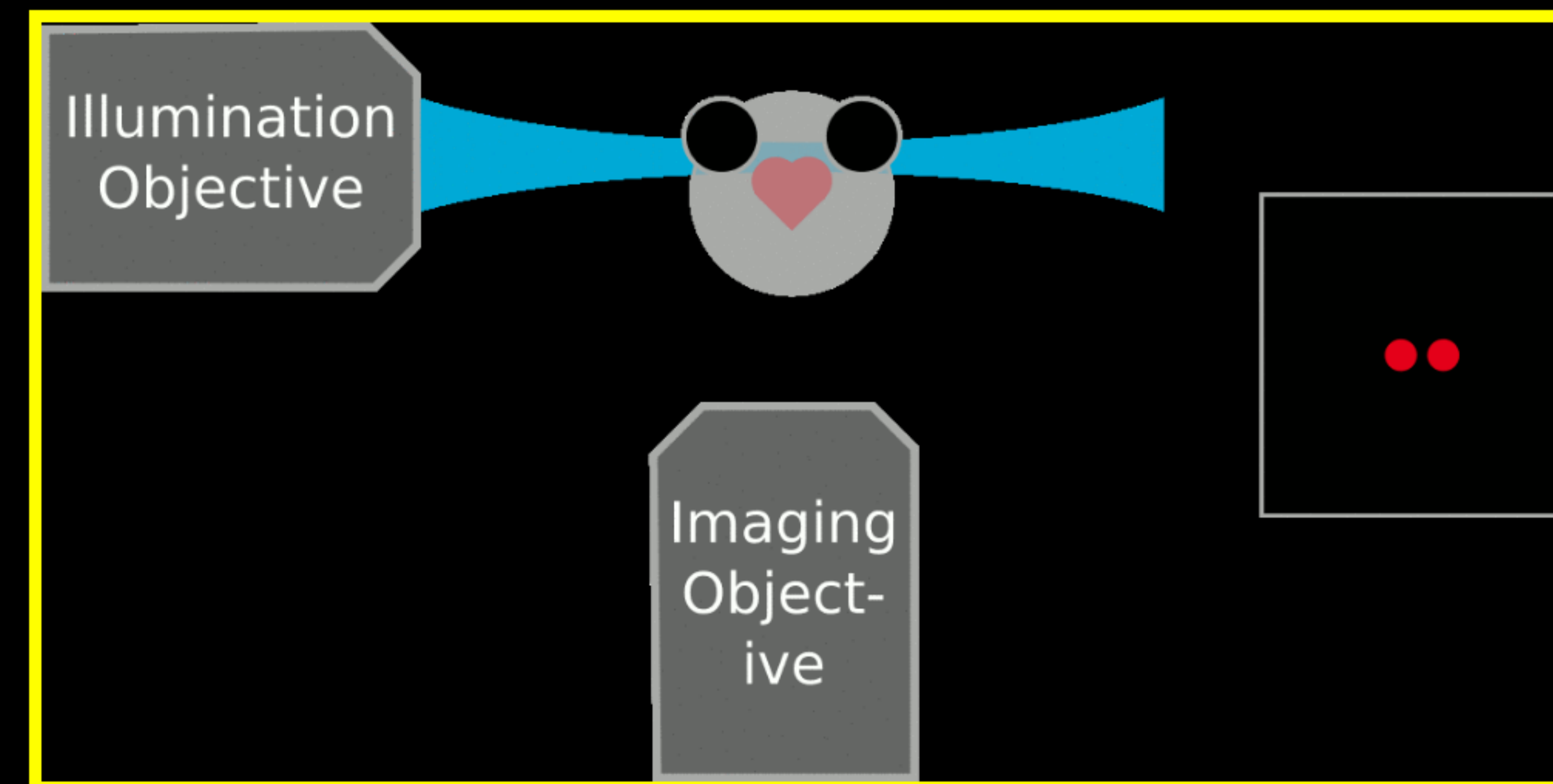


HYBRID OPTICAL GATING FOR 4D HEART IMAGING

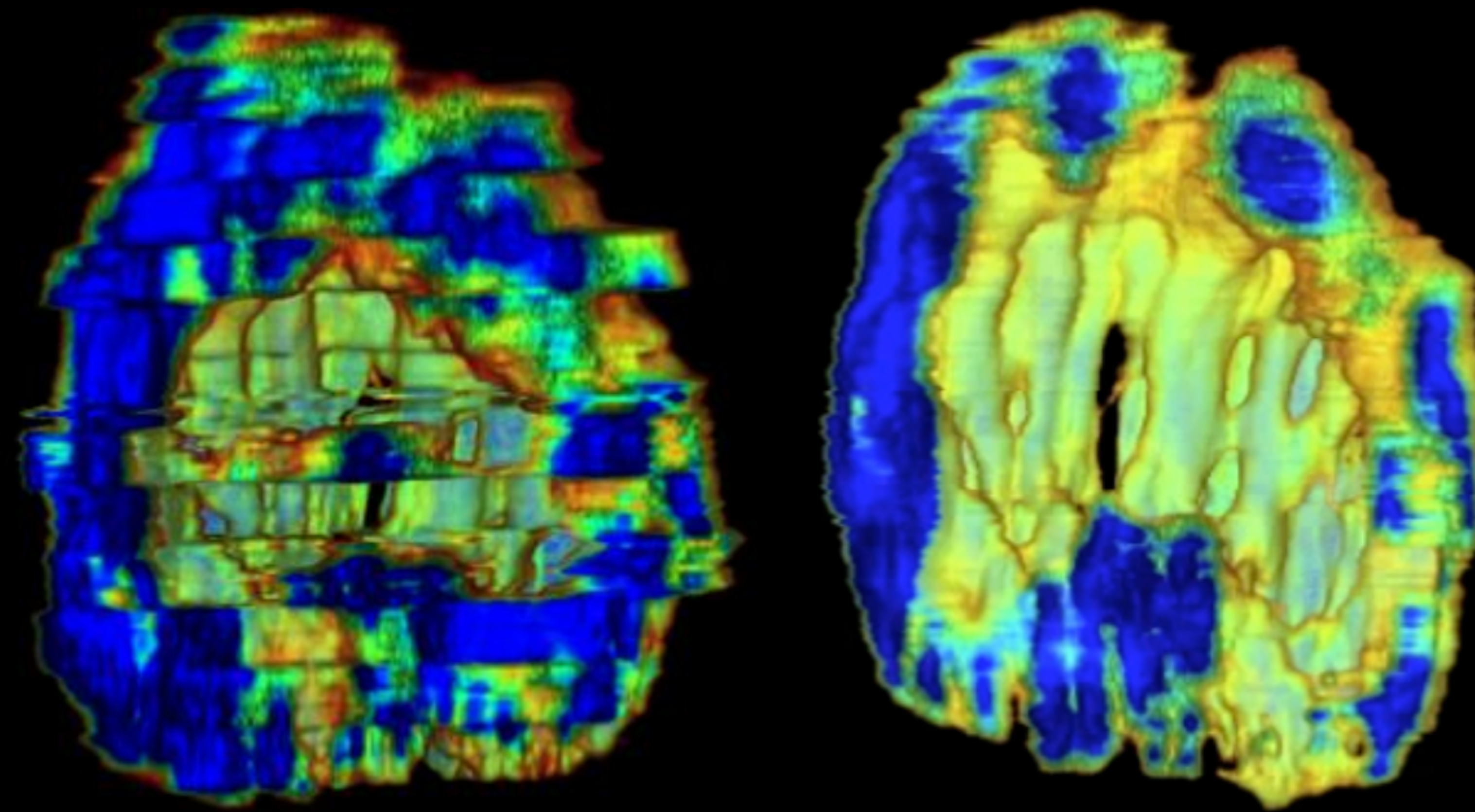
Carl J Nelson, Vytautas Zickus, Charlotte Buckley, Finn Bruton, Aryan Baghbadrani, John J Mullins, Martin A Denvir and Jonathan Taylor

