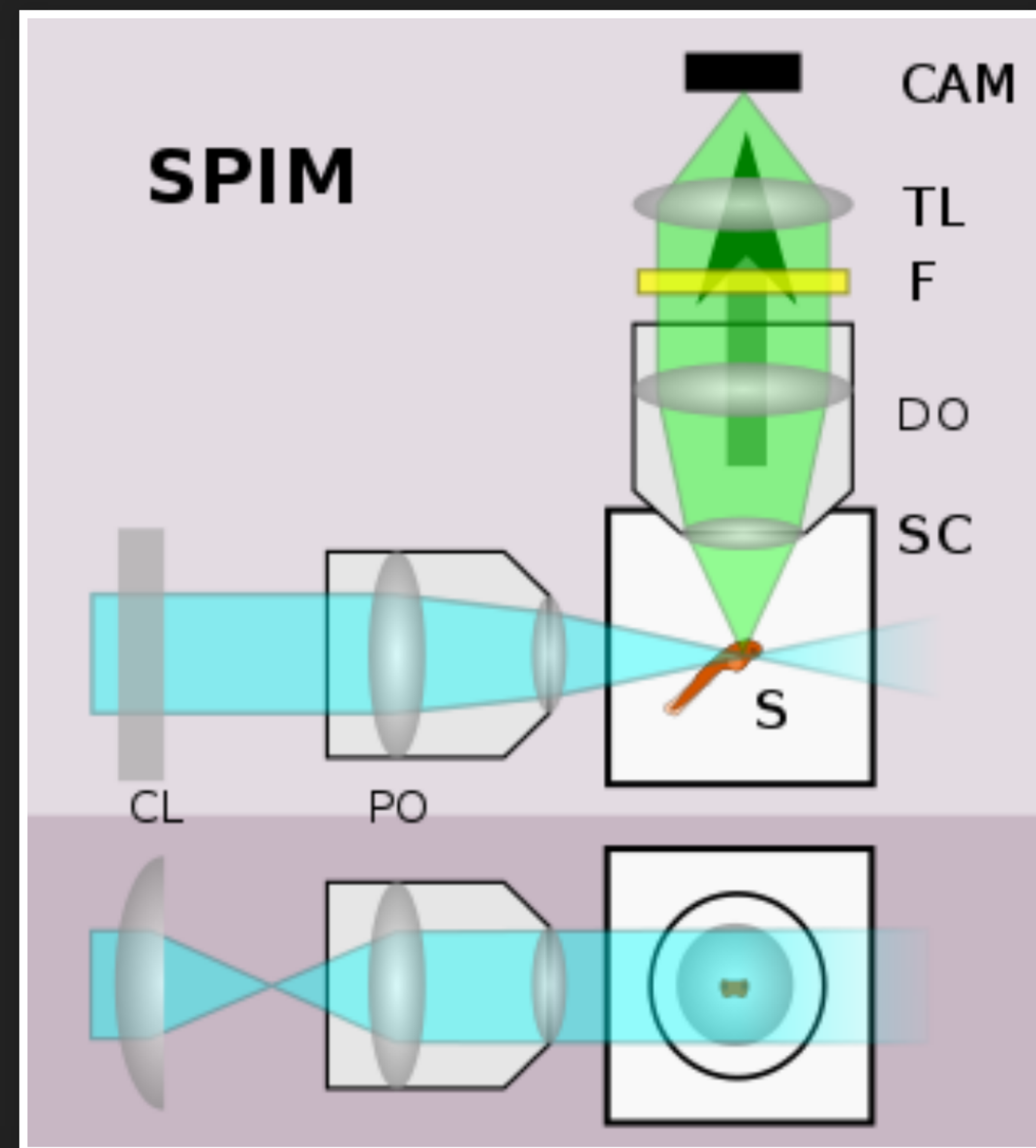
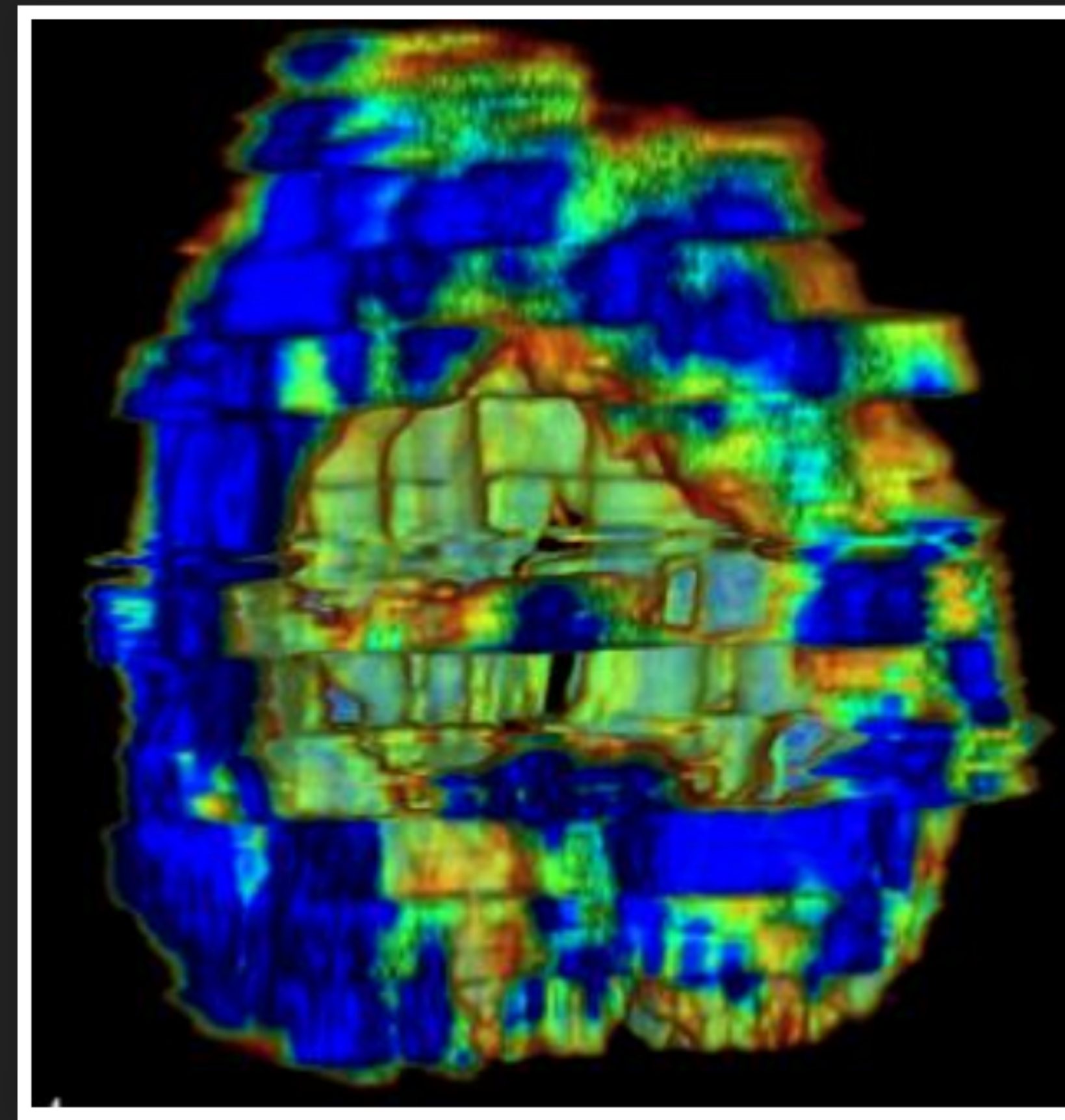


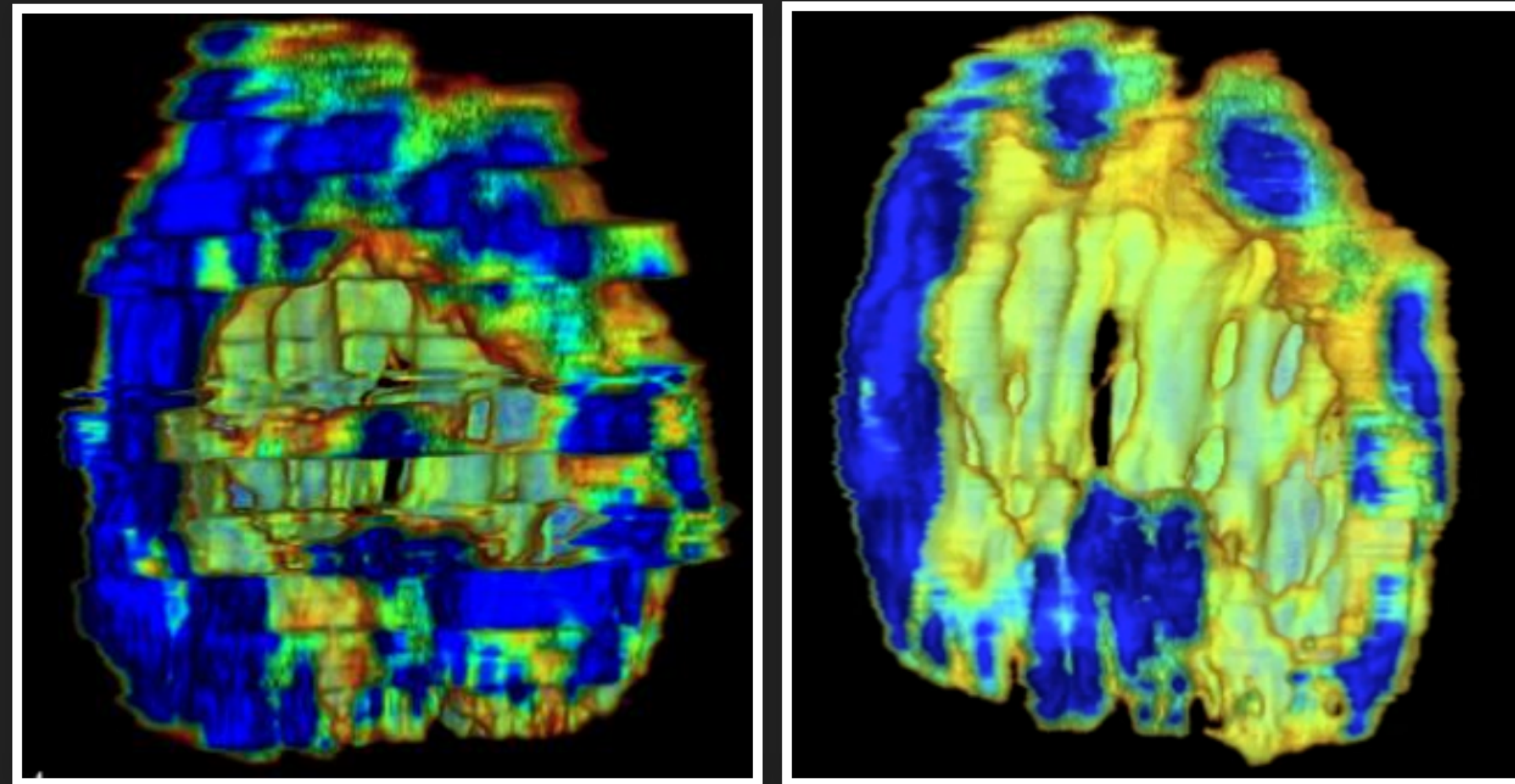
IMAGING THE DEVELOPING HEART

Chas Nelson, Charlotte Buckley, John Mullins, Martin Denvir and Jonathan Taylor





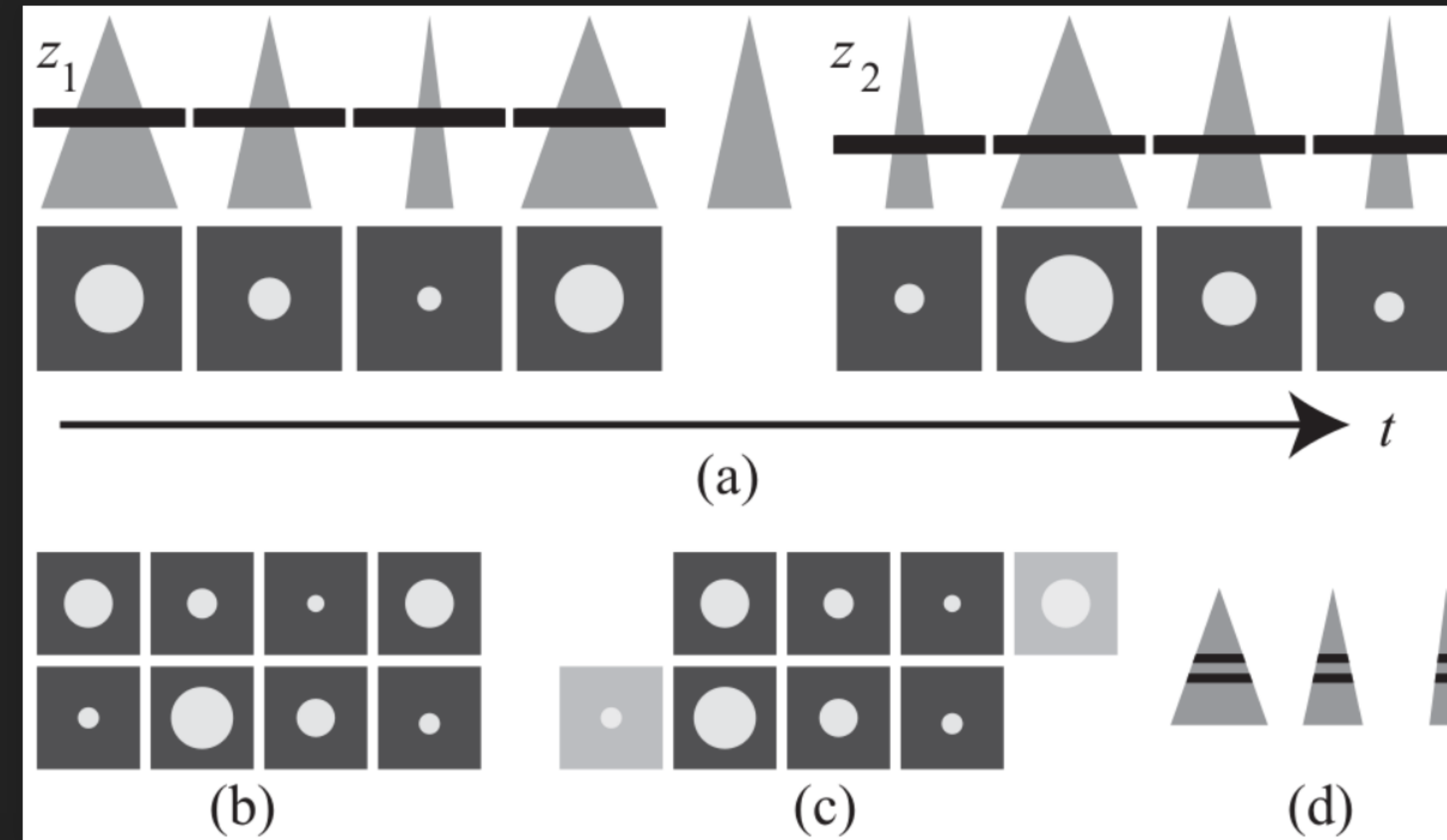
Taylor et al. J. of Biomedical Optics (2011)



