



**INTERNATIONAL CONFERENCE
ON BIOORGANIC CHEMISTRY, BIOTECHNOLOGY AND BIONANOTECHNOLOGY**
dedicated to the 55th Anniversary of the M.M. Shemyakin and Yu.A. Ovchinnikov Institute
of Bioorganic Chemistry, Russian Academy of Sciences
and the 80th Anniversary of Professor Yuri Ovchinnikov

September 15–19, 2014; Moscow, Russia

MONDAY, SEPTEMBER 15th

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|----------------------|---|
| 10.00 – 10.30 | CONFERENCE OPENING
Chairmen: Rem Petrov, Aleksey Rozanov
Anatoly Grigoriev
Welcome address of the Russian Academy of Sciences
Vadim Ivanov
Introduction |
| 10.30 – 11.10 | PLENARY SESSION
Sidney Altman
Antibiotics: present and future |
| 11.10 – 11.30 | Coffee break |
| 11.30 – 12.45 | PLENARY SESSION
Chairmen: Nikolay Nikolsky, Richard Pestell
Eugene Sverdlov
Academician Yury Ovchinnikov, RNA polymerases, interferons and we.
Glimpse of today
Angelo Azzi
Gene regulatory functions of Vitamin E
Konstantin Skryabin
“Ancient” DNA |
| 12.45 – 13.30 | Conference Group Photo |
| 13.30 – 14.30 | Lunch |
| 14.30 – 15.30 | YOUNG SCIENTISTS COMPETITION. THE FIRST AUDITION: POSTER SESSION |
| 15.30 – 16.45 | PLENARY SESSION
Chairmen: Michael Blackburn, Michael Ugryumov
Michael Blackburn
Recent advances in enzyme mechanisms: Active and passive roles for phosphates
Viktor Tsetlin
Three-finger toxins and four-helical receptors: from selective binding to new drugs
Sergey Nedospasov
TNF and lymphotoxin produced by distinct cellular sources have distinct functions:
implications for anti-cytokine therapy |
| 16.45 – 17.05 | Coffee break |
| 17.05 – 18.10 | PLENARY SESSION
Chairmen: Nadik Abdulaev, Ernesto Carafoli
Ernesto Carafoli
Calcium signaling: function and dysfunction
Mikhail Ostrovskiy
Visual pigment rhodopsin and difference in spectral sensitivity between a lake/sea
population pair of crustacean <i>Mysis relicta</i>
Mikhail Kirpichnikov
Bacteriorhodopsin of <i>Exiguobacterium sibiricum</i> – new type of the proton pump |
| 18.30 – 20.00 | Welcome reception |



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TUESDAY, SEPTEMBER 16th

- 10.00 – 11.15** **PLENARY SESSION**
Chairmen: Angelo Azzi, Georgy Georgiev
Valentin Vlasov
Nucleic acid therapeutics and targets
Dmitry Chudakov
Individual T cell receptor repertoires
Pavel Georgiev
Chromatin insulators and long-distance interactions in *Drosophila* genome
- 11.15 – 11.40** Coffeebreak
- 11.40 – 13.20** **PLENARY SESSION**
Chairmen: Michael Agadjanyan, Alexander Makarov
Vladimir Shuvalov
Primary processes of white energy conversion in reaction centers of photosynthesis
Alexander Gabibov
Mechanisms of antigen degradation
Sergey Kozin, Aleksander Makarov
The role of the metal-binding domain of beta-amyloid in pathogenesis of Alzheimer's disease
Michael Agadjanyan
Active and passive vaccination strategy for Alzheimer's disease
- 13.20 – 14.30** Lunch
- 14.30 – 15.30** **POSTER SESSION**
- 15.30 – 17.10** **PLENARY SESSION**
Chairmen: Alexander Boronin, Sergei Zavriev
Valentin Stonik
Secondary sea metabolites: some characteristic features and prospects of use
Nikolai Myasoyedov
New possibilities in development of peptide pharmaceuticals
Sergey Kochetkov
New blockers of socially significant infections
Vladislav Deigin
Peptide pharmaceuticals: from peptide extracts to oral peptidomimetics
- 17.10 – 17.30** Coffee break
- 17.30 – 18.45** **PLENARY SESSION**
Chairmen: Norbert Dencher, Roman Efremov
Vadim Govorun
3D-omics data integration: mycoplasma reveals regulation complexity
Norbert Dencher
How protein dynamics and protein-protein interactions contribute to energy conversion, healthy ageing, and neurodegenerative diseases
Sergey Kostrov
Pro-proteins and evolutionary adaptation



