

Novel heavy metal complexes as *ex-vivo* contrast agents for computed tomography scanning of biological samples

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CHALLENGE

One major limitation of conventional histological/pathological methods for diagnostic purposes in a clinical setting is the production of 2D images obtained by destructive preparation of 3D tissue samples. X-ray imaging techniques, such as micro computed tomography (μ CT) allow for non-destructive 3D tissue imaging. However, for the visualization of morphological details in biological samples μ CT is limited by the lack of contrast in soft tissue samples. Particularly, it is very challenging to obtain homogenous staining in large biological samples with conventional staining methods, due to diffusion problems.

INNOVATION

Novel contrast agents for computed tomography scanning of biological samples allow for homogeneous tissue staining resulting in drastic contrast enhancement required for detailed 3D tissue imaging. Structural details such as cell nuclei are preserved and can be visualized using commercially available μ CT setups at high resolution. The staining protocol produces superb contrast in 3D tissue samples without influencing conventional histological methods.

COMMERCIAL OPPORTUNITIES

The innovation is applicable in the entire field of 3D histology and pathology with subsequent X-ray imaging. Potential applications are:

- Tumor diagnostics
- Detection of 3D anatomy
- Staining of tissue samples in agriculture and forestry

DEVELOPMENT STATUS

Proof of concept. Staining of soft tissues with subsequent μ CT analysis suitable for diagnostic 3D screening.



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