4D HEART IMAGING



Huisken & Stainier. Development (2009)

4D HEART IMAGING



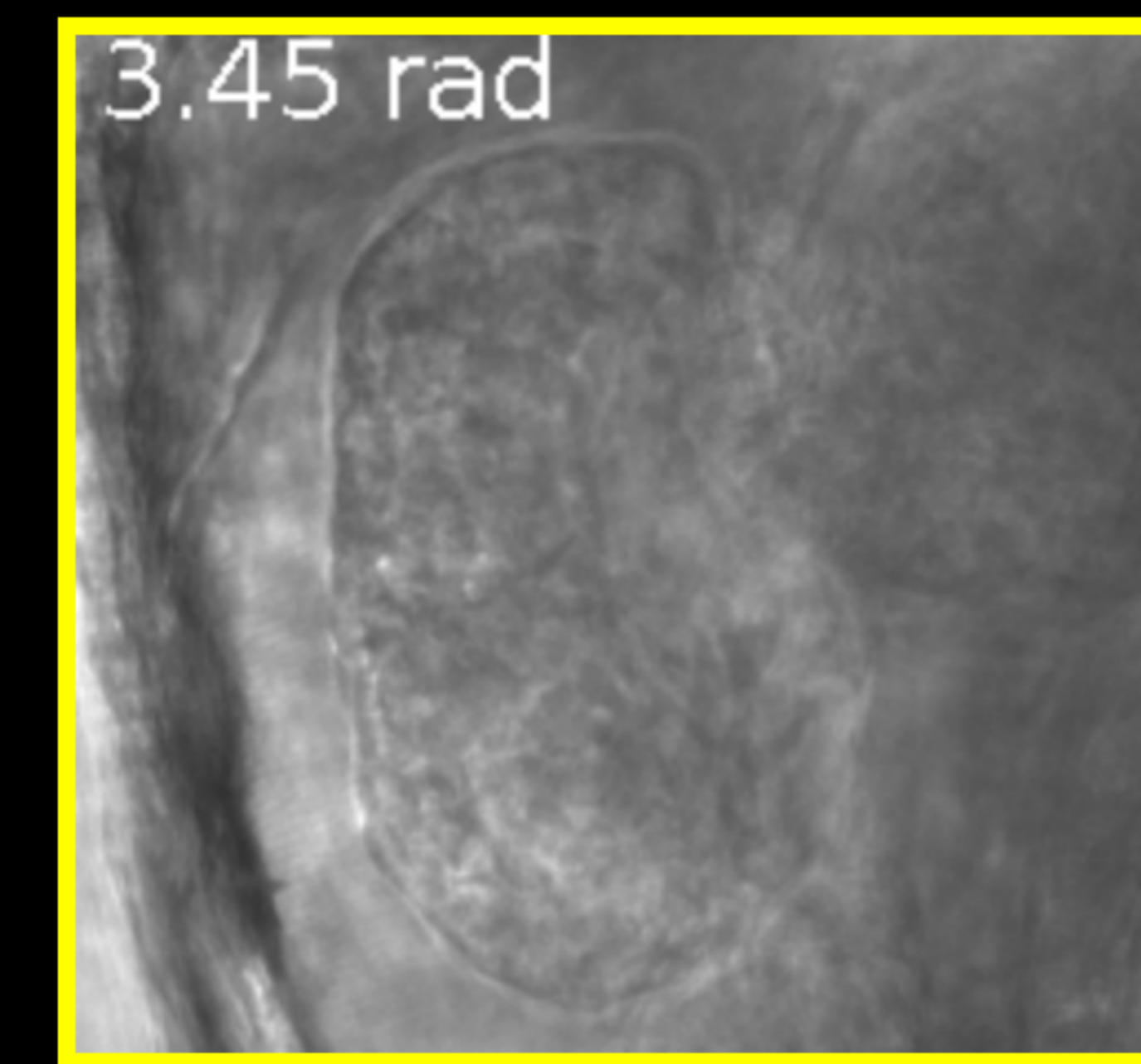
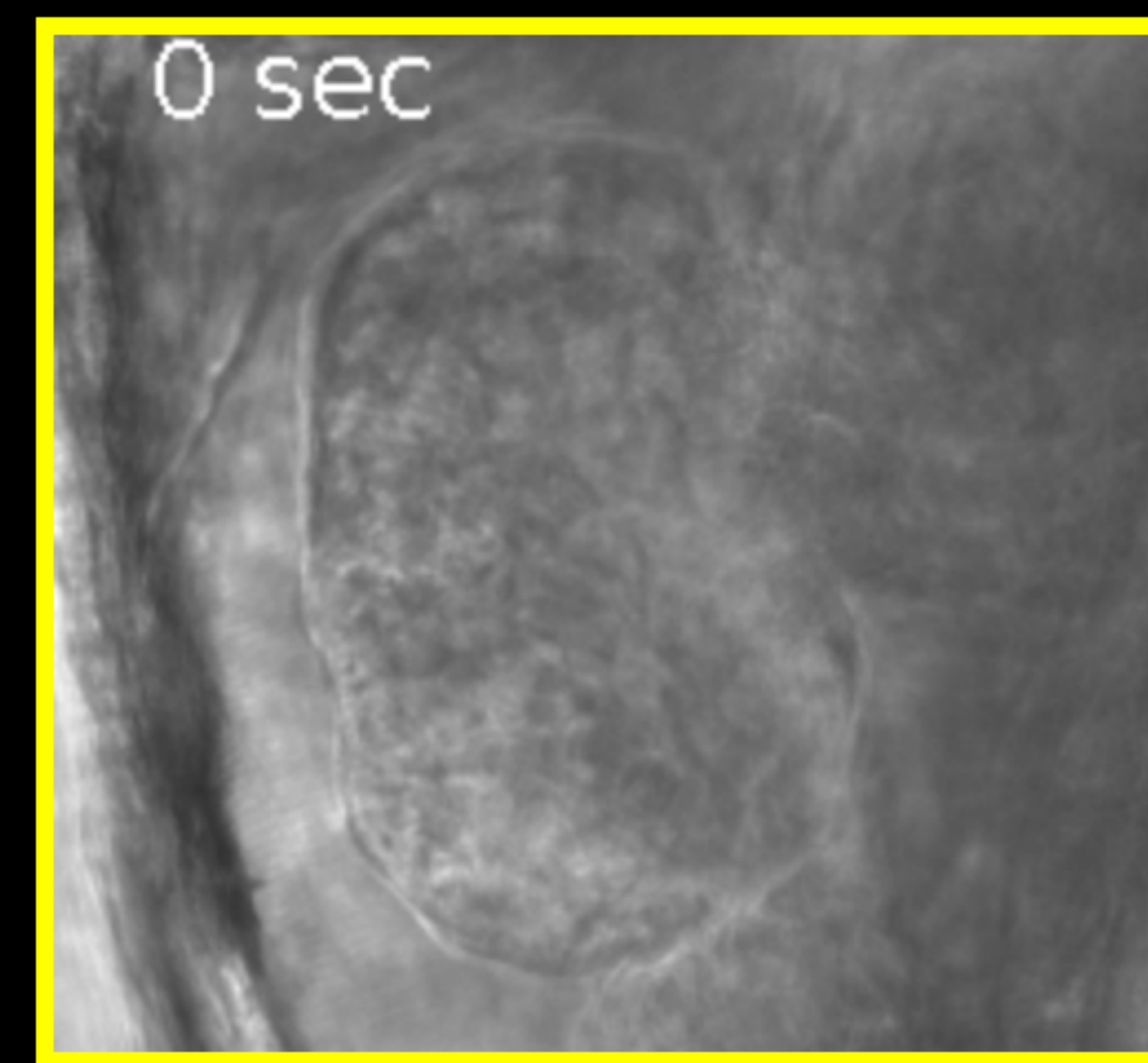
Taylor et al. J. of Biomedical Optics (2011)

