

International Workshop “Targeting RNA World”

2 – 7 September 2018

Saint-Petersburg, Russia

PROGRAMM

Sunday, 2th September 2018

	Arrival
18:00-19:00	Registration
19:00 – 21:00	Welcome reception

Monday, 3rd September 2018

	Opening Ceremony
9:30 – 9:45	<i>Introduction to the Scientific Project: past and future</i> Prof. Marina Zenkova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia Dr. Elena Bichenkova , University of Manchester, Manchester, UK
Session 1.	Chemistry and Design of Functionality
Chair:	Prof. Marina Zenkova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
9:45 – 10:15	<i>Structural and functional features of the phosphoryl guanidine oligonucleotides</i> Prof. Dmitrii Pyshnyi , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
10:15 – 15:35	<i>Description of structural aspects and dynamic behaviour of ribonuclease mimetics: high-field NMR and molecular modeling</i> Linda Trivoluzzi , University of Manchester, Manchester, UK
10:35 – 11:05	<i>Insight into binding modes and molecular interactions between peptidyl-oligonucleotide conjugates and RNA: role of different structural elements in recognition and catalysis</i> Dr. Elena Bichenkova , University of Manchester, Manchester, UK

11:05 – 11:25	<i>Towards enhancement of catalytic turnover: Design and synthesis of peptidyl-oligonucleotide conjugates for irreversible cleavage of disease-relevant RNA</i> Bahareh Amirloo , University of Manchester, Manchester, UK
11:25 – 11:45	<i>Sequence-specific cleavage of tRNA^{Phe} with bulge-forming peptidyl-oligonucleotide conjugates</i> Yaroslav Staroseletz , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
11:45 – 12:10	Coffee Break
Session 1.	Chemistry and Design of Functionality
Chair:	Prof. Marina Zenkova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
12:10 – 12:30	<i>Sequence specific detection of target nucleic acids: complementary self-assembling peptides as building blocks for hydrogel biosensor</i> Sameen Yousaf , University of Manchester, Manchester, UK
12:30 – 12:50	<i>Study of the cleavage mechanism and association stability of oligonucleotide conjugates using conventional and advanced molecular modelling techniques</i> Dr. Kepa Koldo Burusco-Goni , University of Manchester, UK
12:50 – 13:10	<i>Molecular dynamics analysis of the bulged complexes of RNA with DNA-peptide conjugates</i> Dr. Alexander Lomzov , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
13:10 – 13:25	<i>Computational tools for drug design: modelling biomolecular conformation using molecular dynamics simulations</i> Dr. Richard Bryce , University of Manchester, UK
13:30 – 14:30	Lunch
Session 2	Molecular Targets: Targeting of Disease-Associated RNAs
Chair:	Dr. Elena Bichenkova , University of Manchester, Manchester, UK
15:00 – 15:30	<i>Antiviral and antibacterial oligonucleotide-based therapeutics: where is the magic drug?</i>

	Prof. Valentin Vlassov , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
15:30 – 15:50	<i>Role of tumor-associated RNAs in tumor progression</i> Dr. Nadezhda Mironova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
15:50 – 16:10	<i>Inhibition of oncogenic miRNAs in tumour cells by synergistic cleavage with peptide-oligonucleotide conjugates and RNase H acting in multi-turnover mode</i> Dr. Olga Patutina , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
16:10 – 16:30	<i>New oligonucleotide derivatives containing N-(1-butanefonyl)-phosphoramidate and N-(1-hexanesulfonyl)-phosphoramidate groups</i> Dr. Boris Chelobanov , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
16:30 – 16:50	<i>Novel N-mesyl-phosphoramidate oligonucleotides targeted to oncogenic miRNA as a worthy alternative to phosphorothioate oligonucleotides</i> Svetlana Miroshnichenko , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
16:50 – 17:10	<i>The prospective antibacterial conjugates of modified oligonucleotides with peptides</i> Dr. Darya Novopashina , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
17:10 – 17:40	Coffee break
	Free time
19:30 – 20:30	Dinner

