread of infectious diseases  
Room 316

12:00 - 1:00 pm Lunch  
Room 305

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Room 305

12:00 - 1:00 pm Lunch  
Room 305

1:00 - 4:30 pm  
Digital workshop  
Ecology

1:00 - 4:30 pm  
Digital workshop  
Epidemics

1:00 - 4:30 pm  
Digital workshop  
Ecology

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Epidemics

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Epidemics

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Ecology

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Digital workshop  
Ecology

1:00 - 4:30 pm  
Digital workshop  
Epidemics

**Modeling Phage-CRISPR dynamics from cells to populations**

**Modeling within-host viral dynamics**

**Within-host phage therapy modeling**

**Inferring responding immune clonotypes**

**Simulating phage-bacteria interaction in space**

**Epidemic spreading on networks**

**Evolutionary epidemiology theory**

**NextStrain Interactive Demo**

**Modeling marine phage-bacteria dynamics**

**Model-data integration for human mobility, mixing, and disease spread**

Room 321

Room 316

Room 321

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Room 316

J.L. Weissman  
J. Marchi

J. Weitz  
F. Blanquart  
J. Seurat

J. Marchi  
S. Zborowsky  
J. Seurat

T. Mora  
A. Walczak  
M. Bensouda Koraichi  
A. Mazzolini  
J.L. Weissman

N. Mitarai  
A. Berglund Nielsen  
J.L. Weissman

C. Poletto  
F. Bonacina  
B. Faucher

S. Gandon  
W. Benhamou  
M. Guillemet  
J. Marchi

R. Neher  
V. Druelle  
M. Molari

D. Demory  
J. Seurat  
J. Marchi

E. Valdano  
L. Di Domenico  
B. Faucher

4:30 - 5:00 pm Coffee break - Room 305

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4:30 - 5:00 pm **Joshua Weitz**  
Winter School Closeout  
Room 316

5:00 - 6:00 pm **Edze Westra**  
Bacteria-phage warfare  
Room 306

5:00 - 6:00 pm **Aleksandra Walczak**  
Response in immune repertoires  
Room 316

5:00 - 6:00 pm **Richard Neher**  
Reconstructing, tracking, and predicting viral spread and evolution  
Room Dussane

5:00 - 6:00 pm **Sylvain Gandon**  
Virulence evolution during epidemics: theory and experiments  
Room 316

6:00 - 6:15 pm Coffee break - Room 305

6:15 - 8:45 pm  
**Poster session**  
Room 316

7.30 pm  
**Speaker dinner**

6:00 - 7:00 pm **Vittoria Colizza**  
COVID-19 Models, Big Data, and Public Health Decision-Making  
Room Dussane

7.30 pm  
**Student/Speakers dinner**

6:00 - 8:00 pm  
**Cocktail**  
Room 305