

**Polish Children's Fund**  
**Visit at the Nencki Institute of Experimental Biology**  
**7-11.03.2011**

Coordinator dr hab. Anna Wasik phone 58 92 227

**7.03.2011 Nencki Institute presentation for xx person**

**Lectures**

**9.00-10.30**

prof. U. Sławińska

*The history and achievements of the Nencki Institute*

mgr M. Lebedzińska

*A bad and a good thing in one, mitochondrial functions in the cell*

**Visits to selected laboratories (3 groups)**

**10.45-11.30**

- group 1 Lab. of Molecular Neurobiology; prof. L. Kaczmarek
- group 2 Lab. of Cell Signaling and Metabolic Disorders; prof. A. Dobrzyń
- group 3 Lab. of Biochemistry of Lipids; prof. Sławomir Piwocka

**11.30-12.15**

- group 1 Lab. of Biochemistry of Lipids; prof. Sławomir Piwocka
- group 2 Lab. of Molecular Neurobiology; prof. L. Kaczmarek
- group 3 Lab. of Cell Signaling and Metabolic Disorders; prof. A. Dobrzyń

**12.15-13.00**

- group 1 Lab. of Cell Signaling and Metabolic Disorders; prof. A. Dobrzyń
- group 2 Lab. of Biochemistry of Lipids; prof. Sławomir Piwocka
- group 3 Lab. of Molecular Neurobiology; prof. L. Kaczmarek

**Lunch**

**14.00-14.45**

- group 1 Lab. of Signal Transduction; dr Tomasz Wilanowski
- group 2 Lab. of Neurobiology of Development and Evolution; prof. K. Turlejski
- group 3 Lab. of Molecular Bases of Aging; prof. E. Sikora and Lab. of Cytometry; dr Katarzyna Piwocka

**14.45-15.30**

- group 1 Lab. of Molecular Bases of Aging; prof. E. Sikora and Lab. of Cytometry; dr Katarzyna Piwocka
- group 2 Lab. of Signal Transduction; dr Tomasz Wilanowski
- group 3 Lab. of Neurobiology of Development and Evolution; prof. K. Turlejski

**15.30-16.15**

- group 1 Lab. of Neurobiology of Development and Evolution; prof. K. Turlejski
- group 2 Lab. of Molecular Bases of Aging; prof. E. Sikora and Lab. of Cytometry; dr Katarzyna Piwocka
- group 3 Lab. of Signal Transduction; dr Tomasz Wilanowski

## ONE-DAY WORKSHOPS

### DIFFERENCES AND SIMILARITIES – INSIGHT INTO MAMMALIAN BRAIN

LABORATORY OF NEUROBIOLOGY OF DEVELOPMENT AND EVOLUTION

*Head: prof. Krzysztof Turlejski*

Workshop tutors: dr hab. Ruzanna Djavadian, dr Katarzyna Bartkowska, mgr Monika Gajerska

Workshop for 2-3 people

**9.03.2011 (Wednesday) 9.00-16.00**

Presentation of species that are used in our laboratory as model animals: Laboratory mouse (*Mus musculus*), Brazilian opossum (*Monodelphis domestica*), Common shrew (*Sorex araneus*), Laboratory rat (*Rattus norvegicus*).

Sectioning brains (cutting on the kriostat). Sections of the fixed brains will be cut on a cryostat. During this part of workshop visitors will prepare coronal, sagittal and horizontal sections from a mouse brain.

Histological stains – Nissl staining. Visitors will perform the Nissl staining protocol on brain sections of various species (i.e. mouse, rat, opossum, shrew, hedgehog and mole) from our library of sections and compare results.

Behavioral tests – open field. Presentation of one of most the frequently used behavioral tests, the open field test that evaluates both cognitive and emotional components of behavior in animals. During the visit we are going to perform one session of the open field test on a mouse and to analyze main parameters of the animal behavior (e.g. locomotor activity) with the ViewPoint system.

### FUNCTION AND STRUCTURE OF THE MAMMALIAN BRAIN

#### Part 1 Behavior

LABORATORY OF NEUROPSYCHOLOGY

*Head: prof. E. Szela*

Workshop tutors: dr hab. Małgorzata Węsierska, dr Iwona Adamska

Workshop for 4 people

**10.03.2011 (Thursday) 9.00-13.00**

Aim of the workshop is presentation of different kinds of memory using behavioral method - the Place Avoidance Test. The equipment to the Place Avoidance Test together with different variants of this test will be presented in original and video versions.

