40th Anniversary of the Institute of Protein Research
Russian Academy of Sciences

INTERNATIONAL CONFERENCE ON *PROTEIN BIOSYNTHESIS, STRUCTURE AND FUNCTION*

June 9 – 13, 2007, Pushchino, Russia

PROGRAM

SATURDAY, JUNE 9TH

OPENING CEREMONY

12:00 Opening lecture by **A. S. Spirin**

13:00 Greetings

14:00 Get-together reception

SUNDAY, JUNE 10TH

10.00 Morning session.

PROTEIN BIOSYNTHESIS AND REGULATION

N. E. Shirokikh and A. S. Spirin. Localization of the ribosomal initiation 48S complex on eukaryotic mRNAs by the method of primer extension inhibition with the use of fluorescent label (15 min).

V. A. Shirokov, G. S. Kopeina, K. V. Gromova, Zh. A. Afonina, V. D. Vasiliev, A. S. Spirin. Step-wise formation of polyribosomes and circular translation of polysomal mRNA in a long-term eukaryotic cell-free system (15 min).

O. M. Alekhina, K. S. Vassilenko, A. S. Spirin. Translation of non-capped mRNAs in a eukaryotic cell free system: acceleration of initiation rate in the course of polysome formation (15 min).

N. L. Korneeva, R. E. Rhoads. Alteration of eIF4F activities affects mRNA selection for translation (15 min).

O. Thiébeauld, H-S. Park, A. Geldreich, T. Hohn and L. A. Ryabova. The role of host factors in TAV-activated reinitiation of translation (20 min).

11:30-11:45 *Coffee break*

A. A. Selyutina, A. V. Sorokin, V. M. Evdokimova, L. P. Ovchinnikov. Cleavage of YB-1 by the 20S proteasome: a possible mechanism of cleavage, effect of YB-1 truncation on its functions and intracellular distribution (15 min).

D. N. Lyabin, I. A. Eliseeva, O. V. Skabkina and L. P. Ovchinnikov. Regulation of YB-1 mRNA translation (15 min).

E. S. Bochkareva, A. A. Herskovits, J. Adler, L. Bahari and E. Bibi. *In vivo* dissecting the functional roles of the E. coli SRP and its receptor, FtsY in membrane protein biogenesis (20 min).

A. G. Ryazanov. Elongation factor-2 kinase: from translational control to longevity (20 min).

Lunch

15.00 Evening session.

STRUCTURE OF THE RIBOSOME AND OF PROTEIN-SYNTHESIZING MACHINERY COMPONENTS

G. Yusupova, L. Jenner, B. Rees, D. Moras and M. Yusupov. Messenger RNA structure on the ribosome in different functional states (20 min).

S. V. Tishchenko, E. Yu. Nikonova, O. S. Kostareva, A. D. Nikulin, V. G. Klyashtorny, S. A. Volchkov, O. S. Nikonov, N. L. Davydova, N. A. Nevskaya, S. V. Nikonov, M. B. Garber, W. Piendl. Crystallization and structural investigation of regulatory complexes between ribosomal protein L1 and specific mRNA fragments (15 min).

G. M. Gongadze, A. V. Korobeinikova, A. P. Korepanov, M. V. Bazhenova, A. V. Sarskikh, M. B. Garber. Properties of the bacterial CTC family proteins associated with the ribosome (15 min).

A. P. Korepanov, M. G. Bubunenko, M. B. Garber. Genetic analysis of the assembly of the 30S ribosomal subunit platform in *Escherichia coli* (15 min).

16:20-16:35 *Coffee break*

E. A. Stolboushkina, O. S. Nikonov, A. D. Nikulin, S. V. Nikonov, M. B. Garber, U. Bläsi. Crystallization of the heterotrimeric archaeal translation initiation factor aIF2 (10 min).

O. S. Nikonov, E. A. Stolboushkina, A. D. Nikulin, D. Hasenöhrl, U. Bläsi, D. J. Manstein, R. V. Fedorov, M. B. Garber and S. V. Nikonov. New insights into the interactions of the translation initiation factor 2 from Archaea with guanine nucleotides and initiator tRNA (15 min).