Tuesday, 4th September 2018

Session 3	Delivery of therapeutic nucleic acids
Chair	Dr. Elena Chernolovskaya , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
9:30 – 10:00	<i>Lipid transport pathways targeting the RNA domain</i> Prof. David Clarke , University of Manchester, UK
10:00 – 10:20	<i>Targeted delivery of nucleic acids into tumors mediated by folate-equipped liposomes</i> Daniil Gladkikh , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
10:20 – 10:40	<i>Antitumor non-cellular vaccines on the base of dendritic cell-targeted mannosylated liposomes or dendritic cells-derived extracellular vesicles efficiently activate cytotoxic T cells against murine melanoma</i> Dr. Oleg Markov , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
10:40 – 11:00	<i>Extracellular vesicles and their analogues as vectors for the delivery of therapeutic nucleic acids</i> Anastasiya Alekseeva , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
11:00 – 11:20	<i>Transport oligonucleotides equipped with hydrophobic moieties as a novel system for nucleic acids delivery</i> Anton Filatov , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
11:20 – 11:50	Coffee Break
Session 3	Delivery of therapeutic nucleic acids
Chair:	Prof. Olga Ilinskaya , Institute of Fundamental Medicine and Biology, Kazan Federal (Volga-Region) University, Kazan, Russia
11:50 – 12:10	<i>Biosimilar systems for therapeutic nucleic acids delivery</i> Dr. Elena Chernolovskaya , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
12:10 – 12:30	<i>Cholesterol-modified siRNAs: gene silencing abilities and structure-function relationships</i> Ivan Chernikov , Institute of Chemical Biology and Fundamental

	Medicine SB RAS, Novosibirsk, Russia
12:30 – 12:50	<i>Non-covalent associates of siRNAs and AuNPs enveloped with lipid layer and doped with amphiphilic peptide for efficient siRNA delivery</i> Dr. Inna Pyshnaya , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
12:50 – 13:10	<i>Novel polycationic amphiphiles for improved nucleic acid delivery</i> Pavel Puchkov , Lomonosov Institute of Fine Chemical Technologies, MIREA - Russian Technological University, Moscow, Russia
13:10 – 13:30	<i>Polycationic lipids with disulfide bonds for nucleic acids delivery</i> Dr. Elena Shmendel , Lomonosov Institute of Fine Chemical Technologies, MIREA - Russian Technological University, Moscow, Russia
13:30 – 14:30	Lunch
Session 4	Non-coding RNAs
Chair:	Prof. Dmitrii Pyshnyi , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
15:00 – 15:30	<i>Mycobacterium tuberculosis small noncoding RNAs in adaptation to host immune response</i> Dr. Tatiana Azhikina , Shemyakin-Ovchinnikov Institute of bioorganic chemistry RAS, Moscow, Russia
15:30 – 15:50	<i>Early gene expression alterations in human cells induced by splice isoforms of long non-coding RNA GAS5</i> Dr. Dmitriy Semenov , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
15:50 – 16:10	<i>Regulation of snoRNA activities: from RNA modification to CRISPR-knockout</i> Dr. Grigory Stepanov , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
	Sponsor lectures
16:10 – 16:30	<i>Methodological and computational pitfalls, limits, and sources of errors of RNA-Seq experiments</i> Dr. Evgenyi Brenner , AO “Vector-Best”, Novosibirsk, Russia
16:30 – 16:50	<i>MicroRNA-biomarkers for screening and early diagnosis of slow-growing tumours: thyroid and cervical cancer examples</i> Dr. Mikhail Ivanov , AO “Vector-Best”, Novosibirsk, Russia