REAL-TIME PROSPECTIVE OPTICAL GATING

REAL-TIME PROSPECTIVE OPTICAL GATING

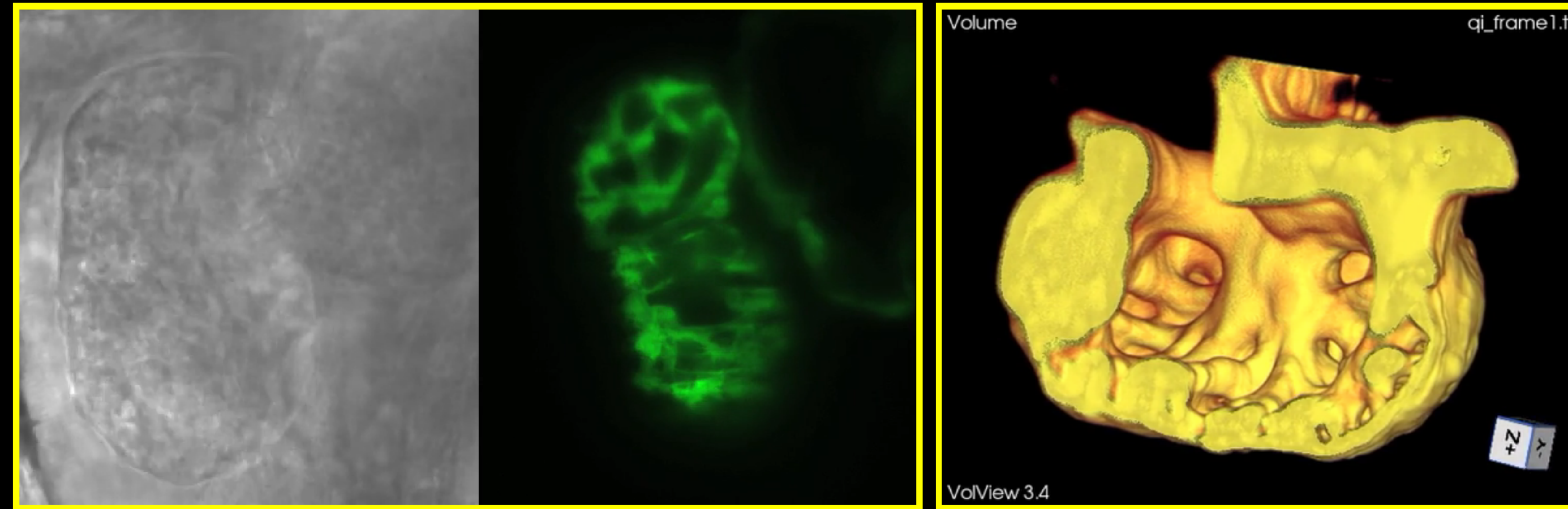
Brightfield Stream

Reference Heartbeat (0.25x)



