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Joint Research Conference of the Israel Institute for Advanced Studies and the Israel Science Foundation

IX Jakub K. Parnas Conference

Proteins
from Birth to Death

Scientific Program

September 29 - October 2, 2013

LOCAL ORGANIZERS

Abdussalam Azem, Tel Aviv University

Assaf Friedler, The Hebrew University

The conference will take place at the Israel Institute for Advanced Studies, The Hebrew University, Edmond J. Safra Campus at Givat Ram, Jerusalem

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SCIENTIFIC COMMITTEE

Professor Jakub Karol Parnas

Professor Jakub Karol Parnas (1884 -1949) was a world-renowned scientist, the founder of the Polish school of biochemistry. He was born on 16th January 1884 in Mokrzany near Tarnopol, a small town situated at that time in the district of Galicia. Between 1918 and 1939, the First and Second World Wars, this region belonged to Poland. Today, it is a part of Ukraine as well as Lviv, the main city of this land where Parnas worked for 20 years and where he made his greatest discoveries.

Parnas attended primary school in Tarnopol and then gymnasium in Lviv. After his studies in Berlin, Strasbourg and Zurich he was appointed to his first faculty position at the University of Strasbourg in 1907. In 1913 he moved to Cambridge, but in 1914, when the First World War broke out, Parnas returned home to Poland, which at this time started its successful fight for independence. In 1916 he lectured in physiological chemistry at the University of Warsaw and in 1921, already a full professor, moved to Lviv where for twenty years he headed the Department of Medical Chemistry at the Jan Kazimierz (Joannes Casimirus) University.

This period marked the beginning of his most fruitful years of research. In a short time he gathered a team of talented coworkers and generated a very special, stimulating atmosphere in the department. His main field of research was muscle metabolism, particularly the pathway of ammonia formation, glycogenolysis and glycolysis. This study made important contributions to the understanding of muscle biochemistry and nucleotide metabolism and to the explanation of anaerobic glucose metabolism, later called the Embden-Meyerhoff-Parnas pathway. Among his main achievements was also the discovery of glycogen phosphorolysis, the first use of radioactive phosphorus in biological studies, and the formulation and proof of phosphate transfer between glycolytic intermediates and ATP.

In June of 1941, the German eastern offensive began and, being of Jewish origin he was forced to flee Lviv for remote Ufa, deep in the Soviet Union. In 1943, refugees residing in Ufa were transferred to Moscow. Parnas was appointed a director of the Chemical Department of the National Institute of Experimental Medicine. He reorganized it soon into a National Institute of Biological and Medical Sciences and organized a new Laboratory of Carbohydrate Metabolism. During the years 1946 to 1947 he was allowed to visit Poland. He was in Cracow and Wroclaw and was invited to accept the Chair of the Department of Physiological Chemistry in either one of those academic centers. Parnas was ready to accept the position offered at the Jagiellonian University in Cracow. Unfortunately, his plans could not be realized. He was not allowed to return to Poland, despite his Polish nationality.

On January 29 1949, Parnas was arrested on a charge of espionage and died the same day in the Lubyanka prison in Moscow. His son, in 1992, received a document stating that J.K. Parnas had been arrested on the accusation of the "intelligence work against USSR for a foreign Western country". From 1949 to 1960, it was forbidden to mention the name Parnas in the USSR.

Contacts between Polish and Ukrainian Biochemical Societies became more intensive when the political systems in both countries became transformed. Due to that, in 1996, it become possible to organize in Lviv the 1st Polish-Ukrainian Conference to honor Jakub Karol Parnas. During this conference not only the lectures and recollections were held, but also a plaque commemorating Jakub Karol Parnas was placed on the wall of the building where the Department of Medical Chemistry headed by Parnas was located. The Conference was a great success. Attendees passed a resolution to organize the Parnas Conference every two years, rotating between Poland and Ukraine. According to this resolution, the 2nd Parnas Conference was held in 1998 in Gdańsk (Poland), the third one in 2000, again in Lviv, the 4th in 2002 in Wrocław (Poland), the 5th one in Kiev (Ukraine) in 2005, the 6th in 2007 in Cracow (Poland) and the 7th in Yalta (Ukraine). The Parnas laboratory was a place where, in a friendly atmosphere young Polish, Ukrainian and Jewish scientists studied glucose metabolism. It was the reason that a joint Polish, Ukrainian and Israeli conference was proposed and subsequently held as the 8th Parnas conference in 2011 in Warsaw, organized not only by the Polish and Ukrainian but also by the Israel Society for Biochemistry and Molecular Biology. This conference was also a great success. Therefore it has been decided to carry out the 2013 Parnas Conference in Jerusalem (Israel), organized again by the three aforementioned societies. We thank you for joining us for what we hope will be an enriching experience.