S. Ch. Agalarov, A. A Kalinichenko, A. Kommer, A. S. Spirin. Ribosomal protein S1 induces a conformational change of the 30S ribosomal subunit (15 min).

A. V. Zhigailov, E. S. Laletina, N. S. Polimbetova, D. M. Graifer, B. K. Iskakov. Study of plant 18S rRNA 3' domain accessibility in the composition of wheat germ 40S ribosomal subunit (15 min).

S. V. Nikonov, S. A. Volchkov, N. A. Nevskaya, M. B. Garber. Interactions of ribosomal proteins with ribosomal and messenger RNAs (20 min).

18:00-20:00 POSTER SESSION

20:00-23:00 EVENING CLUB (socializing)

MONDAY, JUNE 11TH

10.00 Morning session.

BIOCHEMISTRY OF NUCLEIC ACIDS

A. B. Chetverin, H. V. Chetverina. Molecular colonies (20 min).

H. V. Chetverina, M. V. Falaleeva, T. R. Samatov, A. V. Kravchenko, Yu. A. Zabolotneva, A. B. Chetverin. Diagnostic potential of the molecular colony technique (15 min).

V. I. Ugarov, A. B. Chetverin. Functional circularity of Qβ replicase templates (15 min).

M. V. Falaleeva, H. V. Chetverina, V. I. Ugarov, E. A. Uzlova, A. B. Chetverin. Polynucleotide phosphorylase from *Thermus thermophilus* as a tool for studies on RNA recombination (10 min).

11:10-11:25 *Coffee break*

O. I. Lavrik. Coordination of DNA repair machines studied by affinity labeling technique combined with functional assay (20 min).

A. V. Oleinikov, S. Francis, V. A. Malkov, E. Rossnagle, T. K. Mutabingwa, M. Fried, P. E. Duffy. Malaria parasite tricks and challenges in development of anti-malarial vaccine (20 min).

O. V. Denisova, A. V. Chernov, T. Y. Koledachkina, N. I. Matvienko. A new tag-based approach to high-throughput analysis of CCWGG methylation (10 min).

N. V. Zyrina, L. A. Zheleznaya, E. V. Dvoretsky, V. D. Vasiliev, A. Chernov and N. I. Matvienko. Template independent DNA synthesis by Bst DNA polymerase in the presence of site-specific DNA nickases (10 min).

V. N. Ksenzenko, A. I. Krutilina, A. S. Glukhov, N. V. Akulenko, S. O. Garbuzinskiy, O. V. Galzitskaya, A. V. Kaliman,. L. A. Shaloyko. Site-specific endonucleases encoded by T5-like bacteriophages: biochemical properties and genetic role (15 min).

Lunch

15.00 Evening session.

STRUCTURE AND FUNCTION OF PROTEINS

A. A. Vazina, N. F. Lanina, V. N. Korneev, I. P. Dolbnya, W. Bras. The principles of nanostructural organization of the multidomain muscle protein titin (20 min).

V. V. Rogov, K. Schmöe, N. Yu. Rogova, F. Löhr, F. Bernhard, V. Dötsch. Structural analysis of the Rcs signalling pathway in ENTERObacteria (20 min).

Y. V. Sergeev, J. F. Hejtmancik and P. T. Wingfield. Energetics of domain-domain interactions and entropy driven association of β-crystallins (20 min).

16:10-16:25 *Coffee break*

S. Ryazantsev, E. Neufeld, Z. H. Zhou and L. Rome. Electron Microscopy as a Critical Component of NanoScience Research (20 min).

K. Severinov, T. Kazakov, E. Semenova, A. Kazakov, M. Gelfand. Structure, function and evolution of post-translationally modified microcins (20 min).

D. E. Agafonov and R. Lührmann Protein composition of human snRNPs and spliceosomal complexes revealed by two-dimensional electrophoresis (15 min).

Yu. V. Mitin, A. Yu. Khrushchev, L. V. Klimenko, I. A. Kashparov. Non-linear antimicrobial peptides (10 min).