Taylor et al. J. of Biomedical Optics (2011)

REAL-TIME PROSPECTIVE OPTICAL GATING

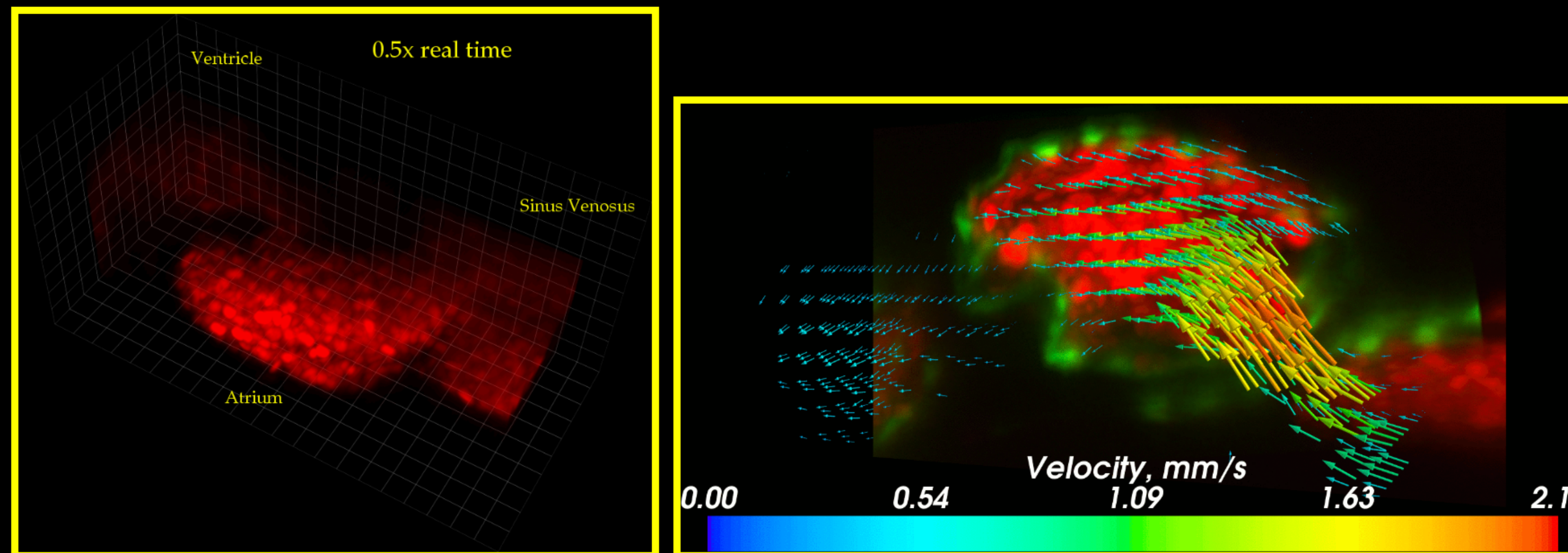


Taylor et al. J. of Biomedical Optics (2011)