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WEDNESDAY, SEPTEMBER 17th

10.00 – 13.00 YOUNG SCIENTISTS COMPETITION. FINAL AUDITION: ORAL PRESENTATIONS
Chairmen: Tatiana Ovchinnikova

13.00 – 14.00 Lunch

14.00 – 17.00 RESUMPTION

THURSDAY, SEPTEMBER 18th

10.00 – 11.15 PLENARY SESSION

Chairmen: Burkhard Bechinger, Eugene Fesenko

**Alexander Arseniev, Eduard Bocharov, Konstantin Mineev, Kirill Nadezhdin,
Sergei Goncharuk, Alexey Feofanov**

NMR view on transmembrane helix dimerization: cell signaling in human health
and pathologies

Burkhard Bechinger

Biophysical investigations of peptide interactions with membranes

Yuri Chizmadzhev

Study of lipid-protein molecular machines responsible for viral infection of the cell

11.15 – 11.40 Coffee break

11.40 – 13.20 PLENARY SESSION

Chairmen: Dmitry Knorre, Sergey Lukyanov

Lev Ovchinnikov

Y-box binding protein 1 (YB-1): structural organization and biological functions

Vladimir Popov

Enzymes from extremophilic microorganisms: structural insight into the molecular
basis of extremophilicity

Vladimir Pletnev

Three-dimensional structure of fluorescent proteins. Structure-functional relations

Konstantin Lukyanov

Fluorescent proteins: from understanding to advanced applications

13.20 – 14.30 Lunch

14.30 – 15.55 PLENARY SESSION

Chairmen: Jean-Luc Imler, Valery Lipkin

Jean-Luc Imler

Antiviral immunity in *Drosophila*

Nikolai Modyanov

Impact of ATP1B4 co-option on development of placental mammals

Alexander Petrenko

Subtle structural variations define the function of membrane proteins

15.55 – 16.15 Coffee break

Continued



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THURSDAY, SEPTEMBER 18th

16.15 – 19.00

**REPORTS OF YOUNG SCIENTISTS FROM THE M.M. SHEMYAKIN AND
Yu.A. OVCHINNIKOV INSTITUTE**

Chairperson: Tatiana Ovchinnikova

Igor Deev

pH-sensing properties of receptor-like tyrosine kinases

Mikhail Matlashov

Genetically encoded redox switches and pH sensors for neurobiology

Alexandra Tsarkova

A novel ATP-dependent bioluminescent system from the Siberian earthworm

Fridericia heliota: structure elucidation of luciferin and its analogs

Maria Tereshina

Loss of Ag1 in ancestors of higher vertebrates correlates with the reduction of their regenerative capacity

George Sharonov

Cell guidance mechanisms: finding the only way through abundance of cues

Victoria Shender

Deciphering specific features of the ovarian cancer ascites proteome

Mikhail Akimov

N-acyl dopamines and other bioactive lipids in the organism's anti-cancer defense system

Natalia Kuznetsova

Complement and liposomes loaded with lipophilic prodrugs of methotrexate and melphalan

Zakhar Shenkarev

Lipid-protein nanodiscs: multipurpose environment for cell-free production, folding and structure-functional studies of membrane proteins and membrane-active peptides

Alexey Belogurov

Ubiquitin-independent proteasome-mediated proteolysis of myelin basic protein and its role in health and disease

Alexander Vassilevski

Does investigation of toxin evolution have practical value?



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FRIDAY, SEPTEMBER 19th

10.00 – 11.40

PLENARY SESSION

Chairmen: Alexander Archakov, Valery Zubov

Alexey Bogdanov

Signal transduction in the ribosome: the key role of ribosomal RNA

Alexander Spirin

Polyribosomes: formation, conformational transitions, activity modulation and dormancy

Olga Dontsova

Unusual features of telomerase RNA

Sergey Deev

Multifunctional nanoconstructs for bioimaging and therapy

11.40 – 12.00

Coffee break

12.00 – 13.20

PLENARY SESSION

Chairmen: Vadim Ivanov, Ferdinand Hucho

Joseph Schlessinger

Cell signaling by tyrosine phosphorylation: from basic principles to cancer therapy

Richard Pestell

Cell cycle control in cancer

13.20

YOUNG SCIENTISTS COMPETITION: AWARD CEREMONY.CLOSING