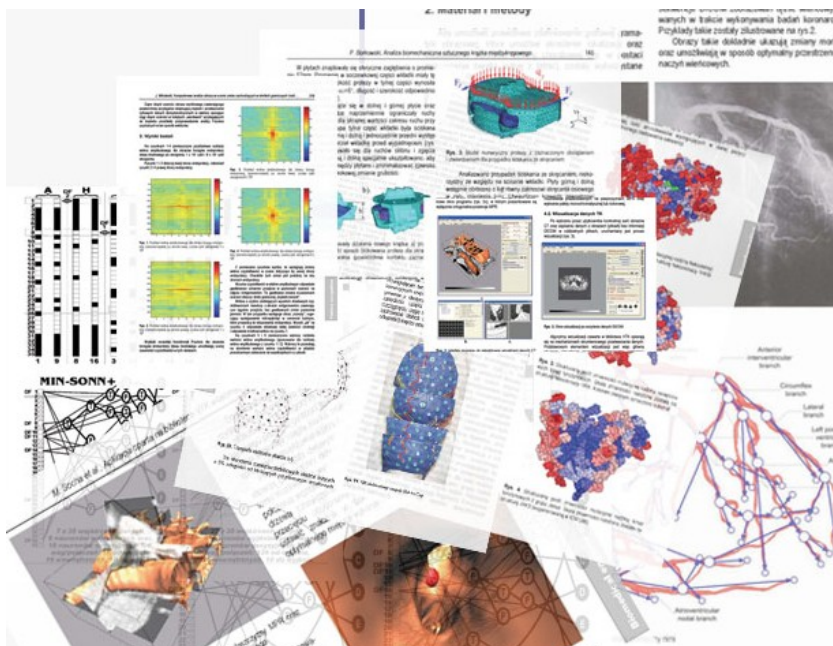


Conference Overview

Conference on "Cybernetic Modeling of Biological Systems" (MCSB) is the conference of the longest history in Poland and in Europe since the first one was organized in 1980 in five years period. The aim of conference is to link the specialists in medicine (biology) with those involved in computer science and engineering. We aim to cover the bright spectrum from molecular processes, through the simulation of processes on the cellular level to organs and tissues to complete organism. We include also the practical medicine with telemedicine and E-learning techniques as well.

The most important and most representative issues have been presented. Special part in MSCB is representation of medical science and technology, by which the conference has always rich pragmatic value. Innovative methods and specific projects for the practice of medicine and health care, as well as the interesting theoretical proposals enriching our scientific knowledge have been presented so far. Most titled specialists in the subject of modeling biological systems participated in our conferences. The Scientific Committee of the conference includes persons with unquestionable scientific achievements, which are authorities in their fields of research.



