

## **Selected publications from the Functioning and Adaptation of Microorganisms' team**

1: Bignaud A, Cockram C, Borde C, Groseille J, Allemand E, Thierry A, Marbouty M, Mozziconacci J, Espéli O, Koszul R. Transcription-induced domains form the elementary constraining building blocks of bacterial chromosomes. *Nat Struct Mol Biol.* 2024 Jan 4. doi: 10.1038/s41594-023-01178-2. Epub ahead of print. PMID: 38177686.

2: Junier I, Ghobadpour E, Espeli O, Everaers R. DNA supercoiling in bacteria: state of play and challenges from a viewpoint of physics based modeling. *Front Microbiol.* 2023 Oct 30;14:1192831. doi: 10.3389/fmicb.2023.1192831. PMID: 37965550; PMCID: PMC10642903.

3: Boulas I, Bruno L, Rimsky S, Espeli O, Junier I, Rivoire O. Assessing in vivo the impact of gene context on transcription through DNA supercoiling. *Nucleic Acids Res.* 2023 Oct 13;51(18):9509-9521. doi: 10.1093/nar/gkad688. PMID: 37667073; PMCID: PMC10570042.

4: Camus A, Espinosa E, Zapater Baras P, Singh P, Quenech'Du N, Vickridge E, Modesti M, Barre FX, Espéli O. The SMC-like RecN protein is at the crossroads of several genotoxic stress responses in *Escherichia coli*. *Front Microbiol.* 2023 Apr 24;14:1146496. doi: 10.3389/fmicb.2023.1146496. PMID: 37168111; PMCID: PMC10165496.

5: Misson P, Bruder E, Cornuault JK, De Paepe M, Nicolas P, Demarre G, Lakisic G, Petit MA, Espeli O, Lecoïnte F. Phage production is blocked in the adherent-invasive *Escherichia coli* LF82 upon macrophage infection. *PLoS Pathog.* 2023 Feb 2;19(2):e1011127. doi: 10.1371/journal.ppat.1011127. PMID: 36730457; PMCID: PMC9928086.

- 6: Bruder E, Espéli O. Escherichia coli bacteria associated with Crohn's disease persist within phagolysosomes. *Curr Opin Microbiol.* 2022 Dec;70:102206. doi: 10.1016/j.mib.2022.102206. Epub 2022 Sep 29. PMID: 36182819.
- 7: Conin B, Billault-Chaumartin I, El Sayyed H, Quenech'Du N, Cockram C, Koszul R, Espéli O. Extended sister-chromosome catenation leads to massive reorganization of the E. coli genome. *Nucleic Acids Res.* 2022 Mar 21;50(5):2635-2650. doi: 10.1093/nar/gkac105. PMID: 35212387; PMCID: PMC8934667.
- 8: Wu HC, Rérolle D, Berthier C, Hleihel R, Sakamoto T, Quentin S, Benhenda S, Morganti C, Wu C, Conte L, Rimsky S, Sebert M, Clappier E, Souquere S, Gachet S, Soulier J, Durand S, Trowbridge JJ, Bénit P, Rustin P, El Hajj H, Raffoux E, Ades L, Itzykson R, Dombret H, Fenaux P, Espeli O, Kroemer G, Brunetti L, Mak TW, Lallemand-Breitenbach V, Bazarbachi A, Falini B, Ito K, Martelli MP, de Thé H. Actinomycin D Targets NPM1c-Primed Mitochondria to Restore PML-Driven Senescence in AML Therapy. *Cancer Discov.* 2021 Dec 1;11(12):3198-3213. doi: 10.1158/2159-8290.CD-21-0177. PMID: 34301789; PMCID: PMC7612574.
- 9: Prudent V, Demarre G, Vazeille E, Wery M, Quenech'Du N, Ravet A, Dauverd-Girault J, van Dijk E, Bringer MA, Descrimes M, Barnich N, Rimsky S, Morillon A, Espéli O. The Crohn's disease-related bacterial strain LF82 assembles biofilm-like communities to protect itself from phagolysosomal attack. *Commun Biol.* 2021 May 25;4(1):627. doi: 10.1038/s42003-021-02161-7. PMID: 34035436; PMCID: PMC8149705.
- 10: Aubry M, Wang WA, Guyodo Y, Delacou E, Guigner JM, Espeli O, Lebreton A, Guyot F, Gueroui Z. Engineering *E. coli* for Magnetic Control and the Spatial Localization of Functions. *ACS Synth Biol.* 2020 Nov 20;9(11):3030-3041. doi: 10.1021/acssynbio.0c00286. Epub 2020 Sep 25. PMID: 32927947.
- 11: Lambert S, Borde V, Charbonnier JB, Dantzer F, Espéli O, Guirouilh-Barbat J,

