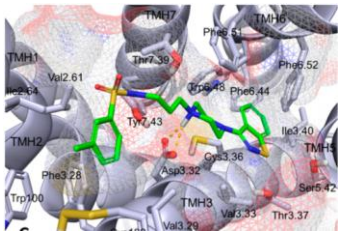
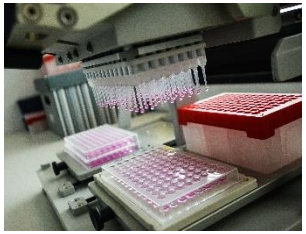
JAGIELLONIAN UNIVERSITY
MEDICAL COLLEGE

Faculty of Pharmacy

leading research areas and key achievements



The Faculty of Pharmacy: **Research**

Search for innovative drugs and drug delivery systems

110 grants in 2014-2018

In total
> **50 000 000** PLN

Currently **48 ongoing** grants
ca. **29 000 000 PLN**

In last 10 years:

- **23 patents** and **11** pending patents applications
- **4** inventions commercialized
- **4** Material Transfer Agreements **(MTA)**


(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)
(19) World Intellectual Property Organization
WIPO | PCT
(10) International Publication Number
WO 2016/003296 A1


(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)
(19) World Intellectual Property Organization
PCT
(10) International Publication Number
WO 2009/093916 A3

COOPERATION WITH INDUSTRY

ADAMED
CELON PHARMA
FARMONA Wallrzek
Neurolixis
spherium biomed®
CERTARA® Simcyp

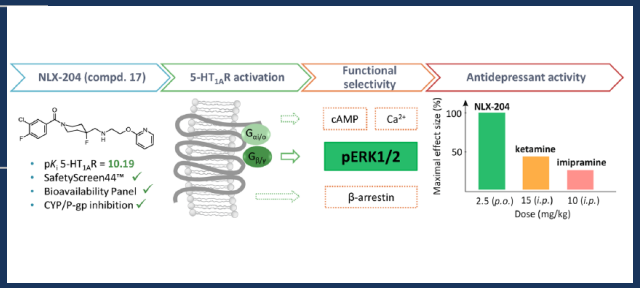
Drug discovery - Psychiatry

Prof. M. Pawłowski team

Prof. M. Kołaczkowski

WO 2012/035123

Multimodal and functionally selective ligands of GPCRs



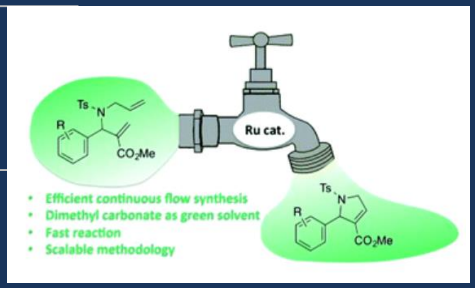
Sniecikowska J et al., **J. Med. Chem.**, 2019, 62, 2750–2771

