The central activity of the CMBC unit is to develop small molecules to probe and control the biological activities of key targets involved in cancer. These are non B-nucleic acid structures (G-quadruplexes, Abasic sites, ...) and proteins (TAM kinases, non B-nucleic acid structures interacting proteins, ...).

The drug and probe discovery activity is sustained by molecular modelling approaches and imaging. The CMBC unit is hosting the Institut Curie-CNRS proprietary library comprised of over 9000 chemical compounds.

The main research themes of the unit include:

- Design and synthesis of G-quadruplex targeting agents for probing, imaging and mapping
- Design, synthesis and studies of novel small-molecule ligands and probes able to recognize unusual DNA and RNA structures
- Screening approaches and rational design for the synthesis of kinase inhibitors
- Identification of radiosensitizing molecules for the treatment of cancers and determination of their molecular mechanisms of action

The main methodological approaches are:

- Chemical biology
- Medicinal chemistry (Hit to lead optimization)
- Biophysics and Biochemistry of nucleic acids
- Molecular dynamics and virtual screening
- Cellular biology & radiosensitization
Key publications

Year of publication 2021

Anouchka Gatin, Isabelle Billault, Patricia Duchambon, Guillaume Van der Rest, Cécile Sicard-Roselli (2022 Jan 3)
**Oxidative radicals (HO• or N3•) induce several di-tyrosine bridge isomers at the protein scale.**

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**

Thomas Barbot, Veronica Beswick, Cédric Montigny, Éric Quiniou, Nadège Jamin and Liliane Mouawad (2021 Feb 4)
**Deciphering the mechanism of inhibition of SERCA1a by sarcolipin using molecular simulations**

**Competition of ligands and the 18-mer binding domain of the RHAU helicase for G-quadruplexes - orthosteric or allosteric binding mechanism?**

Year of publication 2020

Yu Luo, Anton Granzhan, Daniela Verga, Jean-Louis Mergny (2020 Dec 28)
**FRET-MC: A fluorescence melting competition assay for studying G4 structures in vitro.**
*Biopolymers* : Early view : bip23415 : [DOI: 10.1002/bip.23415]

Oksana Reznichenko, Anne Cucchiarini, Valérie Gabelica, Anton Granzhan (2020 Dec 8)
**Quadruplex DNA-guided ligand selection from dynamic combinatorial libraries of acylhydrazones**