



Newsletter 6

October 15, 2015

Summer Retreat 2015



At the Summer Retreat 2015 we worked on the progresses and future of the project at the beautiful Lake Side restaurant 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 biophotonics, 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 July 7, 2015 the KFSP Tumor Oxygenation Summer Retreat 2015 took place at the beautiful Lake Side restaurant in Zurich.

In addition to presenting progress reports on accomplishments, the next milestones and publications completed, intended and in preparation, the participants gave answers to the questions of how they take advantage of the project's multidisciplinary, what they will have completed until December 2015 and what their plans for the next potential funding period 2016-2018 are. 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 a delicious barbecue while discussing the research progresses and future plans.

Seminar

Forschungskolloquium KFSP Tumor Oxygenation

On May 21, 2015 Prof. Dr. Marianne Nordmark from Aarhus University, Denmark gave a speech on "Tumor hypoxia assays and status on clinical implementation".

On August 20, 2015 Marta Nesteruk from the University Hospital Zurich presented a progress report on "Tumor stage, tumor site and HPV dependent correlation of perfusion CT parameters and [18F]-FDG uptake in head and neck squamous cell carcinoma (clinical)".

On September 17, 2015 Prof. Dr. Georgres Wagnières from EPFL Lausanne gave a speech on "Tissue oxygenation by luminescence lifetime spectroscopy".

On October 15, 2015 Prof. Dr. Geoffrey Parker from the University of Manchester gave a speech on "Oxygen-enhanced MRI for non-invasive measurement of tissue oxygenation".

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.

Furthermore, we invited all interested parties to attend the further education "Oral cancer and biology, exploring the interface" given by Prof. Rafi Nagler, senior surgeon in the Oral and Maxillofacial Surgery Department at Rambam Medical Center, Haifa, Israel on September 3, 2015.

Publications

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



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

Lelli A., Nolan K.A., **Santambrogio S.**, Goncalves A.F., Schönenberger M.J., Guinot A., Frew I.J., Marti H.H., Hoogewijs D., **Wenger R.H.** Induction of Long Noncoding RNA MALAT1 in Hypoxic Mice, *Hypoxia*, 2015, 3, 45-52.

Müller-Edenborn K., Léger K., **Glaus Garzon J.F.**, Oertli C., Mirsaidi A., Richards P.J., Rehrauer H., Spielmann P., Hoogewijs D., **Borsig L.**, Hottiger M.O., **Wenger R.H.** Hypoxia Attenuates the Proinflammatory Response in Colon Cancer Cells by Regulating IκB, *Oncotarget*, 2015, 6(24), 20288-20301.

Nesteruk M., Lang S., Veit-Haibach P., **Studer G.**, **Stieb S.**, Glatz S., Hemmatazad H., **Ikenberg K.**, **Huber G.**, **Pruschy M.**, Guckenberger M., Klöck S., **Riesterer O.** Tumor Stage, Tumor Site and HPV Dependent Correlation of Perfusion CT Parameters and [18F]-FDG Uptake in Head and Neck Squamous Cell Carcinoma, *Radiotherapy and Oncology*, 2015.

Schörg A., **Santambrogio S.**, Platt J.L., Schödel J., Lindenmeyer M.T., Cohen C.D., Schrödter K., Mole D.R., **Wenger R.H.**, Hoogewijs D. Destruction of a Distal Hypoxia Response Element Abolishes Trans-activation of the PAG1 Gene

Mediated by HIF-independent Chromatin Looping, *Nucleic Acids Research*, 2015, 43(12), 5810-5823.

Wenger R.H., Kurtcuoglu V., Scholz C.C., Marti H.H., Hoogewijs D. Frequently Asked Questions in Hypoxia Research, *Hypoxia*, 2015, 3, 35-43.

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 2015/2016.

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. Barbara Apel has left the clinical pathology research group of Dr. Kristian Ikenberg at the Institute of Clinical Pathology (USZ) as per end of June 2015. We wish her all the best.



Dr. Desirée Schumann 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 August 2015. We wish her all the best.



Dr. Sonja Stieb has left the clinical research group of PD Dr. Oliver Riesterer at the Clinic of Radiation Oncology (USZ) as per end of August 2015. We wish her all the best.



New Team Members

inform us about grant applications that were submitted.



Since May 2015, Ivo Grgic is employed as a PhD student at the preclinical research group of Prof. Dr. Martin Pruschy at the Clinic of Radiation Oncology (USZ). Prior to joining the KFSP Tumor Oxygenation, he studied Pharmaceutical Sciences BSc (2009-2012) and Medicinal Industrial Pharmaceutical Sciences MSc (2012-2014) at ETH Zurich.

Outlook

Winter Retreat 2015

In January 2016, the KFSP Tumor Oxygenation Winter Retreat will take place.

Additional Funding

We would like to encourage all members of the KFSP Tumor Oxygenation to apply for additional funding based on the excellent work that has been completed so far (a great thank you from the directors!). Please



Newsletter 7 will appear in April, 2016.

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