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

GATING

RETROSPECTIVE OPTICAL GATING



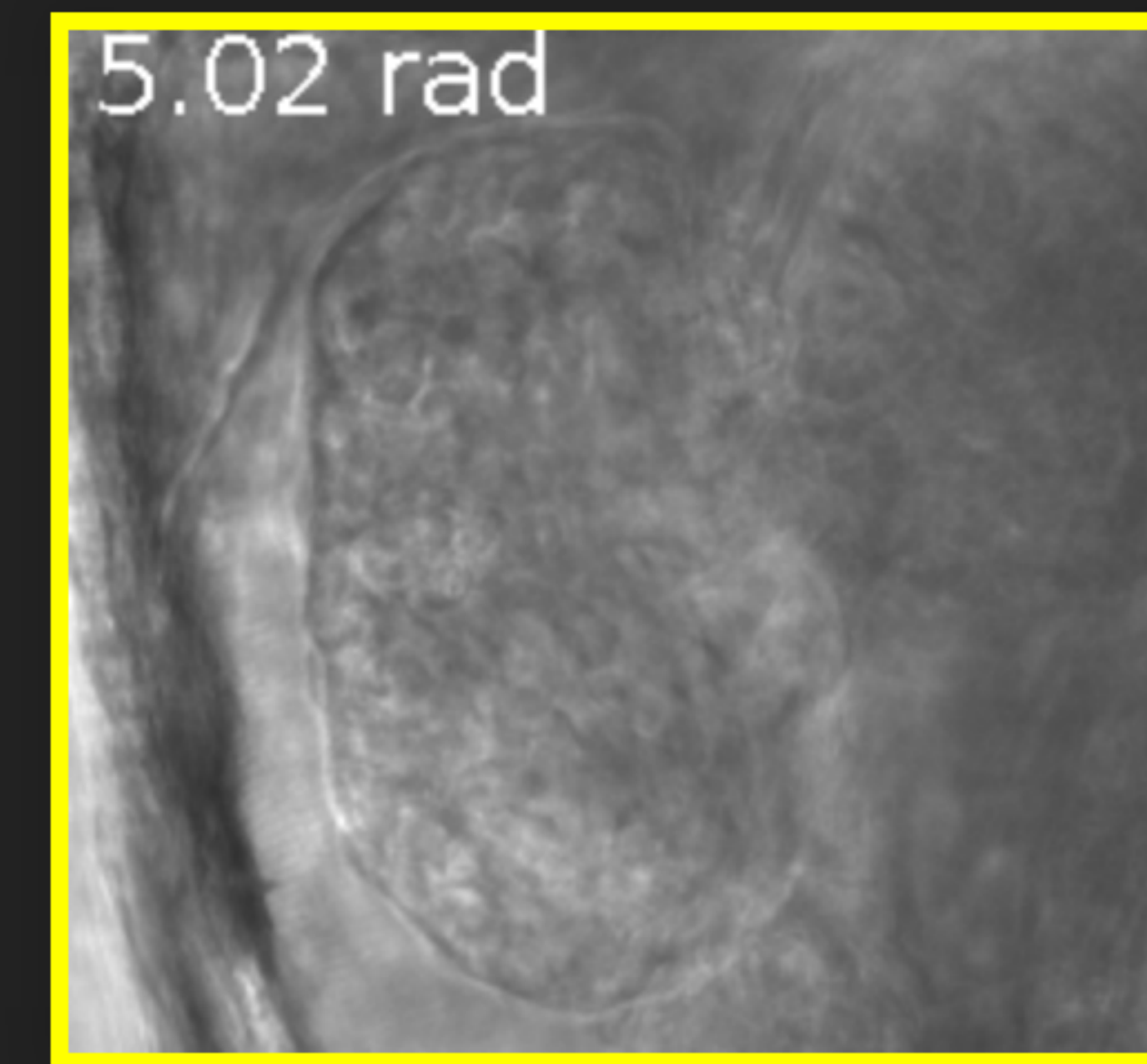
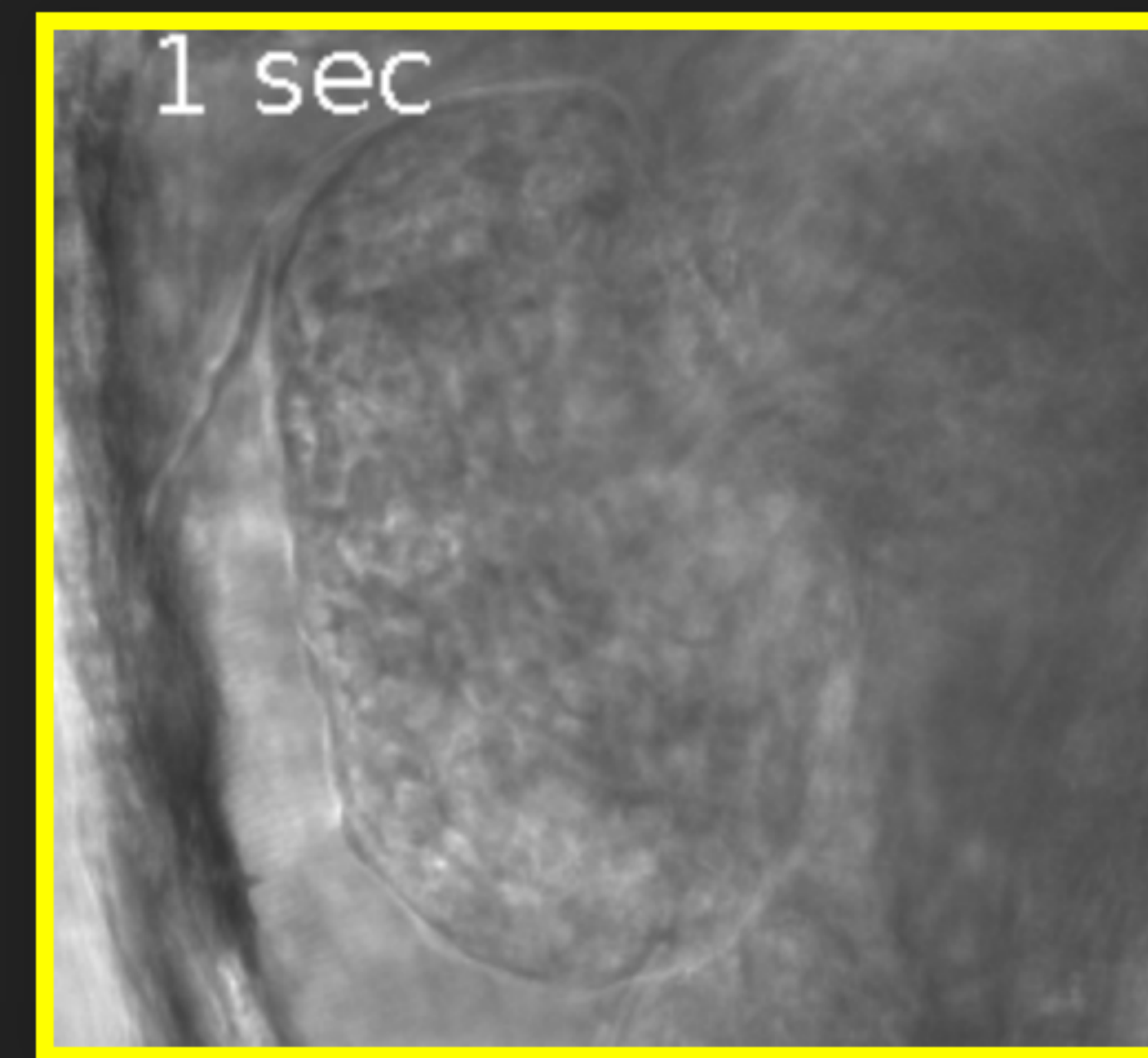
Liebling et al. IEEE ISBI (2006)

PROSPECTIVE OPTICAL GATING

REAL-TIME PROSPECTIVE OPTICAL GATING

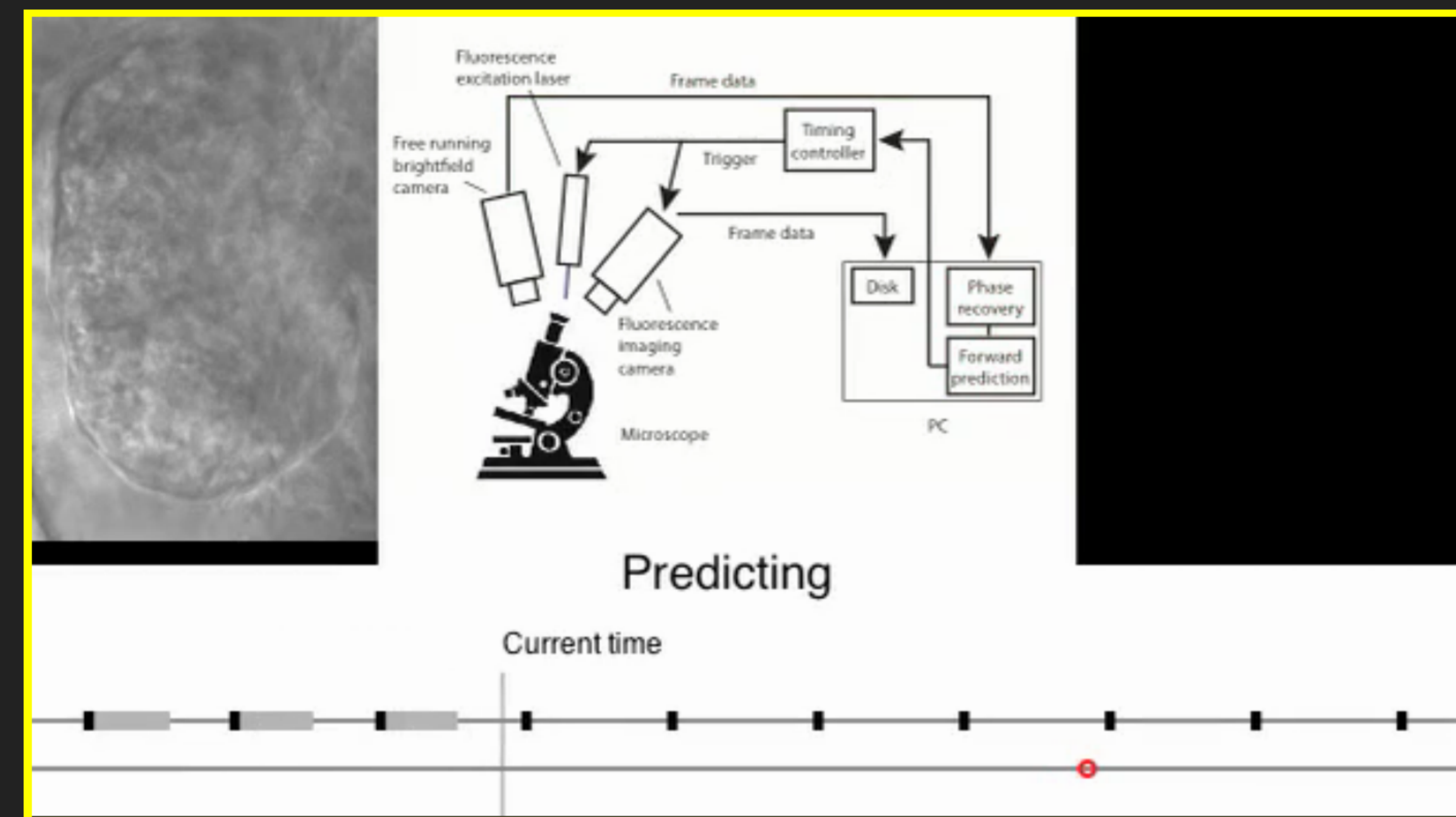
Brightfield Stream

Reference Heartbeat (0.25x)



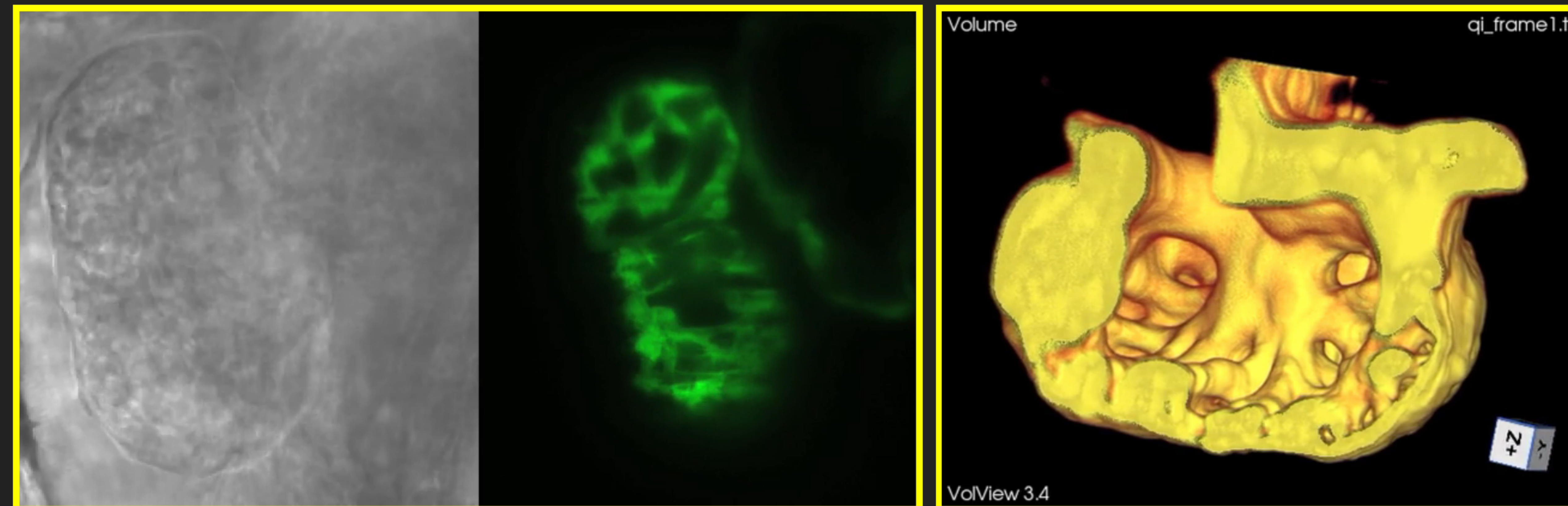
Taylor et al. J. of Biomedical Optics (2011)

