



International Workshop on EPR in Biology and Medicine

Krakow, Poland
October 6-10, 2019

www.internationalEPRworkshop.pl

~ preliminary ~
SCIENTIFIC PROGRAM
revised 20190806

SUN, OCT 6

18:00-21:30
WELCOME RECEPTION

MON, OCT 7

8:25	Introductory remarks (Tadeusz Sarna)
#1	ADVANCES IN EPR INSTRUMENTATION AND METHODOLOGIES (Chair: Wojciech Froncisz)
8:30	Keynote: Small-sample sensitivity using resonator dielectric-tube inserts (James Hyde)
9:00	Spin magnetic resonance spectroscopy – From billions of molecules to single molecule (Jiangfeng Du)
9:20	ENDOR spectroscopy at 263 GHz (Igor Tkach)
9:40	Can we improve signal to noise ratio for EPR dispersion signal? (Wojciech Froncisz)
10:00	Recent developments in Bruker's EPR instrumentation (Sylvia Kacprzak)
10:20	Break
#2	METALS IN BIOLOGY (Chairs: Piotr Pietrzyk & Zbigniew Sojka)
10:40	Plenary: Life without water – High-field EPR studies of protein/matrix hydrogen-bond interactions (Klaus Moebius)
11:10	How physiologic metal ions control prion and related neurodegenerative diseases (Glenn Millhauser)
11:30	Reactivity studies of molybdo-enzymes by EPR spectroscopy – Towards understanding biological CO ₂ reduction (Bruno Guigliarelli)
11:50	Beyond structure: Investigating paramagnetic states in protein crystals of nano-liter volumes at X-band (Jason Sidabras)
12:10	Lunch
#3	OXIMETRY / IN VIVO EPR IMAGING / SPIN TRAPPING (Chair: Martyna Elas)
13:40	Plenary: Biologic validation of spin lattice relaxation based EPR pO ₂ images and biologic consequences of 3-dimensional tumor topology (Howard Halpern)
14:10	Results of the first 25-patient 'Phase I – Safety & Efficacy' clinical trial (Periannan Kuppusamy)
14:30	EPR of melanin in melanomas: From in vitro to ongoing clinical studies (Bernard Gallez)
14:50	Novel multifunctional EPR probes and imaging (Valery Khramtsov)
15:10	Tumor oximetry and redox state measurements in vivo (Martyna Elas)
15:30	Break
#4	ADVANCED SPECTROSCOPY AND MICROSCOPY METHODS (Chairs: Jerzy Dobrucki & Michal Sarna)
15:50	Plenary: Development of ultrafast single-molecule tracking and detection of hop diffusion within focal adhesion in the cell membrane (Akihiro Kusumi)
16:20	Spatio-temporal optical coherence modulation – New tool for tissue imaging (Maciej Wojtkowski)
16:40	Interaction of visible light with DNA in living cells (Jerzy Dobrucki)
17:00	Atomic force microscopy of supported lipid bilayers: imaging and force spectroscopy (Andrea Allesandrini)
17:20	Imaging cellular structures below the cell membrane using higher harmonics atomic force microscopy (Michael Sarna)
17:40	Adjourn

TUE, OCT 8

#5	OXIDATIVE DAMAGE IN BIOLOGICAL SYSTEMS (Chair: Izabella Sadowska-Bartosz)
8:30	Plenary: Mapping of oxidative damage to proteins (Michael Davies)
9:00	Proteins in oxidative stress: victims, defenders, accomplices and messengers (Grzegorz Bartosz)
9:20	Free radical mechanism for the formation of new chiral DNA adducts and their biological effects (Benny Zhu)
9:40	Redox nanoparticles: synthesis, properties and perspectives of use for treatment of neurodegenerative diseases (Izabella Sadowska-Bartosz)
10:00	Decoding oxidative stress from inflammation in experimental and human exposures (Maria Kadiiska)
10:20	Break
#6	MRI, EPRI AND MOESSBAUER SPECTROSCOPY IN BIOMEDICAL RESEARCH (Chairs: Kvetoslava Burda & Luigi Zecca)
10:40	Plenary: Probing the tumor microenvironment with EPR imaging (Murali Krishna Cherukuri)
11:10	Neuromelanin-sensitive MRI as a noninvasive proxy measure of dopamine function in the human brain (Luigi Zecca)
11:30	Regulation of Fe-QA•- interaction by iron spin states in photosystems of type II (Kvetoslava Burda)
11:50	A new perspective in whole-body preclinical EPR imaging (Michael Gonet)
12:10	Photoprotective properties of vitamin D and lumisterol hydroxyderivatives (Andrzej Slominski)
12:30	Lunch
#7	FREE RADICALS AND EXCITED STATE SPECIES IN PHOTOBIOLOGY (Chair: Tadeusz Sarna)
14:00	Plenary: Methylene blue-targeted photosensitizer for photo dynamic therapy (Lev Weiner)
14:30	Plenary: From local control to systemic solid state cancer therapy using the approved TOOKAD soluble (Avigdor Scherz)
15:00	EPR study of regulation of electron and proton transport processes in the plant cell (Alexander Tikhonov)
15:20	Photochemistry of melanin pigments – Role of free radicals and excited states (Tadeusz Sarna)
15:40	Break
#8	NEW SPIN LABELS, REDOX PROBES AND SPIN TRAPS (Chairs: Adam Sikora & Jacek Zielonka)
16:00	Plenary: Connecting the dots: Brain region, tetrahydrobiopterin and hypertension (Jeannette Vasquez Vivar)
16:30	Towards the understanding of the chemistry behind the NO/H ₂ S crosstalk (Adam Sikora)
16:50	Trityl spin probes in distance measurements in biomolecules using SDSL and pulsed ESR (Victor Tormyshev)
17:10	Mitochondria-targeted pyridinium cations as redox cyclers, mitochondrial inhibitors and antiproliferative agents against pancreatic cancer cells (Jacek Zielonka)
17:30	ROS detection in mesoporous silica particles (Micael Hardy)
#9	POSTER PRESENTATIONS
17:50	
18:45	Adjourn