IF= 6.253

Prof. P. Zajdel

WO2015/012704

Solid-suport and flow chemistry in synthesis of drug candidates

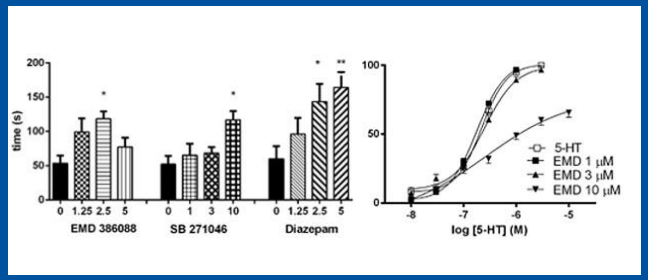


Drop M et al., **Green Chemistry**, 2017, 19, 1647-1652

IF= 9.125

Prof. A. Wesołowska team

Preclinical models of behavioral disturbances

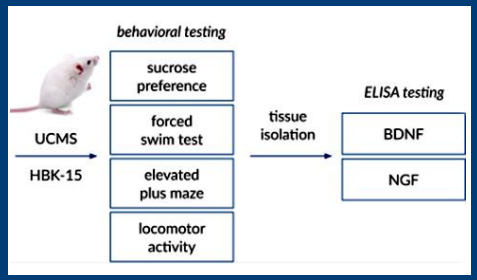


Jastrzębska-Więsek M et al., **Neuropharmacology,** 2014, 85, 253-62

IF= 5.106

Prof. K. Pytka team

Advanced models of depression

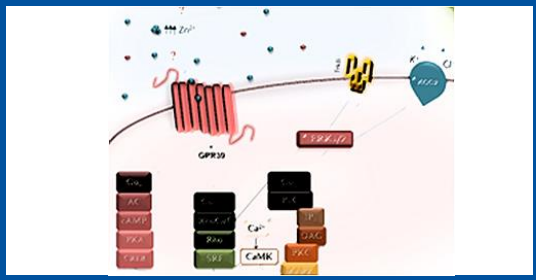


Pytka K et al., et al., **Mol Neurobiol.**, 2017, doi: 10.1007/s12035-017-0605-4.

IF= 6.259

Prof. G. Nowak & Prof. K. Młyniec team

GPR39 Zn(2+) receptor in depression



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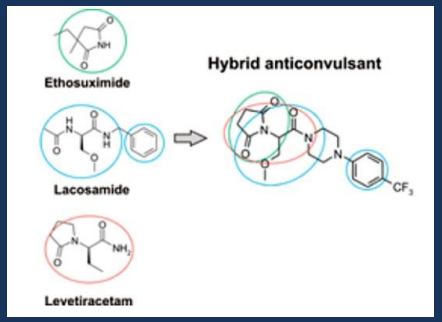
Drug discovery - Neurology

Prof. J. Obniska & Prof. K. Kamiński team

PL 225258

Multifunctional hybrid ligands targeting epilepsy

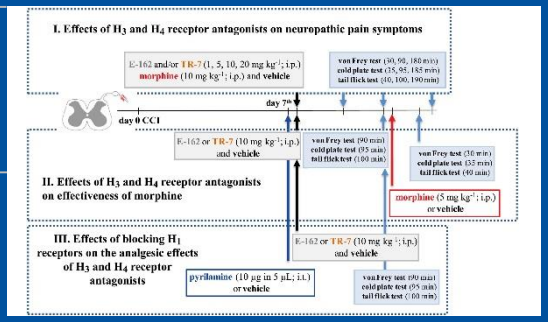


Abram M et al.,
J. Med. Chem., 2017,
60, 8565–8579

IF= 6.253

Prof. J. Kiec-Kononowicz & Prof. J. Handzlik team

GPCR ligands for neurologic disorders

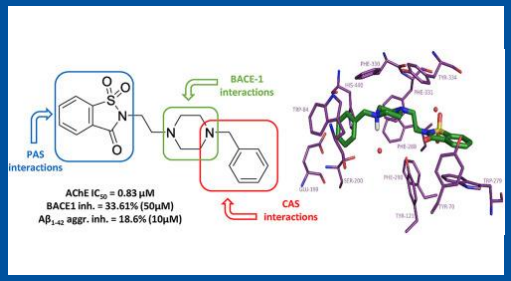


Popiołek-Barczyk K et al.,
Br. J. Pharmacol. 2018,
175, 14, 2897-2910

IF= 6.810

Prof. B. Malawska team

Multitarget directed ligands for Alzheimer's disease



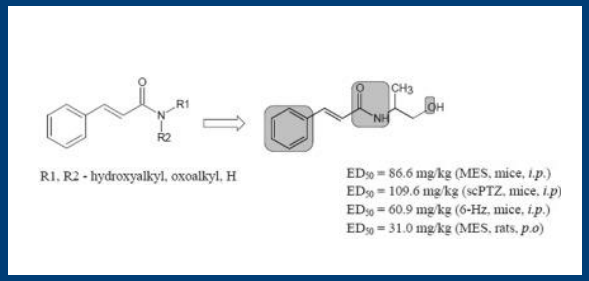
Panek D et al.,
Eur J Med. Chem, 2017, 125, 676-695

