SCIENTIFIC PROGRAM
Young scientists school "Bioinformatics and systems biology"

Novosibirsk, Russia, 30 June – 2 July 2012.
Institute of cytology and genetics SB RAS
30 June, Saturday

8.00-9.30 **Registration** (Conference hall, 3rd flour)

9.30-10.00 Welcome speech
acad. Nikolai Kolchanov (Institute of Cytology and Genetics, Novosibirsk, Russia)
Review of the previous young scientists schools
Dr. Victoria Mironova (Institute of Cytology and Genetics, Novosibirsk, Russia)

10.00-11:30 Lecture
Prof. Eric Mjolsness (University of California, Irvine, USA)
Quasi-equilibrium and non-equilibrium modeling of biochemical reaction networks

11.30-13.00 Lecture
Prof. Roman Efremov (Institute of Bioorganic Chemistry RAS, Moscow, Russia)
Numerical experiment in molecular biophysics of proteins and membranes: tasks and solutions for proteomics

13.00-14.30 Lunch

14.30-16.00 Lecture
Prof. Evgeny Rogaev (Mental Health Research Center RAMS, Moscow, Russia)
New trends in medical genomics

16.00-17.00 Lecture
Prof. Robert Giegerich (Bielefeld University, Bielefeld, Germany)
Dynamic Programming in Bellman's GAP

17.00-17.30 Young scientist's poster session

17.30-18.30 Parallel practical trainings
1. **Computer analysis of high-throughput sequencing and chromatin-immunoprecipitation data (ChIP-seq)**
   Dr. Yuri Orlov (Institute of Cytology and Genetics, Novosibirsk, Russia)
   Conference hall (3rd floor)
2. **Multi-trait analysis of linked QTLs**
   *Prof. Yefim Ronin (*Institute of Evolution, University of Haifa, Israel)
   Aspirant' class (3rd floor)
3. **Enjoy Dynamic Programming in Bellman's GAP**
   Prof. Robert Giegerich (Bielefeld University, Bielefeld, Germany)
   Computer class (Basement)

19.00 Excursion "Novosibirsk in the evening"

<p align="center">**1 July, Sunday**</p>

9.30-10.30 Lecture
Dr. Maksim Zakhartsev (University of Stuttgart; University of Heidelberg, Germany)
Fundamentals of flux analysis

10.30-11.30 Lecture
Dr. Olga Krebs (Heidelberg Institute for Theoretical Studies, Germany)
Data integration in systems biology: SySMO DB on the focus

11.30-11.45- Coffee-break

11.45 -12.45 Lecture
Fernando Izquierdo (HITS gGmbH, Germany)
Parallel computations applied to phylogenetics

12.45- 14.30 Lunch

14.30-15.30 Parallel practical trainings
1. **Data Integration in systems biology: SEEK, JERM and RightFiled tools**
   Dr. Olga Krebs (Heidelberg Institute for Theoretical Studies, Germany)
   Aspirant' class (3rd floor)
2. **Computational proteomics for beginners**
   *Evgenij Tiys (*Institute of Cytology and Genetics, Novosibirsk, Russia)
   Library hall (2nd floor)
3. **Parallel computations applied to phylogenetics**
   Fernando Izquierdo (HITS gGmbH, Germany)
   Computer class (Basement)

15.30 – 16.30 Young scientist's poster session

16.30-18.30 Young scientists' session "Software and algorithms development"
Ilya Malakhin "Unsupervised algorithm based on wavelet analysis for extraction of information about hippocampal neuronal activity characteristics from the experimental data"
Ilya Kiselev "BioUML: modular modeling of complex biological systems"
Evgenij Pozdnyak "Tools for the describing scientific workflows"
Zakhar Mustafin "Haploid evolutionary constructor: parallelization and high performance simulations of prokaryotic communities' evolution"
Fedor Kazantsev "High Performance Computing with MGSmodeller"

19:30 – Football game.

9.00-10.30 Young scientists' session "Plant systems biology"
Vera Gorelova "Study of *Arabidopsis thaliana* Ornithine aminotransferase gene expression control"
Ekaterina Sergeeva "Towards an analysis of the structure of the short arm of 5B chromosome of the bread wheat *Triticum Aestivum L.*"
Victoria Shtratnikova "High-throughput sequencing of microRNA of roots and nodules of *Pisum sativum L.*"
Belenikin Maxim "Sequencing and de novo transcriptome assemby of *Stellaria media (L.) Vill.*"

10.30-10.45- Coffee-break

10.45-11.45 Lecture
*Dr. Daniil Naumoff, (*Institute of Microbiology, Moscow, Russia)
Genome projects and gene annotation

11.45 -13.00 Young scientists' session "Computational medicine"
Nikolai Barducov "Inbreeding and differently directed dynamics of ISSR-PCR and IRAP-PCR markers polymorphism in musk oxen populations"
Petr Ponomarenko "Experimental examining of prognoses *in silico* TBP binding to TATA box with SNP associated with human diseases"
Ulyana Potapova "NS2B/NS3 protease: analysis of allosteric effects of mutations associated with the pathogenicity of tick-borne encephalitis virus"
Bogumil Kaczkowski "Integrative analyses reveal novel strategies in HPV11, -16 and -45 early infection"