WED, OCT 9

#10	MITOCHONDRIAL REDOX SIGNALING (Chair: Artur Osyczka)
8:30	Plenary: The mechanism and regulation of mitochondrial complex I (Ulrich Brandt)
9:00	Energy to drive Photosystem II borrowed from Photosystem I (Wieslaw Gruszecki)
9:20	Spin-spin coupling between the semiquinone and the Rieske cluster in cytochrome bc ₁ and its relation to superoxide production (Marcin Sarewicz)
9:40	Rieske/cyt b complexes: Regulators of ΔΨ in bioenergetic reaction chains? (Frauke Baymann)
10:00	New EPR spectroscopy insights into the assembly of the catalytic H-cluster of [Fe-Fe] hydrogenase (R. David Britt)
10:20	Break
#11	STEM CELLS AND TISSUE ENGINEERING (Chair: Zeljko Bosnjak)
10:40	Plenary: Stem cells and precision medicine (Zeljko Bosnjak)
11:10	Stem cell-derived extracellular vesicles – Biological properties and perspectives in use for tissue repair (Ewa Zuba-Surma)
11:30	Repairing the esophagus with tissue engineering (Kulwinder Dua)
11:50	Stem cell engineering in liver and cardiac engineering applications (Bo Wang)
12:10	Identifying and monitoring critical quality attributes of cardiac cell biomanufacturing using NMR metabolomics (Sean Palecek)
12:30	Lunch
#12	SHORT ORAL PRESENTATIONS (Chairs: TBD)
14:00	tbd1
14:15	tbd2
14:30	tbd3
14:45	tbd4
15:00	tbd5
15:15	Break
15:35	tbd6
15:50	tbd7
16:05	tbd8
16:20	tbd9
16:35	tbd10
16:50	Adjourn
19:00	BANQUET

THU, OCT 10

#13	ADVANCES IN LIPID AND MEMBRANE BIOPHYSICS (Chair: W. Karol Subczynski)
8:30	Plenary: Network of lipid interconnections at the interfaces of lipid bilayers as revealed by molecular modelling and graph theory (Marta Pasenkiewicz-Gierula)
9:00	Nitric oxide inhibition of chain lipid peroxidation in membrane systems (Albert Girotti)
9:20	Methodological advances in preparations of model lipid bilayer membranes with high cholesterol content (Marija Raguz)
9:40	Cholesterol dependent homeostasis in eye lens membranes, fiber cells, and the lens – Biophysical perspectives (W. Karol Subczynski)
10:00	Cholesterol-hydroperoxide mobility; implications and biological consequences (Witold Korytowski)
10:20	Break
#14	REACTIVE OXYGEN AND NITROGEN SPECIES (Chair: Anatolij Vanin)
10:40	Plenary: Why should we consider singlet oxygen? (Peter Ogilby)
11:10	The role of reactive oxygen and nitrogen metabolites in formation of nitrosyl iron complexes in living systems (Enno Ruuge)
11:30	Dinitrosyl iron complexes with thiol-containing ligands as a "working form" of nitric oxide in living organisms (Anatolij Vanin)
11:50	TBD
12:10	Lunch
#15	SHORT ORAL PRESENTATIONS (Chair: TBD)
13:40	tbd11
13:55	tbd12
14:10	tbd13
14:25	tbd14
14:40	tbd15
14:55	Closing remarks and awards for Best Poster & Short Oral presentations (TBD)
15:10	Adjourn