Conference Scientific Committee

Chairpersons

Professor Irena Roterman-Konieczna - UJ CM Kraków

Professor Ryszard Tadeusiewicz - AGH Kraków

Members

Professor Piotr Augustyniak - AGH Kraków

Professor Elżbieta Cydzik-Krasicka - UZ Zielona Góra

Professor Marek Darowski - IBIB Warszawa

Professor Adam Gacek - ITAM Zabrze

Professor Edward Gorzelańczyk - UMK CM Toruń

Professor Ryszard Gryglewski - UJ CM Kraków

Professor Jerzy Kiwerski - STOCER Konstancin

Professor Małgorzata Klys - UJ CM Kraków

Professor Juliusz Kulikowski - IBIB Warszawa

Professor Marek Kuchta - WAT Warszawa

Professor Jerzy Leszek - UM Wrocław

Professor Piotr Ładyżyński - IBIB Warszawa

Professor Roman Maniewski – IBIB Warszawa

Professor Antoni Nowakowski - PGd Gdańsk

Doctor Michał Nowakowski - UJ CM Kraków

Professor Katarzyna Stąpor - PŚI Gliwice

Professor Andrzej Świerniak – PŚI Gliwice

Professor Zbysław Tabor - PK Kraków

Professor Władysław Torbic - IBIB Warszawa

Professor Jacek Waniewski - IBIB PAN

Professor Jerzy Wtorek - PGd Gdańsk

Professor Ewa Zalewska - IBIB PAN

9:00 – 9:30	Opening of the Conference AGH UST Rector - Professor Tadeusz Słomka Vice-Rector for Medical College Professor Piotr Laidler			Aula A0 Main Building (A0)	
	Chairpersons Prof. Ryszard Tadeusiewicz Prof. Irena Roterman-Konieczna				
	Modeling Figure/Ground Separation with Spiking Neurons Prof. Marc Ebner				
9:30 – 11:00	Lectures in English	What can teach us simulations at the molecular level for the folding of proteins Dr. Jacques Chomilier			Aula A0 Main Building (A0)
		The human iron exporter ferroportin. Insight into the transport mechanism by molecular modelling and site-directed mutagenesis Prof. Fabio Polticelli			
11:00 – 11:30	Coffee break - Poster session				Hall First Floor Main Building (A0)
11:30 – 13:00	Lectures in English	Bioinformatics	Modeling and simulation in medicine and biology	Biocybernetics	
		Aula A0 Main Building (A0)	Room 203 Building A1	Room 119 Building A1	
		<i>A method of predicting the secondary protein structure based on dictionaries</i> Dr. Piotr Fabian	<i>Application of CAE systems for medical diagnostics and surgical operations planning</i> Prof. Jacek Cieřlik	<i>Interfaces for tetraplegic people - review of solutions supporting activities of daily living</i> Prof. Piotr Augustyniak	
		<i>Phylogenetic aspects of the concept of intelligent life design</i> Dr. Zbigniew Krajewski	<i>The role of thermal models in evaluation of wound healing processes</i> Prof. Antoni Nowakowski	<i>Mixed Spatial Evolutionary Games</i> Prof. Andrzej řwierniak	
		<i>Integration of omics data to unravel healthy prostate response in broccoli intervention study</i> Dr. Wiktor Jurkowski	<i>Toward Computer-Aided Analysis of Data Coming from Evaluation Sheets of Subjects with Autism Spectrum Disorders</i> Dr. Krzysztof Pancerz	<i>Medical data preprocessing for increased selectivity of diagnosis</i> Prof. Andrzej Walczak	
		<i>Simulation and visualisation of flocking behaviour and SIR epidemic model</i> Ms Natalia Zoń	<i>Patient specific orthoses using RP technologies</i> Dr. Piotr Dudek	<i>Biomaterials for Hip Implants</i> Mr Mieczysław Choroszyński	
13:00 – 14:00	Lunch				

THURSDAY, 14 MAY 2015

	Analysis of signals and medical images	Information Systems in Medicine	Modeling and simulation in medicine and biology
	Aula A0 Main Building (A0)	Room 106 Main Building (A0)	Room 403 Building A3/A4
14:00 – 15:30 Lectures in English	<i>Implementation of Fractional Calculus-Based Methods for the Purpose of Analysis of EEG Signals</i> Dr. Aleksandra Kawala-Janik	<i>Artificial neural networks in the diagnosis of pigmented skin lesions: A review</i> Dr. Joanna Jaworek-Korjakowska	<i>Optimization of Levels of Voltage Thresholds in a Novel J-PET Device</i> Dr. Lech Raczyński
	<i>Lateralisation Exercise System for Children Therapy</i> Dr. Aleksandra Kawala-Janik	<i>Identification of vital signs based on telemedicine platforms - the near future in telecare</i> Dr. Klaudia Proniewska	<i>Characterization of the spatial resolution of the J-PET detector</i> Mrs Ewelina Kubicz
	<i>Automated Globules Detection and Counting in Skin Lesion Images</i> Mr Leszek Nowak	<i>Virtual Patients in Massive Open Online Courses: a technical toolbox</i> Dr. Andrzej A. Kononowicz	<i>Reconstruction of hit position and hit time of gamma quanta in the J-PET detector based on the library of averaged model signals</i> Mrs Neha Gupta
	<i>The effect of increasing amitriptyline doses on cardiomyocytes electrophysiology</i> Ms Zofia Tylutki	<i>Rapid prototyping in applications to preoperative planning</i> Dr. Piotr Dudek	<i>Novel J-PET plastic scintillator with 2-(4-styrylphenyl) benzoxazole as a wavelength shifter</i> Ms Anna Wieczorek
	<i>Computer-based method for detecting colorblindness</i> Mr Maciej Laskowski	<i>Acquisition of individual characteristics of plantar pressure distribution images of the foot</i> Mr Damian Dzienniak	<i>Comparative studies of FE boards for use of J-PET scanner</i> Mr Szymon Niedźwiecki
	<i>Fractal analysis of posturographic time series</i> Mr Mateusz Popek	<i>Modelling cardiovascular hemodynamics during the Valsalva maneuver</i> Mr Leszek Pstraś	<i>Performance characteristics of J-PET detector simulated using GATE package</i> Mr Paweł Kowalski
15:30 – 16:00	Coffee break - Poster session		Hall First Floor Main Building (A0)

