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Press release

Nationales Centrum für Tumorerkrankungen Dresden (NCT/UCC)

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Forbes "30 under 30": UKD physician Fiona Kolbinger is one of the most promising young scientists

In December, Forbes magazine named Dr. Fiona Kolbinger one of the most influential young scientists on its famous "30 under 30 North America 2025" list. With her research at the interface between surgery, data science and computer science, Kolbinger is developing pioneering AI methods for improved treatment in difficult operations.

Every year, the US media company Forbes publishes lists of the most influential young people under the age of 30: from technology, AI, science and health to education, social media and entertainment. The 29-year-old physician Fiona Kolbinger, who works both as a research professor at Purdue University (Indiana, USA) and at the University Hospital Carl Gustav Carus in the Clinic and Polyclinic for Visceral, Thoracic and Vascular Surgery (VTG), is one of the most important personalities of the coming year in the opinion of the jury with her scientific work.

Kolbinger's goal is to integrate AI methods into surgical patient care. The AI tools she has developed can predict the ideal treatment approach based on patient data that is known before an operation, such as age, gender or comorbidities. This makes it possible to select customized treatment approaches with the highest probability of success. During operations, special video analysis software is used to visualize structures such as blood vessels and nerves in real time. "This intraoperative image recognition helps to identify important anatomical target and risk structures during minimally invasive operations," explains the young scientist.

If anatomical structures are not recognized or misinterpreted during a surgical procedure, this can lead to complications. This type of error is one of the most common causes of complications in minimally invasive operations in the abdominal cavity, which are performed through small incisions and using video images from the surgical camera. The new AI methods were developed and tested in collaboration with Prof. Stefanie Speidel, Head of the Department of Translational Surgical Oncology at the National Center for Tumor Diseases (NCT/UCC) Dresden, and Prof. Jürgen Weitz, Director of the Clinic for Visceral, Thoracic and Vascular Surgery.

"As part of our studies, the programs were trained to recognize eleven structures that are particularly relevant for colon cancer operations, such as the ureter, pancreas, small intestine and colon," explains Kolbinger. The researchers then tested the performance of the program using the pancreas as an example in comparison with 28 human test subjects. The artificial intelligence recognized the organ just as well as surgeons with more than ten years of experience in minimally invasive surgery.

"The success of a cancer operation - especially long-term survival and quality of life - depends crucially on the precision of the surgery and therefore in particular on the experience and skill of the surgeon. Fiona Kolbinger's research could improve the overall quality of surgery in the long term," emphasizes Prof. Jürgen Weitz.

"Fiona Kolbinger is an exceptional talent who combines surgery and AI in an innovative way in order to create added value for patients with her interdisciplinary research," says Prof. Stefanie Speidel, praising the young scientist.

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Personal details:

Fiona Kolbinger studied medicine at Heidelberg University. After completing her doctorate at the German Cancer Research Center (DKFZ), she worked as a physician at the Clinic and Polyclinic for Visceral, Thoracic and Vascular Surgery at the University Hospital Carl Gustav Carus Dresden and conducted research in Prof. Stefanie Speidel's group at the National Center for Tumor Diseases (NCT/UCC) Dresden and the Else Kröner Fresenius Center for Digital Health (EKFZ) at TU Dresden on AI-based image recognition models during minimally invasive surgery. Since 2023 she leads an independent research group at Purdue University (USA) as Research Assistant Professor.

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