



Taras Shevchenko National
University of Kyiv



2nd Annual Undergraduate International School in Biomedical Sciences



**2013 Theme “Calcium Signaling in Health and Disease”
September 19-24, 2013, Ukraine**

Marking the 50th Anniversary of the Department of Biophysics at the Institute of Biology

Our mission:

Internationalization of University education and promotion of biomedical research are the key priorities of participating universities. Thus, in organising this Annual School in Biomedical Sciences the partner universities join their efforts for establishing productive collaborative platform aiming:

- to introduce our students to modern trends and recent major developments in Biomedical research, with important focus on “*from theory to practice*”;
- to facilitate exchange in best international practices of university education;
- to allow our students to experience the excellence and long traditions of university education in the United Kingdom and in the USA;
- to improve practice of lectures in English and to develop English skills of students.

This will undoubtedly contribute to further development of educational, scientific and cultural links between the Ukraine, the United Kingdom and other countries.

Where and when:

Educational and Scientific Centre “Institute of Biology”, Taras Shevchenko National University of Kyiv, 2 Academician Glushkov Avenue, Kiev

<http://biology.univ.kiev.ua/index.php?lang=en>

A.A. Bogomoletz Institute of Physiology, National Academy of Sciences of Ukraine, 4 Bogomoletz Street, Kiev

http://biph.kiev.ua/en/Main_Page

19 – 20 & 23-24 September 2013.

Lesya Ukrainka East European National University, 13 Voli Avenue, Lutsk

<http://eenu.edu.ua/en>

23 September 2013.

Audience:

Undergraduate students, Master students, PhD students, and members of staff are invited to participate

School language: English

School Lecturers:

**Queen's University Belfast,
School of Medicine, Dentistry & Biomedical Science,
Belfast, United Kingdom**

Centre for Vision and Vascular Science

[Prof Graham McGeown](#), Dunville Professor of Physiology, Deputy Head of School of Medicine, Dentistry & Biomedical Sciences

[Prof Alexander Zholos](#), Chair in Vascular Physiology/Vascular Biology

[Dr Timothy Curtis](#), Reader, Associate Director Postgraduate Education

Centre for Cancer Research and Cell Biology

[Dr Karen McCloskey](#), Reader

Centre for Infection and Immunity

[Prof Madeleine Ennis](#), Professor

[Dr Fionnuala Lundy](#), Senior Lecturer

[Dr Lorcan McGarvey](#), Clinical Senior Lecturer

**Naresuan University,
Phitsanulok, Thailand**

[Dr Norman Scholfield](#), Faculty of Pharmaceutical Sciences

**Temple University School of Medicine,
Philadelphia, PA, USA**

[Prof Jonathan Soboloff](#), Associate Professor

Special Guest Lecturers

**University of Liverpool,
Institute of Translational Medicine,
Liverpool, UK**

[Prof Theodor Burdyga](#), Professor

**A.A. Bogomoletz Institute of Physiology
National Academy of Sciences of Ukraine**

[Prof Nickolai Veselovsky](#), Head of Department of Physiology of Neuronal Networks

[Dr Nickolai Kononenko](#), Leading Research Scientist, Laboratory of Molecular Biophysics

Special Host Lecturer

**Educational and Scientific Centre "Institute of Biology"
Taras Shevchenko National University of Kyiv, Ukraine**

[Prof Mykola Miroshnichenko](#), Professor of Department of Biophysics

Please click on the hyperlinks to see the individual web-pages of your
International School teachers

School Programme

Thursday 19 September

9.00-9.30 Coffee and Registration

9.30-10.00 Opening and Welcome. Introduction from the organizers, administration of central University and ESC "Institute of Biology", and Visiting Professors

Introduction to calcium signaling in health and disease

10.00 - 11.00 Dr T. Curtis "Optical imaging and microscopy"

11.00 - 12.00 Prof G. McGeown "Measurement and imaging of intracellular calcium"

12.00 - 12.20 Coffey Break

Mini symposium "Channeling calcium"

12.20 - 13.20 Prof A. Zholos "An introduction to electrophysiology and calcium channelopathies"

13.20 - 14.00 Lunch

14.00 - 15.00 Prof J. Soboloff "STIM and Orai, the molecular mediators of store-operated calcium entry"

15.00 - 16.00 Dr F. Lundy "Novel models to study human TRP channel expression and functionality in the oral cavity"

16.00 - 16.30 Prof G. McGeown "Introduction to The Physiological Society"

16.30 - 16.50 Dr G. Tolstanova "The Physiological Society representation in Ukraine"

20.00 - 23.00 - Welcome get-together

Friday 20 September

Mini symposium "Calcium signaling and calcium homeostasis"

09.00 - 10.00 Prof G. McGeown "Calcium sources and activities"

10.00 - 11.00 Prof J. Soboloff "Converting calcium signals into physiological responses"

11.00 - 11.20 Coffey Break

11.20 - 12.20 Dr K. McCloskey "Ion channels and calcium signaling in cancer"

12.20 - 13.20 Dr T. Curtis "Role of calcium signalling in angiogenesis"

