PROGRAM

VII INTERNATIONAL SYMPOSIUM

TOPICAL PROBLEMS OF BIOPHOTONICS

Nizhny Novgorod, 2019
ORGANIZED BY

Institute of Applied Physics
of the Russian Academy of Sciences

Privolzhsky Research Medical University
of the Ministry of Health of the Russian Federation

SYMPOSIUM CHAIRS

- Ammasi Periasami, University of Virginia, USA
- Ilya Turchin, Institute of Applied Physics RAS, Russia
- Alfred Vogel, University of Luebeck, Germany
- Elena Zagaynova, Privolzhskiy Research Medical University, Russia

PROGRAM COMMITTEE

- Igor Adameyko, Karolinska Institutet, Sweden; Medical University of Vienna, Austria
- Boris Chichkov, Laser Zentrum Hannover e.V., Germany
- Sergey Gamayunov, National Medical Research Radiological Center of the Ministry of Health of the Russian Federation, Russia
- Tayyaba Hasan, Wellman Center, Harvard Medical School, Massachusetts General Hospital, Boston, USA
- Irina Larina, Boyar College of Medicine, USA
- Marcel Leutenegger, Max Planck Institute for Biophysical Chemistry, Germany
- Konstantin Lukyanov, Skolkovo Institute of Science and Technology, Russia
- Angelika Rueck, Universitat Ulm, Germany
- Nataliya Shakhova, Institute of Applied Physics RAS, Russia
- Vladislav Shcheslavskiy, Becker & Hickl GmbH, Germany
- Marina Shirmanova, Privolzhskiy Research Medical University, Russia
- Pavel Subochev, Institute of Applied Physics RAS, Russia
- Peter So, Massachusetts Institute of Technology, Cambridge, USA
- Ronald Sroka, Laser Research Laboratory, LIFE Center, University Clinic, Munich, Germany
- Peter Timashev, Sechenov First Moscow State Medical University, Russia
- Bruce Tromberg, Beckman Laser Institute and Medical Clinic, UC Irvine, USA
- Valery Tuchin, Research-Educational Institute of Optics and Biophotonics, Saratov State University, Russia

CONFERENCES CHAIRS

Optical Bioimaging
Chairs:
- Stefan Andersson-Engels, Irish Photonic Integration Centre, Tyndall National Institute, Cork, Ireland;
- Alex Vitkin, University of Toronto, Canada;
- Ilya Turchin, Institute of Applied Physics RAS, Russia.

Biophotonics in Cancer and Stem Cells Research
Chairs:
- Ammasi Periasamy, Keck Center for Cellular Imaging, University of Virginia, USA;
- Elena Zagaynova, Privolzhskiy Research Medical University, Russia.

Clinical Biophotonics Workshop
Chairs:
- Mikhail Kirillin, Institute of Applied Physics RAS, Russia;
- Herbert Stepp, LIFE Center, Munich University Clinic, Germany.

Russian-Chinese Workshop On Biophotonics (Collocated)
Chairs:
- Dan Zhu, Huazhong University of Science and Technology, China;
- Valery Tuchin, Saratov State University, Russia.
CONFERENCES AND TOPICS

Optical Bioimaging
Clinical Biophotonics
Biophotonics in Cancer and Stem Cells Research
Russian-Chinese Workshop On Biophotonics (Collocated)
**Saturday, 27 July**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00</td>
<td><em>Bus transfer from Nizhny Novgorod to Gorodets</em></td>
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<tr>
<td>10:00-12:00</td>
<td><em>Registration</em></td>
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<tr>
<td>10:00-11:00</td>
<td><em>Coffee break (Restaurant “Volga”)</em></td>
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<tr>
<td>11:00</td>
<td><em>Departure from Gorodets</em></td>
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**HALL A**

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>12:00-12:30</td>
<td><strong>OPENING CEREMONY</strong></td>
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<tr>
<td></td>
<td><em>Alexander Sergeev, president of the Russian Academy of Sciences</em> (Russia)</td>
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<td><em>Nikolay Karyakin, rector of Privolzhsky Research Medical University</em> (Russia)</td>
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<td>12:30-13:00</td>
<td><em>Arjun G. Yodh</em> (USA)</td>
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<td><em>Cancer imaging and brain monitoring with diffuse light (plenary)</em></td>
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<td>13:00-13:30</td>
<td><em>Sergei Vinogradov</em> (USA)</td>
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<td><em>Tissue oxygen imaging by phosphorescence quenching (plenary)</em></td>
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<tr>
<td>13:30-14:30</td>
<td><em>Lunch (Restaurant “Volga”)</em></td>
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**HALL A**

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>14:30-16:35</td>
<td><strong>Optical Bioimaging and Clinical Biophotonics</strong></td>
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<tr>
<td></td>
<td><em>Diffuse optical spectroscopy and fluorescence imaging techniques</em></td>
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<td></td>
<td><em>Chairs: Arjun G. Yodh, Ilya Turchin</em></td>
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<td>14:30-14:50</td>
<td><em>Xavier Intes</em> (USA)</td>
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<td><em>Macroscopic lifetime imaging (invited)</em></td>
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<td>14:50-15:00</td>
<td><em>Hamid Dehghani</em> (United Kingdom)</td>
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<td><em>Applications of diffuse optics for detection and characterisation of disease: Thyroid cancer and Rheumatoid Arthritis (invited)</em></td>
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<td>15:00-15:30</td>
<td><em>Stefan Andersson-Engels</em> (Ireland)</td>
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<td><em>Monitoring infant lung function using NIR spectroscopy of oxygen and water vapour (invited)</em></td>
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<td>15:30-15:45</td>
<td><em>Zhiyu Qian</em> (China)</td>
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<td><em>Real time assessment of microwave ablation on tumors by NIR spectra techniques (invited)</em></td>
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**HALL B**

