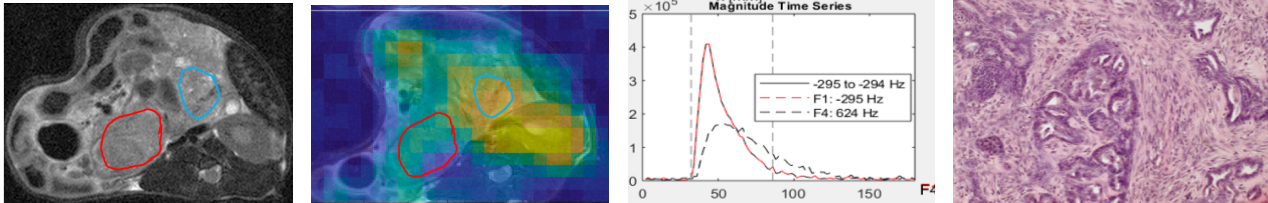


Workshop for PhD Students in Winter Term 2021/22 (4 SWS, 2 ECTS-credits)

Imaging structural and metabolic heterogeneity of cancer.



Description:

Traditionally, oncologic imaging is used to define location and size of the primary tumor (RECIST) as well as detect infiltration of adjacent structures and local or distant spread of cancer cells (TMN). With the advent of more specific therapies, extensive evidence suggests, that these traditional staging criteria are not sufficient and that molecular or morphological subtypes of the cancer should be considered before choosing individual treatment regimen. Multimodal imaging represents one of the promising approaches for non-invasive tumor stratification.

This course is designed to introduce the various imaging modalities and suitable animal models for preclinical studies exemplified by tumor heterogeneity of gastrointestinal and lung cancer. We focus on the clinically available imaging methods CT, PET, DW-MRI and MRSI with hyperpolarized substances. In theoretical lectures, students will learn about physics of different imaging methods and tumor-specific features that can be exploited for imaging. Endogenous and transplanted rodent tumor models and clinical applications of presented methodology will also be discussed. In practical training sessions participants will perform imaging analysis of heterogeneous lung and pancreatic tumors and correlate it with corresponding histology.

Goals:

The overall aim of the workshop is to introduce multiple imaging and image analysis methods available at TUM. Furthermore, pros and cons of different preclinical rodent tumor models (e.g. endogenous versus transplanted) regarding the application of different imaging methods will be discussed. Recent discoveries in subtype stratification, as well as imaging of structural and metabolic heterogeneity of cancer will be presented. Practical skills such as analysis of tumor volume, glucose metabolism and histopathology will be trained.

Requirements:

No previous knowledge is required. This course is designed for students of different doctoral programs at all graduate schools of TUM interested in preclinical and clinical imaging research. Advanced Master students of Biology, Biochemistry, (Bio-)Physics as well as Medical Students are also welcome.

Content:

Workshop consists of one week (35h) of theoretical zoom-lessons, practical trainings in the lab and visits at preclinical as well as clinical research sites. Subsequent 25h are planned for self-studies, exam preparation and writing of a report containing examples from practical training. A written exam will be held on Friday within the workshop week. The report should be sent in within following week.

Registration:

For registration you have to be identified in TUMonline as a student. Workshop Number is 0000000898.