REAL-TIME PROSPECTIVE OPTICAL GATING



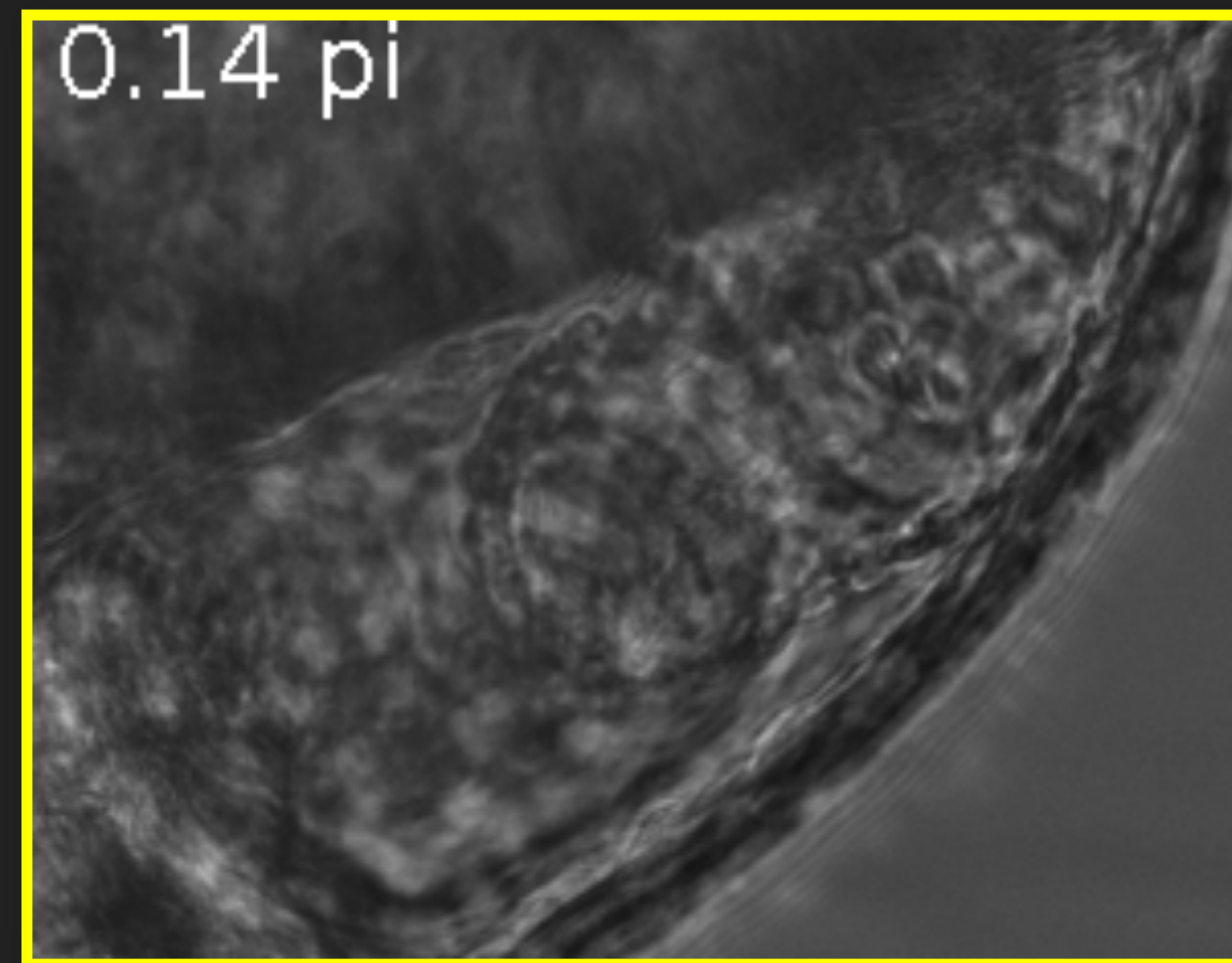
Taylor et al. J. of Biomedical Optics (2011)

REAL-TIME PROSPECTIVE OPTICAL GATING

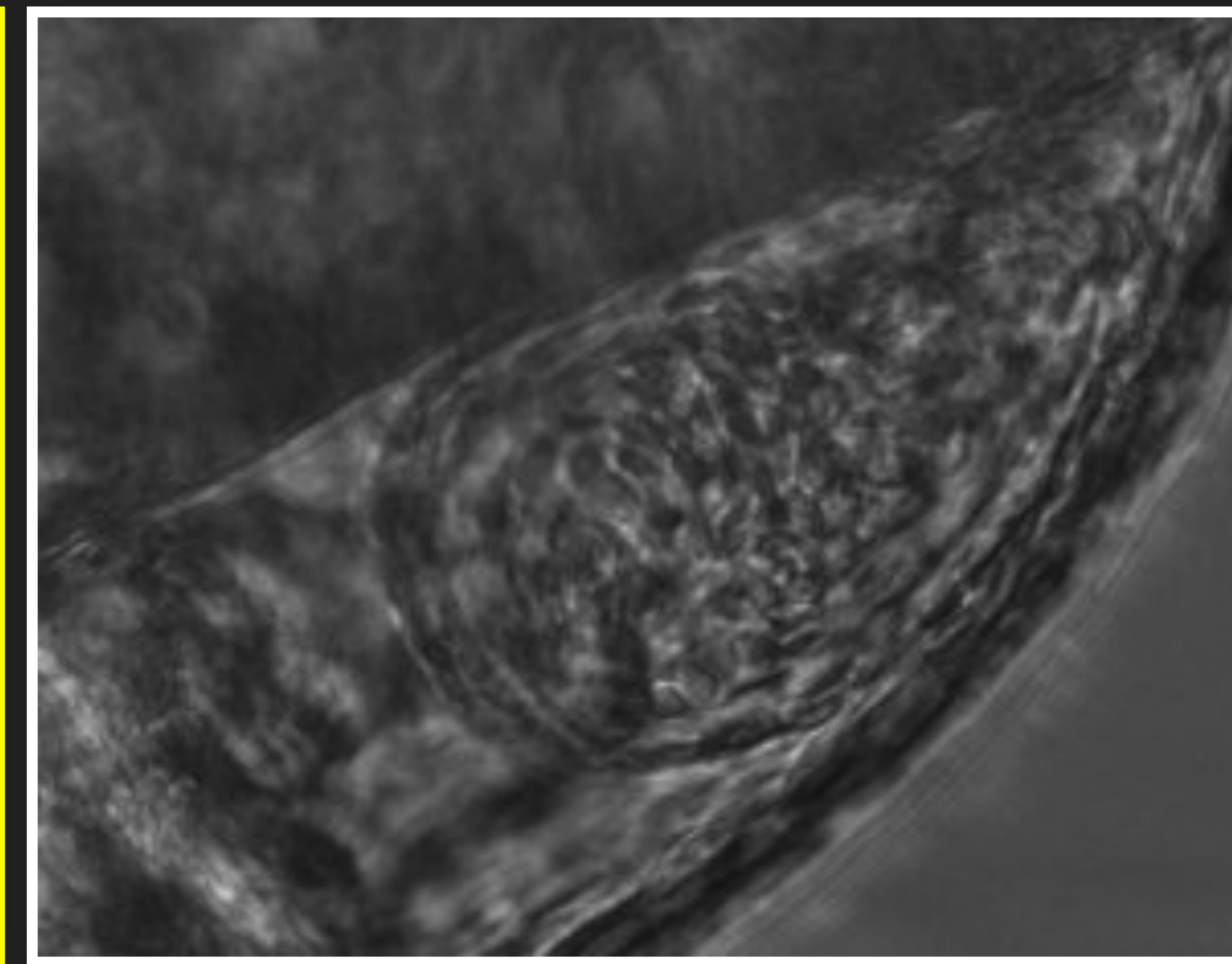


Taylor et al. J. of Biomedical Optics (2011)

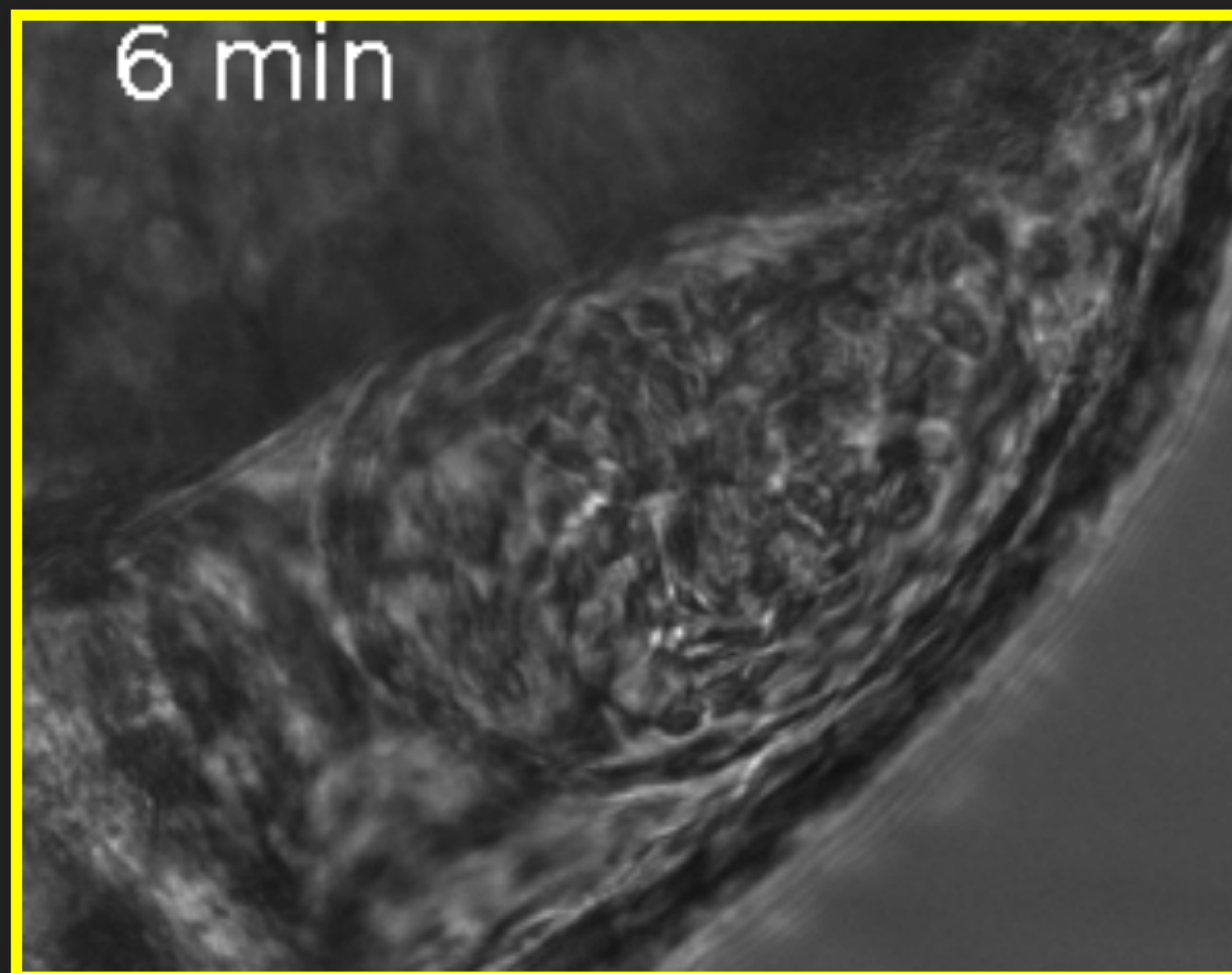
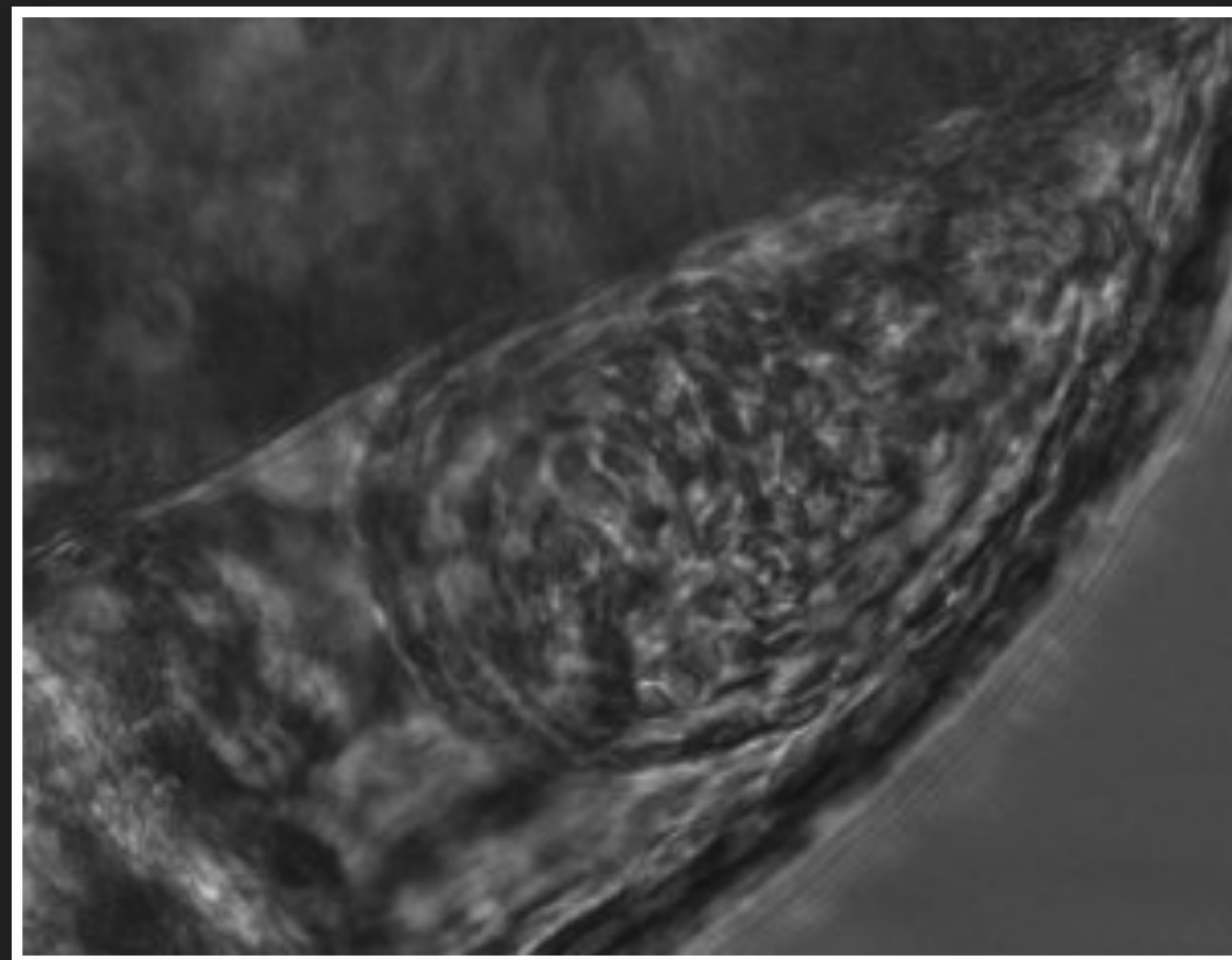
Reference Heartbeat