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<tr>
<th>Time</th>
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<tr>
<td>14:30-15:40</td>
<td><strong>Biophotonics in Cancer and Stem Cells Research</strong></td>
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<tr>
<td>14:30-15:00</td>
<td><em>Alexey Terskikh</em> (USA)</td>
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<td><em>Microscopic imaging of epigenetic landscapes (invited)</em></td>
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<td>14:50-15:10</td>
<td><em>Konstantin Lukyanov</em> (Russia)</td>
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<td><em>Visualization of landscapes of histone epigenetic modifications in live cells (invited)</em></td>
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<td>15:10-15:25</td>
<td><em>George Sharonov</em> (Russia)</td>
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<td><em>From understanding the immune responses to checkpoint blockade to better cancer immunotherapies</em></td>
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<td>15:25-15:40</td>
<td><em>Diana Yuzhakova</em> (Russia)</td>
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<td><em>Methods for identification of tumor-specific T-lymphocytes</em></td>
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</tbody>
</table>
Saturday, 27 July

15:45-16:00
**Jinling Lu** (China)
Resting-state brain functional connectivity accessed by neural and hemodynamic optical imaging

16:00-16:15
**Alexander Konovalov** (Russia)
Fluorescence molecular tomography using early arriving photons: fundamental equations, numerical experiment, and resolution analysis

16:15-16:35
**Ekaterina Bori sova** (Bulgaria)
Exogenous fluorescence diagnostics of stress-induced gastric cancer – current state and future perspectives (invited)

15:40-16:35  
**New optical tools, probes, sensors**  
*Chair: Vladislav Shcheslavskiy*

15:40-16:00
**Aleksei Zheltikov** (Russia)
Multiphoton cell-specific brain imaging: neurons, astrocytes, and gliovascular interfaces (invited)

16:00-16:20
**Victor Nadtochenko** (Russia)
Live cell in situ staining for fluorescent bioimaging by focused femtosecond laser near-IR laser light (invited)

16:20-16:35
**Valentin Milichko** (Russia)
Metal-dielectric nanocavity for all-optical protein diagnostic

16:35-17:00  
**Coffee break (Restaurant “Volga”)**

**HALL A**  
**Optical Bioimaging**

17:00-19:00
**Optical microscopy techniques**  
*Chair: Herbert Schneckenburger*

17:00-17:20
**Angelika Unterhuber** (Austria)
Label-free multimodal morpho-molecular bioimaging (invited)

17:20-17:40
**Peter So** (USA)
Fast and deep multiphoton imaging based on computational optics (invited)

17:40-18:00
**Sebastian Karpf** (Germany)
Ultrafast multiphoton microscopy and FLIM (invited)

18:00-18:20
**Liwei Liu** (China)
Application fluorescence lifetime imaging microscopy in tumor microenvironment (invited)

18:20-18:40
**Peng Fei** (China)
Large-view Bessel light-sheet fluorescence microscopy for high-resolution, isotropic whole-brain imaging (invited)

**HALL B**  
**Biophotonics in Cancer and Stem Cells Research**

17:00-19:00
**New optical tools**  
*Chair: Vladislav Shcheslavskiy*

17:00-17:20
**Rawil Fakhrullin** (Russia)
Dark-field/hyperspectral microscopy for imaging and identification of nanoscale particles in cells and organisms (invited)

17:20-17:40
**Robert Zawadzki** (USA)
Mouse ocular xenograft model as window for cancer nanotheranostics: progress on developing novel in vivo imaging tools (invited)

17:40-18:00
**Dmitry Gorin** (Russia)
Bimodal photoacoustic/fluorescent probes: preparation, properties and applications (invited)

18:00-18:20
**Sergey Tunik** (Russia)
Phosphorescent probes and sensors: rational design for fine tuning the photophysical characteristics and chemical properties (invited)

18:20-18:40
**Vsevolod Belousov** (Russia)
Thermogenetics: neurostimulation and beyond (invited)
### Saturday, 27 July

18:40-19:00  
**Aleš Benda** (Czech Republic)  
*Imaging role of mitochondria in life and death of a cancer cell* (invited)

19:00-20:00  
**Dinner (Restaurant "Volga")**

20:30  
**Welcome party (Bar-restaurant "Neva")**

18:40-18:55  
**Julia Shakirova** (Russia)  
*Nanoscale polymeric temperature sensors based on europium (III) complex*

### Sunday, 28 July

8:00-9:00  
**Breakfast (Restaurant "Volga")**

9:00-13:30  
**Yaroslavl. City tour**

14:00  
**Departure from Yaroslavl**

13:30-14:30  
**Lunch (Restaurant "Volga")**

<table>
<thead>
<tr>
<th><strong>HALL A</strong></th>
<th><strong>HALL B</strong></th>
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</thead>
</table>
| 14:30-15:45 | **Advanced laser techniques**  
Chair: Stefan Andersson-Engels | **Nanoparticles and drug discovery**  
Chairs: Chia-Liang Cheng, Victor Nadtochenko |
| 14:30-14:50  
**Alfred Vogel** (Germany)  
*Free-electron-mediated effects of single femtosecond pulses and pulse series in the (intensity/irradiation dose) parameter space* (invited) | 14:30-14:50  
**Nikolai Khlebtsov** (Russia)  
*Polydopamine-coated Au nanorods for targeted fluorescent imaging and photothermal therapy* (invited) |
| 14:50-15:10  
**Ronald Sroka** (Germany)  
*Laser-induced lithotripsy – developments for future clinical use* (invited) | 14:50-15:10  
**Chia-Liang Cheng** (Taiwan)  
*Nanodiamond facilitated Drug delivery in 3D co-culture model* (invited) |
| 15:10-15:30  
**Alexander Priezzhev** (Russia)  
*Benefits of laser tweezers in living cells studies* (invited) | 15:10-15:30  
**Elena Perevedentseva** (Taiwan)  
*Influence of surfaces and interfaces on properties of nanodiamond considering for their bioapplications* (invited) |
| 15:30-15:45  
**Yulia Alexandrovskaya** (Russia)  
*First clinical application of laser modification of cartilage for transplantation* | 15:30-15:45  
**Mikhail Zyuzin** (Russia)  
*Hybrid micro- and nanocarriers as a universal platform for controlled photo-induced drug release for an effective melanoma treatment* |
| 15:45-17:00  
**Novel agents for drug delivery and theranostics**  
Chairs: Valery Tuchin, Dan Zhu | 15:45-16:00  
**Maxim Gongalsky** (Russia)  
*Fluorescent amphiphilic porous silicon nanocontainers for drug delivery and ultrasonic cancer therapy* |
| 15:45-16:00  
**Yao He** (China)  
*Functionalized silicon nanomaterials for biosensing and bioimaging* (invited) | 16:00-16:15  
**Evgenii Guryev** (Russia)  
*Radioactive (90Y) upconversion nanoparticles conjugated with recombinant targeted toxin for synergistic nanotheranostics of cancer* |
16:00-16:15
**Elina Genina** (Russia)
*Advanced strategy for plasmonic photothermal therapy of tumors* (invited)

