

Million Euro Funding for Improved Imaging and Radiotherapy in Cancer Treatment

Cancer patients shall receive more specific and gentler treatment in the future. This is the goal of six partners from research and industry which are concentrating their expertise in radiation therapy, imaging diagnostics and software development by forming a consortium, "DOT-MOBI". The Federal Ministry of Education and Research (BMBF) will provide funds of 6.9 million euros for the project. Participating partners in Heidelberg are the German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ), and the University Hospitals with its Department of Radiology and the Ion Radiation Therapy Center (HIT).

Successful radiation therapy of cancer relies on the highest quality in diagnostic imaging. Thus, to plan radiation treatment, the spatial dimensions of a tumor are captured by CT and MRI scans. Imaging is also indispensable for monitoring treatment progression and in follow-up care.

Today, approximately every second cancer patient receives radiation therapy. The success in curing cancer by radiotherapy may be further improved by defining the tumor borders more precisely and directing radiation even more specifically onto the tumor. A science consortium consisting of six partners with recognized expertise in imaging, radiation therapy and software development has set itself the goal to ensure that patients will benefit even more from radiotherapy in the future. The German Ministry of Education and Research (BMBF) will support the project within its funding program *Mensch-Technik-Interaktionen* (Man-Technology-Interactions) with 6.9 million euros. Of these, 2.75 million euros will go to the Heidelberg partners DKFZ and University Hospitals.

In Heidelberg, scientists from DKFZ and the University Hospitals are working to translate the physiological function and chemical composition of tissues into imaging information. Thus, it is possible to visualize a lack of oxygen in tumors with poor blood supply using positron emission tomography (PET), while nuclear magnetic resonance spectroscopy can provide clues of tumor-typical molecules.

In another part of the project, researchers from DKFZ and the University Hospitals are collaborating with the Fraunhofer Institute for Technical and Industrial Mathematics (Fraunhofer Institut für Techno- und Wirtschaftsmathematik, FITW) in Kaiserslautern. The aim is to improve mathematical optimization methods for therapy planning in order to direct the radiation even more precisely onto the tumor. Furthermore, working together with MeVis Medical Solutions and Fraunhofer MEVIS in Bremen, DKFZ computer scientists are working to solve a key problem in radiological diagnostics: The different imaging technologies produce for each patient gigantic data files which are not compatible among each other. The solution will be a special software platform that unites and standardizes these data.

Jointly with colleagues at the Heidelberg Ion Radiation Therapy Center (HIT), scientists from DKFZ and the Heidelberg University Hospital, Department of Radiology are studying, using imaging technology, the exact dose positioning in patients and how tumors respond to heavy ion therapy.

"In order to achieve the best possible chances of cure for our patients, all diagnostic and radiotherapy methods need to be perfectly interlocked and adjusted to each other," says Dr. Dr. Christian Thieke, project head of DOT-MOBI at DKFZ, explaining the common goal of all consortium partners.

Project partners of the DOT-MOBI consortium:

MeVis Medical Solutions AG, Bremen
Deutsches Krebsforschungszentrum, Heidelberg
Fraunhofer MEVIS Institute für Medical Image Computing, Bremen
Fraunhofer Institut für Techno- und Wirtschaftsmathematik, Kaiserslautern
Universitätsklinikum Heidelberg
Heidelberger Ionenstrahl-Therapiezentrum (HIT) GmbH

Associated: Siemens Healthcare AG, Erlangen

DOT-MOBI:

Software platform for multimodal diagnosis of oncological diseases and treatment optimization by molecular imaging

An illustration accompanying this press release is available at:

<http://www.dkfz.de/de/presse/pressemitteilungen/2009/images/PET-CT-Hirntumor.jpg>

Figure caption:

Representation of a brain tumor by CT and PET. The colored contours are used for planning radiation therapy.

The German Cancer Research Center (Deutsches Krebsforschungszentrum, DKFZ) is the largest biomedical research institute in Germany and is a member of the Helmholtz Association of National Research Centers. More than 2,000 staff members, including 850 scientists, are investigating the mechanisms of cancer and are working to identify cancer risk factors. They provide the foundations for developing novel approaches in the prevention, diagnosis, and treatment of cancer. In addition, the staff of the Cancer Information Service (KID) offers information about the widespread disease of cancer for patients, their families, and the general public. The Center is funded by the German Federal Ministry of Education and Research (90%) and the State of Baden-Württemberg (10%).

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