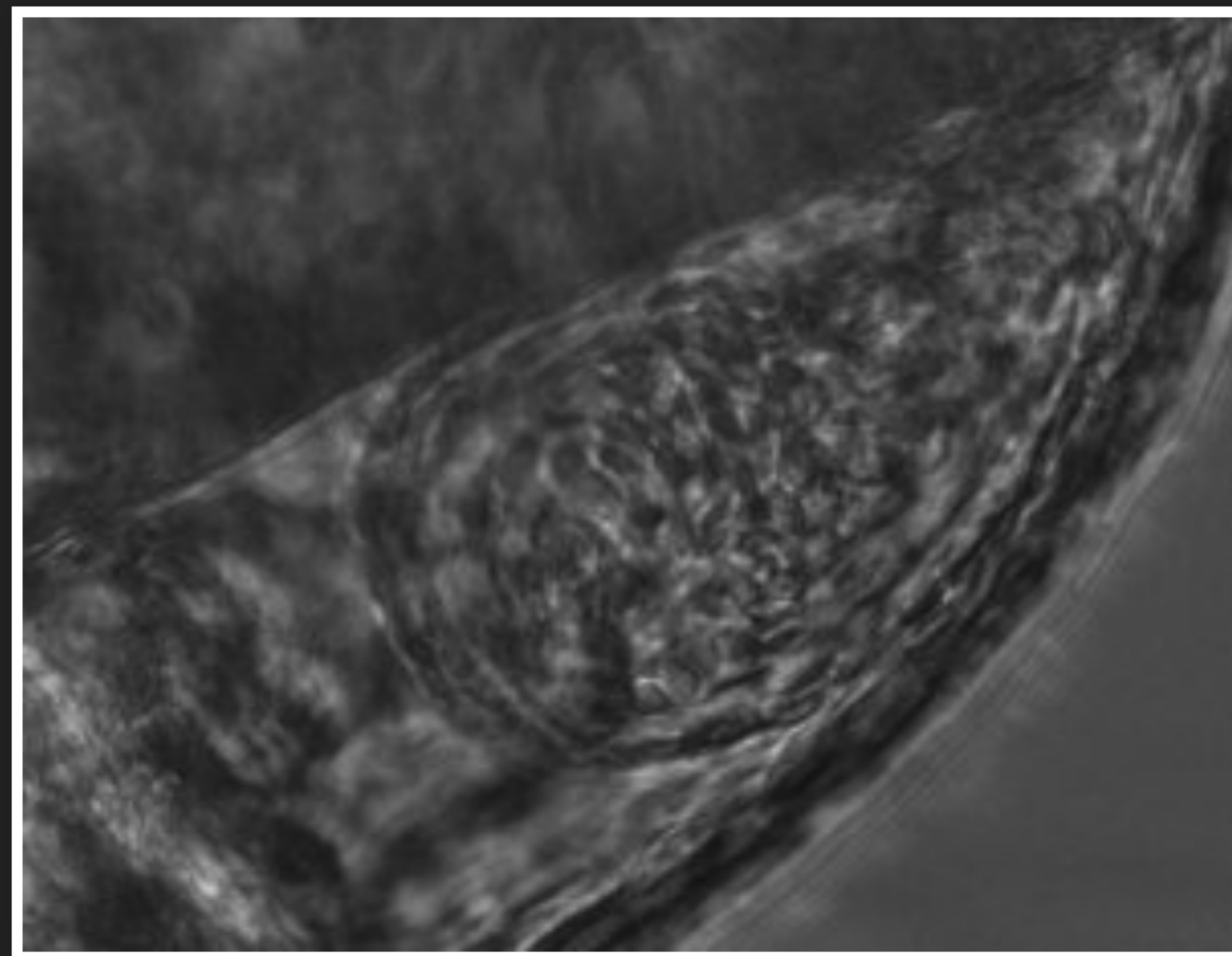
Initial Target Frame



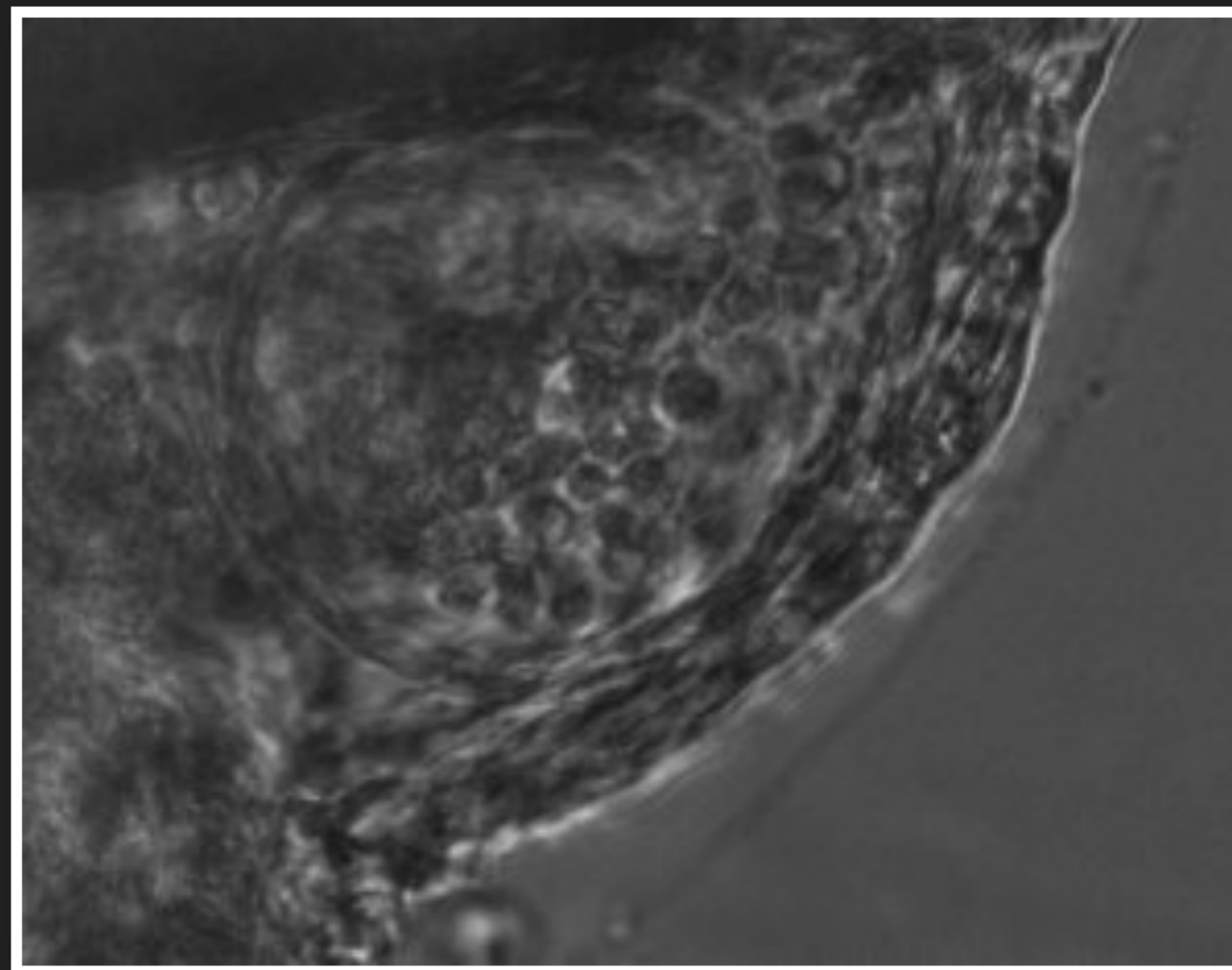
Initial Target Frame



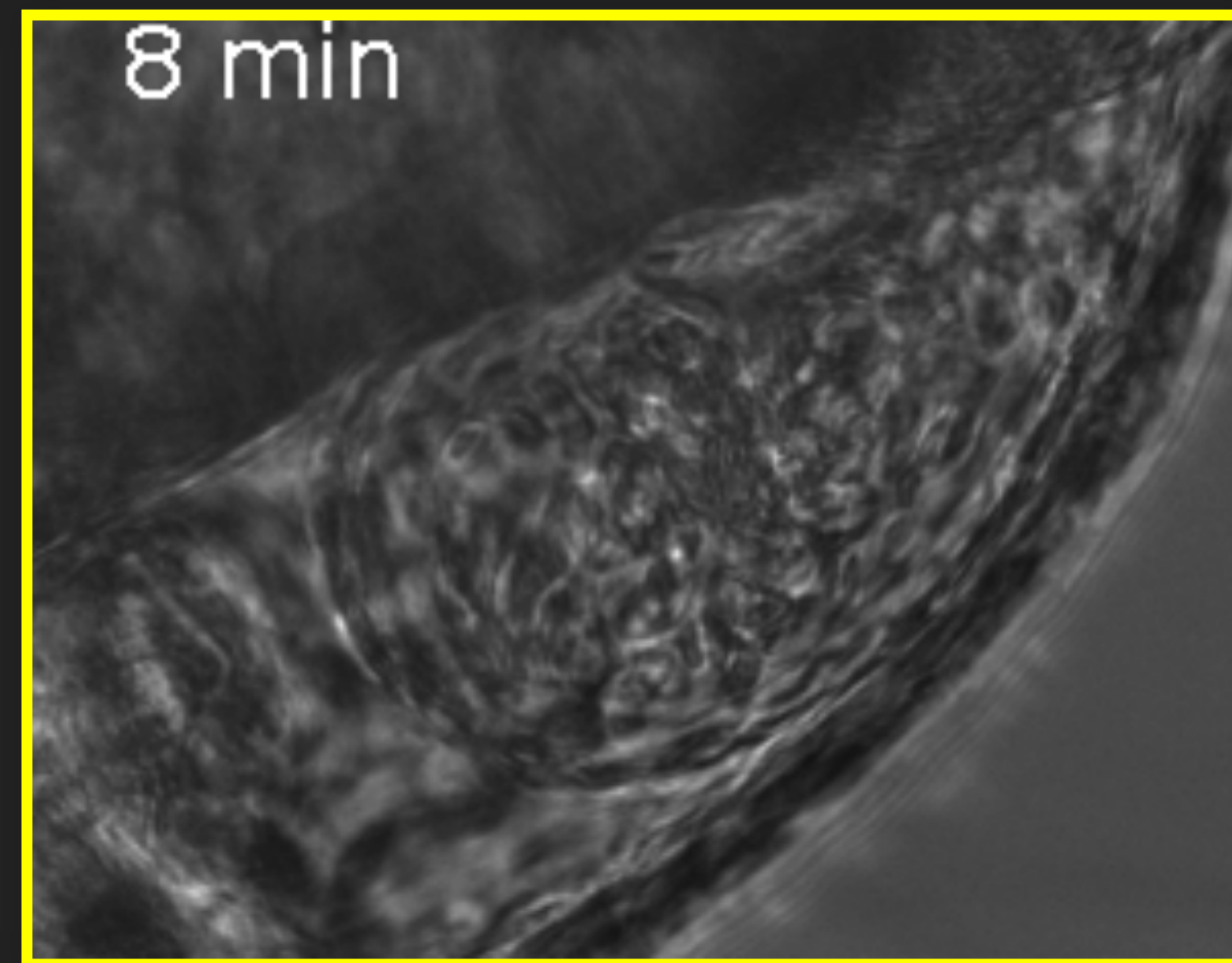
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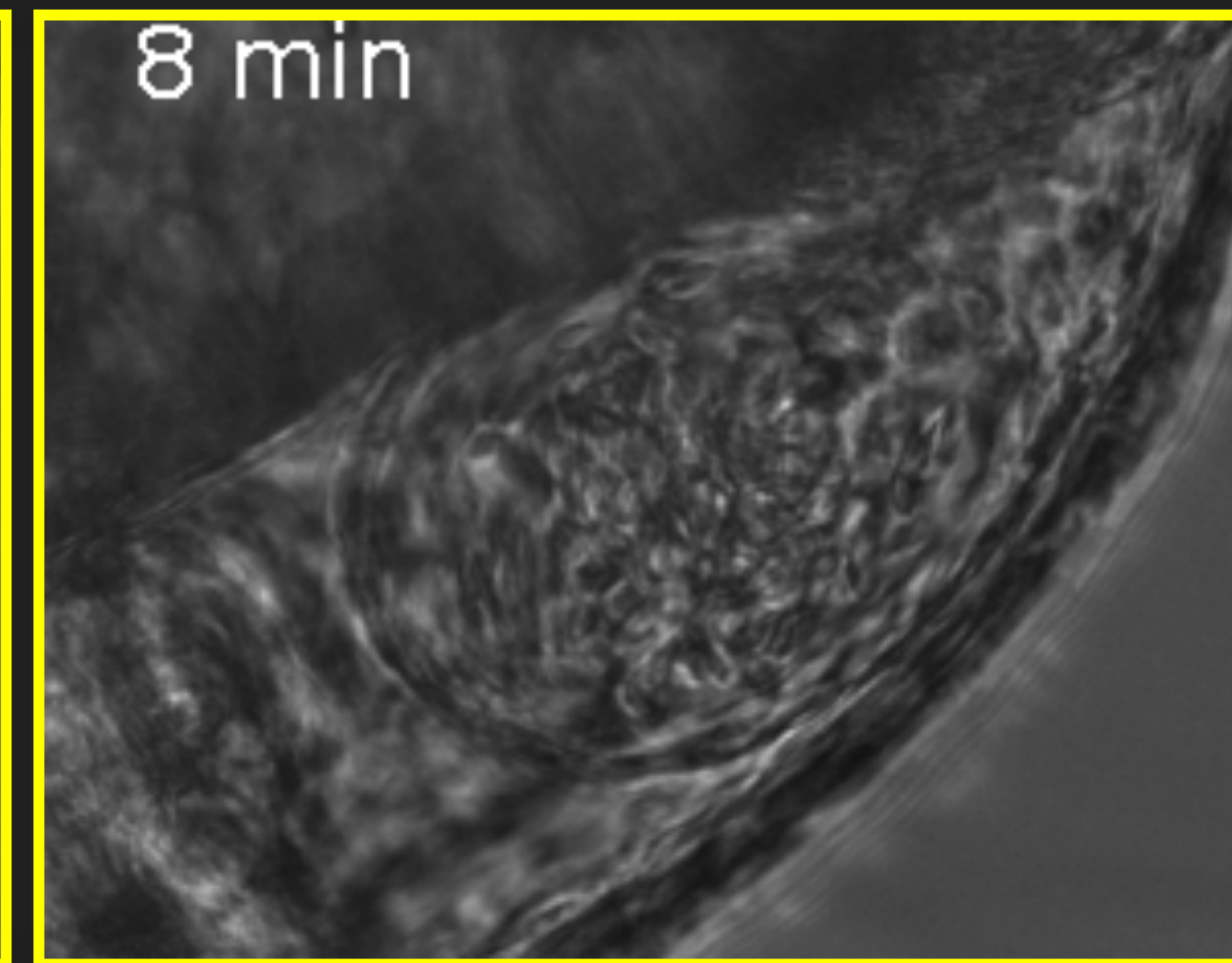
Final Target Frame



