

## **New Nikon Centre of Excellence in Super Resolution Microscopy at the Institute of Molecular Genetics of the Academy of Sciences, Czech Republic**

On Tuesday, 21<sup>st</sup> of January, 2014 Nikon Company in the cooperation with the Institute of Molecular Genetics, Czech Academy of Science, will start operation of a new Nikon Centre of Excellence in Super Resolution Microscopy. The Super Resolution Microscopy is a revolutionary microscopic method enabling the observation of the smaller details especially in the cell biology, than it was possible until now with the conventional methods.

The Centre is a part of the European Network of Nikon Centres of Excellence. There only 5 these centres in Europe (IMG Prague, ICFO Barcelona, Koki Budapest, UvA Amsterdam, Stockholm). Therefore we are very proud, that this Centre starts its operation in the Czech Republic, at the Academy of Sciences.

A Nikon Centre of Excellence (NCE) is a partnership and exchange of knowledge with an institute that focuses on a specific area of research. The partnership allows the researchers access to high-end advanced imaging equipment and Nikon technical expertise, and gives Nikon invaluable feedback and input from scientists carrying out cutting edge research, gaining insight into new applications to be able to create the perfect imaging solution.



The Centre has been equipped with the Nikon Biological High End Systems:

- N-SIM – Super Resolution System breaking the optical diffraction limit, based on the Structure Illumination. The system is installed on the Nikon TiE high end research microscope and enables the deep insight into the cell structures. Nikon's N-SIM super resolution microscopy system uses structured illumination techniques to produce images with twice the resolution of conventional optical microscopes. With 2D, 3D and TIRF imaging modes, the Nikon N-SIM allows sub-cellular structure to be clearly imaged at speeds of over 1 frame per second.
- Research Macroscope Nikon AZ100 combinable with the Nikon C2+ confocal system – unique system, enabling the confocal imaging of the large objects in one field of view and by one snapshot.

- Research inverted Nikon Ti-E microscope equipped with a unique Perfect Focus System enabling time lapse experiments, combinable with the Nikon C2+ confocal system.

The Ti-E is the market leading motorised inverted research microscope, designed as a flexible and stable platform for all high end and live cell imaging applications. Designed around Nikon's unique CFI60 optical system, the Ti-E features world-class optical performance and an expandable infinity space, allowing many techniques to be combined on a single microscope including all types of confocal systems.

The award winning Perfect Focus System (PFS) is an established technology in its 3<sup>rd</sup> iteration, exclusive to the Nikon Ti-E. Designed to continually maintain focus by eliminating mechanical, temperature and experimentally derived drift, it enables the capture of time-lapse experiments for 24 hours and beyond.

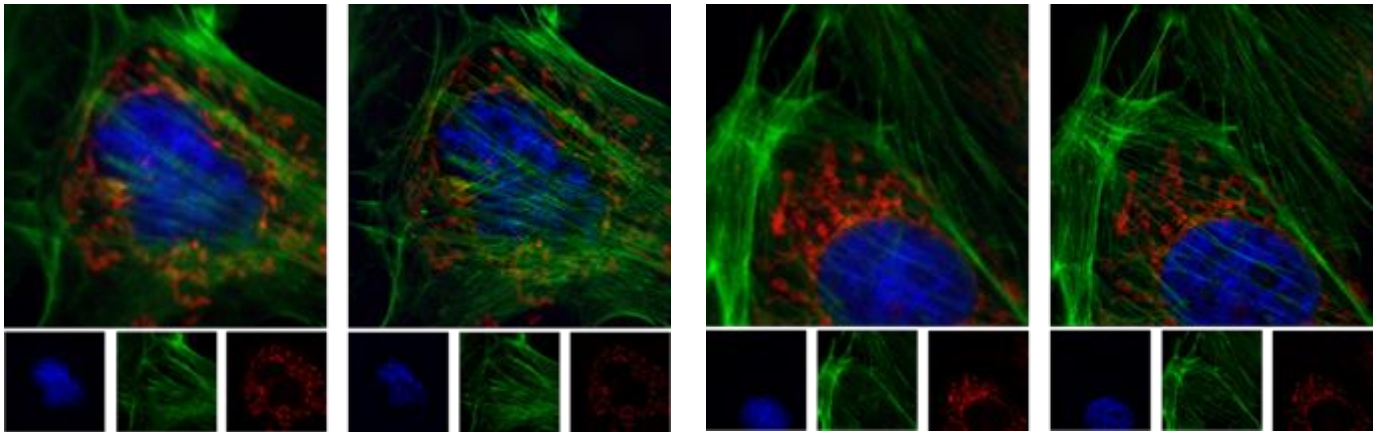
- Research upright microscope Nikon Ni-E, combinable with the NikonC2+.
- Nikon C2+ confocal system.



