In vivo cardiac imaging of calcium transients and action potentials in zebrafish larvae

Commonly used acronym: *ZebrafishHeart*

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Organisation

Name of the organisation University of Antwerp (UAntwerpen)
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Specific Research Group or Service Cardiogenetics research group
Country Belgium
Geographical Area Flemish Region

SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research
Type of method	In vivo
Used species	Danio rerio
Targeted organ system or type of research	Heart

DESCRIPTION

Method keywords

Genetically encoded voltage indicator
genetically encoded calium indicator
light sheet imaging
in vivo imaging

Scientific area keywords

cardiovascular disorders
cardiac arrhythmia
Heart
Cardiogenetics

Method description

We developed a transgenic zebrafish line that expresses a genetically encoded calcium and voltage indicator in the heart, allowing us to assess cardiac action potentials and

calcium transients *in vivo* at real time by analysing changes in fluorescent signal.

Lab equipment

High speed light sheet microscope,
zebrafish facility.

Method status

Internally validated

PROS, CONS & FUTURE POTENTIAL

Advantages

The method allows for *in vivo* assessment of cardiac action potentials and calcium transients in a whole organism.

Challenges

Not all human genes have a zebrafish orthologue and the zebrafish heart only has two chambers (compared to four of the human heart). As such, one needs to acknowlegde the differences between human and zebrafish.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

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