



Newsletter 5

April 16, 2015

Yearly Retreat 2014



At the Yearly Retreat 2014 we worked on the progresses, evaluation and future of the project at the beautiful hotel restaurant Steigenberger Bellerive au Lac in Zurich.



TO₂

KFSP Tumor Oxygenation

Mission

One of our population's main health threats is cancer (25.7% of deaths in Switzerland in 2012). Four out of ten people in Switzerland will contract cancer during their lifetime, with increasing incidence, leading to personal distress and a substantial and rapidly increasing proportion of the healthcare spending. And we still have no sufficient cures.

Today, we know that for cancer diagnosis and treatment, oxygen is one of the most important prognostic biomarkers (i.e. low oxygenation is strongly associated with unfavorable outcomes) and therapeutic targets (i.e. oxygenation highly affects the effectiveness of therapies and therefore the target is to increase tumor oxygenation). So far, the accurate measurement of tumor oxygenation in a non-invasive, non-toxic, yet repetitive manner has not been possible.

The aim of the KFSP Tumor Oxygenation is to provide novel methods of bio photonics, such as 3D near-infrared imaging technologies and fluorescence molecular tomography, BOLD magnetic resonance imaging

(MRI) and positron emission tomography (PET) to image and measure tumor oxygenation and oxygen metabolism in vivo at the animal and human level. Our research focuses on head and neck cancers and might be extended to other important tumor entities at a later stage. The oxygenation of these cancers will be studied before and during surgery, radiotherapy and chemotherapy as well as photodynamic therapy and, ultimately, the therapy will be optimized by being able to predict treatment response before and during therapy. By striving for multidisciplinary medical research, we aim for a personalized approach of cancer treatment that limits harmful side-effects and at the same time provides more effective treatment. Specifically, the KFSP Tumor Oxygenation will provide the tools to better understand, possibly prevent and more effectively treat cancer, thereby reducing social cost and personal distress and increasing the quality of life of cancer patients.

Spotlight



On November 25, 2014 the KFSP Tumor Oxygenation Yearly Retreat 2014 took place at the beautiful hotel restaurant Steigenberger Bellerive au Lac in Zurich.

In addition to presenting progress reports on accomplishments, the next milestones and publications completed, intended and in preparation, the participants discussed the organization of the evaluation on March 16th 2015 and plans for the next potential funding period 2016-2018. Again, Prof. Dr. Urs Lütolf, former Director of the Clinic of Radiation Oncology and Medical Director of the University Hospital Zurich (USZ), acted as a scientific advisor and reviewed the projects' progress. In the evening, all researchers enjoyed delicious catering while discussing the research progresses and future plans.

Evaluation

On March 16, 2015 the KFSP Tumor Oxygenation has been evaluated by the external reviewers Prof. Vincent Gregoire, radiation oncologist at the UCL St-Luc University Hospital in



Brussels/Belgium, and Prof. Dr. Elmar M. Merkle, Head of the Radiology Department at the University Hospital in Basel/Switzerland.

At the evaluation meeting, the PIs of each research group presented their projects and progresses made. We offered the reviewers enough time for asking questions and lively discussions resulted as a consequence. In the evening, the young researchers had the chance to present their progresses on posters and to discuss their projects with the reviewers. The reviewers were impressed by the whole KFSP project's interdisciplinarity and complexity. They will issue their assessment report until the beginning of May 2015 so that the University of Zurich will have a basis for deciding on the prolongation of our KFSP.

In order to make a recommendation to the University of Zurich, the external experts will

evaluate the project with regards to the research quality (originality, potential for innovation), translational aspects and interconnectedness of the involved research groups, measures for junior staff development and equal opportunities for men and women, scientific events and public relations, efforts for acquiring third party funds and adequateness of the requested funding.

Seminar

Forschungskolloquium KFSP Tumor Oxygenation

On November 20, 2014 Prof. Dr. Martin Frenz from the University of Berne gave a speech on "How to determine tissue oxygenation using optoacoustics".

On December 18, 2014 Prof. Dr. Roger Stupp from the University Hospital Zurich gave a



speech on “Translational research: successes and failures between the lab and the bedside”.

On February 19, 2014 Dr. Barbara Apel from the University Hospital Zurich presented a progress report on “Biomarkers”.

On March 19, 2014 Prof. Dr. Beck Schimmer from the University Hospital Zurich gave a speech on “Determination of circulating tumor cells: a new device located at the USZ” and on “Mentoring in academic careers”.

After the seminar, we enjoyed stand-up pizza on site of the lecture hall. Thus, participants stayed and lively discussions took place about the speeches and the respective teams’ research progress.

Special lectures in the framework of the KFSP

We encouraged all researchers involved in the KFSP Tumor Oxygenation to take part in the seminars of the Cancer Network Zurich, available at www.cnz.uzh.ch/Seminars.html.

Publications

Following are the papers that have been or will be published in the framework of the KFSP Tumor Oxygenation from October 2014 until April 2015. A

comprehensive list of all publications from 2012 to 2015 is available on our website: <http://www.to2.uzh.ch/publications.html>

Ahnen L., **Wolf M.**, Hagmann C., **Sanchez S.** Near-Infrared Image Reconstruction of Newborns’ Brains: Robustness to Perturbations of the Source/Detector Location Advances in Experimental Medicine and Biology, in press.