#### Part 2 Neuroanatomy

LABORATORY OF MOLECULAR AND SYSTEMIC NEUROMORPHOLOGY

*Head: dr Grzegorz Wilczyński*

Workshop tutor: dr Monika Malinowska

Workshop for 4 people

**10.03.2011 (Thursday) 14.00-16.00**

Purpose of the presentation is to study a structure of the nervous tissue and components of the mammalian brain in the functional aspect. The presentation bases on participants own microscopic observations of slides from brains of different mammalian species.

### **HOW TO SEE SINGLE PROTEIN MOLECULE AT WORK: RECORDING ACTIVITY OF MECHANOSENSITIVE CHANNELS FROM BACTERIA**

LABORATORY OF PHYSIOLOGY OF CELL MOVEMENTS

*Head* – prof. Stanisław Fabczak

Workshop tutor: dr Piotr Koprowski

**Workshop for 2 people = 4 people altogether**

**8.03.2010 (Tuesday) 11.00-16.00**

**10.03.2010 (Thursday) 10.00-15.00**

We will start with a mini-lecture during which the subject of electrophysiology, ion and mechanosensitive channels will be presented. The patch-clamp equipment will be presented in the next experimental part during which the activity of mechanosensitive channels will be recorded. The participants will have a hands on experience with bacteria micromanipulation and recording by their own.

### **HOW TO EXPLORE THE INVISIBLE?**

LABORATORY OF CELL SIGNALING AND METABOLIC DISORDERS

*Head:* prof. Agnieszka Dobrzyń

Workshop tutors: mgr Anna Dziewulska, mgr Magdalena Jazurek, mgr

Aleksandra Pyrkowska

**Workshop for 3 people**

**11.03.2010 (Friday) 9.00-13.00**

The aim of the workshop is to introduce participants to methods of protein and lipid analysis and *in vitro* culturing of various mammalian cell lines (i.e. pancreatic  $\beta$ -cells, adipocytes, myotubes and hepatocytes). Students will perform protein electrophoresis on polyacrylamide gels and chromatographic analysis of lipids extracted from various tissues. Furthermore, students will have opportunity to compare morphology of various mammalian cells under light microscope and to perform trypan blue staining in order to distinguish between living and dead cells. Workshop includes preparation of samples and data analysis.

### **CONFOCAL MICROSCOPY: IMAGING TECHNIQUES AND COMPUTER DATA ANALYSIS**

LABORATORY OF CONFOCAL MICROSCOPY

*Head:* prof. Wanda Kłopocka

Workshop tutors: mgr Jarosław Korczyński, mgr Artur Wolny

**Workshop for 2-4 people**

**11.03.2010 (Friday) 9.00-13.00**

Workshop participants become acquainted with operating principles and applications of laser scanning confocal microscopes placed in our Laboratory as well as with methods of samples preparation for this kind of microscopes.

Participants can individually, using our confocal microscopes and fixed specimens, adjust settings of the microscope and acquire images from the region of interest.

At the end participants become acquainted with the newest software for microscope data analysis and they can carry out digital processing of captured images.

## **FREE RADICALS IN CELLS: WHAT ARE THEY FOR? WHERE ARE THEY MADE? HOW DO WE MEASURE THEM?**

LABORATORY OF BIOENERGETICS AND BIOMEMBRANES

*Head:* prof. Jerzy Duszyński

Workshop tutors: dr hab. Joanna Szczepanowska, Dominika Malińska, Małgorzata Bejtka

**Workshop for 5 people**

**11.03.2011 (Friday) 9.00-13.00**

The site of free radicals and reactive oxygen species (ROS) production in the cell. The role of mitochondria. Presentation. Preparation of samples for ROS measurements in cells.

Measurements of ROS in Laser Scanning Cytometer (LSC). Quantitative and qualitative analysis with the use of LSC software.

## **TWO-DAY WORKSHOP**

### **HOW TO MEASURE ENZYME ACTIVITY IN MINERALIZING CELL?**

LABORATORY OF BIOCHEMISTRY OF LIPIDS

*Head:* prof. Sławomir Pikuła

Workshop tutors: dr Agnieszka Strzelecka-Kiliszek, Marta Romiszewska

**2-days workshop for 2-6 persons**

**10.03.2011 (Thursday) 9.00-16.00**

**11.03.2011 (Friday) 9.00-13.00**

The main task of the workshop is to analyze the enzymatic activities of Src and ROCK kinases in human osteosarcoma Saos-2 cells, which are able to mineralize producing extracellular matrix vesicles. Cell cultures will be performed in control and stimulating for mineralization conditions (in the presence of ascorbic acid and beta-glycerophosphate). Cells will be observed under inverted microscope. Then, the cellular extracts will be prepared from cell cultures to measure the protein content using Bradford method. As a next step immunoenzymatic test using ELISA will be utilized to measure in cellular extracts the activities of Src and ROCK kinases.

## **ACTIVITIES FOR 27 PEOPLE**