Llorente B, Legube G, Prioleau MN, Radicella P. Des mécanismes moléculaires aux applications cliniques. L'essentiel du Colloque Réplication-Réparation-Recombinaison 2019. Bull Cancer. 2020 Feb;107(2):283-287. French. doi: 10.1016/j.bulcan.2020.01.003. Epub 2020 Jan 31. PMID: 32014246.

12: Planchenault C, Pons MC, Schiavon C, Siguier P, Rech J, Guynet C, Dauverd-Girault J, Cury J, Rocha EPC, Junier I, Cornet F, Espéli O. Intracellular Positioning Systems Limit the Entropic Eviction of Secondary Replicons Toward the Nucleoid Edges in Bacterial Cells. J Mol Biol. 2020 Feb 7;432(3):745-761. doi: 10.1016/j.jmb.2019.11.027. Epub 2020 Jan 11. PMID: 31931015.

13: Demarre G, Prudent V, Schenk H, Rousseau E, Bringer MA, Barnich N, Tran Van Nhieu G, Rimsky S, De Monte S, Espéli O. The Crohn's disease-associated *Escherichia coli* strain LF82 relies on SOS and stringent responses to survive, multiply and tolerate antibiotics within macrophages. PLoS Pathog. 2019 Nov 14;15(11):e1008123. doi: 10.1371/journal.ppat.1008123. PMID: 31725806; PMCID: PMC6855411.

14: Muller H, Scolari VF, Agier N, Piazza A, Thierry A, Mercy G, Descorps-Declere S, Lazar-Stefanita L, Espeli O, Llorente B, Fischer G, Mozziconacci J, Koszul R. Characterizing meiotic chromosomes' structure and pairing using a designer sequence optimized for Hi-C. Mol Syst Biol. 2018 Jul 16;14(7):e8293. doi: 10.15252/msb.20188293. PMID: 30012718; PMCID: PMC6047084.

15: Lioy VS, Cournac A, Marbouty M, Duigou S, Mozziconacci J, Espéli O, Boccard F, Koszul R. Multiscale Structuring of the *E. coli* Chromosome by Nucleoid-Associated and Condensin Proteins. Cell. 2018 Feb 8;172(4):771-783.e18. doi: 10.1016/j.cell.2017.12.027. Epub 2018 Jan 18. PMID: 29358050.

16: El Sayyed H, Espéli O. Mapping *E. coli* Topoisomerase IV Binding and Activity Sites. Methods Mol Biol. 2018;1703:87-94. doi: 10.1007/978-1-4939-7459-7\_6.

PMID: 29177735.

17: Demarre G, Prudent V, Espéli O. Imaging the Cell Cycle of Pathogen *E. coli* During Growth in Macrophage. *Methods Mol Biol.* 2017;1624:227-236. doi: 10.1007/978-1-4939-7098-8\_17. PMID: 28842887.

18: Vickridge E, Planchenault C, Espéli O. Revealing Sister Chromatid Interactions with the loxP/Cre Recombination Assay. *Methods Mol Biol.* 2017;1624:29-37. doi: 10.1007/978-1-4939-7098-8\_3. PMID: 28842873.