	Biomedical Engineering	Analysis of signals and medical images	Modeling and simulation in medicine and biology
	Aula A0 Main Building (A0)	Room 106 Main Building (A0)	Room 403 Building A3/A4
	<i>Human-Machine interface with online gesture classification towards dexterous manipulators teleoperation</i> Dr. Piotr Kaczmarek	<i>The change of daily protein intake depending on the type of diet with the use of computer program DietaPro</i> Dr. Agnieszka Ostachowska-Gasior	<i>A Systems Biology Approach to Melanogenesis. Tyrosinase subsystem and eu/pheomelanin synthesis</i> Dr. Zenon Matuszak
	<i>The effect of beclomethasone aerosol deposition location on the function of selected brain structures</i> Dr Zygmunt Podolec	<i>Some remarks on support vector machines application</i> Mrs Justyna Pieter	<i>Gradient-based parameter estimation of cell signalling pathway models based on normalized semi-quantitative data</i> Mr Krzysztof Łakomiec
16:00 – 18:00	<i>Evaluation of hemodialysis catheters by SEM and impedimetric analysis</i> Mrs Ewa Paradowska	<i>Independent Component Analysis of EEG data for EGI System</i> Mrs Anna Gajos	<i>Using mathematical modeling to find possible interactions between NF-κB and HSF signaling pathways</i> Mrs Małgorzata Kardyńska
Lectures in Polish	<i>Mechanical valves in pulsatile Ventricular Assist Devices</i> Mr Jan Barcik	<i>Symmetry of dynamical cerebral autoregulation</i> Mrs Marta Piątek	<i>Influences of the p53 abnormalities on the apoptotic decision in the non-small cell lung cancer line: A549, H1355 and H157</i> Mrs Magdalena Ochab
	<i>The analysis of imaging capabilities for static layouts of scatterers using Doppler tomography method</i> Mr Tomasz Świetlik	<i>Visual Speech Models for Polish Speech Processing in Noisy Environments</i> Mr Tomasz Jadczyk	<i>Software for Open Educational Resources and MOOCs</i> Mr Damian Marchewka
	<i>The use of patterns to evaluate the quality of mapping in CT</i> Mrs Renata Knapik	<i>Make the invisible visible - how to use infrared light to detect early atherosclerosis - Study review</i> Mrs Elżbieta Pociask	<i>Branched IFS models with positioners for biological visualizations</i> Mrs Małgorzata Prolejko
	<i>Study on CIE Exoskeleton interface for paraplegic users</i> Mr Rafał Kabaciński	<i>Computer simulation of the regulation mechanism in metabolic diseases</i> Ms Agnieszka Świerkosz	<i>Simulation of skinfold creep under the load of caliper within the poroelastic model</i> Ms Joanna Nowak
	<i>Human body posture as a source of information about various diseases</i> Mrs Mirosława M. Długosz	<i>Improving access to expert consultation with tele-dermoscopy and tele-confocal: an introduction to cloud based communication systems.</i> Mrs Joanna Łudzick	<i>On Scientific Research using Scalarm Platform for Modeling and Simulation</i> Mr Jakub Liput

20:00

Conference Dinner
Stuba Communis Dining Room
Jagiellonian University Collegium Maius

We're happy to invite you to our Conference Dinner at Stuba Communis on Thursday, 14th May 2015 (8:00 p.m.).