16:50-17:10	<i>RNA-seq: from whole transcriptome to single transcripts</i> Dr. Irina Karpova , Alamed, Moscow, Russia
17:10 – 17:40	Coffee Break
Session 5	Translational medicine
Chair:	Dr. Nadezhda Mironova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
17:40 – 18:00	<i>Degradation of cancer cells RNA by ribonuclease binase as a basis for antitumor therapy</i> Dr. Vladimir Mitkevich , Engelhardt Institute of Molecular Biology RAS, Moscow, Russia
18:00 – 18:20	<i>Bacterial RNase binase as antiviral agent</i> Dr. Vera Ulyanova , Institute of Fundamental Medicine and Biology, Kazan Federal (Volga-Region) University, Kazan, Russia
18:20 – 18:40	<i>Oligomerization is a natural property of eukaryotic and procaryotic RNases</i> Surchenko Yulia , Institute of Fundamental Medicine and Biology, Kazan Federal (Volga-Region) University, Kazan, Russia
18:40 – 19:00	<i>Inhibition of Ras-signaling by Bacillus pumilus RNase binase</i> Dr. Pavel Zelenikhin , Institute of Fundamental Medicine and Biology, Kazan Federal (Volga-Region) University, Kazan, Russia
19:30 – 20:30	Dinner
22:45 4th September – 03:00 5th September	Boat trip, the bridges drawn

Wednesday, 5th September 2018

Session 5	Translational medicine
Chair:	Dr. Olga Patutina , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
11:00 – 11:20	<i>Molecular mechanisms of antiproliferative and interferon-inducing activity of short immunostimulating dsRNA</i> Prof. Marina Zenkova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
11:20 – 11:40	<i>Multidrug resistance mediated by MDR1/P-glycoprotein expression has a crucial role for survival and prognosis in leukemia patients</i> Dr. Alexandra Sen'kova , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
11:40 – 12:00	<i>Anti-inflammatory potential of Soloxolone methyl in LPS stimulated macrophages and mice models</i> Dr. Evgenya Logashenko , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
12:00 – 12:20	<i>Transcriptomic insight into the response of human cervical carcinoma cells to SM, a new promising antitumor agent</i> Dr. Andrey Markov , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
12:20 – 12:40	<i>Immunostimulating dsRNA enhance the resistance of C57Bl mice to influenza virus</i> Dr. Elena Goncharova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
	Sponsor lecture
12:40 – 13:00	<i>Successful miniaturization of molecular biology reaction volumes for cloning, library generation and single cell analysis</i> Dr. Tamara Malygina , Optec LLC, ZEISS Group, Novosibirsk, Russia
13:00 – 14:30	Lunch
Session 6	Young scientists
Chair	Dr. Alexander Lomzov , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia

14:30 – 14:50	<i>The antimetastatic effect of DNase I is associated with a decrease in the number of tandem repeats in the blood of mice with different metastatic tumors</i> Ludmila Alexeeva , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
14:50 – 15:10	<i>Optimization of non-covalent associates of RNA duplexes and gold nanoparticles preparation</i> Anna Epanchintseva , Institute of Chemical Biology and Fundamental Medicine, SB RAS, Novosibirsk, Russia
15:10 – 15:30	<i>Gene expression alterations in lung adenocarcinoma cells A549 induced by circulating exosomes and microvesicles of healthy human blood</i> Yulia Savinovskaya , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
15:30 – 15:50	<i>Using ribosomal RNA genes in phylogenetic analysis</i> Islam Saber Ead Mohamed , Al-Azhar University, Egypt; Novosibirsk State University, Novosibirsk, Russia
15:50 – 16:30	Coffee break
	Closing ceremony
16:30 – 17:00	<i>N-(Sulfonyl)-phosphoramidate oligonucleotides as potential antisense therapeutics</i> Dr. Dmytryi Stetsenko , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia
17:00 – 17:20	Summary Prof. Valentin Vlassov , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia Prof. Marina Zenkova , Institute of Chemical Biology and Fundamental Medicine SB RAS, Novosibirsk, Russia Dr. Elena Bichenkova , University of Manchester, UK
19:00 – 22:00	Farewell party

Thursday, 6th September 2018

9:15 – 16:30	Excursion to Peterhof
19:00 – 21:00	Dinner

Friday, 7th September 2018

	Departure
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