The prevention of genomic instability and cancer depends on the optimal functions of a complex network of pathways collectively called the DNA damage response (DDR).

The research activities of our unit span several aspects of the DDR, intracellular signalling and genome stability in response to genotoxic stress, either from endogenous sources (e.g. replication stress, mutations in oncogenes and tumor suppressor genes) or from exogenous sources (e.g. oxidative stress, chemotherapeutic agents, ionizing and UV radiation).

We are particularly interested by the functional relationships between what we call the “6Rs”: Replication, Repair, Recombination, RNA biology, Redox regulation and responses to Radiations.

We specifically want to focus on:

- The network of cellular responses to exogenous and endogenous stresses,
- The influence of cell stress responses on cancer susceptibility and treatment efficacy,
- The hijacking of stress-induced responses for the development of new anti-cancer therapies.

The wide range of expertise of our teams in molecular and cellular biology, genetics and biochemistry allows us to address these issues by using a great variety of technological approaches and several model systems (yeast, mammalian cell lines, animal models).
Key publications

Year of publication 2018

**Three-dimensional intact-tissue sequencing of single-cell transcriptional states.** Science (New York, N.Y.) : DOI : eaat5691

Maria M Magiera, Puja Singh, Sudarshan Gadadhar, Carsten Janke (2018 Jun 2)
**Tubulin Posttranslational Modifications and Emerging Links to Human Disease.** Cell : 1323-1327 : DOI : S0092-8674(18)30595-6

Maria M Magiera, Puja Singh, Carsten Janke (2018 Jun 2)
**SnapShot: Functions of Tubulin Posttranslational Modifications.** Cell : 1552-1552.e1 : DOI : S0092-8674(18)30644-5

**Whole-genome sequencing of Atacama skeleton shows novel mutations linked with dysplasia.** Genome research : 423-431 : DOI : 10.1101/gr.223693.117

Year of publication 2017

Renaud Chabrier, Carsten Janke (2017 Dec 21)
**The comeback of hand drawing in modern life sciences.** Nature reviews. Molecular cell biology : DOI : 10.1038/nrm.2017.126

Ana Teixeira-Silva, Anissia Ait Saada, Julien Hardy, Ismail Iraqui, Marina Charlotte Nocente, Karine Fréon, Sarah A E Lambert (2017 Dec 8)
**The end-joining factor Ku acts in the end-resection of double strand break-free arrested replication forks.** Nature communications : 1982 : DOI : 10.1038/s41467-017-02144-5