

Dear TUM friends and associates,

An unconventional mindset free from the constraints of individual subject areas, with people at the heart of our aspirations – these are the cornerstones of the TUM Agenda 2030, which is guiding the transformation of our research and education. The TUM Innovation Networks act as focal points for creative research. They provide the scope to adopt visionary research approaches, explore uncharted scientific territory and put potential to the test.

In this issue of Faszination Forschung, you'll get to know two creative minds who serve as spokespeople for individual Innovation Networks. Simon Jacob works with researchers in the fields of medicine, natural sciences and informatics to understand complex brain functions such as language and develop methods to help stroke patients to regain the power of speech. Angela Casini is conversant with the untapped potential that inorganic chemistry holds for the development of novel drugs. She uses organometallic complexes to deliberately inhibit the flow of water through tiny channels in cell membranes, an approach that could lead to new cancer medications.

Hendrik Dietz is developing an innovative technology for the fight against viruses, namely encapsulating viruses in tiny DNA shells. Virologist Ulrike Protzer believes this is an exciting approach that could render even novel viruses harmless.

Additive manufacturing is already employed in numerous fields. This technology enables the development of new designs and the use of new materials. Katrin Wudy analyzes the entire process, from materials development through to quality management. Artificial intelligence is considered a valuable tool in the evaluation of immense volumes of data. Xiaoxiang Zhu harnesses AI to identify relationships and as yet unknown phenomena in earth observation. She develops algorithms supporting the analysis of satellite data.

Antonia Wachter-Zeh has dedicated her work to data protection. She looks ahead to the age of quantum computing, which will require new encryption methods. Her error-correcting codes are designed to repel attacks from quantum computers. Gil Westmeyer is striving to understand how learning processes function at the neural level. By deploying new markers for electron microscopy, he is making molecular processes in nerve cells visible.



When translated into products, research becomes practical, tangible and usable. Mahmoud Masri has developed a process to extract oil from yeast cultures – as an alternative to palm oil. He has founded a start-up with the aim of producing yeast oil in large-scale bioreactors in the near future.

I am certain that this issue of Faszination Forschung will once again provide exciting insights into our researchers' ideas and innovations. I hope you enjoy reading our latest issue!

Yours sincerely,

Thomas F. Hofmann
President