

# Iron complexes as an alternative to gadolinium-based contrast agents for magnetic resonance imaging



PRINCIPLE INVESTIGATORS:

**Eyk Schellenberger, Fei Ni, Akvile Häckel, Hamidreza Hojjat**  
Charité



MedTech



Surgery & Neurology

## SUMMARY

Gadolinium (Gd)-based contrast agents are the most widely used compounds in MRI imaging. However, after decades of clinical use, severe side effects have been reported, including the accumulation of Gd in multiple organs.

Gd is a toxic heavy metal that does not naturally occur in the human body. Therefore, the team is working to develop safer, iron-based contrast agents, which can leverage the body's intrinsic physiological metabolic and excretion systems. They have already demonstrated that their compounds can provide T1 contrast comparable to Gd-based standard agents.

Furthermore, reducing the use of Gd can also help decrease its accumulation in waste and groundwater, thereby mitigating potential environmental contamination.

## PROJECT GOALS

- Test the long-term stability of their lead compounds.
- Test toxicity *in vitro* and *in-vivo* with GMP-like compounds.

## LONG-TERM GOALS

- Preclinical study and validation
- Collaboration with industry partner