With kind regards,

The Organizers, on behalf of
The Israel Society for Biochemistry and Molecular Biology,
the Polish Biochemical Society and
the Ukrainian Biochemical Society

SATURDAY September 28, 2013

Nazareth Tour

SUNDAY September 29, 2013

17:00-18:0 **Registration and Distribution of Meeting Material**

18:00-18:30 **Greetings: Assaf Friedler** and **Abdussalam Azem**

Michael Sela, ISBMB Representative
Andrzej Dzugaj, President of the Polish Biochemical Society
S**erhiy Komisarenko,** President of the Ukrainian Biochemical Society
Israel Pecht, FEBS General Secretary

Chair: **Assaf Friedler**

18:30-19:30 **Keynote talk 1: Arthur L. Horwich,** USA
Chaperone action in health and disease

19:30 **Reception** at IIAS lobby

MONDAY September 30, 2013

09:00-10:00 Chair: **Assaf Friedler**

Keynote talk 2: **Alan Fersht**, UK
Structural biology of tumour Suppressor p53 and MDM2/X

SESSION I: POST TRANSCRIPTION REGULATION

Chair: **Ganna V. Elska**

10:00-10:25 **Valeriy Filonenko,** Ukraine
mTOR/S6K signaling in translation regulation

10:25-10:50 **Ehud Razin,** Israel
Structure and function of the LysRS - Ap4A- MITF pathway in cell signaling

10:50-11:15 **Hermona Soreq,** Israel
Acetylcholinesterase competition with other targets of the primate-specific microRNA-608 modulates the risks of hypertension and anxiety

11:15-11:45 **Coffee break**

11:45-12:00 Short talk 1: **Yair Argon,** USA
Protein disulfide isomerase A6 controls the decay of IRE1α signaling via disulfide-dependent association

12:00-12:15 Short talk 2**: Keren Demishtein-Zohary,** Israel
Elucidating the importance of the GxxxG motif in the TIM23

SESSION II: RNA-PROTEIN INTERACTIONS

Chair: **Orna Elroy-Stein**

12:15:-12:40 **Boris Negrutskii,** Ukraine
X-ray structure of mammalian translation elongation factor 1A2 as a basis for understanding its interaction with GDP/GTP, RNA and protein partners

12:40-13:15 **Mark Safro,** Israel
AaRS-tRNA functional complex formation is controlled by both long- and short-range interactions operating in tandem

13:15-14:45 **Lunch**

14:45-15:10 **Janusz M. Bujnicki,** Poland
3D modeling of protein-RNA complex structures

15:10-15:25 Short talk 3: **Tali Gidalevitz,** USA
Natural genetic variation determines susceptibility to aggregation or toxicity in C. elegans model for polyglutamine disease

SESSION III: PROTEIN TRAFFICKING AND MODIFICATIONS

Chair: **Etan Bibi**

15:25-15:50 **Jerry Eichler**, Israel
Protein glycosylation in archaea - sweet and extreme

15:50-16:15 **Jeffery Gerst**, Israel
A role for COPI in the control of mRNA trafficking to the mitochondria and mitochondrial physiology

16:15-16:40 **Ophry Pines**, Israel
Evolution of protein dual targeting in eukaryotes

16:40-17:10 **Coffee break**

17:10-17:25 Short talk 4: **Nana Voitenko,** Ukraine
Molecular mechanisms of diabetic neuropathy development

SESSION IV: PROTEIN FOLDING AND MISFOLDING

Chair: **Maciej Żylicz**

17:25-17:50 **Pierre Goloubinoff**, Switzerland
Molecular chaperones as enzymes that catalytically unfold misfolded polypeptides

17:50-18:15 **Krzysztof Liberek**, Poland
Chaperones in control of protein aggregation and disaggregation

18:15-18:40 **Marcin Nowotny**, Poland
Structural studies of RNases H and related enzymes

