

PMOD Small Animal Image Processing Course (PAP)

Wednesday, September 27, 2017, Zurich, Switzerland

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Overview

The PMOD Small Animal Image Processing Course (PAP) is a 1-day course that focuses on specific aspects of small animal imaging when working with PMOD. The participants will be trained in the processing of small animal data using PMOD and will learn the principles and special techniques required for the meaningful analysis of the uptake in small tissue structures. Presentations will be complemented with guided exercises, during which the trainers and the participants simultaneously process representative data. Additionally, time will be available for working with individual data and for interacting with the trainers.

The participants are required to bring their own notebooks. They will obtain a USB flash key containing the latest PMOD version as well as training data sets. PMOD can be started directly from the key, such that the configuration of the notebook will remain untouched. As a courtesy, the key can be taken home and will work for another two months. This will give the participants the opportunity to complete their studies if needed, and to try the PMOD tools on their own data.

Target Audience and Course Trainers

The audience is expected to be researchers who do preclinical studies on small animals or plan to do so, PET hardware engineers as well as scientists wishing to learn more about end user requirements, researchers and engineers interested in molecular imaging techniques, and so on.

To get optimal benefit from attending, some familiarity with PMOD will be required, particularly with the viewing (base), fusion, and kinetic modeling tools. Participants new to PMOD can acquire such expertise by attending the 2-day PMOD Basic Application Course, and/or by requesting a free, 2-month trial license via the PMOD website and downloading the PMOD Basic Workbook, and by practicing with the example data provided.

The course will be taught by Dr. Geoff Warnock and by other senior PMOD staff. Dr. Warnock is a seasoned PMOD user and expert in the field of small animal research. Beyond PMOD, he is affiliated with University of Zurich and with www.swisstrace.com.

Contents

Main Topics

- **Image pre-processing.** This brief section covers the import of data from different modalities and in different image formats as well as image cropping and image reorientation.
- **Image matching.** Image matching is required to align the images acquired with separate scanners. It will be demonstrated how the different matching options can be applied depending on the available data.
- **Template-based VOI statistics & template creation.** The use of standard VOIs requires the spatial normalization of the subject data to an anatomical template image. PMOD includes both rat and mouse brain VOI templates, and a template creation tool for user-defined VOI templates. The course will show how the subject brain images are normalized, and how the corresponding VOI templates can be applied to calculate the VOI statistics. Template creation will also be demonstrated.
- **Organ segmentation.** Functionally differing parts of organs should be analyzed independently. It will be shown how the PSEG tool can be applied for defining compact tissue clusters with similar kinetics and calculating their organ time-activity curves.
- **Input curves.** Kinetic modeling requires the tracer activity in arterial blood plasma as the input curve. The difficulties with obtaining a usable input curve are discussed and potential solutions explored.
- **Quantitative analysis.** Kinetic analysis is applied to time activity curves. When a suitable model is chosen, the resulting model parameters quantify a physiologic process such as perfusion or glucose consumption, a quantity such as the receptor binding potential or the tracer delivery such as the distribution volume. Models based on arterial input function as well as reference tissue models will be presented.

Work on the Computer, Course Workbook, and Documentation

A participant's notebook should comprise at least 8 GB RAM, and a 64-bit operating system is needed. The display of the notebook should have a resolution of at least 800 pixels in height to support adequate program layouts.

The participants will conduct a number of guided exercises on their notebooks, using the supplied USB flash key. At the outset of the course, the participants will be handed out a course workbook that contains all the exercises presented, together with step-by-step solutions. The course presentations, the course workbook, and the PMOD documentation will all be available on the supplied USB flash key.

Organization

Course Schedule

Wednesday, September 27 09:00 - 17:00

Course Dinner

At the end of the course day, PMOD will offer to all participants a complimentary dinner. The dinner will allow for continuing discussions and for networking among peers in an informal and relaxed setting.

Course Registration and Rates

Registration can be done online, and will be handled on a first-come, first-served basis for a maximal number of 20 participants. The course fee amounts to:

- Regular: EUR 540.- (**Early-Bird, until September 3, 2017**), EUR 590.- (Standard, afterwards)
- Student: EUR 432.- (**Early-Bird, until September 3, 2017**), EUR 472.- (Standard, afterwards)

The fee covers the training lessons and documentation, the USB flash key, lunch, all refreshments during the breaks as well as the course dinner at the end of the training day. After registration, the participants will receive by e-mail a confirmation message with access information and payment directions. Note that the course fee must be paid **within 10 days** after registration (online payment). Thereafter, we reserve the right to offer the place to persons waiting for a vacancy.

The student fee (20% off the regular fee) is applicable to participants from academia who are currently enrolled in a doctoral or other graduate degree program. As a student participant, please perform the standard registration procedure without payment. Then, send your application for the student fee to info@pmod.com. Once accepted, you are invited to proceed with the online payment.

Note that new PMOD license holders are granted a 50% discount on the regular rates.

Course Location

The course will be held at Hotel Continental, Zurich, Switzerland (Stampfenbachstrasse 60, CH-8006 Zurich). The hotel is conveniently located in downtown Zurich, just a 10-minute walk off the main station.

Accommodation

Accommodation is not included in the course fee and must be booked individually. A list of selected hotels near the course location is available on the PMOD website.

Cancellation Policy

The course will be cancelled, if one month prior to the course, not enough enrolments have been done. In that case, the registered participants will be notified and will receive a full refund. If a registered participant has to cancel attendance, he or she will get a refund (fee minus bank expenses) provided that the seat can be filled by another person.

Complementary PMOD Courses

This course is part of a series of PMOD courses all taking place during the same week in Zurich, Switzerland. Further information can be found on the respective course flyers (available on the PMOD website).

Registration for the complementary courses is being handled separately from registration for this course, yet volume discounts do apply on multiple course registrations (see consolidated price list published on the flyer "PMOD Courses in September 2017", available on the PMOD website).