The conference dinner will be held in the Stuba Communis dining room (Jagiellonian University Collegium Maius), which is still used for ceremonial meetings. Dining room in Krakow University's Great College built in 1430, it still has 3 tables in a horseshoe shape; and they use the ornate Aula, or Jagiellonian Hall, for university award ceremonie - it's the oldest and one of the most beautiful lecture rooms of the University.



Stubas Communis is the old dining room, where the inhabitants of Collegium Maius met to have common meals (twice a day), but also to hold meetings. Until the 18th century, in accordance with the medieval European tradition, the scholars worked, lived and dined in university buildings called colleges. The same name "college" also refers to scholar community. The room was built in 1430 and today, like in the Medieval period, there are three tables here forming a horseshoe shape. Following monastic customs, during the common meals the youngest of all scholars was standing in the oriel niche, reading the Holy Bible or fragments of scholarly works. The gothic oriel, a detail so characteristic for the facade of Collegium Maius at the Jagiellońska St., dates back to ca 1430 and was modeled after a similar oriel in Collegium Carolinum in Prague. Inside stands a sculpture of King Kasimir the Great, the founder of Cracow Academy. The polychrome sculpture was made of limewood ca 1380 to decorate the facade of a collegiate church in Wiślica. The main decoration in the Common Room is the staircase; a Baroque work made of oakwood in Gdańsk in the beginning of the 18th century. It comes from the rural estate of the Potocki family in Krzeszowice. Also the wardrobe was made in Gdańsk in the 18th century, holding silverware inside, which once had belonged to the Pusłowski family and according to the last will of its last member, Franciszek Ksawery, bequeathed with all his possessions to the Jagiellonian University. In the corner stands a late Baroque stove from 1647, reminding of a minaret in its shape. It comes from the estate of the family Dunin in Głębówice. On opposite side stands a cabinet clock featuring barrel-and-pin mechanism made by Francois Bellair in Gdańsk in years 1763-1780. The chiming clock plays the Polish national anthem and the Cracow's bugle call. The Common Room - Stuba Communis up to this day, the dining room is used during ceremonial meetings. It is here where the Jagiellonian University authorities sign various agreements with other institutions. During such events, according to a centuries-old tradition, coffee, tea and wine is served.