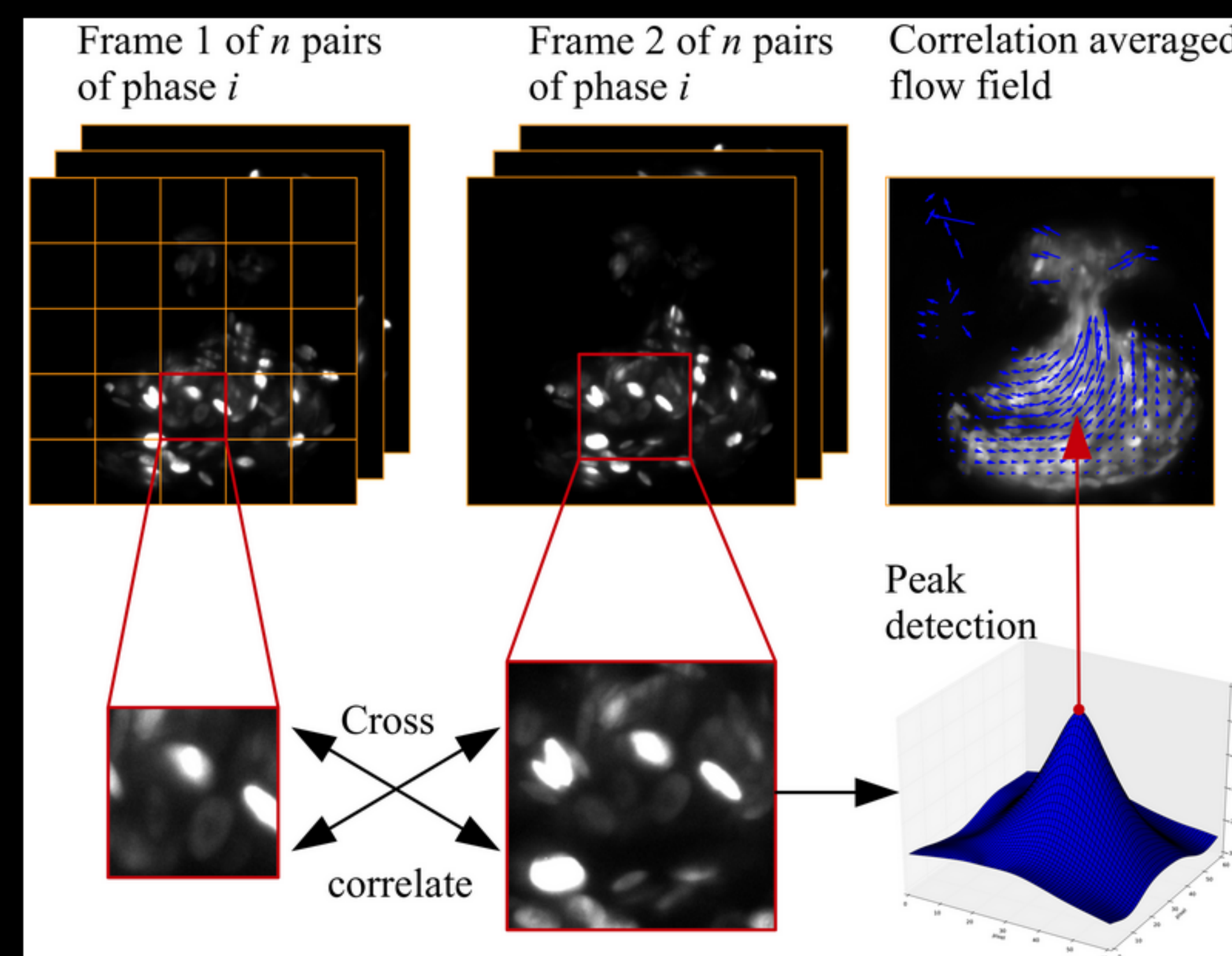
REAL-TIME PROSPECTIVE OPTICAL GATING

4D BLOOD FLOW MAPPING

4D BLOOD FLOW MAPPING



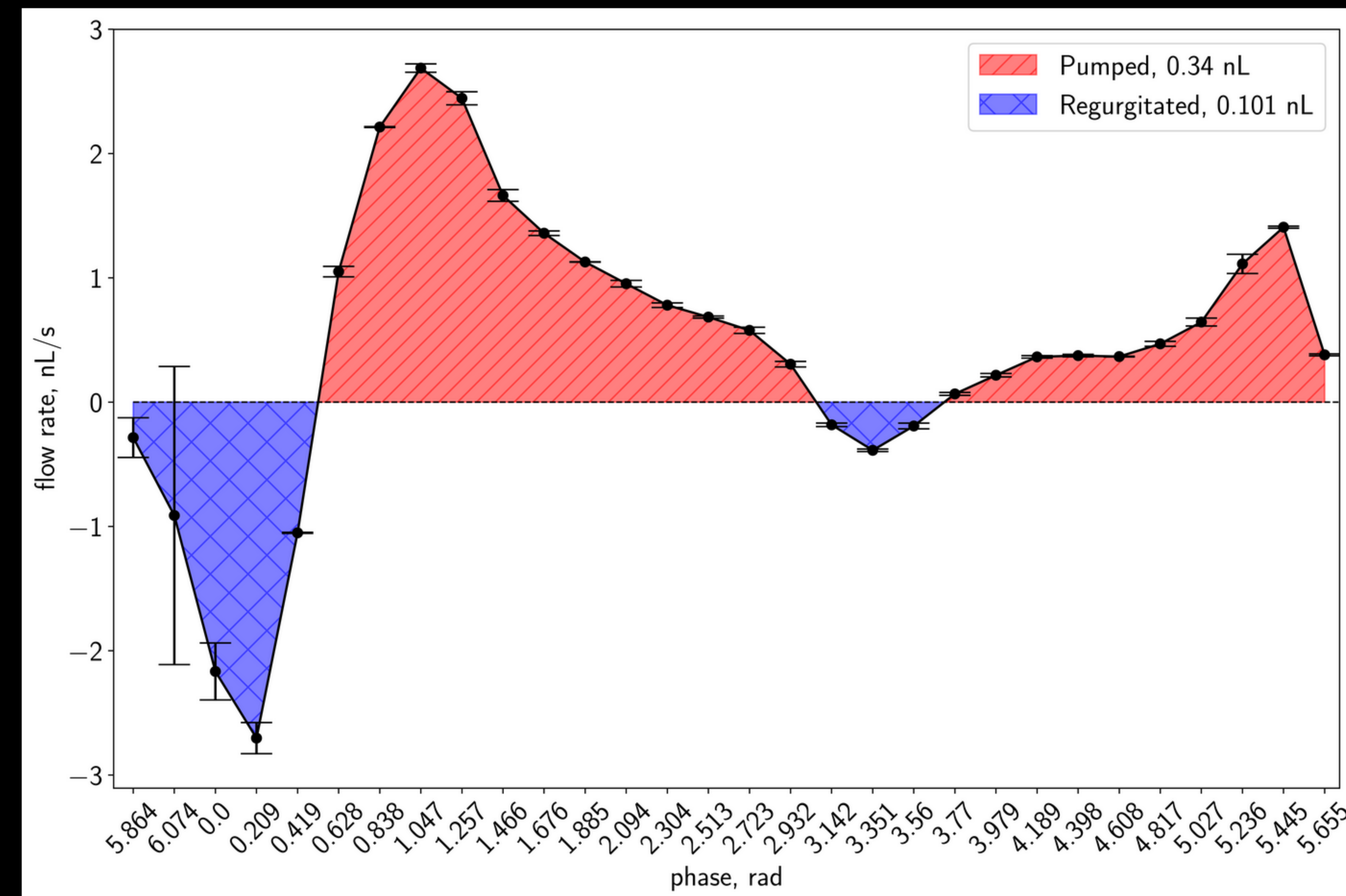
MICRO-PARTICLE IMAGE VELOCIMETRY (μ PIV)



Zickus and Taylor. Biomedical Optics Express (2018)