16:15-16:30
**Siwen Li** (China)
*Reversing temozolomide resistance in glioblastoma by photosensitive liposome drug delivery* (invited)

16:15-16:35
**Gleb Sukhorukov** (United Kingdom)
*Optically addressable fluorescent microcapsules and carbon dots for controlled delivery, release and individual cell tracking* (invited)

16:30-16:45
**Gang Liu** (China)
*Bioinspired nanovesicles as a versatile drug delivery system for imaging-guided cancer therapy* (invited)

16:45-17:00
**Xiaolong Liu** (China)
*Smart strategies for synergistic antitumor therapy: towards hypoxia microenvironment aggravated by phototherapy* (invited)

17:00-17:15
**Coffee break (Restaurant "Volga")**

17:30-19:00
**POSTER SESSION (Bar-restaurant "Neva")**

[OB+CB]-1 **Olga Streltsova** (Russia)
*Cross-polarization OCT study of the urethra in patients with urethral pain syndrome*

[OB+CB]-2 **Fedor Gubarev** (Russia)
*Whole blood clotting time assessment using the method of laser-speckle correlation*

[OB+CB]-3 **Elena Sedova** (Russia)
*Low-level laser therapy for correction of radiation induced mucositis: a comparison of two treatment regimes*

[OB+CB]-4 **Ekaterina Lazareva** (Russia)
*Estimation of rat skin osmotically-induced dehydration during development of tumor using optical measurements in a wide spectral range*

[OB+CB]-5 **Angelina Zherebtsova** (Russia)
*Study of changes in blood microcirculation in normal and pathological conditions using wearable photonics devices*

[OB+CB]-6 **Alexander Sovetsky** (Russia)
*Probability density function formalism in OCT: numerical simulation study and its application to tumor fluidics mapping*

[OB+CB]-7 **Ekaterina Smolina** (Russia)
*Whole-brain in vivo optoacoustic angiography of rodents*

[OB+CB]-8 **Ekaterina Gubarkova** (Russia)
*Quantitative compressional optical coherence elastography for monitoring of tumor response to photodynamic therapy*

[OB+CB]-9 **Alina Meller** (Russia)
*Dual-wavelength photodynamic therapy for treatment of inflammatory diseases of ENT*

[OB+CB]-10 **Vladimir Zaitsev** (Russia)
*Assessment of microstructural changes in laser-irradiated collagenous tissue samples using OCT-based strain mapping in combination with compressional elastography*
Alexander Moiseev (Russia)
Finite impulse response filter for digital refocusing in optical coherence tomography

Pavel Subochev (Russia)
Wideband PVDF detectors for optoacoustic imaging

Daria Kurakina (Russia)
Optical monitoring for photodynamic therapy of tumors with chlorin based photosensitizers: animal and clinical studies

Nina Mitrakova (Russia)
New opportunities of endoscopic diagnosis of early cancer of stomach

Alena Gavrina (Russia)
Study of tumor cells apoptosis using fluorescence bioimaging and new genetically encoded FLIM/FRET sensor.

Alexandra Gavshina (Russia)
The role of surface cysteine residues of SAASoti -FP

Natalia Gladkova (Russia)
Predictive capacity of optical coherence angiography monitoring for PDT

Maria Karabut (Russia)
Identification of tumor-specific T-lymphocytes in a mouse melanoma model

Elena Kiseleva (Russia)
Determining of the optical and elastic properties of the tissue type in glial brain tumors by multimodal OCT

Natalia Klementieva (Russia)
An isogenic model to study molecular mechanisms of tumorigenesis associated with MEN1 mutation

Anton Plekhanov (Russia)
In vivo detection of tumor response to chemotherapy by optical coherence elastography

Svetlana Rodimova (Russia)
Metabolic imaging of hepatocytes during liver regeneration by multiphoton microscopy

Irina Druzhkova (Russia)
Correlation of chemosensitivity and invasiveness in colorectal cancer cells

19:00-20:00  Dinner (Restaurant "Volga")

20:30-22:00  Sponsor Session
Chairs: Pavel Subochev, Elena Zagaynova

20:30-20:45  Wolfgang Becker (Germany). Multi-Parameter FLIM Provides New Insight into Biological Systems (Becker & Hickl GmbH)

20:45-21:00  Vladimir Shershulin (Russia). STEDYCON is a new class of microscopes (Azimuth Photonics)

21:00-21:15  Andrey Evteev (Russia). Solutions for 3D cell model imaging: acquisition, data management and analysis (BioLine LLC)

21:15-21:30  Fedor Orlov (Russia). Weak optical signal detectors from Hamamatsu Photonics (Hamamatsu Photonics Norden AB)
21:30-21:45
**Vladimir Pleshanov** (Russia). *Super resolution at high speed* (LLC “Optical Systems Alliance”)

21:45-22:00
**Valentin Makarov** (Russia). *Modern method of selecting, sorting, and collecting both individual and groups of cells with 100% purity for powerful genomic analysis* (BioGen-Analytica Ltd)