IF= 4.816

Prof. A. Waszkielewicz & Prof. H. Marona team

Novel drug candidates for epilepsy and neuropathic pain

PL 213871

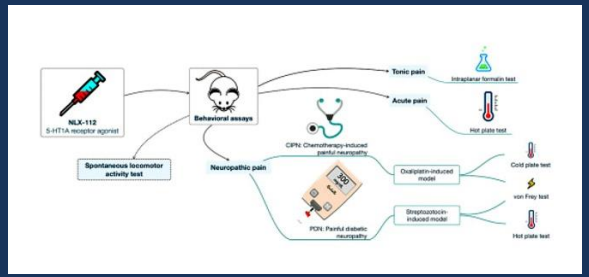


Gunia-Krzyżak A et al., et al.,
Eur J Med Chem. 2016, 107, 26-37

IF= 4.519

Prof. K. Sałat team

Preclinical models of neuropathic pain



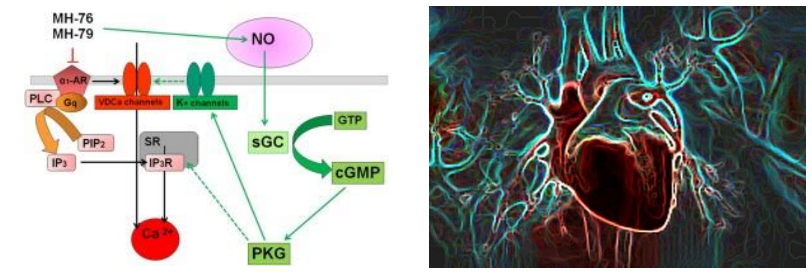
Sałat K et al.,
Neuropharmacology, 2017, 25, 181-188

IF= 5.106

Pharmacodynamics, Pharmacokinetics & Toxicology

Prof. B. Filipek & J. Sapa team

Cardiovascular pharmacology and safety of drug candidates

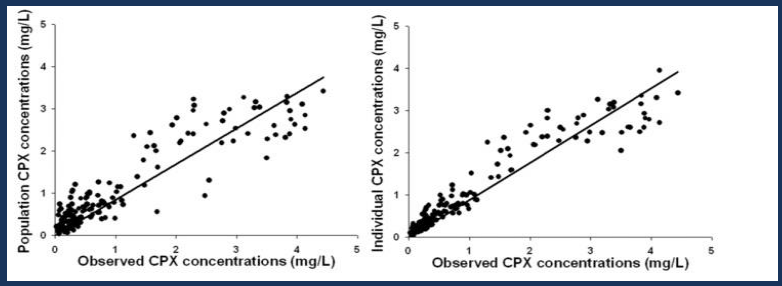


Kubacka M et al., **Biomed. Pharmacother.** 2018, 103, 157-166

IF= 3.457

Prof. E. Wyska team

PK/PD approaches for dose optimization



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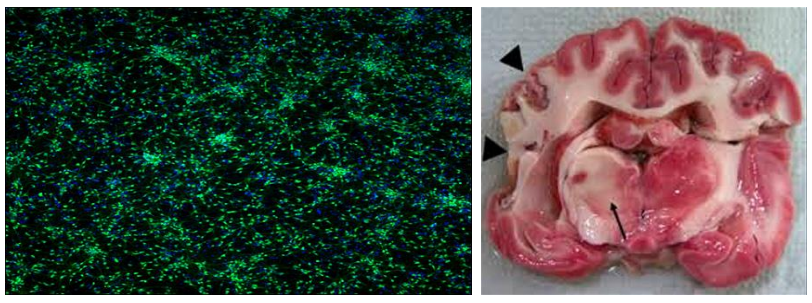
IF= 3.485