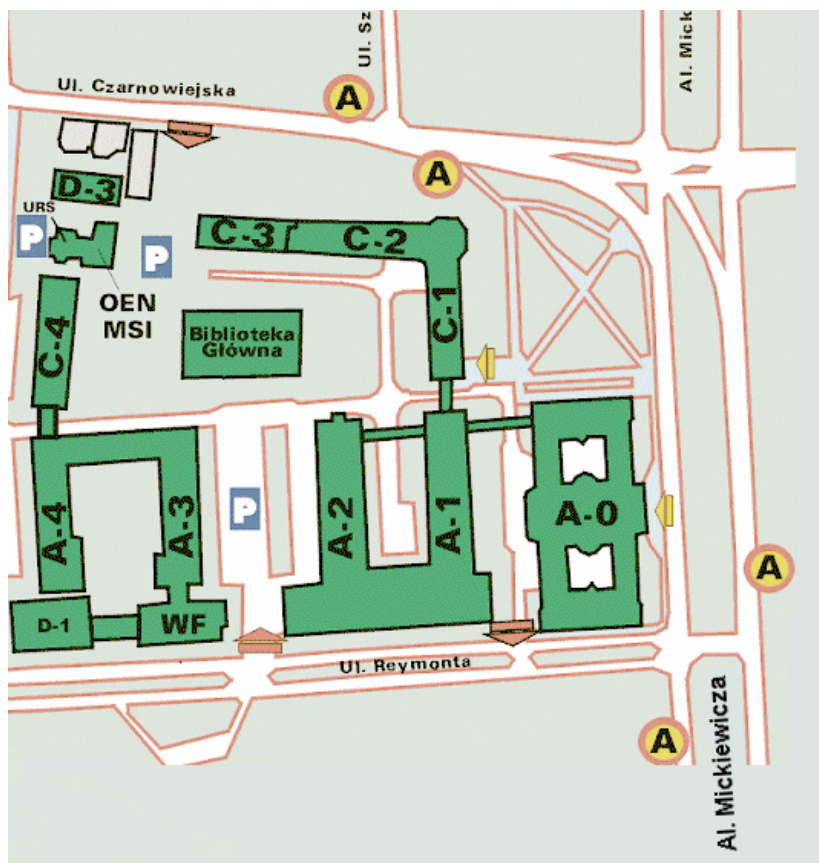
9:30 – 10:30	Lectures in Polish	Neural Networks as a Tool for Modelling of Biological Systems Prof. Ryszard Tadeusiewicz			Aula A0 Main Building (A0)	
		Patent protection of computer-implemented inventions Mr Adam Pawlowski				
		From Hippocrates to statistics in medicine. An historical perspective. Dr. Ryszard Gryglewski				
10:30 – 11:00	Coffee break - Poster session				Hall First Floor Main Building (A0)	
	Modeling and simulation in medicine and biology		Analysis of signals and medical images		Biomedical Engineering	
	Aula A0 Main Building (A0)		Room 119 Building A1		Room 203 Building A1	
	<i>Is based on the modeling of the hip joint can discover the excellent characteristics of biobearing?</i> Prof. Anna Maria Ryniewicz		<i>Application of Levenberg-Marquardt algorithm for engagement detection in electroencephalographic time-series</i> Prof. Grzegorz Wójcik		<i>Omnidirectional B-mode Ultrasound Imaging of Breast Tissue</i> Prof. Krzysztof Opieliński	
	<i>Simulation of cochlear implant patient's hearing</i> Dr. Adam Walkowiak		<i>Monte Carlo simulation of fluorescence based photosensitizer dosimetry in pigmented and non-pigmented tissues</i> Dr. Zenon Matuszak		<i>An Application of the Automatic Speech Recognition to Estimate Contents of Meals in Order to Calculate Insulin Dosage in Diabetic Patients</i> Dr. Piotr Foltyński	
	11:00 – 13:00	Lectures in Polish	<i>Learning from "Mother Nature" in material processing on bio molecular templates</i> Dr. Mariusz Wójcik		<i>Individual Feature Selection for Protein Fold Recognition</i> Dr. Wiesław Chmielnicki	<i>Direct immobilization of human cytokine antibodies on TiO2 nanotubes array</i> Dr. Katarzyna Arkusz
			<i>Quantum nature consciousness and artificial consciousness</i> Dr. Adam Adamski		<i>Telemetry recording of the reproductive tract in pigs - investigation of various phases of ovarian cycle</i> Mrs Ewelina Brzozowska	<i>Simulation of chemo-mechanical processes in porous hydrogels. Identification of the model parameters.</i> Dr. Katarzyna Kazimierska-Drobný
			<i>Quantitative criterion of the collective behavior of bacteria</i> Mr Roman Czaplá		<i>Information theory analysis of human gait</i> Mrs Klaudia Kozłowska	<i>Local control approach for CIE exoskeleton</i> Dr. Piotr Kaczmarek
			<i>Modeling the dynamic of insuline-glucose subsystem using multiagent approach based on knowledge based communication</i> Mr Sebastian Meszyński		<i>Neural model of cooperation of operator with with the system of the parallel driving - a set of inputs data</i> Mrs Karolina Trzyniec	<i>Mining Rules of Diagnostic Procedures for Hypothesis Testing Problem</i> Ms Edyta Winciorek

