

Seminar in Microbiology

Monday, 5th of December, 2016

Salle de séminaire, E07.3347.a, CMU

11:30 – 12:30

Prof. Dominique Schneider



Laboratoire adaptation et pathogénie des microorganismes CNRS /
Université Joseph Fourier, Grenoble, France

Evolutionary Systems Biology: Genomic evolution during a long-term experiment with bacteria

We use experimental evolution to investigate the ecological and molecular mechanisms underlying the dynamics of bacterial evolutionary processes and phenotypic traits, including diversification, adaptation to various environments, virulence, interactions with host cells, and antibiotic resistance. Molecular, genetic, genomic, statistical, and computer tools are integrated to link mutational events, including large chromosomal rearrangements, and regulatory network dynamics to phenotypic changes during evolutionary time. We develop basic, environmental and medical research, and interdisciplinary collaborations with computer scientists, population geneticists and medical practitioners.

Tenaillon O, Barrick JE, Ribick N, Deatherage DE, Blanchard JL, Dasgupta A, Wu GC, Wielgoss S, Cruveiller S, Médigue C, **Schneider D**, Lenski RE. Tempo and mode of genome evolution in a 50,000-generation experiment. *Nature*. 2016 Aug 11;536(7615):165-70.

Raeside C, Gaffé J, Deatherage DE, Tenaillon O, Briska AM, Ptashkin RN, Cruveiller S, Médigue C, Lenski RE, Barrick JE, **Schneider D**. Large chromosomal rearrangements during a long-term evolution experiment with *Escherichia coli*. *MBio*. 2014 Sep 9;5(5):e01377-14.

Le Gac M, Cooper TF, Cruveiller S, Médigue C, **Schneider D**. Evolutionary history and genetic parallelism affect correlated responses to evolution. *Mol Ecol*. 2013 Jun;22(12):3292-3303.

Plucaïn J, Hindré T, Le Gac M, Tenaillon O, Cruveiller S, Médigue C, Leiby N, Harcombe WR, Marx CJ, Lenski RE, **Schneider D**. Epistasis and allele specificity in the emergence of a stable polymorphism in *Escherichia coli*. *Science*. 2014 Mar 21;343(6177):1366-9.

Wielgoss S, Barrick JE, Tenaillon O, Wisner MJ, Dittmar WJ, Cruveiller S, Chane-Woon-Ming B, Médigue C, Lenski RE, **Schneider D**. Mutation rate dynamics in a bacterial population reflect tension between adaptation and genetic load. *Proc Natl Acad Sci U S A*. 2013 Jan 2;110(1):222-7.