Prof. B. Budziszewska team

Animal studies of neurotoxicity

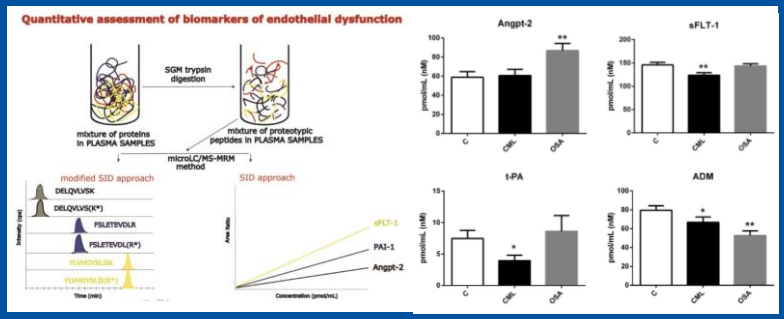


Pomierny B et al., **Neurotox. Res.** 2014, 26, 422-429

IF= 3.538

Prof. M. Walczak team

Biomarkers and PK/Tox studies for drug development



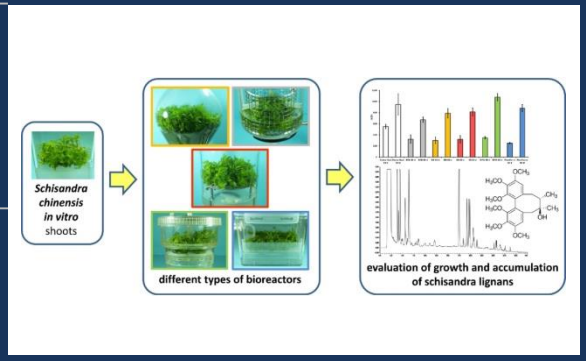
Suraj J. et al., **Talanta**, 2019, 194, 1005 - 1016

IF= 4.244

Pharmaceutical Biotechnology, Microbiology and Food Chemistry

Prof. H. Ekiert team

Biotechnology of medicinal plants

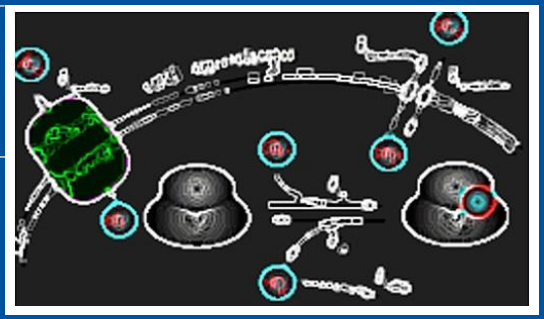


Szopa A et al.,
J. Biotech.,
2017, 10, 11-17

IF= 3.420

Prof. J. Kiec-Kononowicz & Prof. J. Handzlik team

Novel efflux pump blockers

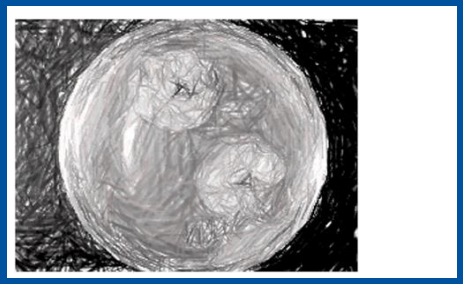


Otrębska-Machaj E et al.,
Front Microbiology,
2016, 3(7) 622

IF= 4.076

Prof. B. Muszyńska team

Biotechnology of medicinal and edible mushrooms



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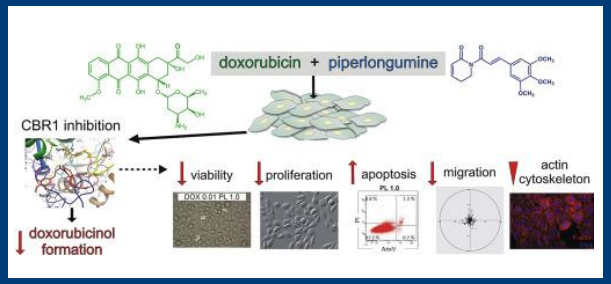
Food Chem, 2016, 5, 509-15

IF= 4.523

Prof. E. Pękala team

In vitro biotransformation and metabolic stability studies

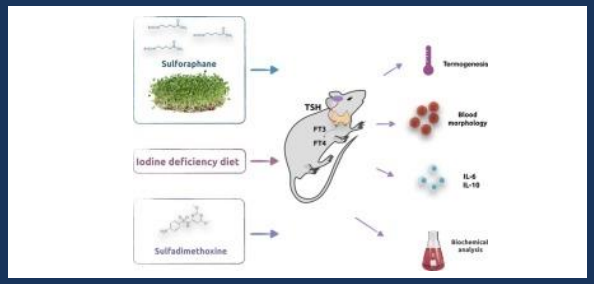


Piska K et al.,
Chem.-Biol. Interact. 2019, 300, 40-48

IF= 3.296

Prof. P. Zagrodzki team

Nutritional metabolomics and biomarkers



Paśko P et al.,
J. Trace Elem. Med. Biol. 2018,

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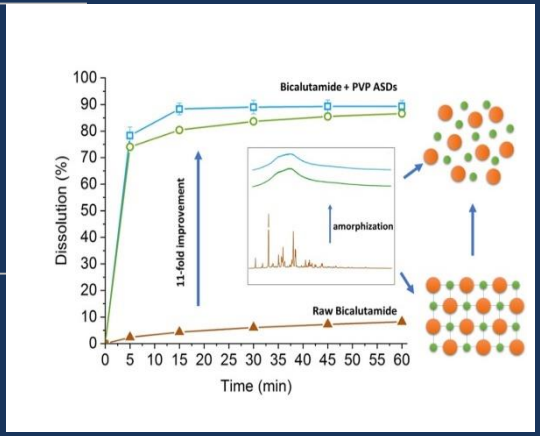
Pharmaceutical Technology and Biopharmacy