22:30 *Dancing (Bar-restaurant “Neva”)*

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**Monday, 29 July**

8:00-9:00 *Breakfast (Restaurant “Volga”)*

9:00-12:00 **Uglich. City tour**

12:00-12:30 *Coffee break (Restaurant “Volga”)*

13:00 *Departure from Uglich*

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**HALL A**

12:30-13:00 **Paul Beard** (United Kingdom)
*Photoacoustic imaging in biology and medicine: from light to sound...and back* (plenary)

13:00-13:30 **Irina Larina** (USA)
*Shining light of early development* (plenary)

13:30-14:30 *Lunch (Restaurant “Volga”)*

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<tr>
<th><strong>HALL A</strong></th>
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<tbody>
<tr>
<td><strong>Optical Bioimaging</strong></td>
<td><strong>Biophotonics in Cancer and Stem Cells Research</strong></td>
</tr>
<tr>
<td>14:30-15:40 <strong>Optoacoustic techniques</strong> (Chair: Paul Beard)</td>
<td>14:30-16:25 <strong>Tumor biology: metabolism</strong> (Chair: Ammansi Periasamy)</td>
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14:30-14:50 **Yoshifumi Saijo** (Japan)
*Skin vasculature and its relation with aging assessed by ultrasound-optoacoustic microscopy* (invited)

14:50-15:10 **Martin Frenz** (Switzerland)
*Steps toward an epi-style multimodal quantitative optoacoustic imaging device* (invited)

15:10-15:25 **Pavel Subochev** (Russia)
*Scanning optoacoustic mesoscopy of biological tissues*

15:25-15:40 **Anna Orlova** (Russia)
*Optoacoustic angiography of experimental tumors*

14:30-14:50 **Wolfgang Becker** (Germany)
*Metabolic imaging by simultaneous FLIM of NAD(P)H and FAD* (invited)

14:50-15:10 **Chiara Stringari** (France)
*Label-free metabolic imaging by fluorescence lifetime of intrinsic biomarkers* (invited)

15:10-15:30 **Angelika Rueck** (Germany)
*Metabolic FLIM and Oxygen PLIM in biomedical research* (invited)

15:30-15:50 **Marina Shirmanova** (Russia)
*Understanding cancer’s complexity with multimodal FLIM* (invited)
### Monday, 29 July

#### 15:40-16:35 Optical clearing

**Chair:** Alexander Priezzhev

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<tr>
<th>Time</th>
<th>Speaker</th>
<th>Title</th>
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<tr>
<td>15:40-16:00</td>
<td>Dan Zhu (China)</td>
<td>Optical clearing skull window for cortical neural and vascular imaging (invited)</td>
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<td>15:50-16:10</td>
<td>Mihaela Balu (USA)</td>
<td><em>In-vivo</em> multiphoton microscopy for monitoring and guiding treatment of pigmentary skin disorders (invited)</td>
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<td>16:00-16:20</td>
<td>Vadim Elagin (Russia)</td>
<td>Multiphoton imaging and OCA for in vivo discrimination between benign and malignant melanocytic lesions</td>
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<td>16:20-16:35</td>
<td>Tingting Yu (China)</td>
<td>FDISCO: advanced solvent-based clearing method for imaging whole organs</td>
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<tr>
<td>16:35-17:00</td>
<td>Coffee break (Restaurant &quot;Volga&quot;)</td>
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<td>17:00-20:00</td>
<td>Riverside outings, Sport activities in Koprino</td>
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<td>20:00-21:00</td>
<td>Dinner (Restaurant &quot;Volga&quot;)</td>
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<td>21:30</td>
<td>Musical program (Bar-restaurant &quot;Neva&quot;)</td>
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<td>22:00</td>
<td>Departure from Koprino</td>
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### Tuesday, 30 July

#### 8:00-9:00 Breakfast (Restaurant "Volga")

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<td>9:00-9:30</td>
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<tr>
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<td>Biophotonics in Cancer and Stem Cells Research</td>
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<tr>
<td>10:15-12:00 Translational biophotonics</td>
<td>10:15-11:45 Stem cell biology</td>
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<td>Chair: Ronald Sroka</td>
<td>Chair: Vladimir Baklaushev</td>
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<tr>
<td>10:15-10:35 Alex Vitkin (Canada)</td>
<td>10:15-10:35 Andrei Chagin (Sweden)</td>
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<td>Breast cancer margin assessment using a hybrid technology approach with polarized light + mass spectrometry (invited)</td>
<td>Peripheral glia makes chondro- and osteo-progenitors (invited)</td>
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Tuesday, 30 July

10:35-10:55  
Tatiana Novikova (France)  
*Tissue diagnostics with Mueller polarimetry at macro- and microscale* (invited)

10:55-11:15  
Martin Villiger (USA)  
*Advances in intravascular polarimetry* (invited)

10:35-10:55  
Peter Kharchenko (USA)  
*Joint analysis of heterogeneous single-cell dataset panels* (invited)

11:15-11:30  
Andrei Lugovtsov (Russia)  
*Micro rheologic and viscoelastic studies of red blood cells aggregation and interaction by optical techniques*

11:30-11:45  
Andrian Mamoshin (Russia)  
*Optical fine-needle aspiration biopsy for mini-invasive surgery*

11:45-12:00  
Mikhail Pavlov (Russia)  
*Multimodal ultrasound and optical methods in assessment of the response of breast cancer to neoadjuvant chemotherapy*

11:50  
Coffee break (Restaurant “Volga”)

10:35-10:55  
Anastasia Koroleva (Germany)  
*Development of human iPSCs derived functional neuronal networks on laser fabricated 3D scaffolds* (invited)

11:15-11:30  
Nastasia Kosheleva (Russia)  
*Paradoxes of cell spheroid fusion*

11:30-11:45  
Aleksandra Meleshina (Russia)  
*Optical imaging techniques in the study of the risks and the safety of the biomedical cell products based on stem cells*

12:00  
Coffee break (Restaurant “Volga”)