13.20 - 14.00 Lunch

14.00 - 15.00 Dr N. Scholfield "Localisation, microdomains and cell function: Ca²⁺ in cellular organelles"

15.00 - 16.00 Training Modules

How to achieve a successful scientific career - Session I "Communication Skills"

1. Dr N. Scholfield "Research ethics and objectivity in Science. Understanding animal research."

2. Dr F. Lundy "Using human tissue for research purposes"

3. Prof M. Ennis "Research ethics and plagiarism and fraud in science"

4. Dr K. McCloskey "Getting published – a day in the life of a Journal Editor"

Image data storage and analysis - Computer-based Session I

5. Prof A. Zholos "Introduction to image analysis and graphing using Origin and ImageJ"

6. Dr T. Curtis "Olympus Confocal Simulator"

16.00 - 18.00 Student poster session

Nomination of the 1st, 2nd and 3rd "Best poster" awards from The Physiological Society for oral presentations on Tuesday 24 September

Monday 23 September

Session at the A.A. Bogomoletz Institute of Physiology in Kiev

10.00 - 11.00 Special Guest Lecture: Prof T. Burdyga "Heterogeneity of calcium signalling in myocytes and pericytes of ureteric arteriolar and venular networks *in situ*"

Mini symposium "Neuronal signaling and calcium"

11.00 – 12.00 Prof Nikolai Veselovsky "Quantal synaptic transmission and calcium"

11.00 - 12.20 Coffey Break

12.20 - 13.20 Dr Nikolai Kononenko "Circadian clock in mammals"

13.20 - 14.00 Lunch

Training Modules

14.00 - 16.30 Practicals supervised by Oxana Rybachuk, Alexander Dovgan and Christina Sukhanova.
P1. Working with the Olympus and Zeiss confocal imaging systems. Calcium imaging. Confocal immunohistochemistry. Transplantation of neural stem cells after ischemic brain injury *in vitro*.
P2. Introduction to patch-clamp techniques. Patch-clamp recording of ion currents in neurons.
These modules will be organised in several laboratories and participants will be asked to rotate between the laboratories in small groups to be able to get some practical experience and feel for each technique.

Session at Lesya Ukrainka East European National University, Lutsk

11.40 - 12.00 Opening and Welcome from Prof Igor Kotsan, Rector of Lesya Ukrainka East European National University, and Prof Graham McGeown, Deputy Head of School of Medicine, Dentistry & Biomedical Sciences, Queen's University Belfast

12.00 - 13.00 Prof M. Ennis "Mast cells and disease"

13.00 - 14.00 Special Host Lecture marking the 50th Anniversary of Biophysics at Taras Shevchenko University: Prof M. Miroshnichenko, Honorary President of the Ukrainian Biophysical Society "Calcium ions and skeletal muscle contraction-relaxation regulation"

14.00 - 14.30 Coffey Break

14.30 - 15.30 Prof G. McGeown "Calcium signaling and myogenic tone"

followed by Round Table discussions with lecturers, clinicians, researchers and students "Role of vascular disease in morbidity and mortality" (facilitated by G. McGeown, A. Zholos, N. Scholfield, T. Curtis)

15.30 - 16.00 Lunch

16.00 Prof I. Kotsan, President of the Ukrainian Biophysical Society "Strategy and perspectives of the Ukrainian Biophysical Society development"

Tuesday 24 September

Mini symposium "Calcium signaling in disease"

09.00 - 10.00 Prof M. Ennis "Mast cells and calcium"

10.00 - 11.00 Dr L. McGarvey "Respiratory viruses, airway nerves and cough – implications for novel therapy"

11.00 - 11.20 Coffey Break

11.20 - 12.20 Prof A. Zholos "Cholinergic excitation-(Ca²⁺)-contraction coupling in visceral smooth muscles and related disorders"

12.20 - 13.20 Dr N. Scholfield "Calcium and death: apoptosis and neurodegeneration"

13.20 - 14.00 Lunch

14.00 - 15.00 Training Modules

How to achieve a successful scientific career - Session II "Communication Skills"

1. Prof M. Ennis "What makes a good poster" (with reflections on student poster session)

2. Dr L. McGarvey "Thesis writing"

3. Dr K. McCloskey "Career planning and the importance of networking to enhance your research"

4. Dr T. Curtis "Giving a research talk"

Image data storage and analysis - Computer-based Session II

5. Prof A. Zholos & Dr N. Scholfield "Analysis of patch-clamp data"

6. Prof J. Soboloff "Quantitative Ca²⁺ measurements, cytolocalization and FRET analysis"

15.00 - 16.00 Prof. G. McGeown, Dr K. McCloskey and Prof M. Ennis: Research and study opportunities at CVVS, CCRCB and CII, School of Medicine, Dentistry & Biomedical Science, Queen's University Belfast

16.00 - 17.00 3 selected student presentations (1st, 2nd & 3rd winners of the poster session)

17.00 - 18.00 Reception and informal discussions with students

18.00 School closing followed by staff discussion & dinner