Novel method for fighting tumors

Making existing cancer therapy more efficient while significantly reducing the side effects on healthy tissue - this is the aim of a project by Prof. Dr. Andreas Walter, who teaches and researches at Aalen University. It is being funded with one million euros from the Carl Zeiss Foundation. The biophysicist and his team are developing innovative nanoparticles made of gold. The particles use radiotherapy and chemotherapy simultaneously and kill the cancer cells in a targeted manner. For the evaluation, cross-scale imaging methods are being developed at Aalen University.

Targeted killing of cancer cells

As part of a call for proposals by the Carl Zeiss Foundation in the thematic focus "Life Science Technologies", four projects received a funding commitment totaling four million euros for innovative surfaces in medicine - including the working group of Prof. Dr. Andreas Walter, part of the Aalen School of Applied Photonics and the Center for Optical Technologies (ZOT) at Aalen University. Aalen is one of four universities to receive one million euros for research at the interface of medicine and engineering sciences over the next three years. "When cancer is treated with radiation or chemotherapy, healthy cells are also damaged. With a new way of fighting tumors, our project aims to kill cancer cells in a targeted and more efficient way than before and reduce side effects on healthy tissue," says Prof. Dr. Andreas Walter.

Novel nanoparticles made of gold

The "NanoLYRIC" project at Aalen University involves the development of novel nanoparticles made of gold that are loaded with chemotherapeutic agents. During radiotherapy, these absorb more radiation into the tumor tissue and only release the chemotherapeutic agents selectively and only in the tumor when irradiated. This simultaneous combination of radiotherapy and chemotherapy, mediated by the nanoparticles, enhances the effect of the cancer therapy by selectively killing only the cancer cells and sparing healthy tissue. The project includes studies on breast cancer cells taken from the tissue of animal models. Cross-scale imaging methods are used for the evaluation.

Biomedical imaging

"Our aim is to reduce the side effects of the therapy on healthy tissue and thus on the organism as a whole, while at the same time improving therapeutic efficacy and thus increasing patients' quality of life and chances of survival," says Walter, who is delighted to receive the funding. Born in Mainz, Walter was appointed to the professorship for Biomedical Imaging and Biophotonics at Aalen University two years ago. After studying physics with a focus on biophysics at Heidelberg's Ruprecht-Karls University and completing his doctorate at the Max Planck Institute of Biophysics in Frankfurt, Walter worked for several years in Vienna as Director of the Austrian BioImaging/Correlated Multimodal Imaging Node Austria (CMI). This is a joint initiative of leading Austrian experts in the field of imaging in the life sciences.

Leave a footprint

Walter also particularly appreciates the interdisciplinary nature of his field of research: "To find new solutions here, doctors, scientists, bioscientists and engineers have to work together. It's just incredibly exciting!" He finds it particularly motivating that he can leave a footprint with his research in which "I can improve or simplify something and which has social relevance."

About the Carl Zeiss Foundation

The Carl Zeiss Foundation has set itself the goal of creating scope for scientific breakthroughs. As a partner of excellent science, it supports basic research as well as application-oriented research and teaching in the STEM disciplines (mathematics, computer science, natural sciences and technology). Founded in 1889 by the physicist and mathematician

Ernst Abbe, the Carl Zeiss Foundation is one of the oldest and largest private science-promoting foundations in Germany. It is the sole owner of Carl Zeiss AG and Schott AG. Its projects are financed from the dividends distributed by the two foundation companies.

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Further information

- Hochschule Aalen - Technik und Wirtschaft