Non-invasive whole-body imaging of adult zebrafish with optoacoustic tomography.

Abstract:
Zebrafish has emerged as an excellent vertebrate model organism for studies of evolution, development and disease. Due to its external development and optical transparency in embryonic stages, zebrafish offers a major advantage over other vertebrate model organisms by being amenable for microscopic studies of biological processes within their natural environment directly in the living organism. However, commonly used zebrafish strains lose their transparency within their first two weeks of development and thus are no longer accessible for optical imaging approaches at juvenile or adult stages. In this study we successfully apply optoacoustic imaging for non-invasive three-dimensional imaging of adult zebrafish. Since optoacoustics does not necessarily require labeling, but can instead rely on the intrinsic tissue contrast, this imaging method has the potential to become a versatile tool for developmental studies from juvenile to adult stages in the intact zebrafish.

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