L. V. Gushchina, A. G. Gabdulkhakov, V. V. Filimonov. The structure of the chimeric protein imitating SH3-peptide interaction (10 min).

17:45-18:00 *Coffee break*

A. Koglin, C. Klammt, N. Trbovic, D. Schwarz, B. Schneider, B. Schäfer, S. Sobhanifar, F. Löhr, F. Bernhard, V. Dötsch. Structural investigation of the membrane proteins TehA and YfiK (20 min).

F. Bernhard, D. Schwarz, F. Junge, C. Klammt, B. Schäfer, V. Dötsch. Cell-free expression of polytopic integral membrane proteins in preparative scales (20 min).

J-S. Li, M. Ikeguchi, Y. Matsumura, M. Shinjo and H. Kihara. α-helix-rich intermediate in the folding pathway (20 min.)

20:00-23:00 EVENING CLUB (socializing)

TUESDAY, JUNE 12th

10.00 Morning session.

CELL BIOLOGY

O. Denisenko. hnRNPs and epigenetic control of gene expression (20 min).

A. S. Kostyukova. Formation of tropomodulin/tropomyosin complex at the pointed end of the actin filament (20 min).

E. S. Nadezhdina, P. A. Ivanov, A. Yu. Lomakin. Microtubules in stress granule dynamics (15 min).

A. A. Minin, O. E. Nekrasova. Role of intermediate filaments in mitochondria distribution (15 min).

E. S. Nadezhdina, A. V. Burakov, O. V. Kovalenko, O. N. Zhapparova, I. B.Brodsky, L. A. Zinovkina, E. S. Potekhina, N. A. Shanina, V. I. Rodionov. Dynein, dynactin and protein kinase LOSK in microtubule array organization (15 min).

11:30-11:45 *Coffee break*

INVESTIGATION OF PROTEINS IN SOLUTION

G. V. Semisotnov. Denaturation and renaturation of globular proteins: scientific and biotechnological aspects (20 min).

V. V. Filimonov. Equilibrium folding intermediates and their association (20 min).

B. S. Melnik, S. R. Evdokimov, V. V. Marchenkov, N. V.Kotova, G. V. Semisotnov. The analysis of Multi-stage denaturation and renaturation kinetics of monomeric globular proteins: carbonic anhydrase B (15 min).

E. I. Tiktopulo, V. D. Vasiliev, N. G. Koretskaya, S. A. Potekhin. Structural transformation of cry 3A δ-endotoxin and its mutant form (C14) depending on pH of the medium and ethanol (15 min).

Lunch.

15.00 Evening session.

INVESTIGATION OF PROTEINS IN SOLUTION.

V. E. Bychkova. Conformational changes occurring in proteins in the presence of membranes and their relation to protein functioning (20 min).

V. A. Balobanov, N. S. Katina, N. B. Ilyina, I. A. Kashparov, E. N. Samatova, V. E. Bychkova. Phase diagrams of apomyoglobin in coordinates of pH, temperature and urea concentration (10 min).

V. M. Tischenko, S. D. Knight, A. V. Zavialov, S. MacIntyre, E. I. Tiktopulo. Subunit destabilization and release from *Yersinia pestis* F1 subunit-chaperone complex (15 min).

S. A. Potekhin, A. F. Bunkin, S. M. Pershin, A. A. Nurmatov, R. S. Khusainova. Selective interaction of biomacromolecules with spin isomers of water molecules (15 min).

16:10-16:25 *Coffee break*

THE THEORY OF PROTEIN STRUCTURE. BIOINFORMATICS.

A.V. Efimov. Novel structural motifs and structural trees of proteins (20 min).

A. V. Kajava. Parallel superpleated β-structure as a common fold for amyloid and prion fibrils (20 min).

B. Reva, Y. Antipin and C. Sander. Specificity of protein function encoded in conservation patterns (20 min).

N. S. Bogatyreva, N. V. Dovidchenko, D. N. Ivankov, A. V. Finkelstein. Strict computation of electrostatic interactions in a corpuscular medium (15 min).