12:00-12:30  
**HALL A**  
Clinical Biophotonics

12:30-14:00  
**Photodynamic therapy I**  
Chair: Mikhail Kirillin

12:30-12:50  
Herbert Stepp (Germany)  
*Update on interstitial PDT for malignant glioma* (invited)

12:30-12:55  
Peter Timashev (Russia)  
*Russia’s landscape in regenerative medicine* (invited)

12:50-13:10  
Stephen Bown (United Kingdom)  
*Photodynamic therapy for early mouth cancer - battery operated LED light activation with mobile phone fluorescence monitoring* (invited)

12:55-13:15  
Boris Chichkov (Germany)  
*Laser printing of cells and microorganisms for cancer research and therapy* (invited)

13:10-13:25  
Ekaterina Sergeeva (Russia)  
*Combined fluorescence and optoacoustic imaging for monitoring the efficiency of photodynamic therapy with BPD based nanoconstructs*

13:15-13:35  
Yury Rochev (Ireland)  
*Bioresponsive drug delivery systems in intestinal inflammation* (invited)

13:25-13:45  
Buhong Li (China)  
*Enhanced singlet oxygen generation during photodynamic therapy* (invited)

13:35-13:55  
Vladimir Baklaushev (Russia)  
*Nervous tissue engineering as a tool for spinal cord recovery* (invited)
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<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>13:45-14:00</td>
<td>Sergey Gamayunov (Russia) Noninvasive optical imaging for monitoring PDT in clinic (invited)</td>
</tr>
<tr>
<td>13:55-14:10</td>
<td>Daria Kuznetsova (Russia) Label free FLIM and SHG imaging to study liver function and structure</td>
</tr>
<tr>
<td>14:00-15:00</td>
<td>Lunch (Restaurant “Volga”)</td>
</tr>
<tr>
<td>15:00-16:45</td>
<td><strong>HALL A</strong> Clinical Biophotonics</td>
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<tr>
<td></td>
<td><strong>Photodynamic therapy II</strong></td>
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<tr>
<td></td>
<td><strong>Chair: Herbert Stepp</strong></td>
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<tr>
<td>15:00-15:15</td>
<td>Felix Feldchtein (Russia) Optical coherence angiography for basal cell carcinoma photodynamic therapy monitoring</td>
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<tr>
<td>15:15-15:30</td>
<td>Mikhail Kirillin (Russia) Optical monitoring of photodynamic therapy with chlorin based photosensitizers at red and blue wavelengths</td>
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<tr>
<td>15:30-15:45</td>
<td>Christian Heckl (Germany) Intra-operative measurement of optical tissue parameters to individualize treatment planning in stereotactic interstitial PDT of malignant glioma</td>
</tr>
<tr>
<td>15:45-16:00</td>
<td>Aleksandr Khilov (Russia) Dual-wavelength fluorescence imaging for chlorin-based photosensitizer localization and photodynamic therapy monitoring</td>
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<tr>
<td>16:00-16:15</td>
<td>Yueqing Gu (China) Biological detection of reactive oxygen species based on upconversion nanomaterials (invited)</td>
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<tr>
<td>16:15-16:30</td>
<td>Maria Shakhova (Russia) Morphofunctional effects of different photodynamic therapy regimens</td>
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<tr>
<td>16:30-16:45</td>
<td>Stephan Stroebl (Austria) Light distribution of optical fiber diffusers in turbid medium derived from air-based measurement methods</td>
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<tr>
<td>15:00-17:00</td>
<td><strong>HALL B</strong> Biophotonics in Cancer and Stem Cells Research</td>
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<td></td>
<td><strong>Developmental biology</strong></td>
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<td></td>
<td><strong>Chair: Irina Larina</strong></td>
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<tr>
<td>15:00-15:20</td>
<td>Igor Adameyko (Sweden) The enigma of muscle orientation in the body: how do muscles know where to go (invited)</td>
</tr>
<tr>
<td>15:20-15:40</td>
<td>Vyacheslav Dyachuk (Sweden) New transgenic strains of zebrafish for developmental biology and clinical investigations (invited)</td>
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<tr>
<td>15:40-16:00</td>
<td>Artashes Karmenyan (Taiwan) Development of preimplantation mammalian embryos after experimental exposure (invited)</td>
</tr>
<tr>
<td>16:00-16:20</td>
<td>Ross Poche (USA) Imaging of mitochondrial dynamics and cell cycle kinetics during development (invited)</td>
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<tr>
<td>16:20-16:40</td>
<td>Maciej Szkulmowski (Poland) Optical coherence microscopy as a tool for imaging structure and function of mammalian embryos (invited)</td>
</tr>
<tr>
<td>16:40-17:00</td>
<td>Chao Zhou (USA) Optical coherence tomography for high-throughput imaging of 3D engineered tissue and developmental biology (invited)</td>
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<tr>
<td>17:00</td>
<td>Coffee break (Restaurant “Volga”)</td>
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<tr>
<td>17:30</td>
<td><em>Ples, Walking tour</em></td>
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<tr>
<td>20:00</td>
<td>Departure from Ples</td>
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<tr>
<td>20:00</td>
<td>Conference Reception</td>
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<tr>
<td>8:00</td>
<td>Breakfast (Restaurant “Volga”)</td>
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<tr>
<td>9:00-11:05</td>
<td>HALL A: Optical Bioimaging and Clinical Biophotonics</td>
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</tbody>
</table>
| 9:00-11:05| Clinical applications of OCT  
Chair: Felix Feldchtein |
| 9:00-9:20 | Kirill Larin (USA)  
Quantification of tissue mechanical properties with dynamic  
optical coherence elastography: from bench to bedside (invited) |
| 9:20-9:40 | Ralf Brinkmann (Germany)  
OCT guided tumor detection and resection in neurosurgery (invited) |
| 9:40-10:00| Anna Maslennikova (Russia)  
Comprehensive monitoring of the damaging and therapeutic effects on the oral mucosa by multi-functional optical coherence tomography (invited) |
| 10:00-10:20| Hinnerk Schulz-Hildebrandt (Germany)  
Towards optical biopsy by microscopic optical coherence tomography (invited) |
| 10:20-10:35| Tatyana Motovilova (Russia)  
Evaluation of endometrial status in patients with fertility problems using optical coherence tomography |
| 10:35-10:50| Alexei Novozhilov (Russia)  
Optical coherence tomography in diagnostic of otitis media with effusion |
