

Federal Agency for Scientific Organizations  
Institute of Continuous Media Mechanics UB RAS, Perm, Russia  
Institute of Strength Physics and Materials Science SB RAS, Tomsk, Russia  
Tomsk Polytechnic University, Tomsk, Russia  
Tomsk State University, Tomsk, Russia  
Perm National Research Polytechnic University, Perm, Russia  
Siberian State Medical University, Tomsk, Russia  
Siberian Branch of the Russian Academy of Sciences  
Ural Branch of the Russian Academy of Sciences  
Ecole Normale Supérieure de Lyon, Lyon, France  
University of Leipzig, Leipzig, Germany  
Jožef Stefan Institute, Ljubljana, Slovenia

Institut Curie, Paris, France  
P. Herzen Moscow Oncology Research Institute, Moscow, Russia  
E.A. Wagner Perm State Medical University, Perm, Russia  
Cancer Research Institute, Tomsk National Research Medical Center  
RAS, Tomsk, Russia  
Technion-Israel Institute of Technology, Haifa, Israel  
Pierre and Marie Curie University, Paris, France  
Institute of Molecular Genetics, Montpellier, France  
Institute for Biophysics, Bremen, Germany  
Technology Platform "Medicine of the Future", Russia  
Physico-Technical Institute NAS, Minsk, Belarus  
Innovative Territorial Center "INO Tomsk", Tomsk, Russia

# **International Conference**

## **Physics of Cancer: Interdisciplinary Problems and Clinical Applications**

**May 23-26, 2017 Tomsk, Russia**



## OBJECTIVES

A transdisciplinary Conference “Physics of Cancer: Interdisciplinary Problems and Clinical Applications” is organized in succession of the Trilateral Russia-Germany-France Workshop “Oncology: on the Frontiers of Molecular Genetics, Biophysics and Medicine, June 5-8, 2012, Perm, Russia”. It aims at gathering researchers working in the fields of physics of cancer, of biophysics, and medicine to discuss challenging approaches for cancer risk determination.

Cancer is known to relate to genetic mutations that facilitate cellular escape from homeostatic tissue control. The subsequent tumor growth and progression is an inherently multiscale process. At the subcellular level, despite the fact that the nucleus is one of the most important cell components, little is known about the contribution of the nuclear shape and size to the mechanical regulation of the genome function. The physical coupling between chromatin architecture and various nuclear and cytoplasmic scaffolds remains poorly understood. Using concepts and methods of mechanobiology we can explore the physical factors involved in mechanotransduction, such as the ability to sense the forces and physical environment at the cell and tissue. Mechanobiology, based on a multidisciplinary expertise from molecular, cellular and tissue biology, from mathematics, computational modeling, physics, physical chemistry, biophysics and engineering will help in understanding mechanical functions across molecular, cellular and tissular levels. Among the key issues that will be addressed in this workshop, special focus will be on modern methods of spatio-temporal analysis of various biological and medical signals including those issued from molecular-genetic studies, mammography and infrared data, as well as images from different high resolution microscopies (e.g. confocal microscopy, atomic force microscopy, scanning electron microscopy, scanning surface potential microscopy). Concepts, methodologies, numerical and experimental techniques coming from statistical mechanics and nonlinear physics combined with multiscale signal processing will be discussed with the specific goal to establish some correlation between clinic stages of tumor progression and biomechanical markers.

## MAIN TOPICS

- Current transdisciplinary issues in cancer diagnosis and treatment
- Cell biology and cell mechanics, and their contribution to oncogenesis research
- New technologies and theoretical models for cancer research
- Mechanogenetics of the cell: application to embryonic and tumor development
- Multiscale analysis and modeling of genomic, epigenetic and microscopy data; methodology and applications to cancer research
- Application of molecular genetics technology and biophysics methods in target therapy and cancer risk estimation
- Modern materials and diagnosis methods for cancer treatment
- Cancer nanotechnology
- Materials / implants for reconstructive oncology
- Nuclear medicine

