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BioPhenics facility specializes in chemical biology as it relates drug discovery, biological probe discovery and phenotypic characterization of small-molecule effects (siRNAs and chemical compounds) on cellular systems. The facility provides basic and applied research teams with the technical resources and expertise needed to carry out high-content screens.

The facility has enabled screening projects for different research groups in Europe, most of them located in cancer centers, aiming to benefit from the platform capabilities for identifying both the genes and pathways that mediate disease states and novel compounds that modulate these pathways. BioPhenics operates with a philosophy of collaboration, rather than fee-for-service. These screens can be carried out using small molecule or siRNA libraries curated by BioPhenics or with custom libraries developed by researchers.

Objectifs

- **Development of cell-based assays for large-scale identification of protein markers of a physiological or functional status of therapeutic response.**
- **Analysis of phenotypic profiles of genes and chemical libraries based on their diagnostic / therapeutic interest.**
- **Identification of bio-active molecules, even though they do not present an immediately exploitable therapeutic effect (molecular tools)**
- **Early drug discovery process from target identification to lead molecule characterization**

BioPhenics is designed to function both as an intellectual base and a core research facility for researchers in their goal to develop novel treatments for diseases. BioPhenics Scientific Staff provides the intellectual capital, collaborative opportunities and access to state-of-the-art technologies in chemical biology and participates in the training of future research scientists and health care practitioners.

Equipements

The robotic platform is a flexible, modular, specialized system for the full automation of a wide variety of 96 and 384-well cell-based and biochemical assays. In addition to housing the instrumentation and robotics required for traditional high-throughput liquid handling (TECAN EVO, MAP TiterTek, Thermo Scientific Multidrop), the facility houses two cutting-edge High Content Image-based instruments (INCell 2000 and INCell 2200 systems) for small-molecule discovery research and analysis in fixed cells. The cell culturing laboratory ensures the
continuous provision of cell culture samples for automated testing. They are located in a positive-pressure room fully equipped for preparation and maintenance of cell cultures in a safe and sterile environment. Standard operating procedures are implemented to ensure the continuous production of consistent high-quality cell-based assays.

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More information on the Biophenics website

Key publications

Year of publication 2019

Gaelle Boncompain, Nelly Gareil, Sarah Tessier, Auriianne Lesure, Thouis R Jones, Oliver Kepp, Guido Kroemer, Elaine Del Nery, Franck Perez (2019 Nov 5)
BML-265 and Tyrophostin AG1478 Disperse the Golgi Apparatus and Abolish Protein Transport in Human Cells.

Targeting CCR5 trafficking to inhibit HIV-1 infection.
Science advances : eaax0821 : DOI: 10.1126/sciadv.aax0821

Protein arginine methyltransferase 5: A novel therapeutic target for triple-negative breast cancers.
Cancer medicine : 2414-2428 : DOI: 10.1002/cam4.2114

Year of publication 2017

Smooth 2D manifold extraction from 3D image stack.  
*Nature communications*: 15554 : [DOI: 10.1038/ncomms15554]  

**Year of publication 2016**

Peter Horvath, Nathalie Aulner, Marc Bickle, Anthony M Davies, Elaine Del Nery, Daniel Ebner, Maria C Montoya, Päivi Östling, Vilja Pietiäinen, Leo S Price, Spencer L Shorte, Gerardo Turcatti, Carina von Schantz, Neil O Carragher (2016 Sep 13)  
**Screening out irrelevant cell-based models of disease.**  
*Nature reviews. Drug discovery*: 751-769 : [DOI: 10.1038/nrd.2016.175]  

**Year of publication 2015**

Priscille Brodin, Elaine DelNery, Emmanuelle Soleilhac (2015 Mar 4)  
**[High content screening in chemical biology: overview and main challenges].**  