Laboratory of Biotechnology




Head

Maria Bretner

Staff

Michał Fedoryński
Joanna Główczyk-Zubek
Tomasz Kobiela
Anna Kowalkowska
Edyta Łukowska-Chojnacka
Małgorzata Milner-Krawczyk
Zbigniew Ochal
Monika Wielechowska
Tadeusz Zdrojewski

Current PhD students

Paweł Borowiecki
Danuta Konczak
Konrad Chojnacki
Anna Sobiepanek

Former PhD students

Agnieszka Kuś
Adam Wawro
Włodzimierz Tszyrsznic

Current research

- Design and synthesis of compounds with potential biological activity
- Measurements of the influence of exogenous factors on the elastic properties of living cells
- Developing methods for the study of protein-ligand interaction
- Exploration of microorganisms and enzymes with the best properties for biocatalysis, useful in the industrial applications of regio- and/or stereoselective transformation of heterocyclic compounds
- Testing cytotoxic and pro-apoptotic properties of synthesised compounds against selected cell lines, and antimicrobial properties using collection of Gram-positive, Gram-negative bacteria, yeasts and fungi

Selected publications

Borowiecki P., Wawro A.M., Wińska P., Wielechowska M., Bretner M., *Synthesis of Novel Chiral TBBt Drivatives with Hydroxyl Moiety. Study on Inhibition of Human Protein Kinase CK2 and Cytotoxicity Properties,* European Journal of Medicinal Chemistry, 84, 364, 2014

Gyenis L., Kuś A., Bretner M., Litchfield D. W., *Functional Proteomics Strategy for Validation of Protein Kinase Inhibitors Reveals New Targets for a TBB-Derived Inhibitor of Protein Kinase CK2*, Journal of Proteomics, 81, 70, 2013

Makowska M., Łukowska-Chojnacka E., Wińska P., Kuś A., Bilińska-Chomik A., Bretner M., *Design and Synthesis of CK2 Inhibitors*, Molecular and Cellular Biochemistry, 356, 91, 2011

Wojciechowski K., Orczyk M., Gutberlet T., Trapp M., Marcinkowski K, Kobiela T., Geue, *Unusual Penetration of Phospholipid Mono- and Bilayers by Quillaja Bark Saponin Biosurfactant*, BBA - Biochimica et Biophysica Acta, 1838, 1931, 2014

Kobiela T., Lelen-Kaminska K., Stepulak M., Lekka M., Malejczyk M., Arct J., Majewski S, *The Influence of Surfactants and Hydrolyzed Proteins on Keratinocytes Viability and Elasticity*, Skin Research and Technology, 19, 200, 2013

Borowiecki P., Milner-Krawczyk M., Plenkiewicz J., *Chemoenzymatic Synthesis and Biological Evaluation of Enantriomerically Enriched 1-(b-hydroxypropyl)imidazolium- and Triazolium-Based Ionic Liquids,* Beilstein Journal of Organic Chemistry, 9, 516, 2013

phone: (0048) 22 234 75 70 | e-mail: mbretner@ch.pw.edu.pl | http://www.ch.pw.edu.pl
Chemical Technology Building, 00-662 Warsaw, Koszykowa Street, 75 | rms: 102, 105, 107b, 109, 110, 202-205, 306

Research profile

Biophysical chemistry
Protein-protein and protein–ligand interactions
Study of the selectivity of enzymes
Enzymatic kinetics
Overproduction of heterologous proteins in bacterial systems
Bioproduction of metabolites
Synthesis of heterocycles
Characterization of microorganisms

Research equipment

- Quartz microbalance with dissipation monitoring
- Chromathography systems ACTA Purifier, Shimadzu
- Atomic force microscope combined with fluorescence microscope for measurements in liquids
- Gel imaging for fluorescence applications G:Box Syngene
- High speed laboratory centrifuge with cooling, ThermoScientific

Collboration

Institue of Organic Chemistry, Polish Academy of Sciences, Warsaw (Poland)
Institute of Biocybernetics and Biomedical Engineering, Polish Academy of Sciences, Warsaw (Poland)
Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Warsaw (Poland)
Institute of Nuclear Physics, Polish Academy of Sciences, Cracow (Poland)