13.00- 14.30 Lunch

14.30-15.30 Young scientists' session "Computational proteomics"
Anastasia Bakulina "Molecular modeling of cytosolic part of a2-subunit of mouse V-ATPase"
Pavel Davidovich "E3 Ligase and p53 Family Proteins Interaction Modeling"
Timofey Ivanisenko "Reconstruction of the associative genetic networks based on integration of automated text-mining methods and protein-ligand interactions prediction"
Sergey Pintus "Computational evaluation of impact of amino acid substitution p.W172C on structure and function of GAP-junction protein connexin 26 and its association with hearing impairment"

15.30-15.45- Coffee-break

15.45-17.00 Young scientists' session "Mathematical biology"
Katyakova Vera "About cycles of functioning of model of gene network regulatory loops"
Ulyana Zubairova "Activation of CLV3 gene expression in model of the stem cell niche structure regulation in the shoot apical meristem"
Elena Mamontova "Spatially distributed modeling of bacterial communities with haploid evolutionary constructor"
Temlyakova Evgenia "Clustering of *E.coli* promoter electrostatic profiles"

17.00-18.00 Parallel practical trainings
1. **Introduction to bioinformatics: search and analysis of genomic sequences**
   *Dr. Dmitry Afonnikov (*Institute of Cytology and Genetics, Novosibirsk, Russia)
   Aspirant' class (3rd floor)
2. **Practical exercises in flux analysis**
   Dr. Maksim Zakhartsev (University of Stuttgart; University of Heidelberg, Germany)*,*
   Computer class (Basement)

19.00 Closing ceremony

Young scientists' poster session

Conference hall
30 June 17.00-17.30
1 July 15.30 – 16.30

1. *Andrey Akinshin* "COMPUTER ANALYSIS OF PHASE PORTRAITS IN GENE NETWORKS MODELS
2. *Anton Bogomolov* "FLUORESCENCE IN SITU HYBRIDIZATION WITH CHROMOSOME-DERIVED DNA PROBES ON OPISTHORCHIS FELINEUS AND METORCHIS XANTHOSOMUS CHROMOSOMES WITHOUT SUPPRESSION OF REPETITIVE DNA SEQUENCES"
3. *Eugene Bushmelev* "POPULATION STUDY OF THE VARIATION IN TRIPLET DISTRIBUTIONS OBSERVED ALONGSIDE A CHROMOSOME, FOR YEAST SPECIES"
4. *Vasilina Chernova* "ANALYSIS OF TRANSCRIPTIONAL AND POSTTRANSCRIPTIONAL REGULATION OF AUXIN CARRIER *AtPIN1*"
5. *Mikhail Domrachev* "NEURAL NETWORK MODELS OF THE PROCESS OF PERCEPTION OF TEXTUAL INFORMATION"
6. *Maria Elkina* "IRAP-PCR MARKERS AND MICRONUCLEI TEST IN THE CHARACTERIZATION OF GENETIC STRUCTURE OF THE KALMYK SHEEP AND TYPES OF THE EDILBAY SHEEP"
7. *Timur Erkenov* "GENOME SCANNING OF HORSE BREEDS BY USING OF ISSR-PCR MARKERS"
8. *Timofey Ermak* "KINET – A NEW WEB DATABASE ON KINETICS DATA AND PARAMETERS FOR E.COLI"
9. *Zhamiga Imangalieva* "A DISCRETE DYNAMICAL SYSTEM ON A DOUBLE CIRCULANT WITH AN ADDITIVE FUNCTION OF THE VERTICES"
10. *Mikhail Kabakov* "A COMPUTER SYSTEM FOR KINETIC ANALYSIS OF GENE NETWORKS"
11. *Artem Kasianov* "DE NOVO SEQUENCING, ASSEMBLY AND CHARACTERIZATION OF TRANSCRIPTOME IN TETRAPLOID PLANT CAPSELLA BURSA-PASTORIS"
12. *Bogumil Kaczkowski* "SOMATIC COPY-NUMBER ALTERATION CAN HELP PREDICT THE TISSUE ORIGIN OF CANCERS OF UNKNOWN PRIMARY"
13. *Alexandra Klimenko* "HAPLOID EVOLUTIONARY CONSTRUCTOR: A GRAPHICAL USER INTERFACE FOR SIMULATING BACTERIAL COMMUNITIES EVOLUTION"
14. *Anna Koval* "STRUCTURAL PARAMETERS OF TRYPTOPHAN ENVIRONMENT IN PHOTOBACTERIUM LEIOGNATHI LUCIFERASE"
15. *Denis Korobko* "GENETICS AND DISEASE PROGRESSION OF FAMILIAL MULTIPLE SCLEROSIS IN NOVOSIBIRSK REGION OF RUSSIA"
16. *Elena Kulish* "ASSOCIATION OF ITGB3 AND GNB3 VARIANTS WITH THE DEVELOPMENT OF VASCULAR COMPLICATIONS IN PATIENTS WITH ACUTE CORONARY SYNDROME"
17. *Ilya Malakhin* "THEORETICALLY-EXPERIMENTAL RESEARCH OF VESICLE TRAFFICKING MECHANISMS IN THE SYNAPTIC PLASTICITY PROCESS"
18. *Azhar Nazhmidenova* "THE DISCRETE DYNAMIC SYSTEM ON A DOUBLE CIRCULANT WITH DIFFERENT FUNCTIONS AT THE VERTICES"
19. *Ekaterina Novoselova* "ROLE OF AUXIN DOSE-DEPENDENT CONTROL IN SPECIFICATION OF ROOT VASCULAR CELLS"