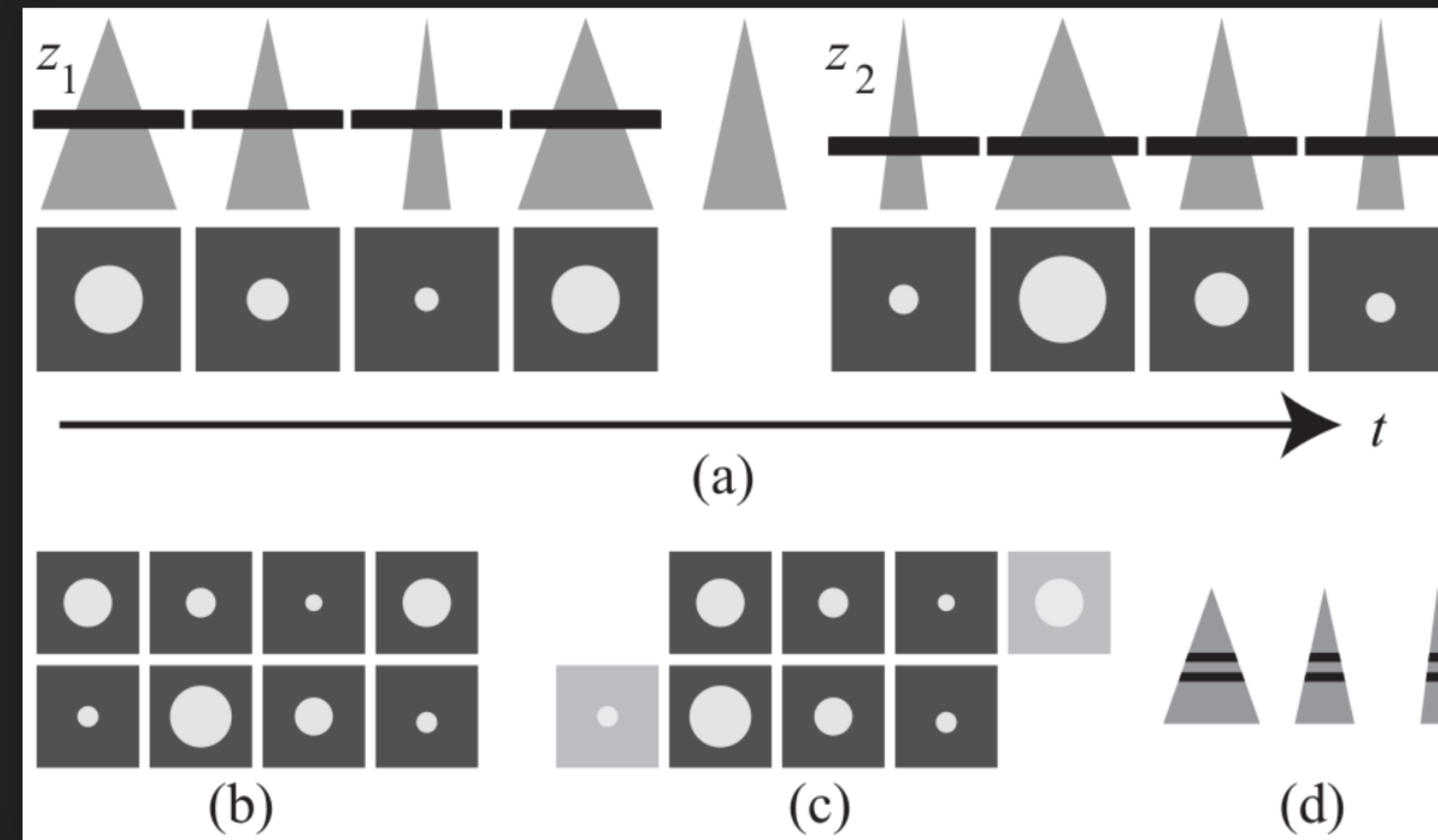
Manual



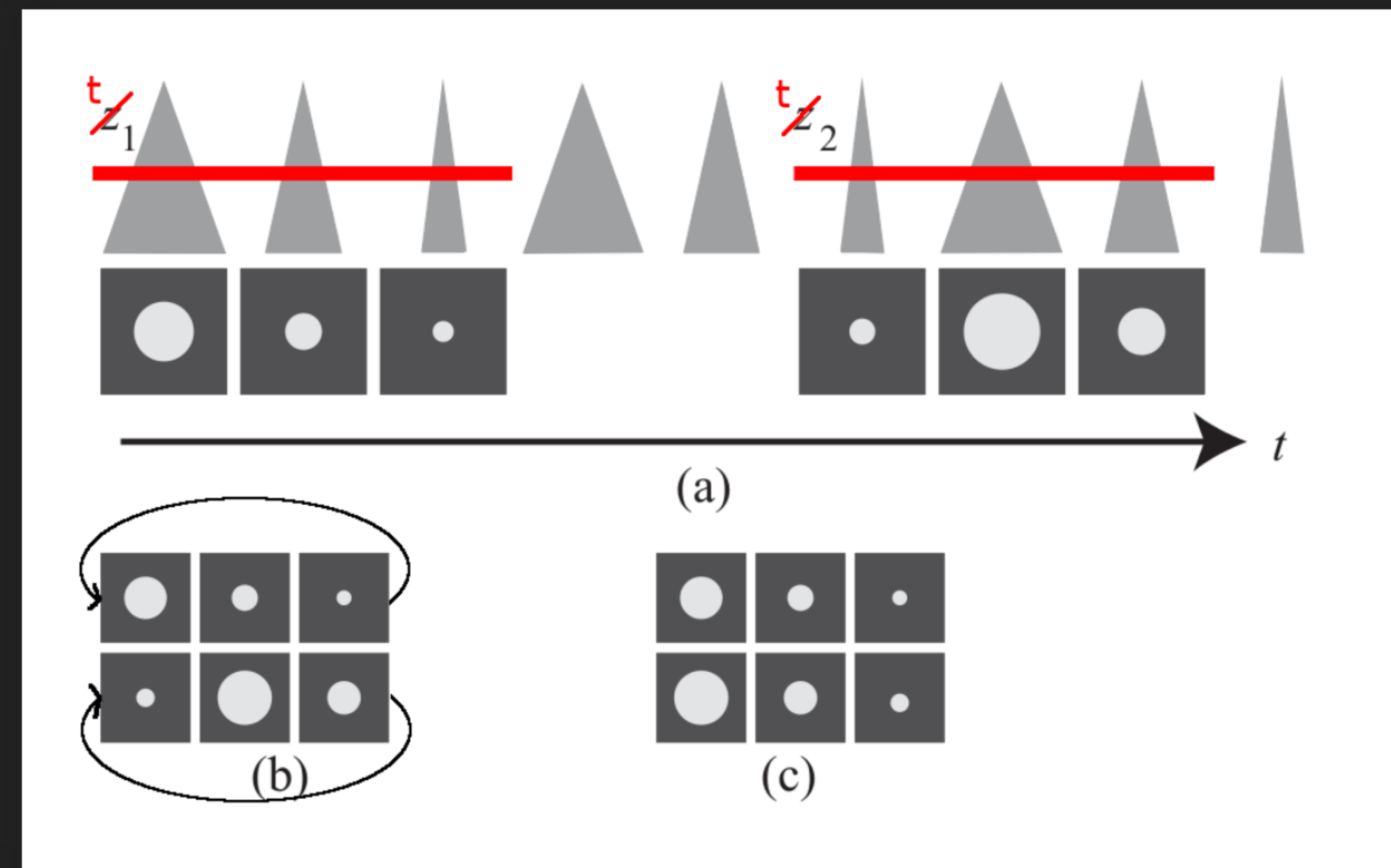
Prospective Only



HYBRID PROSPECTIVE- RETROSPECTIVE OPTICAL GATING



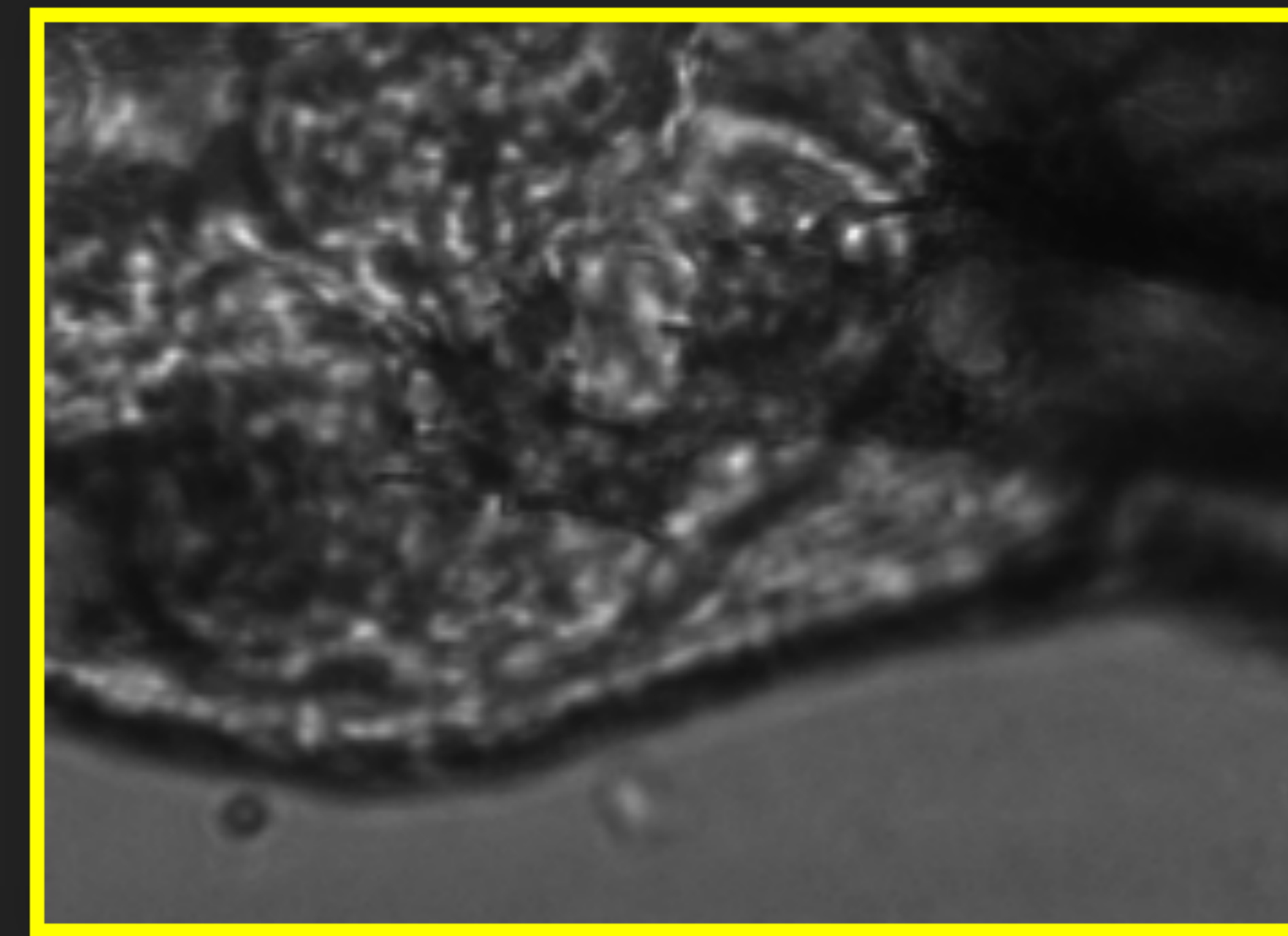
Liebling et al. IEEE ISBI (2006)