| 10:50-11:05| Vladimir Zaitsev (Russia)  
Application of OCT-based elastography for breast cancer delineation and express assessment of morphological/molecular subtypes |
| 9:00-10:50| HALL B: Biophotonics in Cancer and Stem Cells Research            |
| 9:00-10:50| Tumor biology: FLIM/FRET  
Chair: Marina Shirmanova |
| 9:00-9:20 | Alexander Savitsky (Russia)  
A new solution for the old problem of fluorescence molecular tomography: measurement in lifetime domain and tissue optical clearing combined with MRI (invited) |
| 9:20-9:40 | Alena Rudkouskaya (USA)  
FLIM-FRET as an analytical tool to non-invasively monitor drug internalization in mouse breast cancer model (invited) |
| 9:40-10:00| Ammasi Periasamy (USA)  
Multiphoton metabolic imaging of cancer cells and tissues (invited) |
| 10:00-10:15| Maria Lukina (Russia)  
Metabolic imaging of tumor samples from patients |
| 10:15-10:35| Vladislav Shcheslavskiy (Germany)  
Macroscopic time-resolved fluorescence imaging (invited) |
| 10:35-10:50| Lubov Shimolina (Russia)  
Microviscosity of plasma membrane during chemotherapy of colorectal cancer cells |
<p>| 11:05-11:25| Coffee break (Restaurant “Volga”) |
| 11:10-11:40| Coffee break (Restaurant “Volga”) |</p>
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<thead>
<tr>
<th>Time</th>
<th>HALL A</th>
<th>HALL B</th>
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<tbody>
<tr>
<td>11:25-12:45</td>
<td><strong>Optical Bioimaging</strong></td>
<td><strong>Biophotonics in Cancer and Stem Cells Research</strong></td>
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<tr>
<td>11:25-11:40</td>
<td><strong>Advances in OCT technology</strong></td>
<td>11:40-12:50</td>
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<tr>
<td></td>
<td>Chair: Alex Vitkin</td>
<td>Fluid analysis in cancer research</td>
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<td>11:40-12:00</td>
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<td>Chair: Alexander Savitsky</td>
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<tr>
<td>11:25-12:15</td>
<td><strong>Zhihua Ding (China)</strong></td>
<td>11:40-12:00</td>
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<tr>
<td></td>
<td>Structural and functional optical coherence tomography, technology and applications (invited)</td>
<td>Santhosh Chidangil (India)</td>
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<td>Early detection of cancers by body fluid analysis using ultra-sensitive hyphenated technique: High-performance liquid chromatography-laser-induced fluorescence (invited)</td>
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<td>12:00-12:15</td>
<td><strong>Rainer Leitgeb (Austria)</strong></td>
<td>12:00-12:20</td>
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<td></td>
<td>Digital wavefront manipulation in OCT (invited)</td>
<td>Ekaterina Galanzha (USA)</td>
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<td>Biophotonics for lymphatic theranostics in cancer (invited)</td>
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<td>12:15-12:30</td>
<td><strong>Ping Xue (China)</strong></td>
<td>12:20-12:35</td>
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<td>Optical computing for ultrahigh-speed 3D OCT (invited)</td>
<td>Olga Cherkasova (Russia)</td>
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<td>Cancer blood tests using Raman spectroscopy and machine learning</td>
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<td>12:30-12:45</td>
<td><strong>Pavel Shilyagin (Russia)</strong></td>
<td>12:35-12:50</td>
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<td>Numerical method of correction of axial motion influence on retinal images obtained by spectral domain optical coherence tomography</td>
<td>Galina Afanaseva (Russia)</td>
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<td>Advanced diagnosis of melanoma circulating tumor cells in vitro and in vivo</td>
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<td>13:00</td>
<td>Lunch (Restaurant “Volga”)</td>
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<tr>
<td>14:00-15:10</td>
<td><strong>Optical Bioimaging</strong></td>
<td><strong>Biophotonics in Cancer and Stem Cells Research</strong></td>
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<td>14:00-14:20</td>
<td><strong>Super-resolution microscopy</strong></td>
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<td>Chair: Peter So</td>
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<td>14:20-14:40</td>
<td><strong>Marcel Leutenegger (Germany)</strong></td>
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<td>Photolysis and photoconversion of synthetic fluorophores (invited)</td>
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<td>14:40-14:55</td>
<td><strong>Herbert Schneckenburger (Germany)</strong></td>
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<td>Introducing super-resolution in 3D live cell microscopy (invited)</td>
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<td>14:55-15:10</td>
<td><strong>Junle Qu (China)</strong></td>
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<td>Nanobiophotonics for theranostic applications: nonlinear optical imaging and photodynamic effects (invited)</td>
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<td>14:00-14:20</td>
<td><strong>Victor Loschenov (Russia)</strong></td>
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<td>We change the strategy of the attack on cancer. New targets of PD and PDT (invited)</td>
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<td>14:20-14:35</td>
<td><strong>Layla Pires (Canada)</strong></td>
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<td>New insights on PDT response for nodular and/or pigmented tumors</td>
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<td>14:35-16:00</td>
<td><strong>OCT in cancer research</strong></td>
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<td>Chair: Vladimir Zaitsev</td>
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<tr>
<td>14:35-14:55</td>
<td><strong>Brendan Kennedy (Australia)</strong></td>
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<td></td>
<td>Optical elastography in cancer imaging (invited)</td>
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</tbody>
</table>
HALL A  
Optical Bioimaging and Clinical Biophotonics

15:10-15:15  
**Brian Applegate** (USA)  
*PLGA Encapsulated Methylene Blue as a Contrast Agent for Optical Coherence Tomography* (invited)