Prof. R. Jachowicz team

Preparation and stability studies of amorphous solid dispersions exhibiting improved dissolution of active pharmaceutical ingredients



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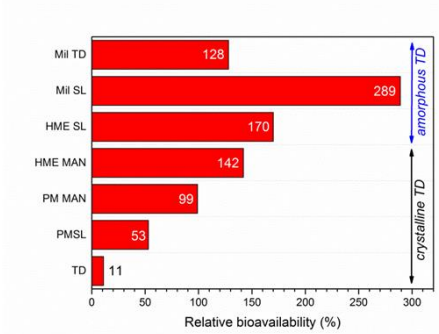
Polish Patent no PL 227367 B1 granted in 2017

P.427771 Patent application

Bioavailability enhancement and controlled release of poorly soluble drugs



High-energy ball milling (Mil) & hot-melt extrusion (HME) in the bioavailabilty improvement of tadalafil (TD)

Krupa A et al., **Mol. Pharm.**, 2016, 13, 3891-3902

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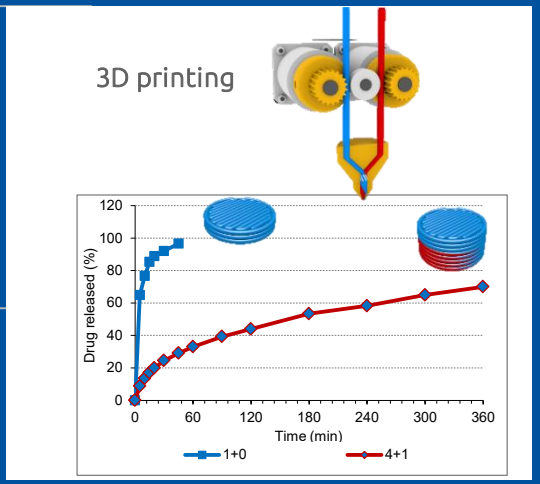
3D printing of dosage forms by filaments extrusion



Jamróz W et al., **Eur. J. Pharm. Biopharm.** 2018 , 131, 44-47

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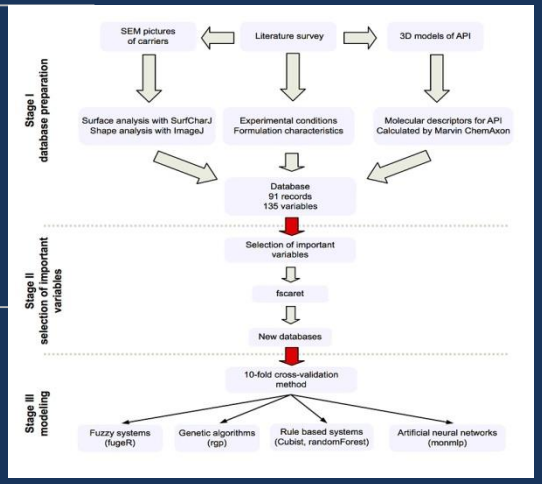
Empirical modeling for drug delivery



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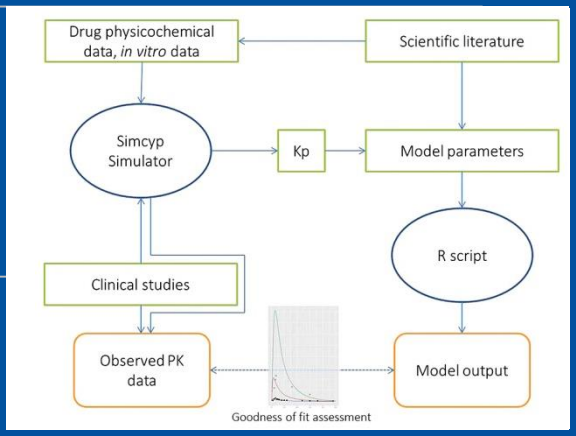
Model Informed Drug Discovery and Development

Prof. S. Polak team

Development of physiologically based pharmacokinetic models of drug cardiac exposure



Tylutki Z et al., **Sci Rep** 2017, doi: 10.1038/srep39494.