SPIM- μ PIV



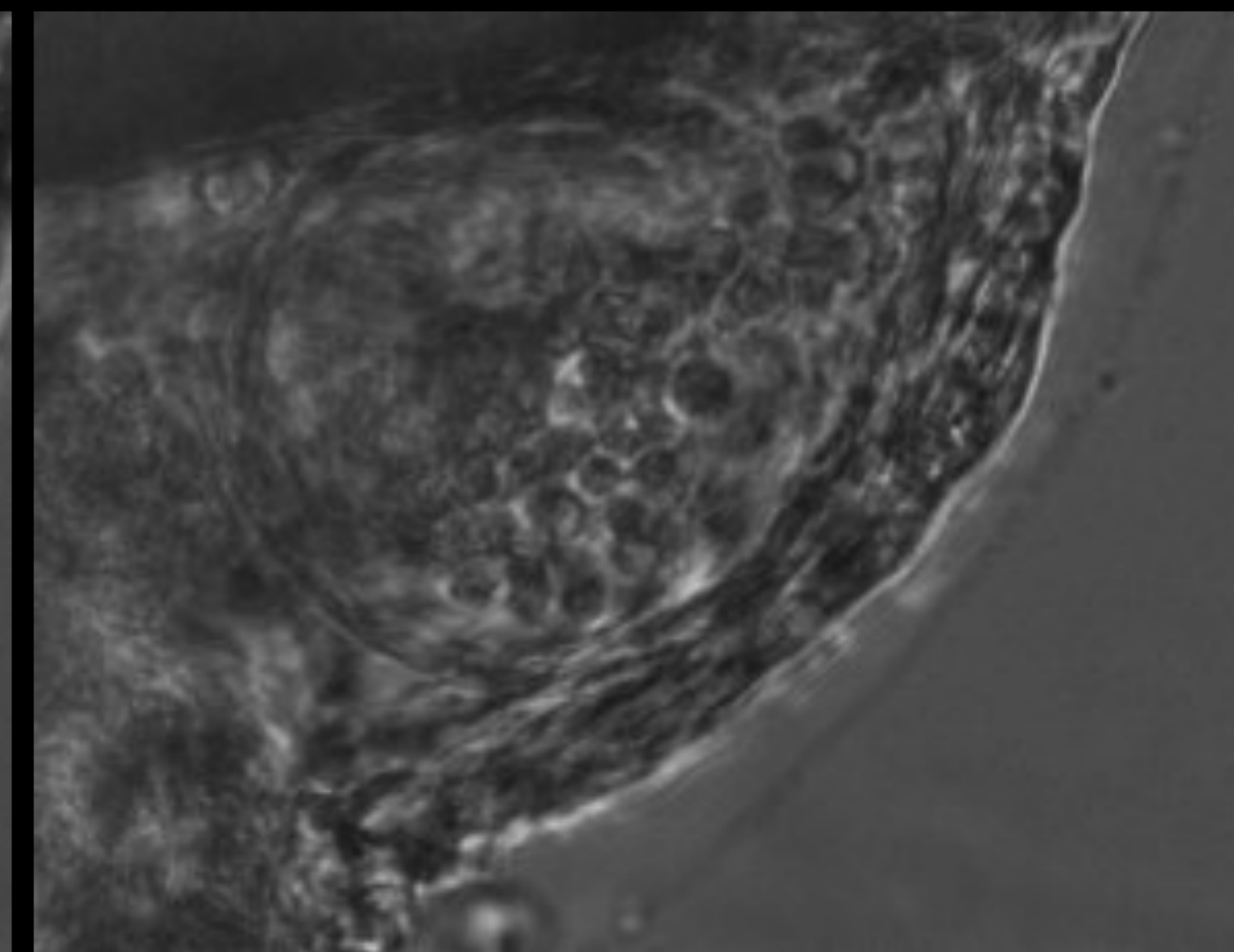
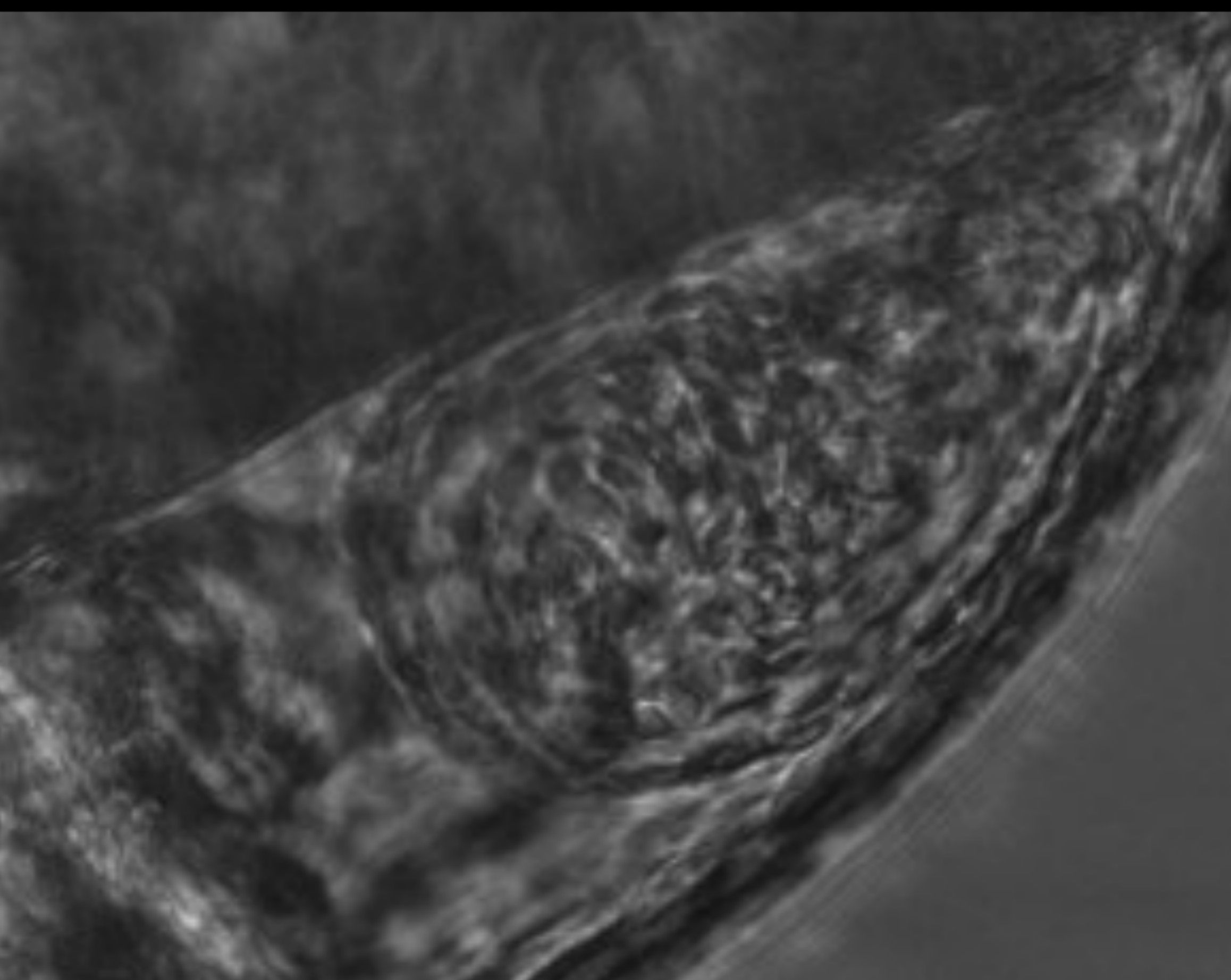
Zickus and Taylor. Biomedical Optics Express (2018)