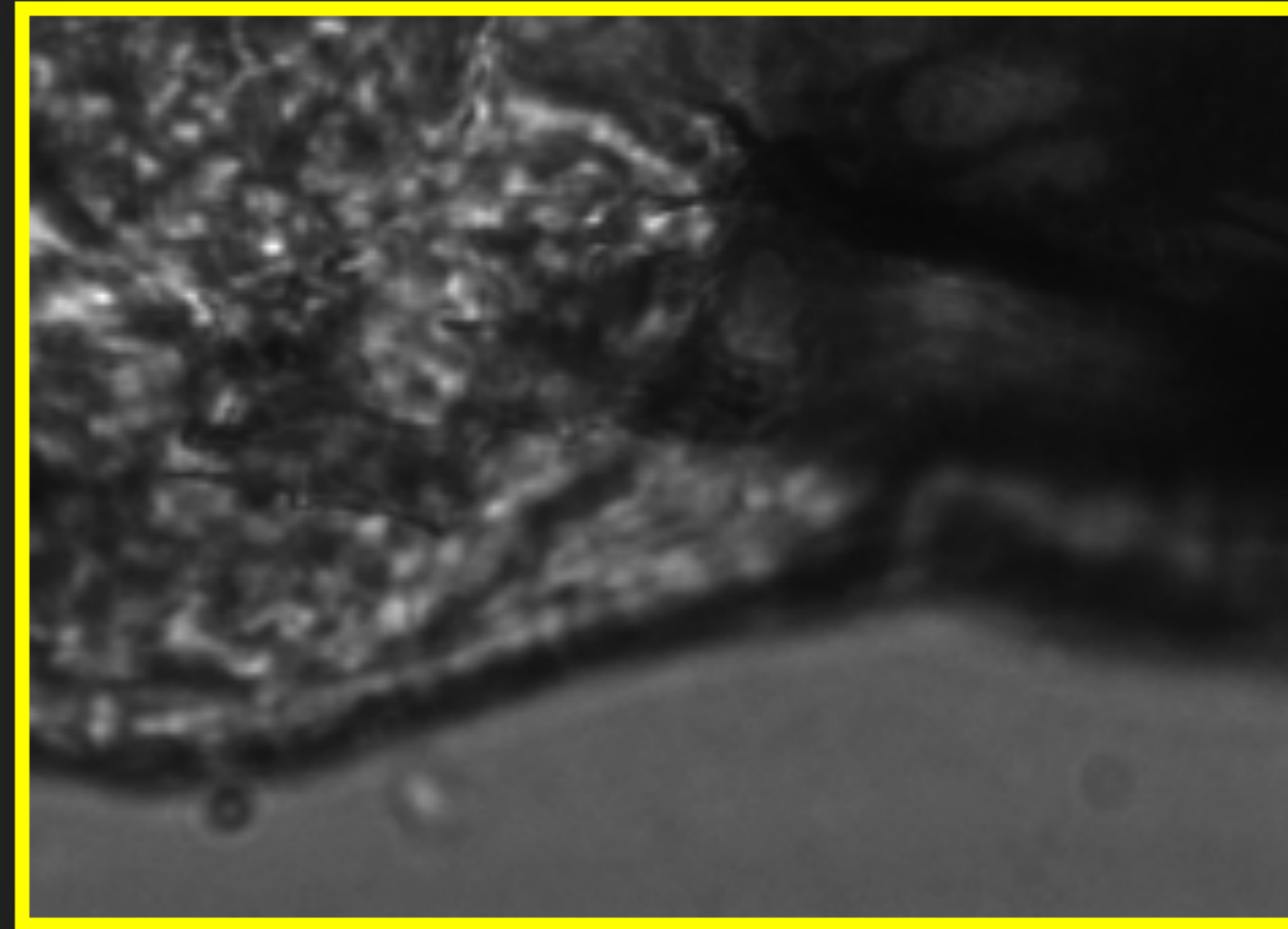
Modified from Liebling et al. IEEE ISBI (2006)

DRIFT

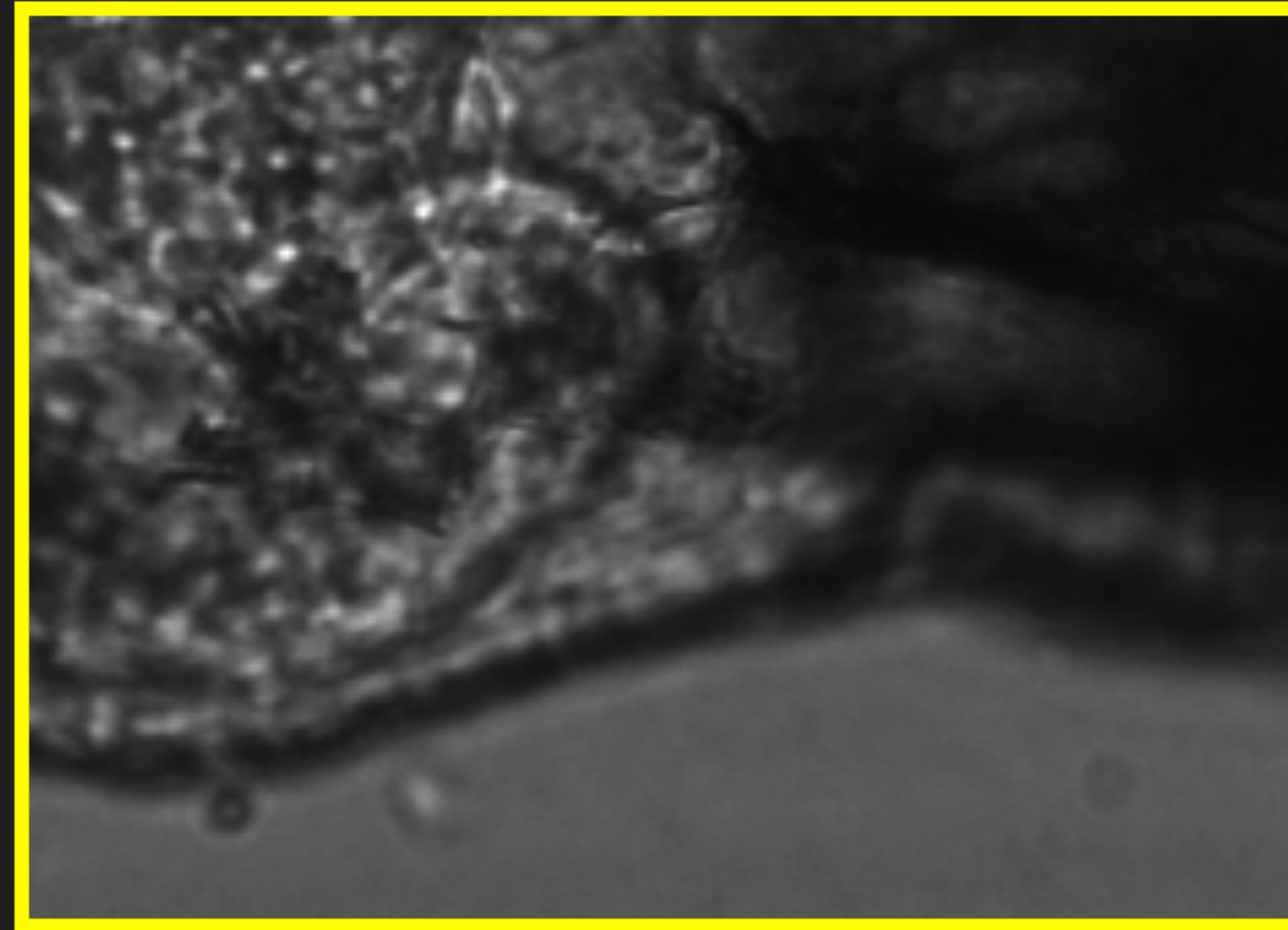
Manual



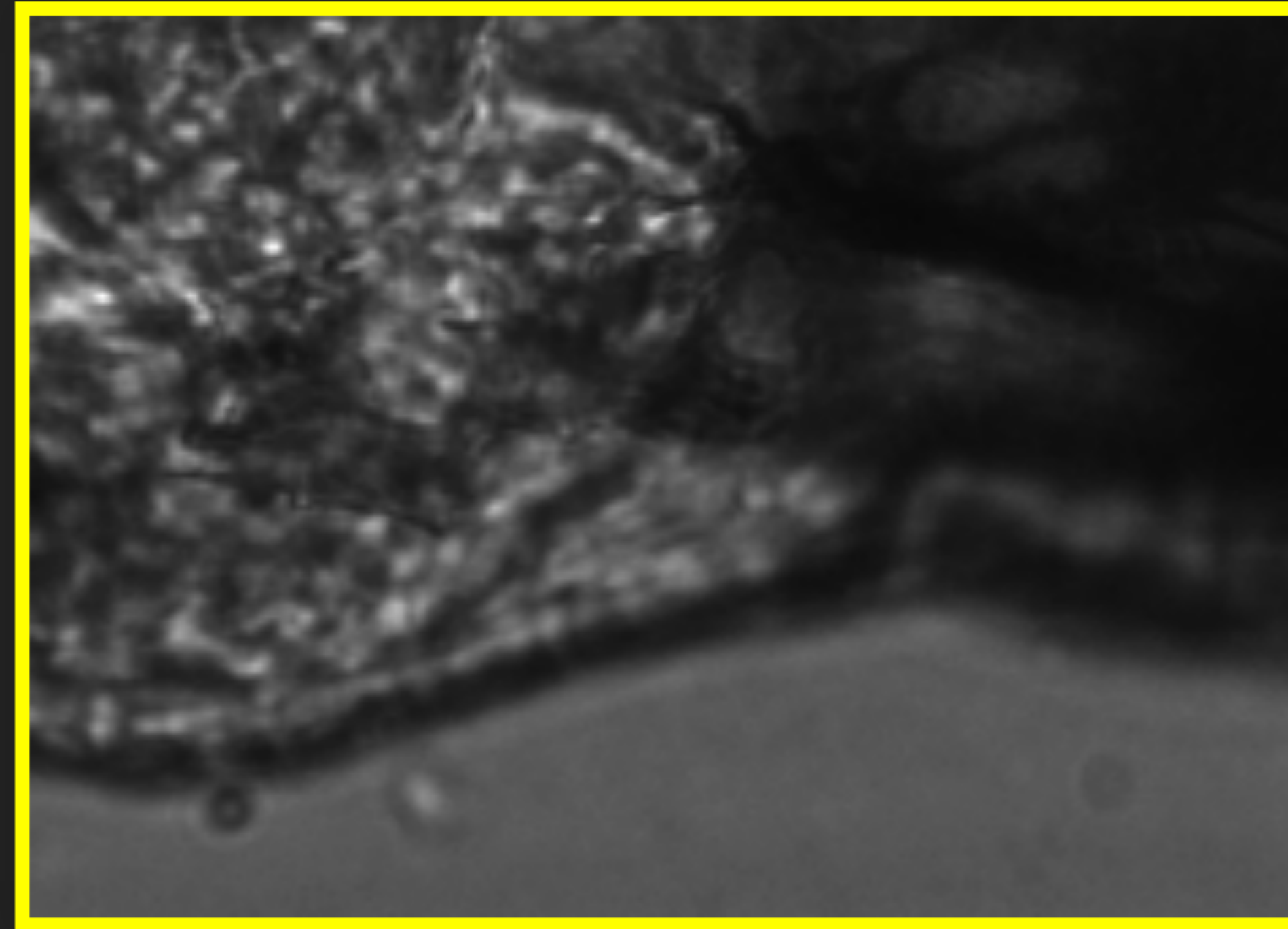
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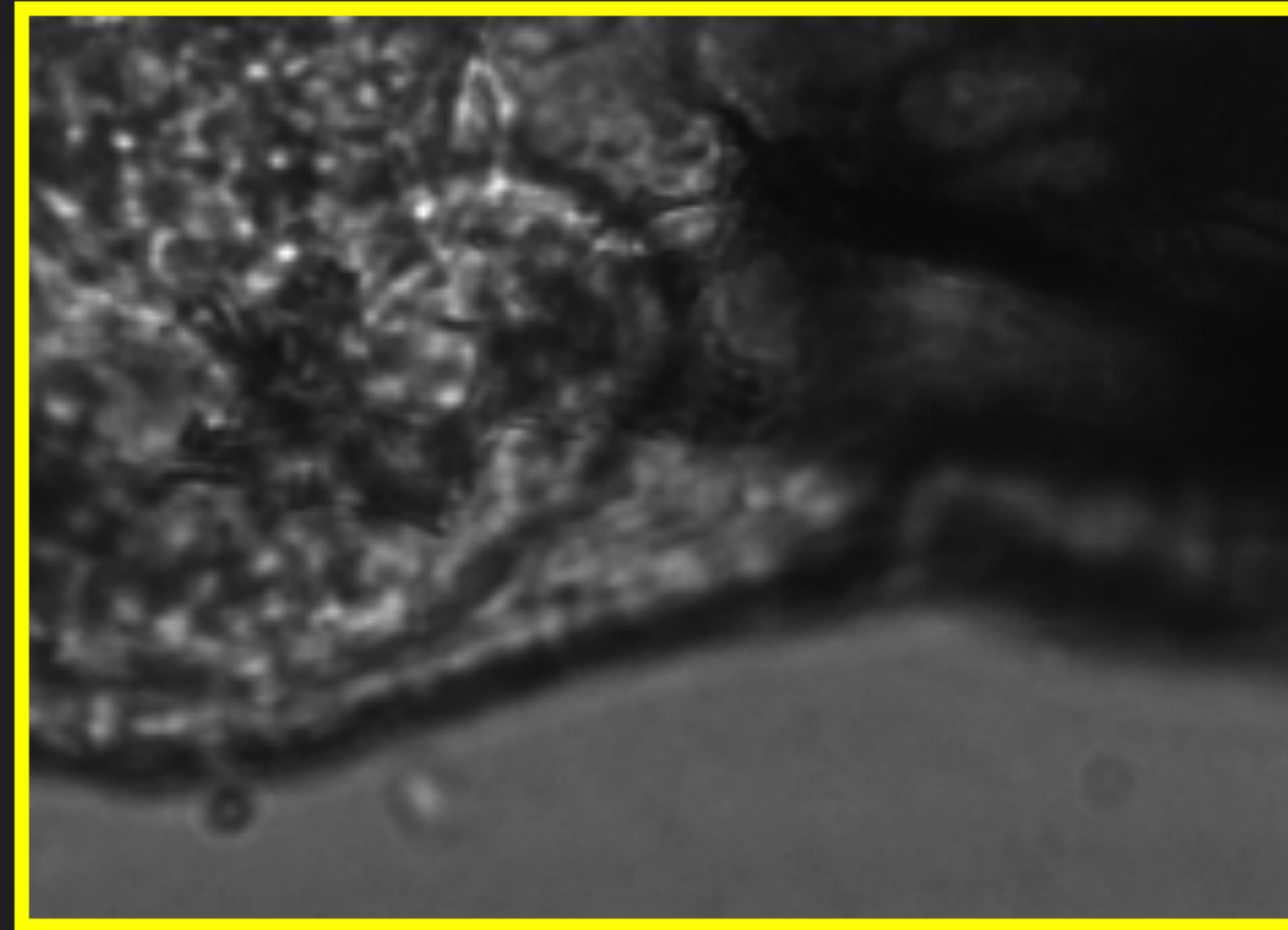
No Correction



