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**RESEARCH INTERESTS** Bacterial evolution; origin of antibiotic resistance; collective behavior in microbial populations

### PROFESSIONAL EXPERIENCE AND EDUCATION

**Institut Pasteur**, Paris, France..... 2017 (oct)– present  
Scientist/ Principal Investigator/ Research Engineer, Department of Genomes and Genetics - Dr Didier Mazel laboratory.

**Princeton University**, Princeton, NJ USA..... 2015 (jul)– 2017 (sept)  
Associate Research Scholar, Lewis-Sigler Institute for Integrative Genomics.

**Princeton University**, Princeton, NJ USA..... 2013 (jan)–2015 (jun)  
Post-doctoral Research Associate, Department of Physics - Dr Robert Austin laboratory.

**Princeton University**, Princeton, NJ USA..... 2008 (oct)–2012 (dec)  
Post-doctoral Research Associate, Department of Molecular Biology- Dr Zemer Gitai laboratory.

**Université de la Méditerranée**, Marseille, France..... 2005-2008  
Ph.D. in Molecular Microbiology and Biotechnologies. Dr Frederic Barras laboratory.  
Fellowships: MENRT (2005-2007), FRM (2008)

Master in Biochemistry, Microbiology and Biotechnologies..... 2005

### PEER-REVIEWED ARTICLES (cited by year)

- 1- Richard E, Darracq B, Littner E, Vit C, Whiteway C, **Bos J**, Fournes F, Garriss G, Conte V, Lapailierie D, Parissi V, Rousset F, Skovgaard O , Bikard D, Rocha EPC, Mazel D, Loot C. **(2022)** “Genetic drivers of chromosomal integron stability. *BioRxiv* doi: <https://doi.org/10.1101/2022.08.03.502626>
- 2- Czarnecki J, Chapkuskaitse J, **Bos J**, Sentkowska D, Wawrzyniak P , Wszyńska A, Szuplewska M, Bartosik D. **(2022)**. “Differential Localization and Functional Specialization of *parS* Centromere-Like Sites in *repABC* Replicons of *Alphaproteobacteria*. *Applied and Env. Micro*; 88, 8, e00207-22
- 3- **Bos J\***, Cisneros LH, Mazel D. “Real-time tracking of bacterial membrane vesicles reveals enhanced transport under antibiotic stress”. (\*corresponding author) **(2021)**. *Science Advances*; 7 : eabd1033  
This paper has been featured in:  
- *EurekAlert*: “Message in a bottle: Info-rich bubbles respond to antibiotics” [\[link\]](#)
- 4- Phan TV., Morris R, Black ME., Do TK., Lin KC, Nagy K, Sturm JC, **Bos J**, and Austin RH **(2020)**. “Bacterial Route Finding and Collective Escape in Mazes and Fractals”. *Phys. Rev. X* 10, 031017.
- 5- Pribis JP, García-Villada L, Zhai Y, Lewin-Epstein O, Wang AZ, Liu J, Xia J, Mei Q, Fitzgerald DM, **Bos J**, Austin RH, Herman C, Bates D, Hadany L, Hastings PJ, Rosenberg SM **(2019)**. “Gamblers: An Antibiotic-Induced Evolvable Cell Subpopulation Differentiated by Reactive-Oxygen-Induced General Stress Response”. *Mol Cell*. (19)30148-0  
This paper has been featured in:  
- *Science Daily*: “Anti-evolvability drugs could slow antibiotic resistance in bacteria” [\[link\]](#)  
- *EurekAlert*: “Novel strategy fights back bacterial antibiotic resistance” [\[link\]](#)
- 6- Phan TV, Morris RJ, Lam HT, Hulamm P, Black ME, **Bos J**, and Austin RH **(2018)** “Emergence of *Escherichia coli* critically buckled motile helices under stress” *PNAS* 115 (51):12979-12984.
- 7- Morris RJ, Phan T, Black M, Lin KC, Kevrekidis Y, **Bos J** and Austin RH **(2017)**. “Bacterial population solitary waves can defeat rings of funnels” *New Journal of Physics*.

8- Gennaris A, Ezraty B, Henry C, Agrébi R, Vergnes A, Vertommen D, **Bos J**, Leverrier P, Espinosa L, Szewczyk J, Collet JF, Barras F (2015). "Repairing oxidized proteins in the bacterial envelope using respiratory chain electrons". *Nature*, 528 (7582):409-12.

9- **Bos J**, Zhang Q, Vyawahare S, Rogers E, Rosenberg SM, Austin RH (2015). "Emergence of antibiotic resistance from multi-nucleated bacterial filaments". *PNAS* 112(1):178-83.

This paper has been featured in:

- *Science*: 347(6217):40 (Jan 2015), "How bacteria develop resistance" [\[link\]](#)
- *Small Things Considered*: "Making Mutants - And Watching Them "In the Making"" [\[link\]](#)
- *Nautilus*: "Does Stress Speed Up Evolution?" [\[http://nautil.us/issue/34/adaptation/does-stress-speed-up-evolution\]](http://nautil.us/issue/34/adaptation/does-stress-speed-up-evolution)

10- Zhang Q, **Bos J**, Tarnopolskiy G, Bestoso J, Sturm J, Hyunsung K, Pourmand N, Austin RH (2014). "You cannot tell a book by looking at the cover: cryptic complexity in bacterial evolution". *Biomicrofluidics* 8(5): 052004.

This paper has been featured in

- AIP publishing: "Bacteria Harbor Secret Weapons Against Antibiotics" [\[link\]](#)

11- **Bos J**, Duverger Y, Thouvenot B, Chiaruttini C, Branlant C, Springer M, Charpentier B, Barras F (2013). "The sRNA RyhB regulates the synthesis of the *Escherichia coli* methionine sulfoxide reductase MsrB but not MsrA." *PLoS One* 8(5): e63647

12- **Bos J**, Yakhnina AA, Gitai Z (2012). "The BapE endonuclease induces an apoptotic-like response to DNA damage in *Caulobacter*." *PNAS* 109(44): 18096-101.

This paper has been featured in:

- *Nature Reviews Microbiology*: 10, 802-803. "Bacterial physiology: *Caulobacter* chooses to self-destruct". [\[link\]](#)

13- Luciano P, Coulon S, Faure V, Corda Y, **Bos J**, Brill S, Gilson E, Simon MN, Géli V. (2012) "RPA facilitates telomerase activity at chromosome ends in budding and fission yeasts". *EMBO Journal*, 31(8): 2034-46.

14- Ezraty B\*, **Bos J**\*, Barras F, Aussel L. (2005) "Methionine sulfoxide reduction and assimilation in *Escherichia coli*: New role for the biotin sulfoxide reductase BisC". *Journal of Bacteriology* 187(1): 231-7. (\*co-first authors).

**BOOK Chapter** **Bos J. and Austin RH. Methods in Cell Biology Volume 147. (2018).** Microfluidics in Cell Biology Part B: Microfluidics in Single Cells. Chapter 3 "Bacterial antibiotic resistance accelerator and applications". p41-57