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THE PEOPLE

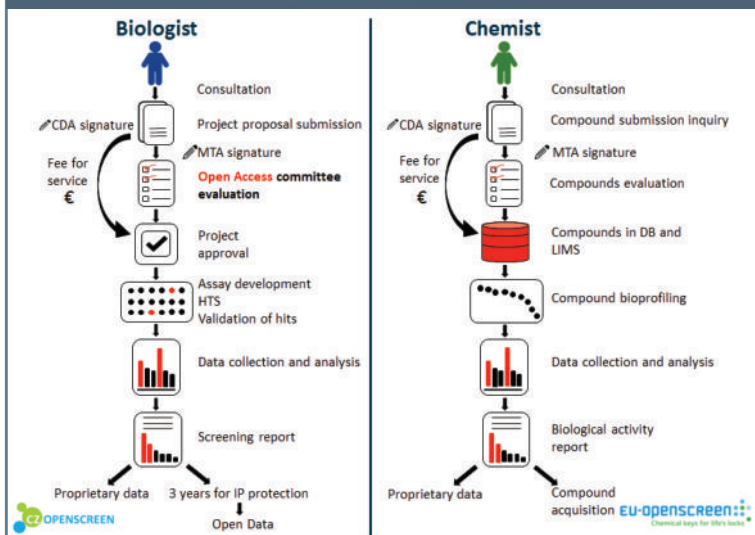
Petr Bartůněk, PhD., bartunek@img.cas.cz

David Sedlák, PhD., sedlak@img.cas.cz

Šárka Šimová, PhD., simova@img.cas.cz

THE PROJECTS

Users access to our partner site



Screening projects

<p>Pathways: Wnt, Shh, Hif-1, p53, miRNA, ERK</p> <p>Enzymes: GCPII, Dicer, Nucleases in DNA repair</p> <p>Killers: Antitumor, TRAIL, ALL, Leishmania</p>	<p>miRNA: Dicer, miRNA pathway modulators</p>	<p>DNA repair: Nucleases in DNA repair: Mre11, Xho1, Mus81, DNA2, Exo1, ERCC1-XPF, Fen1</p> <p>DNA damage in oncogenesis</p>	<p>Regeneration in postnatal neurons</p> <p>De novo purine synthesis: GART inhibitors and treatment of hereditary diseases</p>
	<p>Cell fate: Organoids, iPS, hESC, CD34⁺</p>	<p>Nuclear receptors (32/42): ReceptorX - HTS platform, ERβ selective ligands, ERα, ERβ and AR selective modulators, 17βHSD family inhibitors, Breast & prostate cancer</p>	

THE HARDWARE

CZ-OPENSREEN is equipped with state-of-the-art technologies for high-throughput screening (HTS) and compound storage and logistics:

- integrated robotic HTS station for screening chemical compounds (cell:explorer - PerkinElmer)
- robotic integrated system for automated microscopic analysis and label-free technology
- integrated system for compound storage and sample preparation including robotic liquid handling workstation used for dispensing, copying and reformating of microplates in 96/384/1536 formats (currently storing > 100 000 compounds)



THE SOFTWARE

Probes & Drugs portal (www.probes-drugs.com)

- in-house developed software tool
- public source of bioactive compound libraries, their annotations and comprehensive information about the probes

Laboratory Management System (LIMS)

- in-house developed system for compound management,
- for storage, analysis, data mining and reporting of HTS data

InChIlib

- open-source Javascript library that provides an easy way to display and analyze the hierarchically clustered data and heatmaps

THE OUTPUT

Publications

1. Králová J, Jurásek M, Krčová L, Dolenský B, Novotný I, Dušek M, Rottnerová Z, Kahle M, Drašar P, Bartůněk P, Král V. Heterocyclic sterol probes for live monitoring of sterol trafficking and lysosomal storage disorders. *Sci Rep.* 2018 (in press)
2. Jurásek M, Černohorská M, Řehulka J, Spiwok V, Sulimenko T, Dráberová E, Darmostuk M, Gurská S, Frydrych I, Buriánová R, Ruml T, Hajdúch M, Bartůněk P, Dráber P, Džubák P, Drašar P, Sedlák D. Estradiol Dimer Inhibits Tubulin Polymerization and Microtubule Dynamics. *J Steroid Biochem Mol Biol.* 2018 Oct;183:68-79
3. Skuta C, Popr M, Muller T, Jindřich J, Kahle M, Sedlák D, Svoviz D, Bartunek P. Probes & Drugs Portal: an interactive, open data resource for chemical biology. *Nat Methods.* 2017 Jul 28;14(8):759-760
4. Kralova J, Kolar M, Kahle M, Truksa J, Lettlova S, Balusikova K, Bartunek P. Glycol porphyrin derivatives and temoporfin elicit resistance to photodynamic therapy by different mechanisms. *Sci Rep.* Mar 15;7:44497
5. Tumova L, Pombinho AR, Vojtechova M, Stancikova J, Gradl D, Krausova M, Sloncova E, Horazna M, Kriz V, Machonova O, Jindrich J, Zdrahal Z, Bartunek P, Korinek V. Monensin inhibits canonical Wnt signaling in human colorectal cancer cells and suppresses tumor growth in multiple intestinal neoplasia mice. *Mol Cancer Ther.* 2014 13:812-22.

Patents

- Patent: CZ 306011**
Bartůněk P, Kořínek V, Pombinho A, Tůmová L. Monensin-containing pharmaceutical composition for treating diseases associated with deregulated Wnt pathway
- Patent: EP3054941**
Grekov I, Pombinho A, Šíma M, Kobets T, Bartůněk P, Lipoldová M. Pharmaceutical composition comprising diphenyleneiodonium for treating diseases caused by the parasites belonging to the family Trypanosomatidae
- Patent: EP 2527351**
Rejman D, Pohl R, Bartůněk P, Pombinho AR, Krásný L, Látl T. Lipophosphonoxins, method of their preparation and use

We collaborate with:

- 9 institutes of the Czech Academy of Sciences
- 5 faculties of Charles University, Prague
- 2 faculties of Masaryk University, Brno
- 2 faculties of Palacký University, Olomouc
- a number of SMEs



CZ-OPENSREEN partner sites:

- Department of Chemistry, Masaryk University
- Laboratory of Informatics and Chemistry, University of Chemistry and Technology
- Institute of Molecular and Translational Medicine, Palacký University