## INTERNATIONAL ORGANIZING COMMITTEE

### Co-Chairmen

**O.B. Naimark**  
Perm, Russia

**S.G. Psakhie**  
Tomsk, Russia

**A. Arneodo**  
Bordeaux, France

**E. Gutmanas**  
Haifa, Israel

### Members

**F. Argoul**  
Bordeaux, France  
**E.L. Choyzonov**  
Tomsk, Russia

**E. Farge**  
Paris, France

**G.G. Freund**  
Perm, Russia

**I. Gotman**  
Haifa, Israel

**O.S. Gileva**  
Perm, Russia

**J. A. Käs**  
Leipzig, Germany

**P.P. Kaminsky**  
Tomsk, Russia

**O.S. Kobyakova**  
Tomsk, Russia

**S.N. Kulkov**  
Tomsk, Russia

**A. Lesne**  
Paris, France

**A.I. Lotkov**  
Tomsk, Russia

**G.V. Mayer**  
Tomsk, Russia  
**V.P. Matveyenko**  
Perm, Russia

**O.A. Orlov**  
Perm, Russia

**O.A. Plekhov**  
Perm, Russia

**V.L. Popov**  
Berlin, Germany

**M. Radmacher**  
Bremen, Germany

**I.V. Reshetov**  
Moscow, Russia

**S. Schmauder**  
Stuttgart, Germany

**J. Schreiber**  
Dresden, Germany

**A.A. Tashkinov**  
Perm, Russia

**A.N. Yakovlev**  
Tomsk, Russia

**D.O. Zharkov**  
Novosibirsk, Russia

## PROGRAM COMMITTEE

### Co-Chairman

**A. Arneodo**  
Bordeaux, France

**O.B. Naimark**  
Perm, Russia

### Members

**F. Argoul**  
Bordeaux, France

**S.P. Buyakova**  
Tomsk, Russia

**N.V. Cherdyntseva**  
Tomsk, Russia

**E. Farge**  
Paris, France

**G.G. Freund**  
Perm, Russia

**M.I. Lerner**  
Tomsk, Russia

**A. Lesne**  
Paris, France

**G.V. Mayer**  
Tomsk, Russia

**L.L. Meisner**  
Tomsk, Russia

**O.A. Orlov**  
Perm, Russia

**M. Radmacher**  
Bremen, Germany

**Yu.P. Sharkeev**  
Tomsk, Russia

**E.N. Slavnova**  
Moscow, Russia

**A.N. Yakovlev**  
Tomsk, Russia

## CONFERENCE PROCEEDINGS

The conference proceedings will be published in the AIP Conference Proceedings indexed by Web of Science.

Conference participants are invited to submit four-page papers in English written according to the paper submission instructions not later than **June 30, 2017** to the organizing committee, email [onco-2017@ispms.tsc.ru](mailto:onco-2017@ispms.tsc.ru).

The conference program will be available at the website [www.ispms.ru](http://www.ispms.ru) before the beginning of the conference.

**OFFICIAL LANGUAGES** will be Russian and English.

## DEADLINES

**April 15, 2017:** Registration

**May 1, 2017:** Payment transfer

**June 30, 2017:** Paper submission

Instructions for the bank transfer are available at the conference website

<http://www.ispms.ru>

## PRESENTATION OF REPORTS

The conference will consist of oral and poster sessions. Simultaneous interpretation will be provided at the conference sessions. Oral presentations will be limited to 30 min (including discussion); computer projectors will be available. The size of poster presentations should be 60×80 cm. Computer and poster presentations must be prepared in English.

## REGISTRATION

Preliminary registration is available online at the conference website [www.ispms.ru](http://www.ispms.ru) until

**April 15, 2017.**

The online registration requires the submission of an abstract of the conference report of no more than 1000 characters and spaces written in English according to the instructions. The title of the file with the abstract must include the surname and initials of the author, e.g., Ivanov\_VM.doc.

## REGISTRATION FEE

For foreign participants: 100 €.

For Russian participants:

- 7000 P with report publication in the AIP Conference Proceedings

- 3000 P without report publication in the AIP Conference Proceedings

**Registration fee includes:** participant's bag, publication in AIP Conference Proceedings, and refreshments.

## BANKING DETAILS FOR PAYMENT IN EURO

Intermediary bank:

DEUTSCHLAND AG, FRANKFURT AM MAIN

SWIFT – OWHBDEFF

Account 0102758018

Bank beneficiary:

JCB VTB BANK, MOSCOW

SWIFT code: VTBRRUMM

KRASNOYARSK BRANCH, KRASNOYARSK, 145, LENINA STREET

Settlement account № 40501978010030200001 ISPMS SB RAS

## ACCOMMODATION

### 1. Congress Center “Rubin” of TSC SB RAS:

16 Akademicheskii pr., Tomsk, 634055

Hotel reservation at <http://rubin.tomsk.ru/about/about.html>

Phone/fax: (3822) 49-26-89, (3822) 49-25-59

E-mail: [rubin@mail.tomsknet.ru](mailto:rubin@mail.tomsknet.ru) with the indication of the conference name.

### 2. Bon Apart Hotel:

1A Gertsena ul., Tomsk, 634029

Hotel reservation at <http://www.bon-apart.ru/en/>

## CONTACTS

2/4 Akademicheskii pr., Tomsk, 634055

Institute of Strength Physics and Materials Science SB RAS

Fax: (3822) 492576

Website: [www.ispms.ru](http://www.ispms.ru)

Address for correspondence:

E-mail: [onco-2017@ispms.tsc.ru](mailto:onco-2017@ispms.tsc.ru)

Conference secretary:

Viktor N. Timkin

Phone: (3822) 28-69-82; mobile phone: +7-952-807-15-67