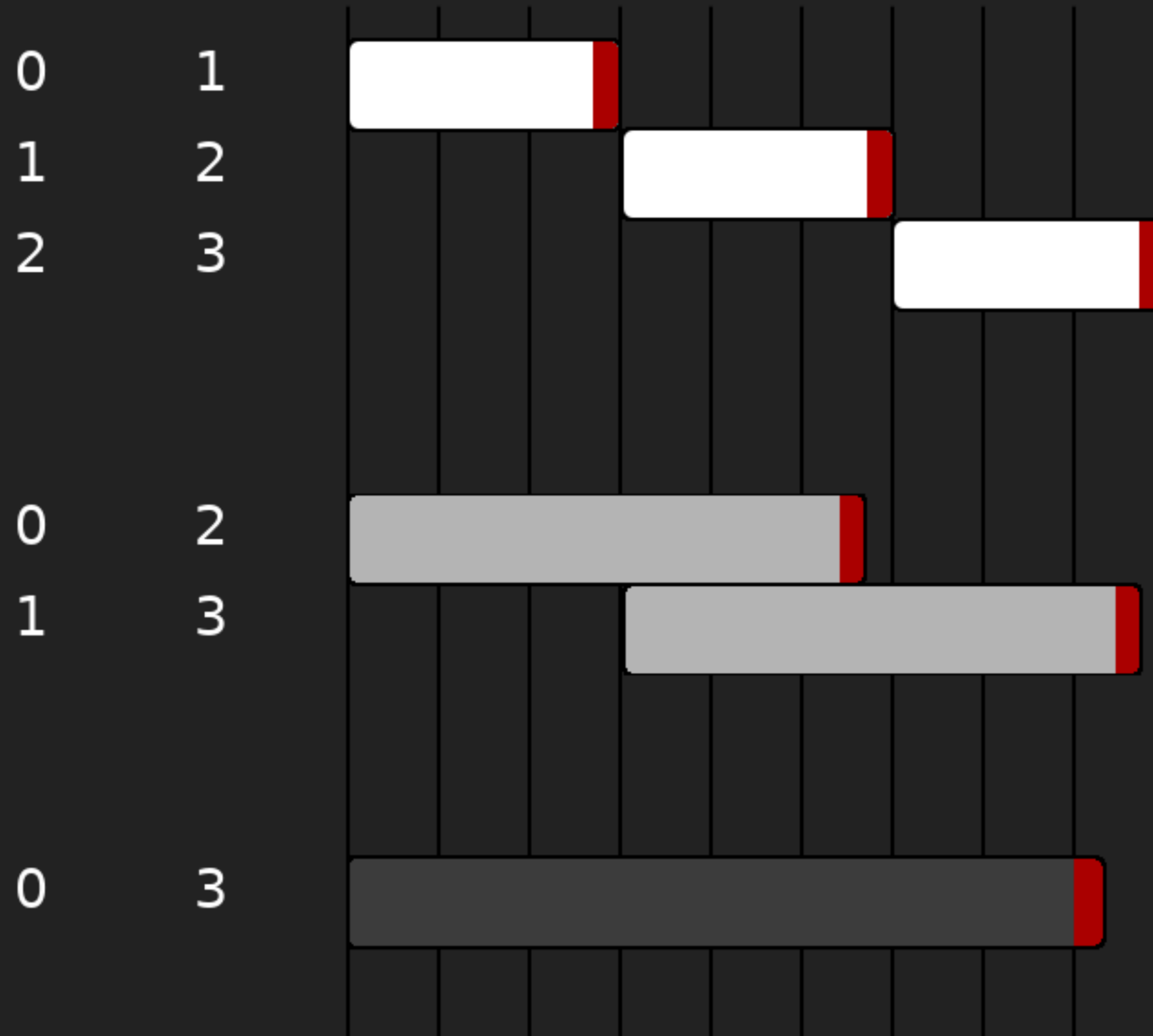
Manual



No Correction



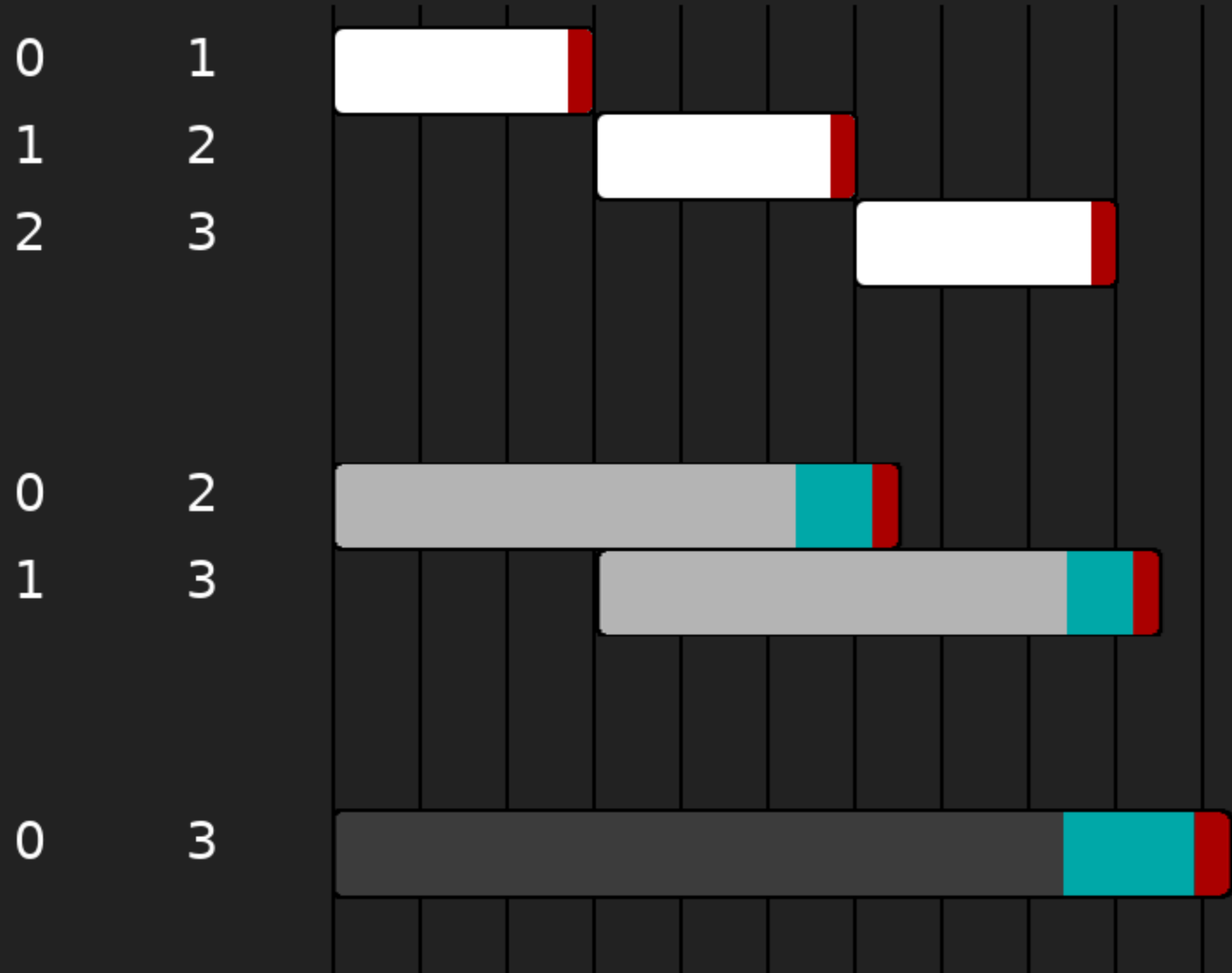
i	j	Relative Shifts (Errors)
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i

j

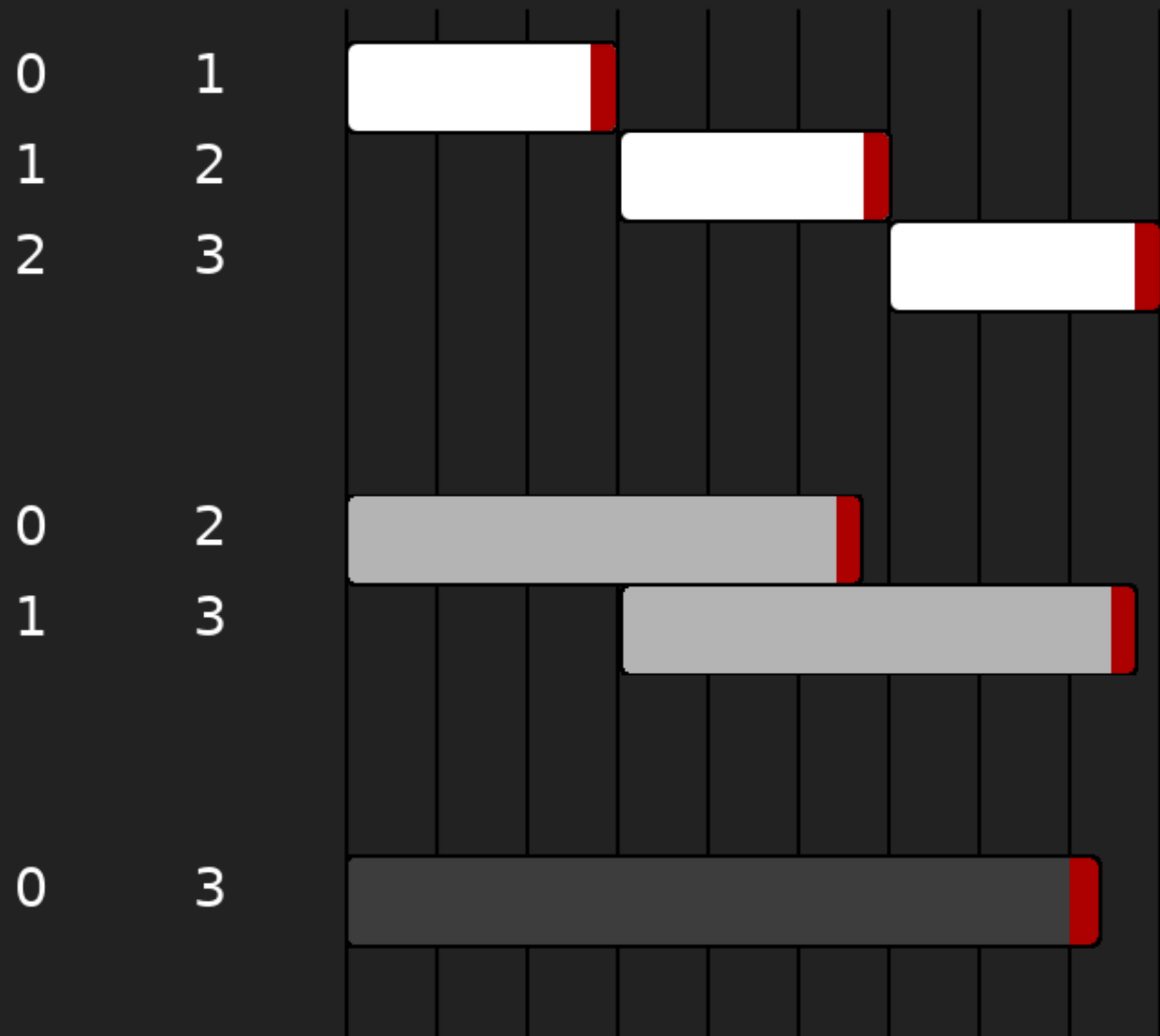
Relative Shifts (Errors)