IMAGING THE DEVELOPING AND INJURED HEART OVER HOURS

PROSPECTIVE OPTICAL GATING

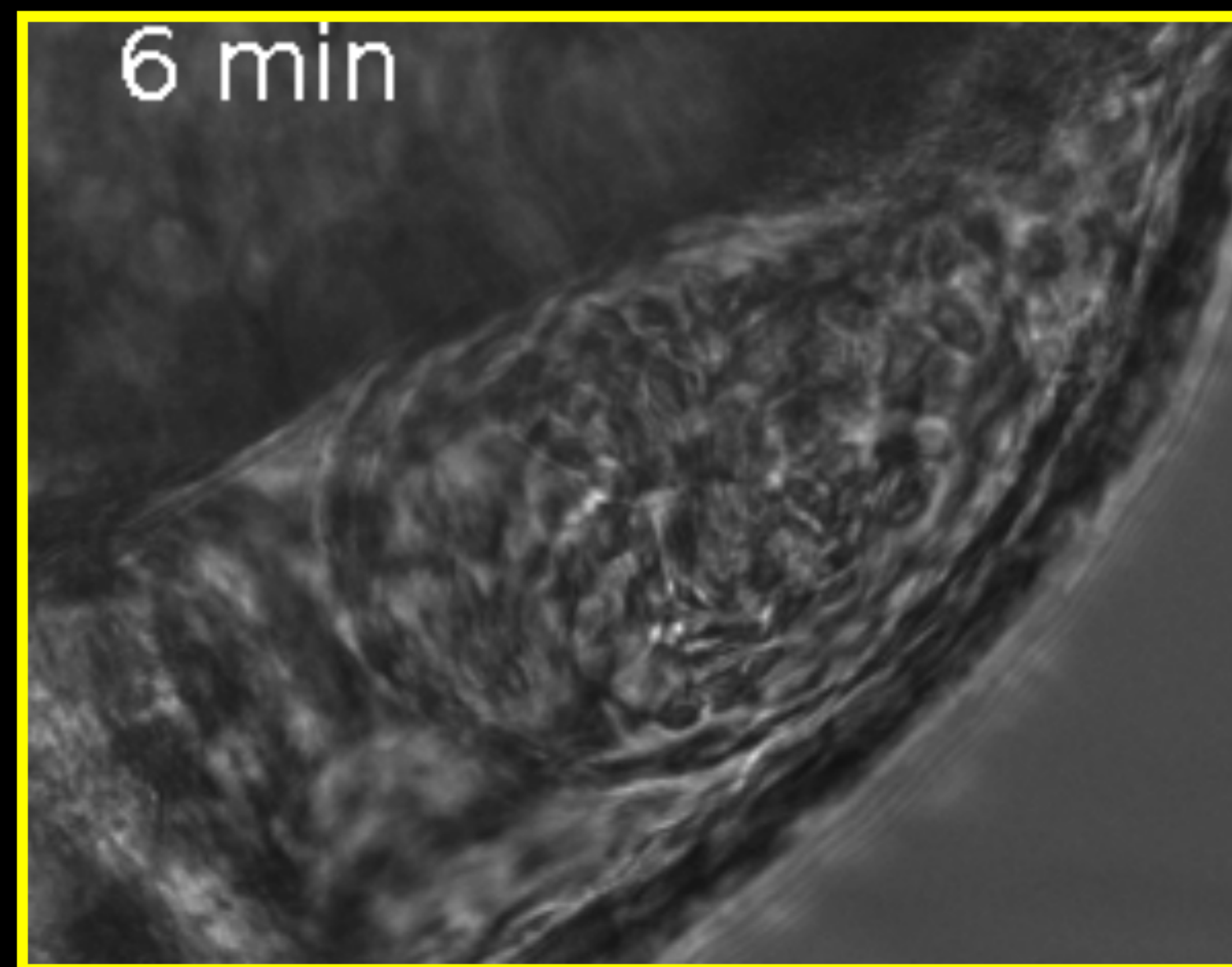
Reference Target Frame

18 hour Target Frame

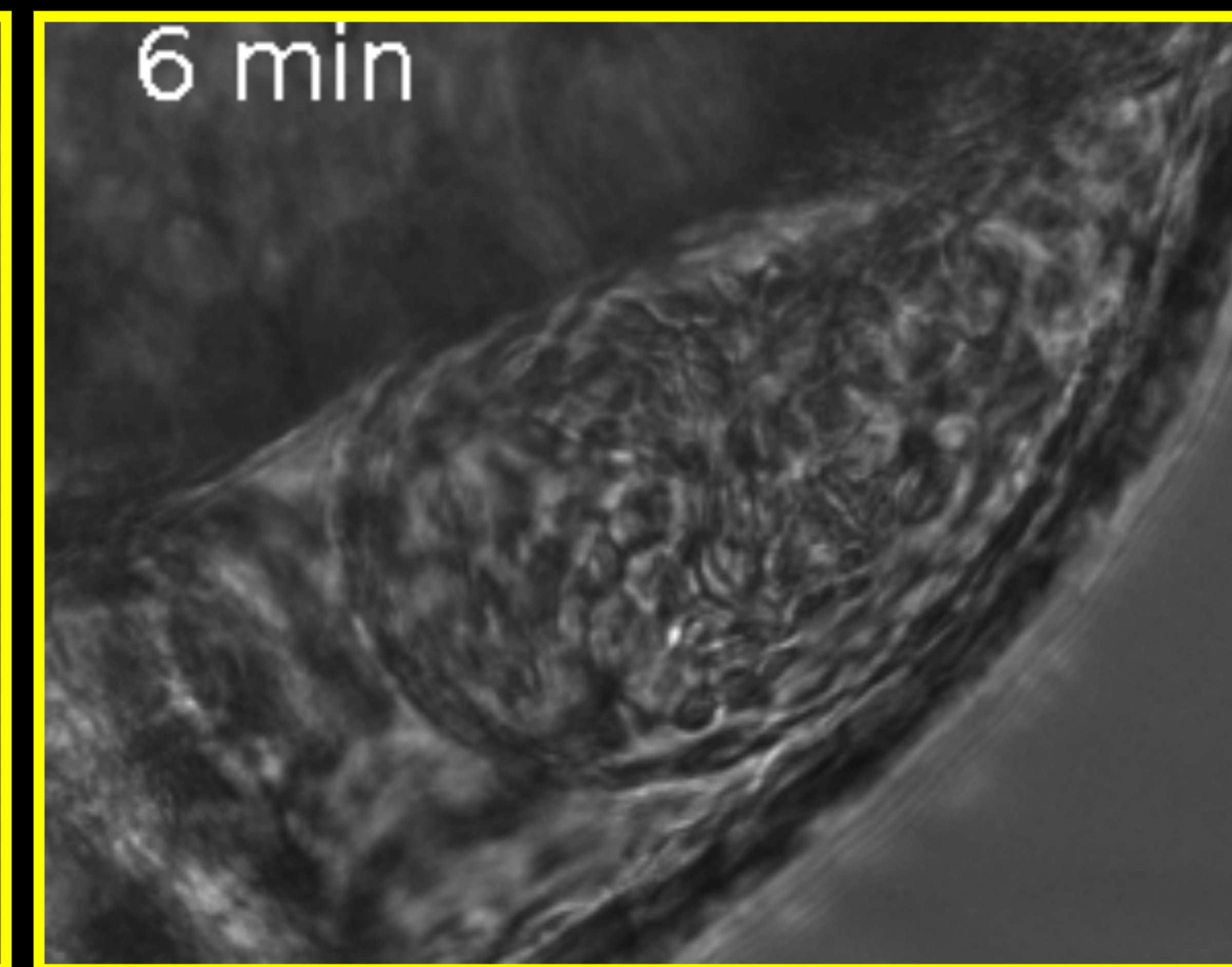


