

# Polish Children's Fund

## Visit at the Nencki Institute of Experimental Biology

### 4-8.03.2013

Coordinator dr hab. Anna Wasik phone no 58 92 227

## BEHAVIORAL WORKSHOPS

### Tuesday

#### BEHAVIOURAL STUDIES OF MEMORY AND COGNITIVE PROCESSES

LABORATORY OF NEUROPSYCHOLOGY

Head: prof. E. Szeląg

Workshop tutors: Prof. Małgorzata Węsierska, Weronika Duda, Joanna M. Sadowska

Workshop for 4 people

4.03.2014 ; 9.00-15.00

The purpose of this course is to present researches of different kinds of memory, attention processes and executive function using diverse variants of Place Avoidance Method. This method will be presented as video presentations and as the Place Avoidance set-up.

The place avoidance test in a modified variant will be presented as a useful tool to study schizophrenia-like symptoms in the animal model.

The role of brain structures will be discussed on the example of selected areas of brain damage. To this end, the histological procedure will be presented to listeners.

#### MAMMALIAN BRAIN-MORPHOLOGY OF THE NERVOUS TISSUE AND THE BRAIN COMPONENTS

LABORATORY OF MOLECULAR AND SYSTEMIC NEUROMORPHOLOGY

Head: dr Grzegorz Wilczyński

Workshop tutor dr Monika Malinowska

Workshop for 4 people

4.03.2014; 15.00-17.00

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.

### Wednesday

#### NISSL STAINING OF THE PERFUSED BRAIN SECTIONS.

LABORATORY OF NEUROBIOLOGY OF DEVELOPMENT AND EVOLUTION

Head: prof. Krzysztof Turlejski

Workshop tutors: Dr Ruzanna Djavadian, Natalia Chłodzińska, Agata Aniszewska

Workshop for 4 people

5.03.2014; 9.00-16.00

1. Coronal, horizontal and sagittal cutting of the perfused brain sections on a cryostat.
2. Nissl staining of the brain sections.
3. Evaluation of the stained sections by microscope.
4. Presentation of the brain sections of different mammalian species stained by immunohistochemistry and histological techniques.

Participants of the workshop will be allowed to take home the preparations they performed.

## **Thursday**

### **ELECTROPHYSIOLOGICAL AND BEHAVIORAL METHODS TO STUDY BRAIN FUNCTIONS.**

LABORATORY OF NEUROPSYCHOLOGY

Head: prof. Elżbieta Szelağ

Workshop tutors: Anna Dacewicz, Kamila Nowak, Anna Oroń, Aneta Szymaszek

**Workshop for 4 people**

**6.03.2014; 9.00-16.00**

The purpose of the workshop is to present an behavioral and EEG method, particularly Event Related Potentials (ERPs) approach. The workshop will be divided in two sections: theoretical and practical. Behavioral methods to study cognitive functions will be explained. Moreover, technical details of the EEG equipment will be presented as well as the information about application of EEG/ ERP methods will be provided.

In the second part of the workshop participants may take part in an EEG experiment and then they will study how to analyze EEG data obtained during the workshop.

## **BIOCHEMICAL WORKSHOPS**

### **Tuesday**

### **DISTURBANCE IN CHOLESTEROL METABOLISM IS A REASON OF DANGEROUS LYSOSOMAL STORAGE DISORDERS DEVELOPMENT.**

LABORATORY OF CELLULAR METABOLISM

Head - Prof. Krzysztof Zabłocki

Leaders: Marcin Woś MSc

**Workshop for 4 people**

**4.03.2014; 9.00-16.00**

The main task of the workshop is to determine cholesterol level both quantitatively and qualitatively in control cells and cells from patients suffering for Niemann-Pick type C disease (NPC). NPC is characterized by abnormal accumulation of cholesterol in compartment of late endosomes/lysosomes. Cells will be observed under inverted microscope. Then, an aliquot of the cells will be fixed and stained with filipine to observe cholesterol accumulation under fluorescent microscope. Second aliquot of the cells will be analyzed to determine the cholesterol concentration using luminescent kit.

### **Wednesday**

### **MITOCHONDRIA FUNCTIONING – TESTS IN LIVING FIBROBLASTS**

LABORATORY OF BIOENERGETICS AND BIOMEMBRANES

Head - prof. Dr hab. Jerzy Duszyński

Instructors: prof. Joanna Szczepanowska, Małgorzata Bejtka MSc, Jarosław Walczak MSc, Aleksandra Wojtala MSc, Małgorzata Partyka MSc, Karolina Drabik MSc

**Workshop for 4 people**

**5.03.2014; 9.00-16.00**

Preparation of cells for experiments. Measurements of mitochondrial mass and inner mitochondrial membrane potential in living cells by Laser Scanning Cytometer. Evaluation of reactive oxygen species level with the use of microplate reader.

## **Thursday**

### **CONFOCAL IMAGING OF CANCER CELLS INVASION IN EXTRACELLULAR MATRIX**

LABORATORY OF BIOCHEMISTRY OF LIPIDS

Head - Prof. dr hab. Sławomir Pikuła

Workshop tutor: mgr Anna Ćmoch

**Workshop for 4 people**

**06.03.2014; 9.00-16.00**

The ability of a cancer cell to undergo migration and invasion allow it to change position within the tissues, which is particularly important for metastasis occurrence. Cellular structures which are responsible for extracellular matrix digestion upon invasion are known as invadopodia. During the workshop students perform immunofluorescent staining of fixed human bone cancer cells (osteosarcoma). To visualize the formation and activity of invadopodia in examined cells two assay will be employed: immunofluorescent staining (using fluorochrome-conjugated antibodies to label the invadopodia markers: cortactin and F-actin) and matrix digestion in situ (fluorescently labeled gelatin). Then preparations will be observed with a confocal microscope. Further analysis of microscopic images and 3D reconstructions will be presented using ImageJ and Imaris software.

## **COMMON WORKSHOP**

## **Friday**

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

LABORATORY OF IMAGING OF TISSUE STRUCTURE AND FUNCTION

Head: dr Tytus Bernaś

Workshop tutors: dr Hanna Sas-Nowosielska, mgr Natalia Nowak, dr Wojciech Brutkowski, mgr Jarosław Korczyński, mgr Artur Wolny

**Workshop for 12 people**

**7.03.2014; 9.00-13.00**

Participants will be familiarized with the basics of fluorescence microscopy placed in our Laboratory as well as with advanced confocal microscopy techniques. 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.