19: Vickridge E, Planchenault C, Cockram C, Junceda IG, Espéli O. Management of *E. coli* sister chromatid cohesion in response to genotoxic stress. *Nat Commun.* 2017 Mar 6;8:14618. doi: 10.1038/ncomms14618. PMID: 28262707; PMCID: PMC5343486.

20: El Sayyed H, Le Chat L, Lebailly E, Vickridge E, Pages C, Cornet F, Cosentino Lagomarsino M, Espéli O. Mapping Topoisomerase IV Binding and Activity Sites on the *E. coli* Genome. *PLoS Genet.* 2016 May 12;12(5):e1006025. doi: 10.1371/journal.pgen.1006025. PMID: 27171414; PMCID: PMC4865107.

21: Lagomarsino MC, Espéli O, Junier I. From structure to function of bacterial chromosomes: Evolutionary perspectives and ideas for new experiments. *FEBS Lett.* 2015 Oct 7;589(20 Pt A):2996-3004. doi: 10.1016/j.febslet.2015.07.002. Epub 2015 Jul 11. PMID: 26171924.

22: Passot FM, Nguyen HH, Dard-Dascot C, Thermes C, Servant P, Espéli O, Sommer S. Nucleoid organization in the radioresistant bacterium *Deinococcus radiodurans*. *Mol Microbiol.* 2015 Aug;97(4):759-74. doi: 10.1111/mmi.13064. Epub 2015 Jun 25. PMID: 25988355.

23: Junier I, Boccard F, Espéli O. Polymer modeling of the *E. coli* genome reveals the involvement of locus positioning and macrodomain structuring for the

control of chromosome conformation and segregation. *Nucleic Acids Res.* 2014 Feb;42(3):1461-73. doi: 10.1093/nar/gkt1005. Epub 2013 Nov 4. PMID: 24194594; PMCID: PMC3919569.

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25: Le Chat L, Espéli O. Let's get 'Fiscal' with bacterial nucleoid. *Mol Microbiol.* 2012 Dec;86(6):1285-90. doi: 10.1111/mmi.12073. Epub 2012 Oct 29. PMID: 23078263.

26: Dame RT, Espéli O, Grainger DC, Wiggins PA. Multidisciplinary perspectives on bacterial genome organization and dynamics. *Mol Microbiol.* 2012 Dec;86(5):1023-30. doi: 10.1111/mmi.12055. Epub 2012 Oct 15. PMID: 23066904.

27: Lesterlin C, Gigant E, Boccard F, Espéli O. Sister chromatid interactions in bacteria revealed by a site-specific recombination assay. *EMBO J.* 2012 Aug 15;31(16):3468-79. doi: 10.1038/emboj.2012.194. Epub 2012 Jul 20. PMID: 22820946; PMCID: PMC3419930.

28: Espéli O, Borne R, Dupaigne P, Thiel A, Gigant E, Mercier R, Boccard F. A MatP-divisome interaction coordinates chromosome segregation with cell division in *E. coli*. *EMBO J.* 2012 May 11;31(14):3198-211. doi: 10.1038/emboj.2012.128. PMID: 22580828; PMCID: PMC3400007.

29: Thiel A, Valens M, Vallet-Gely I, Espéli O, Boccard F. Long-range chromosome organization in *E. coli*: a site-specific system isolates the Ter macrodomain. *PLoS Genet.* 2012;8(4):e1002672. doi: 10.1371/journal.pgen.1002672. Epub 2012 Apr

19. PMID: 22532809; PMCID: PMC3330122.

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42: Rossignol M, Basset A, Espéli O, Boccard F. NKBOR, a mini-Tn10-based transposon for random insertion in the chromosome of Gram-negative bacteria and the rapid recovery of sequences flanking the insertion sites in *Escherichia coli*. *Res Microbiol.* 2001 Jun;152(5):481-5. doi: 10.1016/s0923-2508(01)01221-9. PMID: 11446516.

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10.1046/j.1365-2958.1997.6121983.x. PMID: 9427406.