



## Press Release

### Radiology researcher receives Humboldt Foundation Sofja Kovalevskaja Award

**André Martins advances biomedical imaging of tumor cell metabolism at Tübingen University Hospitals – New approaches for personalized medicine**

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André Martins.  
Photo: Michael Damböck

Dr. André Martins from the Department of Radiology at the Tübingen University Hospitals is one of this year's recipients of the Alexander von Humboldt Foundation's Sofja Kovalevskaja Award. This award, one of the highest endowed science awards in Germany, honors talented early-career international researchers. It provides up to 1.65 million euros for a five-year research project and enables establishing an independent research group at a research institution in Germany. Mar-

tins, an expert in non-invasive biomedical imaging, has been leading his research group – Hyperpolarized Metabolism & Multimodal Imaging Sciences – at the Department of Preclinical Imaging and Radiopharmacy since 2019. This department, headed by Professor Bernd Pichler, is also the host institution for the Kovalevskaja Award-winning project.

André Martins' team is interested in understanding relevant paradigms in human pathology and physiology through accurate non-invasive biomedical imaging. The team uses highly translational molecular and metabolic imaging approaches to determine the role of metabolism in various diseases. His research is placed at the intersection of several scientific fields in oncology, biomedical imaging, and basic sciences in biophysics, biochemistry, and chemistry. Martins' team is also working in the development of the next generation of non-invasive metabolic sensors for biomedical imaging, for example, biomarkers of metabolism in cancer senescence, diabetes, stroke or inflammation, and immunology.

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## **Cancer research project**

With the funding of 1.65 million euros from the Sofja Kovalevskaja Award, Martins plans to focus research on metabolic tumor heterogeneity. The tumor microenvironment is a heterogeneous space composed of different cells, metabolites, and molecules that can confer evolutionary advantages to the tumor. The aberrant metabolism of cancer cells leads to alterations in the local tumor microenvironment. Martins hopes to clarify the metabolic factors that influence tumor aggressiveness as potential indicators of cancer malignancy. To this end, he uses non-invasive high-tech imaging methods, machine learning, and clinically translatable smart metabolic sensors. The project aims to open up new paths in personalized medicine by identifying metabolic factors that influence the resistance of individual tumors to treatment.

André Martins earned a joint Ph. D. degree in Chemistry and Biochemistry at the University of Coimbra in Portugal and at the University of Orléans in France. He then worked as a Research Associate scientist at the University of Texas (UT) in Dallas and the UT Southwestern Medical Center in Texas, USA. During this time, Martins deepened his interest in molecular imaging and smart sensors for Magnetic Resonance Imaging, including innovative zinc sensors that found application in diabetes and prostate cancer. In 2019, he moved to the University Hospital of Tübingen as a Research Group Leader.

The Sofja Kovalevskaja Award was inaugurated in 2002. It goes to early-career researchers. The aim is to integrate internationally sought-after research talents into collaboration with researchers in Germany at the beginning of a promising career. Awards are given for outstanding talent and creative research approaches. The prize is funded by the German Ministry of Education and Research and is named after the Russian mathematician Sofja Kovalevskaja, born in 1850. She received her doctorate in 1874 at Göttingen University with a dissertation entitled "On the Theory of Partial Differential Equations" and in 1889 she was appointed a full professor of mathematics at Stockholm University.

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