

## Screening Laboratory IMB PAS – Virology Unit

The Screening Laboratory offers *in vitro* tests to assess the cytotoxicity and antiviral activity of chemical compounds against the cancer cell lines (HeLa, HepG2, A549), normal cells (NCTC clone 929, Vero, LLC-MK2, MRC-5) and viruses (HSV-1, HPIV-3, HCMV, EMCV, AdV5, HR8). We use the colorimetric test (MTT) and analysis monitored in real time using the xCELLigence system (RTCA, real-time cell analysis).

The Screening Laboratory works in accordance with the standards of the 2nd class of biosafety (BSL-2). The biological material comes from the certified ATCC collection (American Type Culture Collection).

### WHAT WE OFFER:

- Assessment of cytotoxic activity with the use of the xCELLigence system against a selected cell line (Vero, LLC-MK2, NCTC clone 929, HeLa, A549) - screening test at a concentration of 10  $\mu$ M or determination of the CC<sub>50</sub> parameter.
- Evaluation of cytotoxic activity with the use of MTT assay (1 cell line selected from the assortment of the Screening Laboratory) - screening test at a concentration of 10  $\mu$ M or determination of the CC<sub>50</sub> parameter.
- Evaluation of cytotoxic activity using the MTT assay against a panel of 7 cell lines available in the Laboratory - screening test at a concentration of 10  $\mu$ M or determination of the CC<sub>50</sub> parameter.
- Evaluation of antiviral activity using the MTT assay (1 virus selected from the assortment of the Screening Laboratory) - screening test at a concentration of 10  $\mu$ M or determination of the IC<sub>50</sub> parameter.
- Evaluation of antiviral activity using the MTT assay against a panel of 6 viruses available in the Laboratory - screening test at a concentration of 10  $\mu$ M or determination of the IC<sub>50</sub> parameter.

- ✓ **We offer a short analysis time - up to 4 weeks from the moment of receiving samples (depending on the number of samples and the selected experiment variant).**
- ✓ **We provide the results of the experiments as a report presenting numerical values. We do not interpret the results obtained.**

**We invite you to cooperation.**

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### Charges

Experiment type		Materials	Number of compounds	Price* [EUR]
Cytotoxicity determinations - xCELLigence	Screening study	1 cell line <sup>1</sup>	1-30 compounds	€ 221
			30-60 <sup>2</sup> compounds	€ 442
	CC <sub>50</sub> determination	1 cell line <sup>1</sup>	1-4 compounds	€ 221
			5-8 compounds	€ 442
			9-12 compounds	€ 663
			13-16 compounds	€ 884
Cytotoxicity determinations - MTT	Screening study	1 cell line <sup>3</sup>	1-30 compounds	€ 116
			30-60 <sup>2</sup> compounds	€ 232
	CC <sub>50</sub> determination	1 cell line <sup>3</sup>	1-4 compounds	€ 116
			5-8 compounds	€ 232
			9-12 compounds	€ 348
			13-16 compounds	€ 464
	Screening study	Panel of 7 cell lines	1-30 compounds	€ 305
			30-60 <sup>2</sup> compounds	€ 610
			1-4 compounds	€ 305
			5-8 compounds	€ 610
CC <sub>50</sub> determination	Panel of 7 cell lines	9-12 compounds	€ 915	
		13-16 compounds	€ 1 220	
		1-30 compounds	€ 198	
		30-60 <sup>2</sup> compounds	€ 397	
Antiviral activity determinations	Screening study	1 virus <sup>3</sup>	1-4 compounds	€ 198
			5-8 compounds	€ 397
	IC <sub>50</sub> determination	1 virus <sup>3</sup>	9-12 compounds	€ 595
			13-16 compounds	€ 793
			1-30 compounds	€ 595
			30-60 <sup>2</sup> compounds	€ 1 190
Antiviral activity determinations	Panel of 6 viruses	1-4 compounds	€ 595	
		5-8 compounds	€ 1 190	
		9-12 compounds	€ 1 785	
		13-16 compounds	€ 2 380	