MCSB 2015

	<i>Modeling crosstalk between ATM and ATR signaling pathways after exposure to IR</i> Mrs Monika Kurpas <i>Cascades of consciousness in narrative communication</i> Mr Iwona Grabska-Gradzińska <i>Model Based on Various Data Mining Methods for Prediction of Infertility Treatment Outcome</i> Mrs Dorota Jankowska	
13:00 – 14:00	Lunch	
14:00 – 14:30	Closed lecture <i>Modelling of cortico-subcortical loops</i> Prof. Edward Gorzelańczyk Closing of the Conference Prof. Ryszard Tadeusiewicz Prof. Irena Roterman-Konieczna	Aula A0 Main Building (A0)
14:30 – 14:40		

VENUE

Akademia Górniczo-Hutnicza
Building A0, A1, A3, A4
Kraków, al. Mickiewicza 30



Poster session

Poster ID	Abstract's authors	Abstract title
P01	Waldemar Bauer, Jerzy Baranowski, Wojciech Mitkowski, Tomasz Tomasiak	Perspectives of using Markov Chain Monte Carlo for simulation of Primary Health Care patients population behavior
P02	Małgorzata Biaduń, Marek Kuchta, Jacek Dygut	Modeling of the dynamics of the knee joint in the Simulink
P03	Małgorzata Biaduń, Marek Kuchta, Jacek Dygut	Dynamic's researchers of a knee joint for different types of loads
P04	Łukasz Bojko, Anna Maria Ryniewicz	The use of Direct Metal Laser Sintering for the manufacturing of prosthetic constructions of CoCrMo
P05	Marta Danch-Wierzchowska, Damian Borys, Andrzej Świerniak	Breast deformation modelling based on MRI images - case study
P06	Ryszard Dindorf, Piotr Woś	Brain-computer interface for wireless remote control
P07	Dominik Drabik, Sebastian Kraszewski, Marek Langner	Comparison of bending rigidity coefficient obtained using both molecular dynamics and vesicle fluctuation analysis
P08	Jacek Dygut, Marek Kuchta	Simulations in the diagnosis and treatment of diseases of the hip and knee
P09	Anna Jagusiak	Drug delivery system created from carbon nanotubes and supramolecular compounds
P10	Piotr Katolik, Sebastian Kraszewski	Comparative modelling of the second member of a sodium-dependent glucose cotransporters (hSGLT2) using Modeller program.
P11	Mateusz Klys, Sebastian Kraszewski	Homology modeling of the human sodium dependent glucose transporter hSGLT1 (SLC5A1)
P12	Adrian Klusek, Witold Dzwiniel	Computer simulation of heterogeneous melanoma
P13	Bożena Kostek, Tomasz Poremski	Designing a computer-based application for subjective tinnitus evaluation
P14	Dominik Drabik, Marek Langner, Sebastian Kraszewski	Molecular study of small cell lung carcinoma promotion by catestatin neuropeptide
P15	Wojciech Lasoń, Edward Jacek Gorzelańczyk, Piotr Walecki	Quantitative methods of assessment of psychomotor function in opioid-addicted patients