15:15-15:30  
**Elena Kiseleva** (Russia)  
*Detection of the myelin fibers direction in different areas of the human brain using cross-polarization OCT*

15:30-15:45  
**Konstantin Yashin** (Russia)  
*Optical coherence tomography grading correlates with diffusion tensor MRI in gliomas*

15:45-16:00  
**Natalia Gladkova** (Russia)  
*Multimodal OCT for malignancy imaging and for predicting of tumor response to treatment*

15:10-17:30  
**Novel techniques for biophotonics**  
*Chair: Ekaterina Borisova*

15:10-15:30  
**Igor Meglinski** (Finland)  
*When does the dynamic light scattering approach fail at broken ergodicity conditions?* (invited)

15:30-15:45  
**Pengcheng Li** (China)  
*Laser speckle techniques for functional optical imaging* (invited)

15:45-16:00  
**Yury Kistenev** (Russia)  
*Cancer tissue analysis using optical imaging and machine learning*

16:00-16:15  
**Andrey Dunaev** (Russia)  
*Laparoscopic laser speckle contrast imaging for real-time mini-invasive surgery: animal studies*

16:15-16:40  
**Coffee break (Restaurant "Volga")**

16:40-17:30  
**Closing ceremony**

18:00  
**Arrival in Nizhny Novgorod**
NIZHNY NOVGOROD

Nizhny Novgorod is called as the third capital and the "pocket of Russia". The city was founded in 1221 by Vladimir-Suzdal Prince Yury Vsevolodovich as a frontier fortress, but after the biggest fair in the country moved here, it became one of the main shopping centers in Russia. There were legends about the wealth and prosperity of Nizhny Novgorod, and its stone Kremlin of the 16th century was never yielded to the onslaught of the besiegers.

There are many unique monuments of history, architecture and culture in the city, which gave UNESCO grounds for including Nizhny Novgorod in the list of 100 cities of world historical and cultural value.

Nizhny Novgorod can boast of over 600 exclusive historical and architectural monuments. What's more, there are many museums here, including particularly outstanding museum complex dedicated to Maxim Gorky, who spent his childhood here. The city even was named in honor of the writer in the period from 1932 to 1990.

As for the historical center of Nizhny Novgorod, it is, first of all, a magnificent red-brick Kremlin with its 13 towers and the ancient Archangel Michael Cathedral, a beautiful Verhnevolzhskaya embankment, Bolshaya Pokrovskaya street with an abundance of interesting sculptures and Rozhdestvenskaya street, the Fedorovsky embankment and the Chkalovskaya staircase.

SIGHTSEEING TOUR IN YAROSLAVL

The pearl of the Golden Ring, an member of the UNESCO List with more than 800 monuments of architecture, the center of Russian merchants and just a very beautiful city that recently celebrated its millennium - all this is Yaroslavl. In its historical center, located in a place where the river Volga and the river Kotorosli meet, you can see pieces of art of the architects of the last five centuries including shopping streets, exchange houses, merchants' mansions and, of course, churches with "branded" emerald doms, topped with openwork gold crosses. It's difficult to count all the interesting things of Yaroslavl: "The Tale of Igor's Campaign" was found in the the Monastery of the Transfiguration of the Savior of Yaroslavl, the Russian theater was born in this city, the poet N.Nekrasov worked here, the first printing house in the Russian province was opened in Yaroslavl, and the brilliant voice of the opera singer Sobinov sounded here.

Today Yaroslavl is one of the centers of Volga tourism with convenient infrastructure, an abundance of attractions and museums, a good choice of hotels for different preferences and budgets and excellent opportunities for outdoor activities like trekking and fishing.
UGLICH INCLUDING VISITING THE CHURCH TSAREVICH DMITRY “ON BLOOD”  

(2.5 hours)

The old Russian town of Uglich is located on the Volga River, in that picturesque place where the Volga River makes a steep turn. The town was named so after this river turn or after the coal mines located here long time ago or after one of the Slavic tribes.

Anyway, the history of Uglich is rich. The most famous history of the city chronicles is the murder of Tsarevich Dmitry, the walls of the local Kremlin still keep the secrets of this tragedy. Uglich seems to have frozen somewhere in the past: there are many ancient churches, monasteries, merchant houses, museums and other sights, and a special atmosphere, cozy, calm, perfect for having meditative rest. Today Uglich is one of the main tourist centers of the Yaroslavl region: it is impossible to pass this town traveling around the Golden Ring.

SIGHTSEEING TOUR OF THE HISTORICAL PART OF PLES  

1.5 hours

IMPORTANT! This excursion is a uphill and downhill walking one. If it’s raining it’s necessary to wear safe shoes as cobbled paths with wet foliage are not safe.

Ples was not such a popular place but one day the talented artist Isaac Levitan chose this town. He was not born here but he was so impressed with it that he lived here for several years. Thanks to his more than 200 pictures that he painted here, other artists, writers and then tourists started coming here. This is the reason why Ples is almost the same place as it was at the time its foundation 600 years ago. People come here for the historical atmosphere: colorful wooden houses over the Volga, the outlines of ancient bell towers and the forest on the hills attract hundreds of thousands of tourists a year here. Nevertheless, it is quiet and clean here. Golden beaches in summer and ski slopes in winter are interesting additions to the typical museums, which there are many in the Volga settlements.
Deck Scheme of “Konstantin Korotkov” Boat
The event is supported financially by the Russian Foundation for Basic Research, project 02-19-20081
Мультифотонный лазерный сканирующий микроскоп Olympus FLUOVIEW FVMPE-RS

Мультифотонный лазерный сканирующий микроскоп Olympus FLUOVIEW FVMPE-RS – разработан для исследований глубоких слоев тканей. Он обеспечивает высокоскоростное получение изображений в течение миллисекунд быстroredующих процессов in vivo и идеальное точное возбуждение высоким уровнем энергии – даже в глубинных слоях тканей.

