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**Teams in this unit aim at elucidating the regulation of mechanisms that are crucial to the maintenance of genome integrity, like DNA replication, repair and recombination, as well as the role of cell cycle checkpoints and non-coding RNAs in genome and epigenome maintenance.**

Experimental models include yeast, mammalian and human cell lines, mutant mouse models and tumour samples. A large variety of methods is used including genetic, molecular and cytogenetic techniques, fluorescence *in situ* hybridisation and DNA ‘combing’, as well as high throughput sequencing approaches such as DNA-seq for mutation landscape analyses, RNA-seq for transcriptome analyses and CHIP-seq mapping of chromatin-associated proteins and their genome-wide modulation in response to DNA damages.

## Key publications

**Year of publication 2019**

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Emilia Puig Lombardi, Allyson Holmes, Daniela Verga, Marie-Paule Teulade-Fichou, Alain Nicolas, Arturo Londoño-Vallejo (2019 Jul 9)

**Thermodynamically stable and genetically unstable G-quadruplexes are depleted in genomes across species.**

*Nucleic acids research* : 47 : 6098-6113 : [DOI : 10.1093/nar/gkz463](https://doi.org/10.1093/nar/gkz463)

Kevin Grosselin, Adeline Durand, Justine Marsolier, Adeline Poitou, Elisabetta Marangoni, Fariba Nemati, Ahmed Dahmani, Sonia Lameiras, Fabien Reyat, Olivia Frenoy, Yannick Pousse, Marcel Reichen, Adam Woolfe, Colin Brenan, Andrew D. Griffiths\*, Céline Vallot\* & Annabelle Gérard\* (2019 May 31)

**High-throughput single-cell ChIP-seq identifies heterogeneity of chromatin states in breast cancer**

*Nature Genetics* : 1060–1066 : [DOI : 10.1038/s41588-019-0424-9](https://doi.org/10.1038/s41588-019-0424-9)

**Year of publication 2018**

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Antoine Hocher, Myriam Ruault, Petra Kaferle, Marc Describes, Mickaël Garnier, Antonin Morillon, Angela Taddei (2018 Oct 26)

**Expanding heterochromatin reveals discrete subtelomeric domains delimited by chromatin landscape transitions.**

*Genome research* : [DOI : gr.236554.118](https://doi.org/gr.236554.118)

Porreca RM, Glousker G, Awad A, Matilla Fernandez MI, Gibaud A, Naucke C, Cohen SB, Bryan TM, Tzfati Y, Draskovic I, Londoño-Vallejo A (2018 Mar 7)

**Human RTEL1 stabilizes long G-overhangs allowing telomerase-dependent over-extension**

*Nucleic Acids Research* : [DOI : 10.1093/nar/gky173](https://doi.org/10.1093/nar/gky173)

De Muyt A, Pyatnitskaya A, Andréani J, Ranjha L, Ramus C, Laureau R, Fernandez-Vega A, Holoch D, Girard E, Govin J, Margueron R, Couté Y, Cejka P, Guérois R, Borde V. (2018 Feb 1)

**A meiotic XPF-ERCC1-like complex recognizes joint molecule recombination intermediates to promote crossover formation**

*Genes & Development* : [DOI : 10.1101/gad.308510.117](https://doi.org/10.1101/gad.308510.117)

Adam C, Guérois R, Citarella A, Verardi L, Adolphe F Béneut C, Sommermeyer V, Ramus C, Govin J, Couté Y, Borde V (2018 Feb 1)

**The PHD finger protein Spp1 has distinct functions in the Set1 and the meiotic DSB formation complexes**

*PLoS Genetics* : 14(2) : [DOI : 10.1371/journal.pgen.1007223](https://doi.org/10.1371/journal.pgen.1007223)



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