<sup>1</sup> Choice of: Vero, LLC-MK2, NCTC clone 929, HeLa, A549

<sup>2</sup> Screening test > 60 compounds will be assessed individually

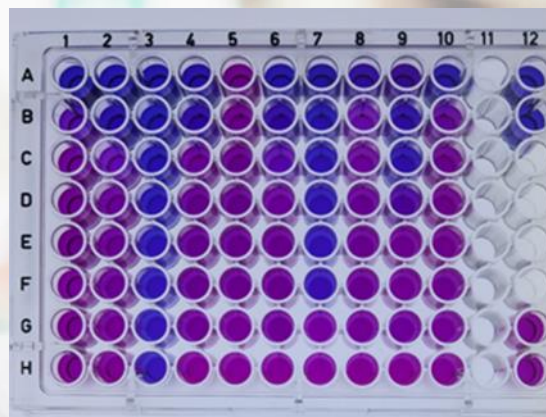
<sup>3</sup> Available from the assortment of the Screening Laboratory

**Any other variant of the determination of cytotoxicity or antiviral activity is individually valued**

**\*Exchange rate of the July 25, 2022 (National Bank of Poland).**

## A price offer for the service by the bacteriology screening laboratory.

The laboratory offers the possibility of medium-throughput screening in the BSL-2 facilities of bactericidal and bacteriostatic compounds active against gram-negative, gram-positive, and acid-fast bacteria, including tubercle bacilli. The screening of compounds active against gram-negative bacteria is based on *Escherichia coli* and *Salmonella enterica* ser. Typhimurium strains. The screening of compounds active against gram-positive bacteria is based on *Staphylococcus simulans* and *Streptococcus agalactiae*. The screening of compounds active against acid-fast bacteria is based on *Mycobacterium smegmatis* and *Mycobacterium bovis* BCG.



Colorimetric and fluorescent screening of antibacterial compounds in 96 well plate format

We propose two-step screening (i) for the selection of active compounds in a given concentration and (ii) for the determination of minimal inhibitory concentration (MIC) for the compounds selected in the first step.

The initial screening is based on a single compound concentration (typically 50-100 µg/mL) and from one to six bacterial strains selected by the customer. We recommend including three strains in the initial screening, one representing each group (gram-negative, gram-positive, acid-fast).

The initial screening cost is calculated as the quotient of the number of compounds tested and the number of bacterial strains included in the test.

1 compound / 1 strain (gram-negative, gram-positive) = 2.9 euro

1 compound / 1 strain (acid-fast) = 3.3 euro

1 compound / 3 strains = 9.1 euro

90 compounds / 3 strains = 828 euro

	strain	90 compounds	1 compound
G-negative	<i>E. coli</i>	264	2,9
G-negative	<i>S. enterica ser. Typhimurium</i>	264	2,9
G-positive	<i>S. simulans</i>	264	2,9
G-positive	<i>S. agalactiae</i>	264	2,9
acid-fast	<i>M. smegmatis</i>	300	3,3
acid-fast	<i>M. tuberculosis-complex (BCG)</i>	300	3,3
<b>total - 3 strains [euro]</b>		<b>828</b>	<b>9,1</b>
<b>total - 6 strains [euro]</b>		<b>1656</b>	<b>18,2</b>

The secondary screening (MIC determination) applies the compounds selected in the first step as bactericidal. The cost of the secondary screening depends on the number of compounds included in the screening and the strain used.

1 compound / 1 strain (gram-negative, gram-positive) = 216 euro

1 compound / 1 strain (acid-fast) = 234 euro

	strain	total [euro]
G-negative	<i>E. coli</i>	<b>216</b>
G-negative	<i>S. enterica ser. Typhimurium</i>	<b>216</b>
G-positive	<i>S. simulans</i>	<b>216</b>
G-positive	<i>S. agalactiae</i>	<b>216</b>
acid-fast	<i>M. smegmatis</i>	<b>234</b>
acid-fast	<i>M. tuberculosis-complex (BCG)</i>	<b>234</b>

For the chemical library screening (90 compounds and more), the analysis can be done as a research task, common grant application, or research service.

#### The laboratory offers also post-screening research including:

- determination of the mutation rate (frequency of mutations generating resistance to a given compound)
- identification of a molecular target for the selected compound and/or mechanism of acquired resistance developed by bacteria for a given compound
- activity against intracellularly located bacteria (tubercle bacilli only)

(individual quotation, grant task, common grant application)