P16	Anna Maria Ryniewicz, Tomasz Madej, Andrzej Ryniewicz, Łukasz Bojko	The use of 3D modeling hip belt in planning of resurfacing surgery
P17	Przemysław Mazurkiewicz	Application of multichannel EMG signal analysis in estimation of the motor units discharge patterns
P18	Mariusz Nieć, Krzysztof Psiuk-Maksymowicz	A computational study of solid tumour growth and angiogenesis in 3D
P19	Edward Oczeretko, Marta Borowska, Ewelina Brzozowska	Signal processing methods in analysis of the uterine contractions activity in women in pregnancy
P20	Patryk Orzechowski, Krzysztof Boryczko	Rough assessment of GPU capabilities for parallel PCC-based biclustering method applied to microarray datasets
P21	Monika Piowar	Relation of the exon units to the 2D and 3D protein structures
P22	Michał Podpora, Aleksandra Kawala-Janik	Cybernetic modelling of human vision in a robot swarm - a distributed cognitive approach
P23	Roksana Rosicka, Irena Roterman, Mateusz Banach	Analysis of lipid-binding proteins in human brain
P24	Irena Roterman-Konieczna, Mateusz Banach, Leszek Konieczny	Hydrophobic core structure of macromomycin - the apoprotein of the antitumor antibiotic auromomycin - fuzzy oil drop model applied
P25	Anna Maria Ryniewicz, Wojciech Ryniewicz	Biomechanics of prosthetic bridges
P26	Andrzej Ryniewicz, Jerzy Soja, Wojciech Ryniewicz, Krzysztof Śladek	Experimental studies and modeling of selected layers of the trachea on the basis of EBUS
P27	Piotr Schneider, Aleksandra Kawala-Janik, Michał Podpora	Brain Activity Measurement System for the Purpose of Brain-Computer Interaction
P28	Janusz Skrzat, Magdalena Kozerska, Agata Musiał	Polygonal modeling of the human cochlea from micro-ct data
P29	Urszula Smyczyńska	Influence of neural network structure on its performance in solving chosen medical problem
P30	Piotr Szymczyk, Magdalena Szymczyk	Application of S-transform to signal analysis
P31	Kamila Czaplicka, Wadim Wojciechowski, Zbysław Tabor, Justyna Włodarczyk, Andrzej Urbanik	Automated assessment of synovitis in 0.2 tesla magnetic resonance images of the metacarpophalangeal joint
P32	Tomasz Wójtowicz, Krzysztof Rzecki, Paweł Pławiak, Michał Niedźwiecki, Tomasz Sośnicki, Zbysław Tabor	Emergence of cooperation as a result of mutation and inheritance in PD/PG-like game