19:00 **Poster Session A** and **Dinner in poster area**

TUESDAY October 1, 2013

SESSION V: PROTEIN STRUCTURE AND PROTEIN-PROTEIN INTERACTIONS

Chair: **Felix Frolow**

9:00-10:00 **Keynote talk 3: Alexander Wlodawer**, USA
Plant proteins with anti-cancer properties: structural studies of two members of β-trefoil family that combine serine protease inhibition with activities as lectins

10:00-10:25 **Stefan Rüdiger**, Netherlands
Molecular recognition of a chaperone machine

10:30-11:00 **Coffee break**

Chair: **Serhiy Kosterin**

11:00-11:25 **Gideon Schreiber**, Israel
Structural and dynamic determinants of type I interferon receptor assembly and their functional interpretation

11:25-11:50 **Ora Furman**, Israel
The structural basis of peptide-mediated protein interactions

11:50-12:15 **Amir Aharoni**, Israel
Employing protein engineering for the functional analysis of multi-specific proteins

12:15-13:30 **Lunch**

13:30-13:55 **Amnon Horovitz**, Israel
Allosteric mechanisms can be distinguished using structural mass spectrometry

SESSION VI: FOCUS ON MEMBRANE PROTEINS

Chair: **Jerzy Duszyński**

13:55-14:20 **Kostas Tokatlidis**, Greece
Redox regulation of mitochondrial protein import

14:20-14:45 **Artur Osyczka,** Poland
Electron and proton transfers in membranous cytochrome bc1

14:45-15:10 **Adam Szewczyk,** Poland
Mitochondrial potassium channels

15:10-15:25 Short talk 5**: Lukasz Jaremko,** Germany
Molecular bases of enzymatic cold-adaptation - biophysical studies of bacterial and human peptidyl-prolyl isomerases

15:25-15:40 Short talk 6: **Pawel Pomorski**, Poland
Effect of Integrin on Glioma C6 Cell Recovery from ROCK inhibition and cell migration

15:40-17:30 **POSTER SESSION B**

WEDNESDAY October 2, 2013

SESSION VII: PROTEINS - FROM FUNCTION TO THERAPY

Chair: **Serhiy Komisarenko**

09:00:09:25 **Eduard Lugovskoy,** Ukraine
On the mechanisms of thrombus fibrin network formation (clinical implications)

09:25-09:50 **Marina Skok**, Ukraine
Nicotinic acetylcholine receptors: immune surveillance and neurodegenerative diseases

09:50-10:15 **Liudmyla Drobot**, Ukraine
Adaptor/Scaffold proteins in carcinogenesis: molecular mechanisms and therapeutic potential

10:15-10:30 Short talk 7: **Michal Sharon**, Israel
The 20S proteasome is regulated by two oxidative-stress related proteins

10:30-10:45 Short talk 8: **Shahar Sukenik**, Israel
Consolute effects on protein folding and interactions

10:45-11:15 **Coffee break**

SESSION VIII:MOONLIGHTING PROTEINS: PROTEINS OF MULTIPLE FUNCTIONS

Chair: **Andrzej Dzugaj**

11:15-11:40 **Judith Ovádi,** Hungary
Neomorfic moonlighting functions of the disordered TPPP/P25 protein

11:40-12:05 **Lorrane Agius,** UK
The glucokinase partners determine its location and function

12:05-12:30 **Dariusz Rakus,** Poland
Aldolase and Fructose 1,6-bisphosphatase: how much more than the regulation of carbohydrate metabolism?

12:30-13:45 **Lunch**

SESSION IX: INNOVATIVE APPROACHES

Chair: **Gadi Schuster**

13:45-14:10 **Gali Prag,** Israel
Structure of ubiquitylated-Rpn10 provides insight into the regulation mechanism of ubiquitin receptors by self-ubiquitylation

14:10-14:35 **Ariel Kaplan,** Israel
Mechanical forces during protein synthesis: the ribosome as a molecular motor

14:35-15:00 **Jordan Chill,** Israel
Visualizing elusive molecular events: novel NMR approaches

15:00-15:25 **Andreas Matousheck,** USA
A second code for targeting proteins to intracellular degradation by the proteasome?

CLOSING SESSION: hosted by the Israel Academy of Sciences and Humanities

16:30-17:30 **Closing Keynote talk: Ada Yonath**, Israel
The birth of proteins and cotranslational chaperone activities

17:30 **Closing reception**

THURSDAY October 3, 2013

10:00 **Jerusalem Tour**