Our scientific goal is to provide, via organic chemistry and synthesis, small molecules as druggable candidates and chemical tools for a better understanding of biological processes in the field of cancer. The discovery of new molecules interacting with living organisms benefits from the team’s expertise in modeling and molecular dynamics.

In parallel with these drug discovery projects, we are continuing to develop and optimize methods in organic chemistry in order to introduce molecular diversity and open new chemical space and on normal modes in order to implement...
Thanks to the drug discovery expertise acquired through the collaboration with the biotech Abivax and through the development of ATP competitive kinase inhibitors, the team is developing medicinal chemistry on innovative projects in oncology in collaboration with biologists from Institut Curie. Our research focusses on non-ATP competitive inhibitors of kinase of the TAM family and on a receptor coupled to protein G identified as a potential target of melanoma. For these goals, the screening of the Curie-CNRS chemistry library is an asset to identify hits that require further hit-to-lead optimization.

The questions of subcellular detection, localization and quantification in cellular medium of small molecules are crucial in their development as chemical tools or as drugs. Therefore, we also pursue our efforts on development of new fluorophores for cellular subcompartments labelling as well as biosensors for protein labeling.
Internal motions of a microtubule doublet.
Flagellar microtubule doublet (MTD) assembly in vitro reveals a regulatory role of tubulin C-terminal tails. In support of the in vitro experiments, we performed molecular simulations that showed that all MTD tails are not equivalent in this regulation (Science 363, 285-288 (2019)). In the movie presented here, we display four essential motions of MTD in the absence of the tubulin tails. These motions correspond to the four lowest-frequency normal modes.

Key publications

Year of publication 2021
Marc Lavigne, Olivier Helynck, Pascal Rigolet, Rofia Boudria-Souilah, Mireille Nowakowski, Bruno Baron, Sébastien Brulé, Sylviane Hoos, Bertrand Raynal, Lionel Guittat, Claire Beauvineau, Stéphane Petres, Anton Granzhan, Jean Guillon, Geneviève Pratviel, Marie-Paule Teulade-Fichou, Patrick England, Jean-Louis Mergny, Hélène Munier-Lehmann (2021 Jul 7)
SARS-CoV-2 Nsp3 unique domain SUD interacts with guanine quadruplexes and G4-ligands inhibit this interaction.

**Photoactivatable small-molecule inhibitors for light-controlled TAM kinase activity**
*ChemPhotoChem* : Accepted Author Manuscript : [DOI: 10.1002/cptc.202100131](https://doi.org/10.1002/cptc.202100131)

Laura Fourmois, Florent Poyer, Aude Sourdon, Delphine Naud-Martin, Soundarya Nagarajan, Rahima Chenoufi, Eric Deprez, Marie-Paule Teulade-Fichou, Florence Mahuteau-Betzer (2021 May 19)
**Modulation of cellular fate of vinyl triarylarnines through structural fine tuning: to stay or not to stay in the mitochondria?**
*Chembiochem* : a European journal of chemical biology : Accepted Article : [DOI: 10.1002/cbic.202100168](https://doi.org/10.1002/cbic.202100168)

**The ability of 2,5-disubstituted oxazole dyes derivatives to generate two-photon upconversion photoluminescence and its brightness evaluation**

Sylvie Gory-Fauré, Rebecca Powell, Julie Jonckheere, Fabien Lanté, Eric Denarier, Leticia Peris, Chi Hung Nguyen, Alain Buisson, Laurence Lafanèchère, Annie Andrieux (2021 Mar 12)
**Pyr1-Mediated Pharmacological Inhibition of LIM Kinase Restores Synaptic Plasticity and Normal Behavior in a Mouse Model of Schizophrenia.**

Auvray M., Bolze F., Clavier G., Mahuteau-Betzer F. (2021 Mar 1)
**Silafluorene as a promising core for cell-permeant, highly bright and two-photon excitable fluorescent probes for live-cell imaging**