PROSPECTIVE OPTICAL GATING

Manual

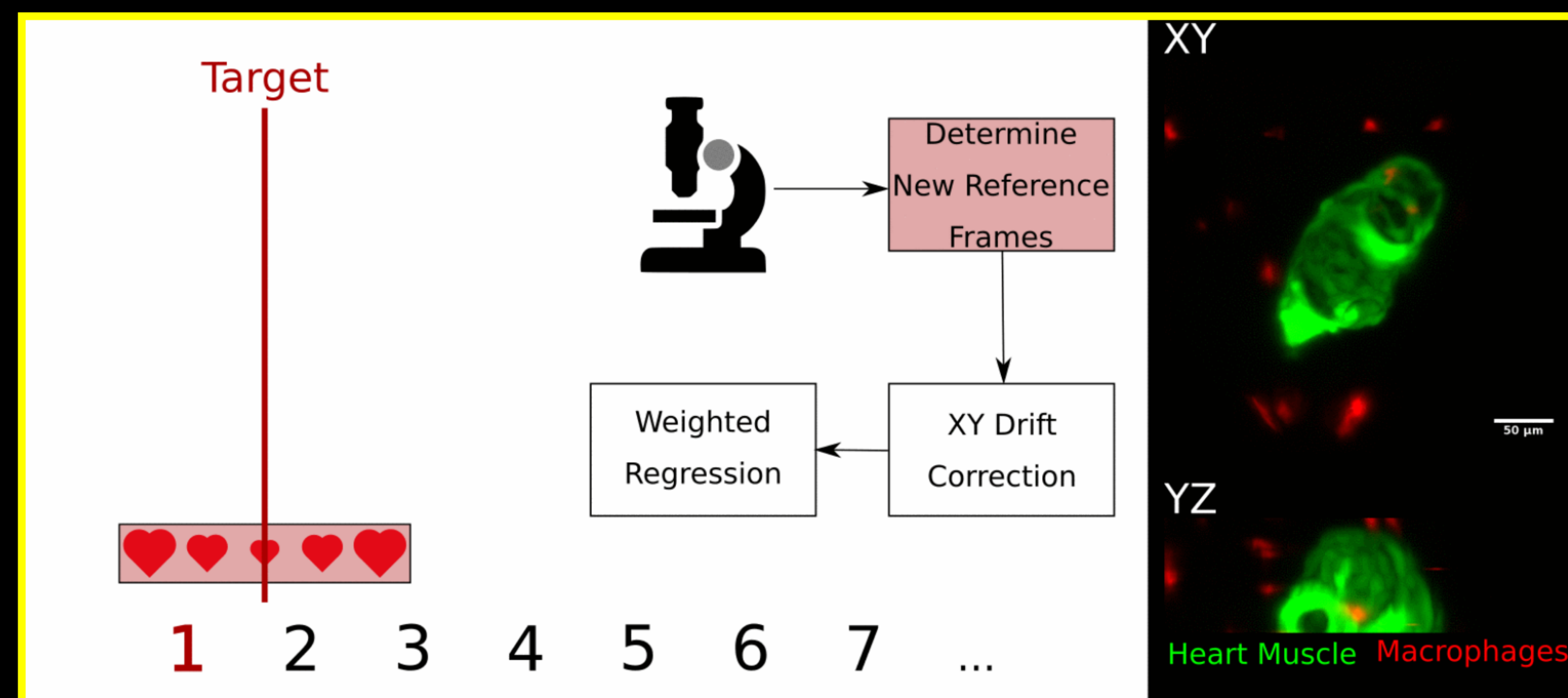


Prospective Only



HYBRID PROSPECTIVE- RETROSPECTIVE OPTICAL GATING

HYBRID OPTICAL GATING



HYBRID OPTICAL GATING

Manual

Automated