IF= 4.259

Building framework for the model based drug cardiac safety assessment

Drug	TQT E14[a]		TdP[b] class	Additional information on TQT study		
	Therapeutic dose	Supratherapeutic dose		No. of subjects in test group	Healthy or patients	Refs
Alfuzosin	Negative	Negative	0	48	H	[53]
Asenapine	Negative	Negative	0	38	P	[54]
Atomoxetine	Negative	Negative	0	131	H	[55]

	Number of classification schemes where a compound was classified as TdP+ (used in model)	Number of classification schemes where a compound was classified as TdP– (used in model)
Imipramine	6 [22,32]	4
Isradipine	2 [20,22]	1
Ketanserin	3 [20]	2
Ketoconazole	4 [22]	3
Lapatinib	1 [22]	1
Loperamide	1	1 [22]
Mefloquine	2 [20,22]	2
Mesoridazine	3 [20,22]	1
Metronidazole	1	3 [20,31,32]
Mexiletine	1 [22]	5 [16,32]
Mibefradil	3 [20]	4 [31,32]
Miconazole	1	1 [20]

Wisniowska B et al., **DDT** 2017, 22, 10-16. **DDT** 2017, 22, 1460-65

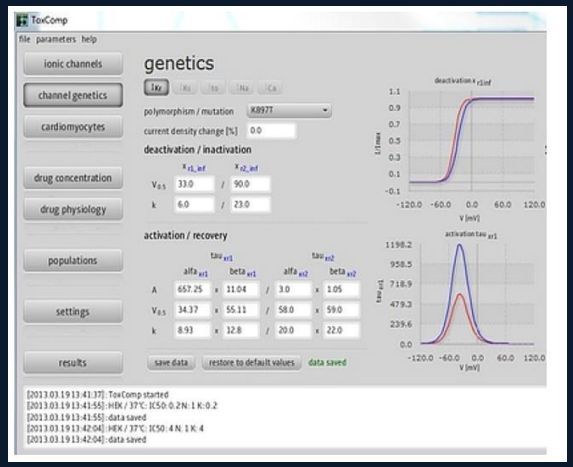
IF= 6.848

ToxComp

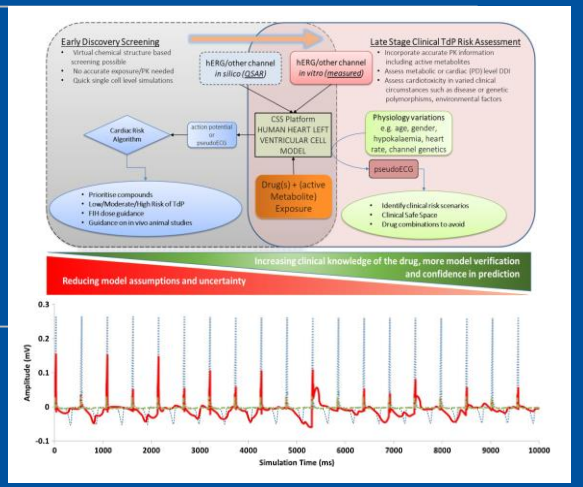
- commercialized as

Cardiac Safety Simulator™

A computer system for cardiotoxicity risk assessment of drugs



MODEL VERIFICATION Real Patient and its Virtual Twin – New Concept of Therapy Optimization



