

High-throughput screening (HTS) and Combinatorial chemistry platform

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Homed at the bioorganic chemistry laboratory (iBiTEC-S, CEA), this unique platform combines equipment and know-how to perform high-throughput biological tests for bioactive molecules selection and "hits" optimization by medicinal/combinatorial chemistry. The platform uses commercial and national (CNRS) libraries but also synthesizes "in house" targeted compounds including radiolabeled molecules. This multidisciplinary platform belongs to the GIS-IBISA network and offers its competences through collaborative research programs.

Expertise and objectives

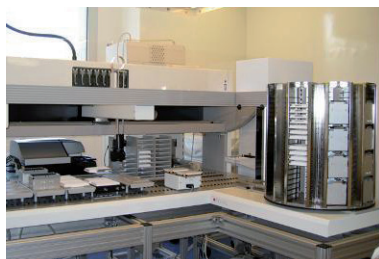
From hit to lead: speed-up bio-active compounds discovery process

Identification of compounds («hits») that modulate a biological target

- Screening for bioactive molecules by cell or biochemical assays
- Radiolabeled compounds synthesis (^3H , ^{14}C) and screening

Optimization (analogue synthesis) using solid and/or liquid phase combinatorial chemistry

- Chemical synthesis of candidates (library feeding) and lead compounds
- development of new labeling strategies by chemical synthesis



HTS workstation

Application and projects

Research

Bio-active compounds as tools for biological investigations (chemical genetics, protein/protein interactions, cell cycle, uptake...).

Development

Hit compounds optimization and validation, drug development.

Current programs

Mitosis dynamic mechanisms and tumour growth: cancer compounds identification and development (in collaboration with ARC).

Screening method development to ^{18}F radiolabeled molecules to faster the selection of efficient contrast agents for PET scan (in collaboration).

The HTS workstation at a glance

Sterile environment ; cell culture room ; molecular biology equipments and materials

A robotic station including:

- a liquid handling system,
- a CO_2 incubator,
- a fluorescence–luminescence–TRF microplate reader,
- a monochromator UV–VIS microplate reader (200–1000 nm)
- a radioactive microplate reader (β and γ)
- a 20 000 drug-like compounds library
- chemicals and radioactive chemicals synthesis
- targeted librairies (liquid, solid phase synthesis ; microwave reactor
- analysis and purification (NMR, LC/MS)
- data analysis (**results confidentiality**)



Data analysis

Results ownership and IP

Results can lead to patent filing. Ownership shall be discussed regarding the involvement of each partner and terms of the contract set up.

Recent disclosures

PB. Stechmann, S.-K. Bai, E. Gobbo, R. Lopez, G. Merer, S. Pinchard, L. Panigai, D. Tenza, G. Raposo, B. Beaumelle, D. Sauvaire, D. Gillet, L. Johannes, J. Barbier (2010) **Inhibition of retrograde transport protects mice from lethal ricin challenge.** Cell, printing.

Compounds with antiparasitic activity, applications thereof to the treatment of infectious diseases caused by apicomplexans. Deligny M., Saidani N., Bonneau A-L., Botte C., Hardre H., Rousseau B., Vial H., Mercier C., Lopez R., Maréchal E. **patent pending EP2155676 (priority 2010)**



energie atomique - énergies alternatives

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