Конфокальный сверхразрешающий микроскоп на базе диска Нипкова Olympus IXplore SpinSR10

Конфокальный сверхразрешающий микроскоп на базе диска Нипкова Olympus IXplore SpinSR10 - создан для визуализации живых клеток с разрешением 120 нм, сочетает в себе скорость, разрешение и эффективность на единой гибкой платформе. Исследователи могут наблюдать мельчайшие детали и работу внутренних клеточных структур при разрешении, превышающем дифракционный предел, с возможностью простого переключения между сверхразрешением, конфокальными и широкопольными изображениями.

Конфокальный лазерный сканирующий микроскоп Olympus FLUOVIEW FV3000

Конфокальный лазерный сканирующий микроскоп Olympus FLUOVIEW FV3000 разработан для решения самых сложных задач современной науки. Обладая высокой чувствительностью и скоростью, необходимыми для визуализации живых клеток и тканей, FV3000 также обеспечивает интуитивно понятный и адаптируемый интерфейс, а также способен реализовать сложные протоколы скрининга, в том числе и многолуночных планшетов. Серия поддерживает полную функциональность, необходимую для визуализации живых клеток в формате 2D-6D (x, y, z, t, p) а также обработку изображений, таких как деконволюция и анализ.
Микроскопы для различных исследований:
- биологические;
- эпи-флюоресцентные;
- стереомикроскопы;
- поляризационные;
- цифровые;
- металлографические.

Модульные лазерные сканирующие микроскопические системы от компании Thorlabs:
- До 4 каналов возбуждения и детектирования;
- лазер, сопряженный с оптоволокном;
- детекторный модуль на базе ФЭУ (до 4 шт.);
- гальванические / гальвано-резонансные сканеры;
- моторизованное колесо с пинхолами;
- полный кадр - 4096 x 4096 пикселей;
- набор фильтров в комплекте;
- компьютер с монитором и ПО.

Модульные системы для модификации микроскопов

1. Модуль STEDYCON
   - Преобразует эпи-флюоресцентный микроскоп в конфокальный и STED микроскоп;
   - высококачественное 2D STED исполнение
   - не требуется настройка и обслуживание;
   - простое в использовании ПО.

2. Модуль RCM (Re-scan Confocal Microscope)
   - Улучшенное латеральное разрешение: 170 нм;
   - лучшее отношение сигнал/шум
   - квантовая эффективность до 95%;
   - открытая архитектура системы;
   - более глубокое секционирование по Z-оси;
   - высокая чувствительность и низкий шум;

3. Оптический модуль Clarity
   - Конфокальная визуализация без когерентного источника света;
   - минимальное время экспозиции: 10 мс;
   - максимальная скорость кадров: 100 к/с;
   - диапазон возбуждения: 370 - 700 нм;
   - диапазон испускания: 410 - 750 нм.
THUNDER Imaging Systems

Decode 3D Biology in Real Time

The THUNDER Technology
THUNDER is an opto-digital technology that uses the new Computational Clearing method to generate high resolution and high contrast images. THUNDER, a Leica technology, automatically takes all relevant optical parameters into account in order to achieve haze-free results in real time.

Computational Clearing
Computational Clearing efficiently differentiates between signal and background by taking the size of the targeted specimen features into account. This approach makes image details immediately visible which formerly were not revealed.

See through the haze
THUNDER Imagers remove the out-of-focus blur through the new Leica method called Computational Clearing. Now with THUNDER Imagers you can have both high-quality 3D images of thick samples and, at the same time, benefit from the speed and sensitivity like with a widefield system.

Decode 3D biology in real time
Whether single cells, tissues, whole organisms, or tumor spheroids, THUNDER Imagers enable the decoding of 3D biology in real time.

THUNDER Imager 3D Live Cell
THUNDER Imager Model Organism
THUNDER Imager 3D Tissue

BioLine LLC is the official distributor for Leica Microsystems in Russia
БИОГЕН-АНАЛИТИКА, ООО
Поставщик биотехнологического, аналитического и лабораторного оборудования ведущих мировых производителей поставляет высокотехнологичные приборы в научные и исследовательские институты, в медицинские и диагностические лаборатории, а так же в лаборатории контроля качества в России и странах СНГ.

Мы предлагаем широкий перечень оборудования: центрифуги, микроскопы, оборудование для гель-электрофореза, гель-документации и визуализации, анализаторы клеток и частиц, термоциклеры, оборудование для выделения ДНК и секвенаторы, ультра низкотемпературные морозильники и холодильники, многофункциональные климатические камеры, ламинарные шкафы, микробиологические и CO2-инкубаторы, системы хранения в жидком азоте, сухожаровые шкафы, оборудование для генетических и клеточных исследований, клетки для вивариев и оборудование для работы с животными, ингаляционные системы, системы автоматизации лабораторных процессов и доклинических исследований in vivo, включая молекулярную визуализацию, и многое другое.

У нас можно приобрести не только приборы, но и любые запасные части, расходные материалы, реагенты, и получить консультацию высококвалифицированных специалистов, прошедших обучение в компаниях-производителях.

Основными приоритетами нашей компании являются индивидуальный подход к подбору решений тех задач, которые необходимо осуществить нашим коллегам, друзьям или партнерам посредством оборудования, которое мы представляем.

127422, г. Москва, ул. Тимирязевская, д.1, стр.2
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Новый микроскоп исследовательского класса
Nikon Eclipse Ti2
Inverted Microscope System

Новый микроскоп исследовательского класса Nikon Eclipse Ti2 сочетает новейшие технологии построения и дизайна оптической системы, позволяя на единой платформе реализовывать широкий круг исследовательских задач. Микроскоп Eclipse Ti2 обеспечивает беспрецедентное поле обзора препарата 25 мм (FOV). Благодаря этому невероятному показателю, Ti2 позволяет максимально эффективно использовать возможности широкоформатных CMOS-камер и значительно улучшает производительность при получении цифровых изображений.

Компания БиоВитрум является официальным дистрибьютором компании Nikon Instruments, а также ряда других компаний – ведущих производителей компонентов для оптической микроскопии.

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Driven by discovery
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ORCA-Fusion digital CMOS camera
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