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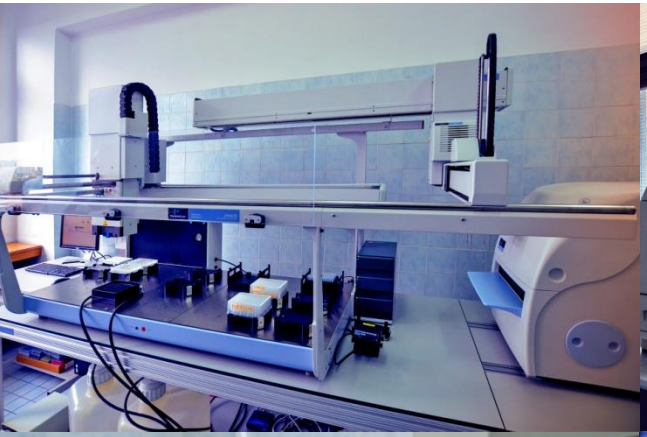
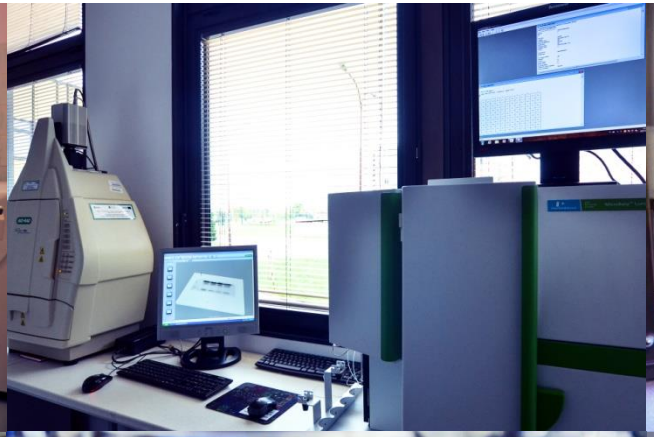
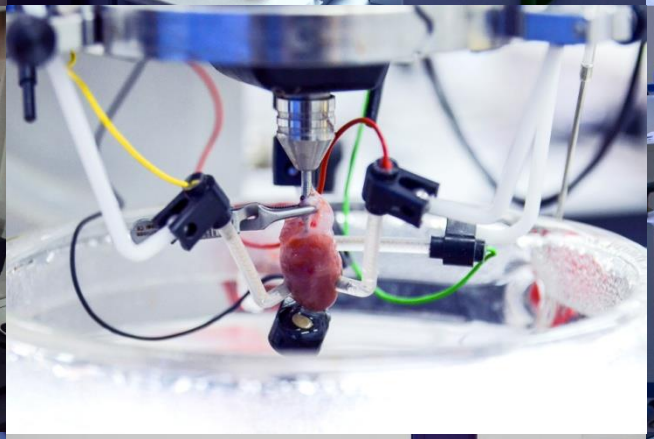
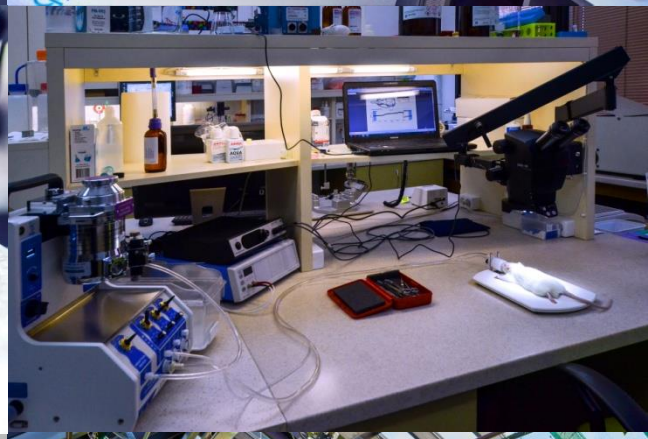
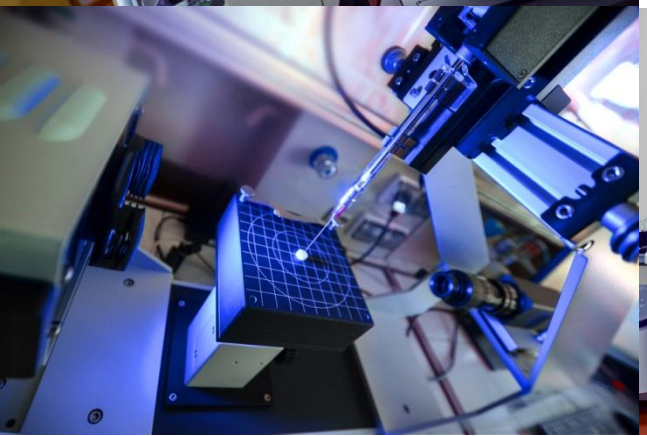
IF= 3.804

Infrastructure & Research Facilities




JAGIELLONIAN UNIVERSITY
MEDICAL COLLEGE

Faculty of Pharmacy

leading research areas and key achievements