Broggini-Tenzer A., Sharma A., **Nytko K.**, Vuong V., **Orlowski K.**, Hug D., O’Reilly T., **Pruschy M.** Combined Treatment Strategies for Microtubule Stabilizing Agent-Resistant Tumors Journal of National Cancer Institute, in press.

Gander T., Studer S., **Studer G.**, Grätz K.W., **Bredell M.** Medium-Term Outcome of Astra Tech Implants in Head and Neck Oncology Patients International Journal of Oral and Maxillofacial Surgery, 2014, 43(11), 1381-1385..

Gotzamanis G., Kocian R., Oezbay P., Redle R., Spryidion K., Eberhardt C., **Boss A.**, Nanz D., Rossi C. In Vivo Quantification of Cerebral R2*-Response to Graded Hyperoxia at 3 Tesla Journal of Clinical Imaging Science, in press.

Luecker A., **Weber B.**, Jenny P. A Dynamic Model of Oxygen Transport from Capillaries to

Tissue with Moving Red Blood Cells American Journal of Physiology - Heart and Circulatory Physiology, 2015, 308(3), 206-216.

Meller S., Bicker A., Montani M., **Ikenberg K.**, Rostamzadeh B., Sailer V., Wild P., Dietrich D., Uhl B., Sulser T., Moch H., Gorr T.A., Stephan C., Jung K., Hankeln T., Kristiansen G. Myoglobin Expression in Prostate Cancer Is Correlated to Androgen Receptor Expression and Markers of Tumor Hypoxia. Virchows Archiv: An International Journal of Pathology, 2014, 465(4), 419-427.

O’Conner T., **Borsig L.**, Heikenwalder M. CCL2-CCR2 Signaling in Disease Pathogenesis Endocrine, Metabolic and Immune Disorders - Drug Targets (in press).

Pruschy M. The Radiobiological Aspects of Tumor Hypoxia, in Recent Results in Cancer Research, invited book chapter to be published in 2015.

Quandt B.M., Scherer L.J., Boesel L.F., **Wolf M.**, Bona G.L., Rossi R.M. Body-Monitoring and Health Supervision by Means of Optical Fiber-Based Sensing Systems in Medical Textiles Advanced Healthcare Materials, 2015, 4(3), 330-355.

Stieb S., Lang S., Linsenmeier C., Graydon S., **Riesterer O.**



Safety of High-Dose-Rate Stereotactic Body Radiotherapy Radiation Oncology, 2015, 10(27).

Vital D., Morand G., **Huber G.F., Studer G.**, Holzmann D. Outcome in Squamous Cell Carcinoma of the Nasal Vestibule: A Single Center Experience Head & Neck, 2015, 37(1), 46-51.

Further publications by members of the KFSP Tumor Oxygenation have been submitted. Yet further publications are in the process of being issued and planned to be submitted for publication in 2015.

We would like to remind all researchers to mention the KFSP Tumor Oxygenation in the acknowledgement or affiliation of their papers, abstracts, newspaper articles, conference presentations and public speeches in the following form: "This work was supported by the KFSP Tumor Oxygenation of the University of Zurich". Please keep in mind to use the American spelling "tumor" (instead of "tumour").

People

Team Members Who Have Left



Dr. Ilhem El-Kochairi has left the clinical research group of Marius Bredell BChD MBChB MChD at the Clinic of Cranio-maxillofacial and Oral Surgery (USZ) as per end of November 2014. We wish her all the best.



Dr. M. Asim Siddique has left the clinical research group of Marius Bredell BChD MBChB MChD at the Clinic of Cranio-maxillofacial and Oral Surgery (USZ) as per end of December 2014. Dr. M. Asim Siddique's employment was limited to four months as he replaced Dr. Ilhem El-Kochairi during her maternity leave. We wish him all the best.

New Team Members



Since January 2015, Dr. Jutta Ernst is employed as a post doc by the clinical research group of Marius Bredell BChD MBChB MChD at the Clinic of Cranio-maxillofacial and Oral Surgery (USZ). Prior to joining the KFSP Tumor Oxygenation, Dr. Ernst received her PhD in Neuroscience from the Psychiatric University Hospital Zurich in 2014. Prior to receiving her PhD, Dr. Ernst conducted and coordinated several studies at the Psychiatric University Hospital Zurich starting in 2007. Welcome to the team!

Outlook

Summer Retreat 2015

In 2015, the KFSP Tumor Oxygenation will conduct a summer retreat in addition to the yearly winter retreat. The first summer retreat will take place on June 5, 2015 at Lake Side restaurant in Zurich.

In addition to presenting progress reports that address what has been accomplished, what could not be accomplished and what the next research mile-



stones are, the topics of the retreat will include the potential prolongation and future plans of the KFSP.

Winter Retreat 2015

In November 2015, the KFSP Tumor Oxygenation Winter Retreat will take place on a day and in a location that still have to be agreed upon.



Newsletter 6 will appear in October, 2015.

Publishing Information

Editor	KFSP Tumor Oxygenation Steering Committee
Editorial work	Dr. Julia Hillebrandt
Periodicity	2 editions per year
Contact	julia.hillebrandt@usz.ch
Download	www.to2.uzh.ch/newsletter