17:30-17:45 *Coffee break*

O. V. Galzitskaya, S. O. Garbuzynskiy, D. N. Ivankov, A. V. Glyakina, M. Yu. Lobanov, A. V. Finkelstein. Prediction of folding nuclei in globular proteins (15 min).

Yu. N. Chirgadze, R. V. Polozov, V.S. Sivozhelezov, E. I. Zheltukhin. Structural principles of complex formation of transcription factors with B-DNA: transcription factors with three α-helices (15 min).

M. S. Gelfand. Evolution of bacterial regulatory systems (20 min).

A. V. Finkelstein, G. V. Semisotnov, V. E. Bychkova. Protein folding problem: theory and experiment. In the memory of Oleg B. Ptitsyn (30 min).

CLOSING CEREMONY

WEDNSDAY, JUNE 13th

12:00 Picnic

LIST OF POSTERS

A. A. Kovtun, N. E. Shirokikh, A. T. Gudkov and A. S. Spirin. Leader sequence of tobacco mosaic virus RNA possesses cooperatively melted, compact conformation (10 min).

G. B. Postnikova, S. V. Tselikova, E.A.Shekhovtsova. Mioglobin and mitochindria: how does "oxygen depot" work?

A. Nikulin, E. Stolboushkina, S. Tishchenko, M. Garber and S. Nikonov. Bacterial Sm-like protein Hfq: structure and interaction with RNA.

E.A. Prituzhalov, I.N.Serdyuk, O.N. Evseeva, A.A. Timchenko. New possibilities of analytical ultracentrifugation for analysis of hydrodynamic properties of proteins.

O. M. Selivanova, Y. Yu. Fedorova and I. N. Serduyk. Proteolysis of the ribosomal protein S1 from *Escherichia coli* and *Thermus thermophilus* leads to the formation of two different fragments.

V.O. Tsvetkov, V.N. Shyp, M.A. Timchenko, I.N. Serdyuk, A.A. Timchenko, I.V. Kolesnikov. Influence of point mutations in the NF-κB p50 subunit DNA-binding loop on the protein stability and its complex formation with DNA.

I. N. Serdyuk, E.I. Deryusheva, S. O. Garbuzynskiy, O. V. Galzitskaya. Unstructured regions in elongation factors EF1A from three overkingdoms of the living world.

S. O. Garbuzynskiy, D. N. Ivankov, D. C. Reifsnyder, N. S. Bogatyreva, A. V. Finkelstein, O. V. Galzitskaya. Prediction of protein folding rates.

J-S. Li, Y. Matsumura, M. Shinjo, M. Kojima and H. Kihara. A stable α-helix-rich intermediate is formed by a single mutation of the β-sheet protein, src SH3, at pH3

J-S. Li, M. Shinjo, Y. Matsumura, M. Morita, D. Baker, M. Ikeguchi and H. Kihara. An alpha-helical burst in the src SH3 folding pathway.

L. V. Basova, I. V. Kurnikov, L. Wang, I. I. Vlasova, N. A. Belikova, D. H. Waldeck, V. E. Bychkova, V. E. Kagan. Redox function and peroxidase activity of cytochrome C in mitochondria are regulated by cardiolipin.

N. S. Katina, V. A. Balobanov, E. N. Samatova, B. S. Melnik, G. V. Semisotnov, V. E. Bychkova, A. V. Finkelstein. Heterogeneity of the molten globule state of apomyoglobin.

N. S. Katina, V. A. Balobanov, N. B. Ilyina, I. A. Kashparov, E. N. Samatova, V. E. Bychkova. pH-induced denaturation of mutant forms of apomyoglobin.

N.A. Ryabova, N.V. Kotova, V.V. Marchenkov, S.Yu. Marchenkova, G.V. Semisotnov. Ligand-dependent assembly of GroEL chaperonin oligomeric particle.

S.N. Beznosov, M.G.Pyatibratov, A.S.Syutkin, A.G. Alatyrev, O.V. Fedorov. Unique traits of *Haloarcula marismortui* flagellar filaments.