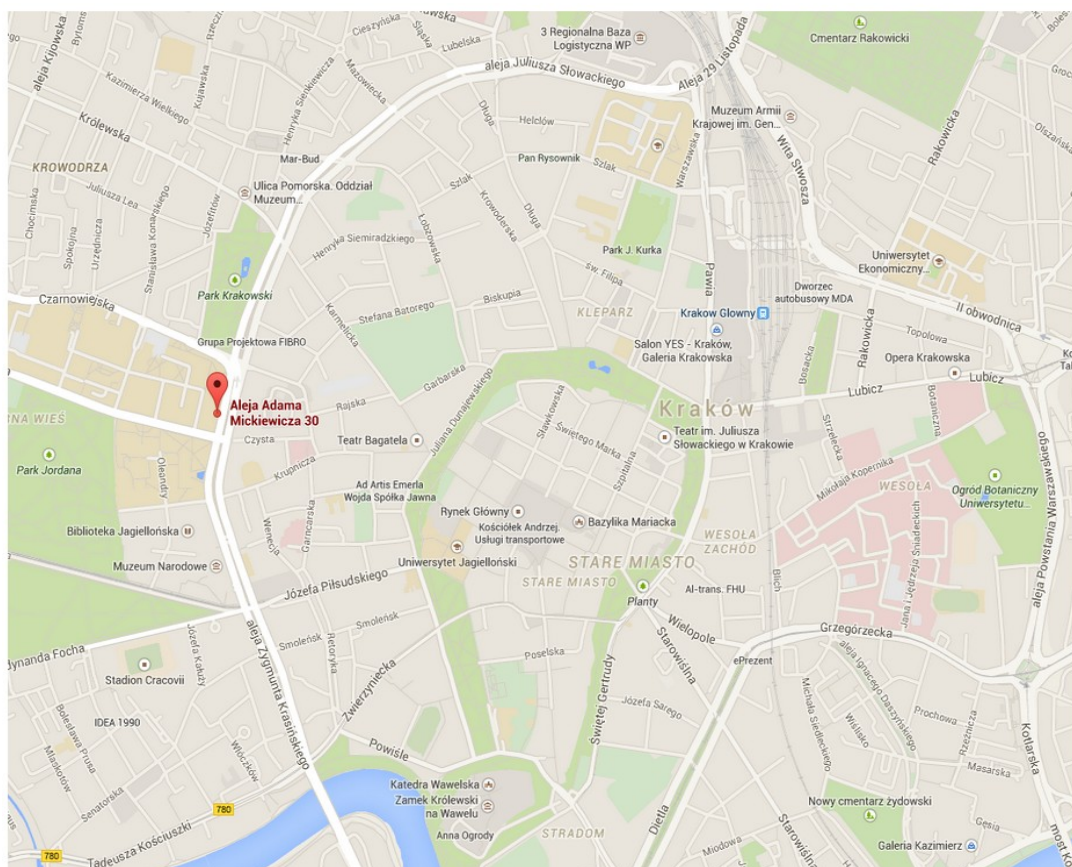
P33	Małgorzata Tomanek, Irena Roterman-Konieczna, Barbara Kalinowska, Zbigniew Baster, Dawid Dułak, Tomasz Szepieniec	Protein folding simulations of “3D Gauss accordant” structures
P34	Paulina Trybek, Łukasz Machura, Michał Nowakowski	The multifractal analysis of the kinesiological surface electromyography signal
P35	Piotr Walecki, Katarzyna Pasgreta, Marek Kunc, Edward Gorzelańczyk	Saccadic eye movement abnormalities in Alzheimer’s disease
P36	Piotr Walecki	Eye movement measurement in the diagnosis of ADHD/HKD
P37	Piotr Walecki, Edward Gorzelańczyk, Wojciech Lasoń, Julia Feit, Katarzyna Pasgreta	Diagnostic tools for the evaluation of disorders associated with HIV infection
P38	Piotr Walecki, Wojciech Lasoń	Model of activity dorsolateral prefrontal cortex in saccadic eye movements
P39	Andrzej Chmiel, Marta Wasilewska-Radwańska, Agata Dankowska, Kinga Wełnogórska	Dosimetry verification of treatment plans in a dynamic techniques in radiotherapy
P40	Zdzisław Wiśniowski, Irena Roterman, Barbara Kalinowska	Construction of Fuzzy Automata for Determining the Structure of the Early-stage Intermediate in Protein Folding
P41	T. Kołodziej, D. Dziob, P. Cyzio, J. Nowak, Z. Rajfur	Influence of media on cell migrations parameters
P42	D. Dziob, T. Kołodziej, P. Cyzio, J. Nowak, Z. Rajfur	Elastic polymer substrates for cell migration research
P43	Andrzej Stanisław	Application of Data Mining methods for determination of risk factor for complication appearance after the ischaemic stroke
P44	Elżbieta Broniatowska	The interactions of beta-lactamases with their inhibitors – the ETS-NOCV analysis
P45	Salapa K., Trawińska A., Tadeusiewicz R.	Speaker discrimination based on neural networks and dynamic formant frequencies of Polish vowels
P46	Salapa K., Trawińska A., Tadeusiewicz R.	Application of Multilayer Perceptron to identification of Polish-language speakers based on the vowel /e/
P47	Chłopaś Katarzyna, Jagusiak Anna, Konieczny Leszek, Piekarska Barbara, Roterman Irena, Rybarska Janina, Stopa Barbara, Zemanek Grzegorz, Bielańska Elżbieta, Piwowar Piotr, Woźnicka Olga	The use of metal-carrying dye markers to reveal the structure of amyloid proteins by em
P48	Wach J., Bubak M., Konieczny L., Roterman I., Chłopaś K.	Negative feedback based on simulation of bio-systems

VENUE

Akademia Górniczo-Hutnicza

Building A0, A1, A3, A4

Kraków, al. Mickiewicza 30



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LANGUAGE

The official language of MCSB 2015 will be **Polish** and **English**