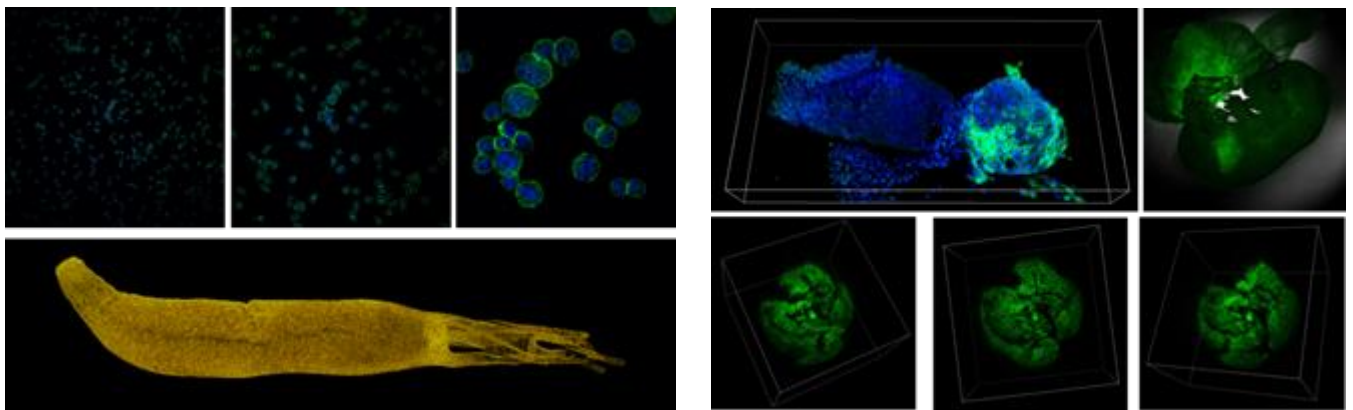
The systems are equipped with the latest technologies that will be available for the broad range of the professional community. We believe that these state-of-the-art technologies will contribute to the next progress in the microscopic research in biology.

The Centre will enable especially:

- Access to the cutting-edge microscopic technologies and equipment, especially to the Super Resolution.
- Training in advanced light microscopy for the scientists and PhD students.



Examples of enhancement of triple stained cells (the left images taken by conventional widefield, the right images by N-SIM method).



Whole-section imaging and micro imaging including imaging of single cells (top) and macro imaging of whole organisms like hydra (bottom) done by the Nikon AZ-C2 Macro Confocal System.

Macro imaging including optical sectioning of whole organisms or tissues. Volume View of a double stained embryo (top left). 2D image of a mouse embryo (top right) and different Volume Views of a liver (bottom) done by the Nikon AZ-C2 Macro Confocal System.

The Nikon Centre of Excellence was opened by Prof. Hořejší who stated: “The purpose of the centre is to combine the technical expertise of the world leading imaging manufacturer and the scientific expertise of the researchers at the Institute of Molecular Genetics. I believe that we will together contribute to the new developments in biomedical sciences”. Mr Sumio Eimori, president of Nikon Europe, in his speech highlighted that Nikon will soon celebrate 100<sup>th</sup> anniversary of the company and not only past, but also the future is very important for Nikon. Placing the Nikon High End microscopical systems in the advanced laboratories as it is in the Institute of Molecular Genetics enables to show all their capabilities and contributes to the next improvement of the excellent products and services of Nikon. The Nikon Centre of Excellence should help Nikon as well as the Institute of Molecular Genetics in future stated Mr. Eimori.



**The following guests participated in the opening ceremony:**

Mr. Sumio Eimori, President Nikon Instruments Europe  
 Prof. Václav Hořejší, PhD., director of the Institute of Molecular Genetics of the Czech Academy of Sciences  
 Prof. Pavel Hozák, Ph.D., D.Sc., head of the Department of the Biology of the Cell Nucleus of the Institute of Molecular Genetics of the Czech Academy of Sciences  
 Mr. Mitsuru KAMEYA, First Secretary, Section for Economic Affairs, Embassy of Japan in the Czech Republic  
 Mr. Seiji NAKAGOSHI, Executive Director, Japanese Chamber of Commerce and Industry in the Czech Republic  
 Mr. Harald Bayer, Area Manager Nikon Instruments Central and Eastern Europe  
 RNDr. Ivan Rozkošný, Ph.D., Sales Manager Nikon Instruments Czech and Slovak Republic



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