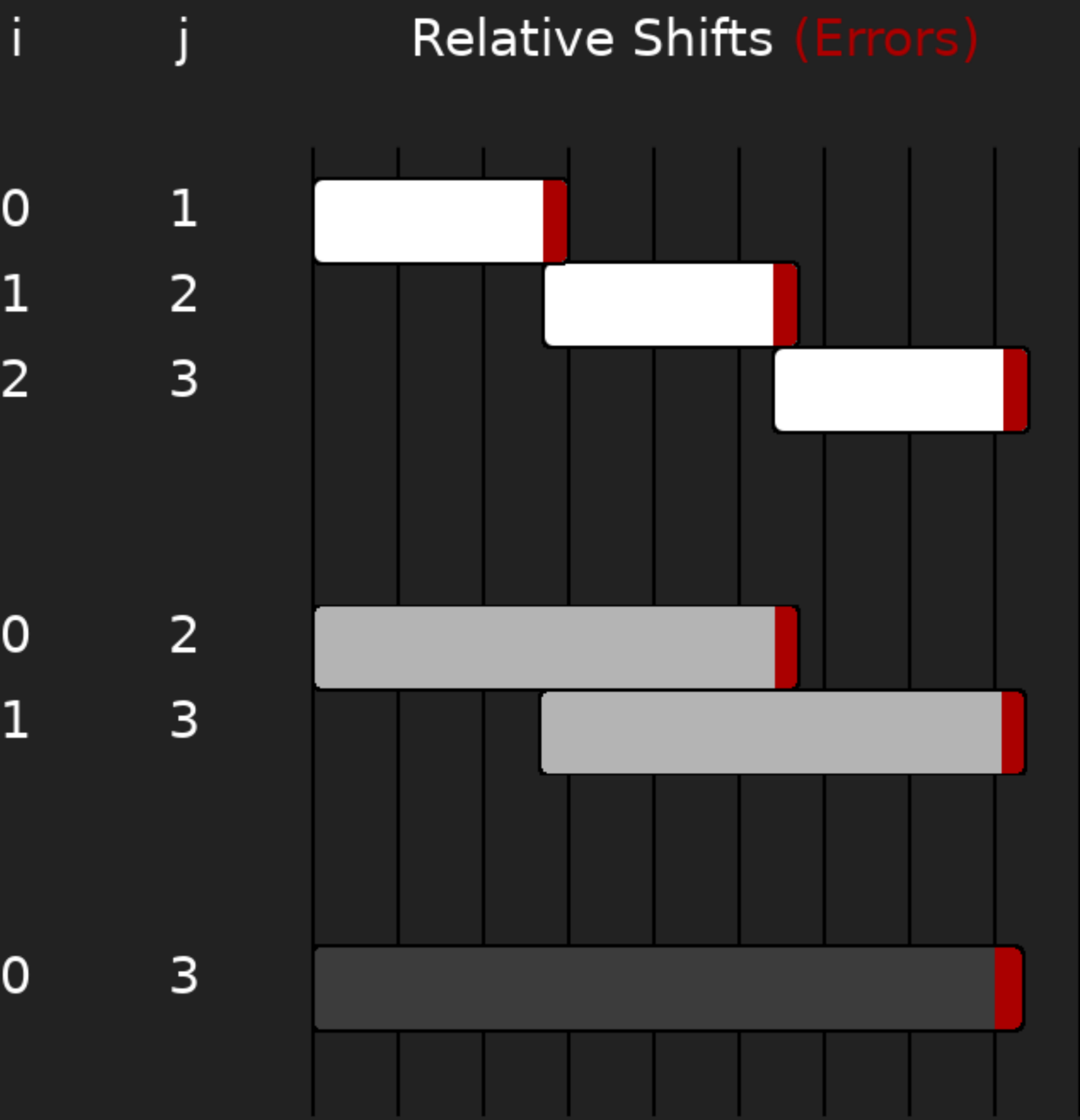


i

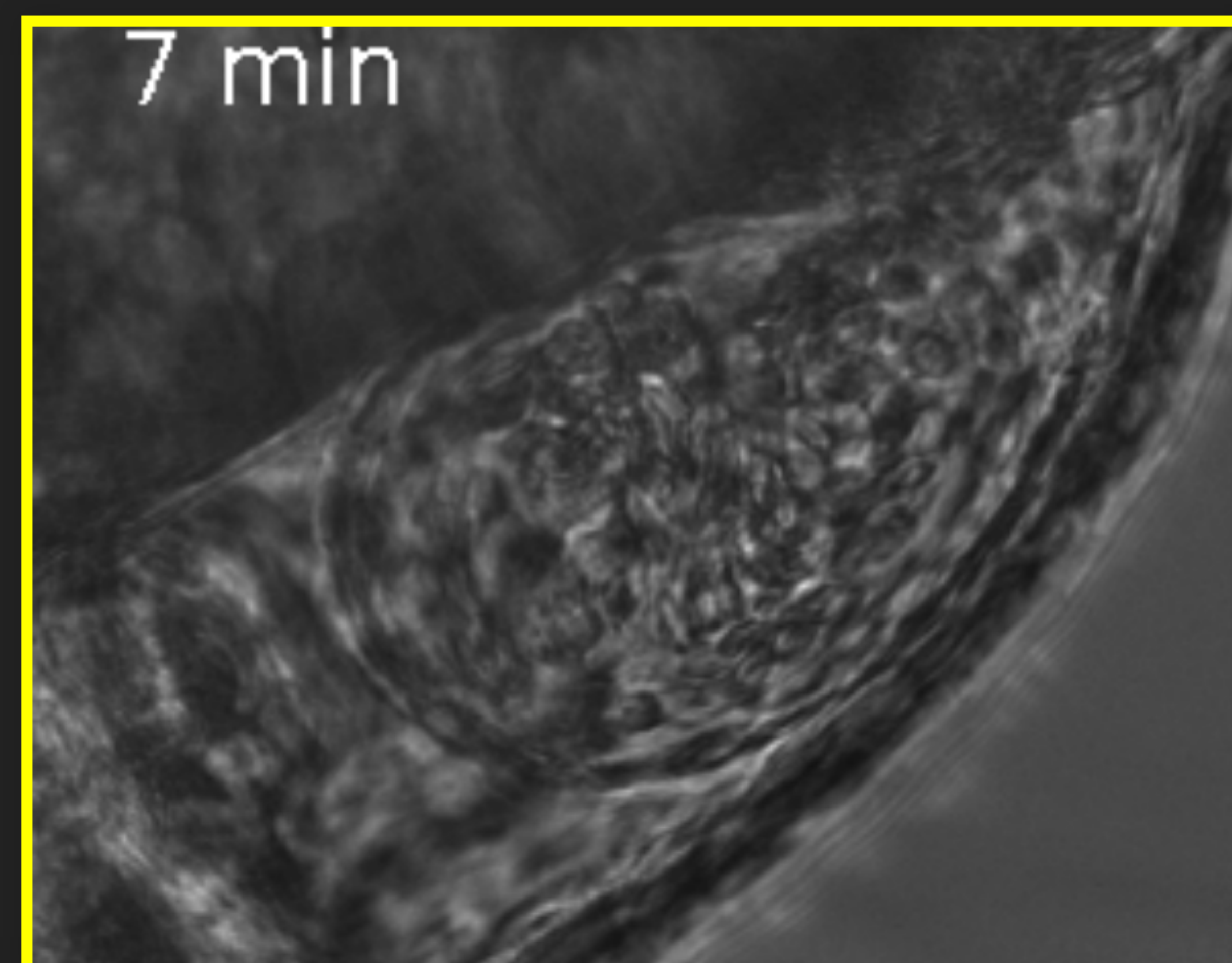
j

Relative Shifts (Errors)

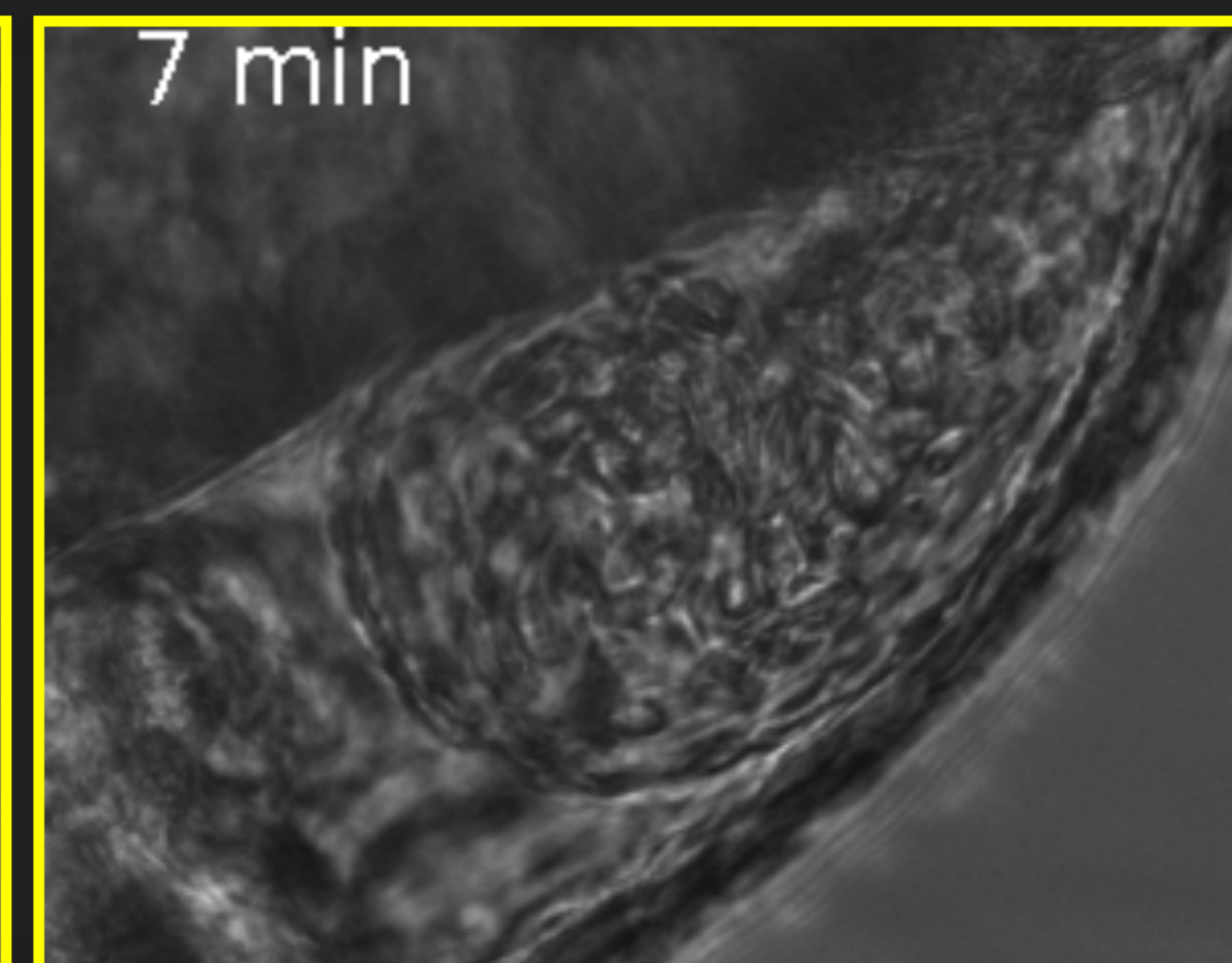


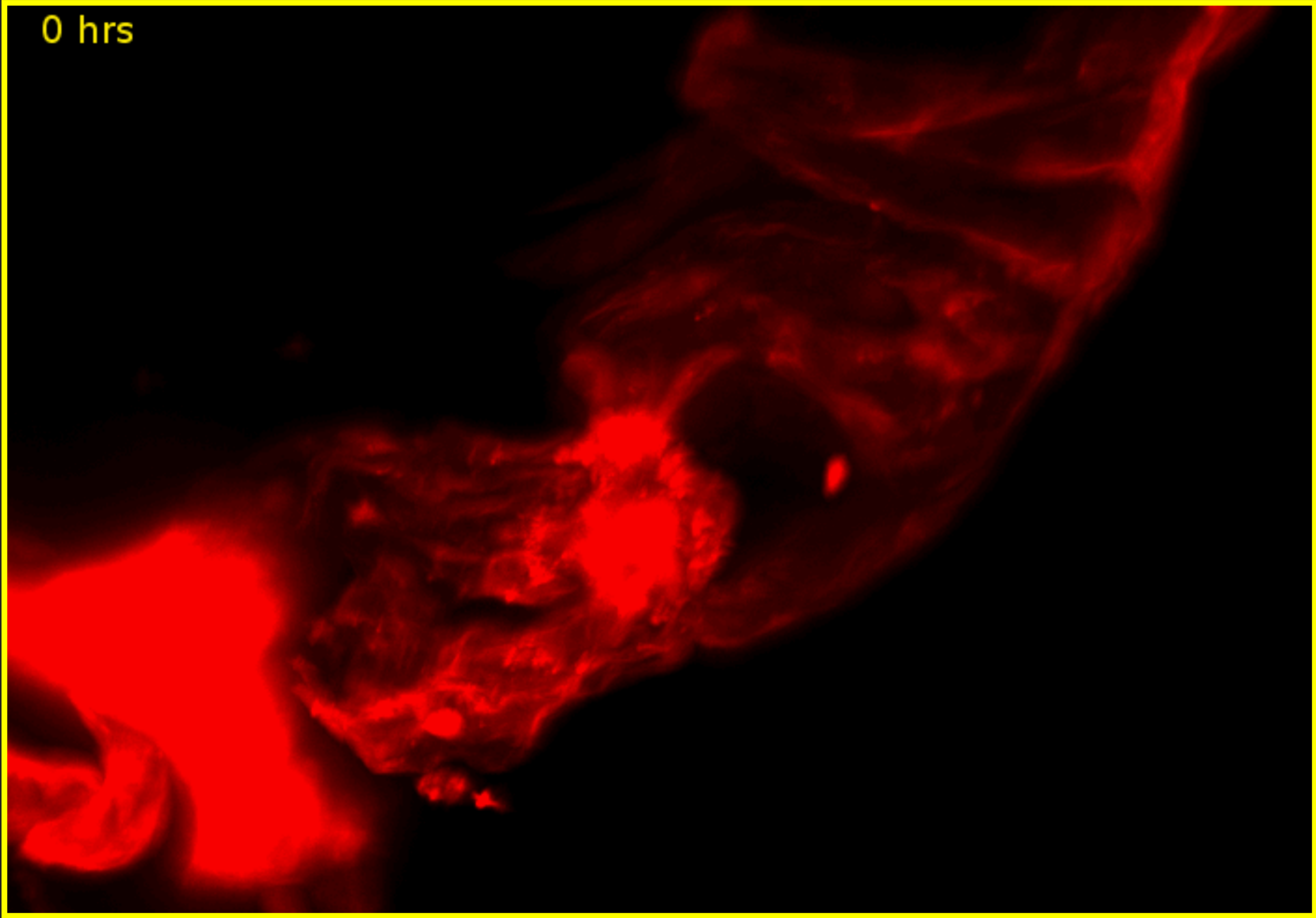


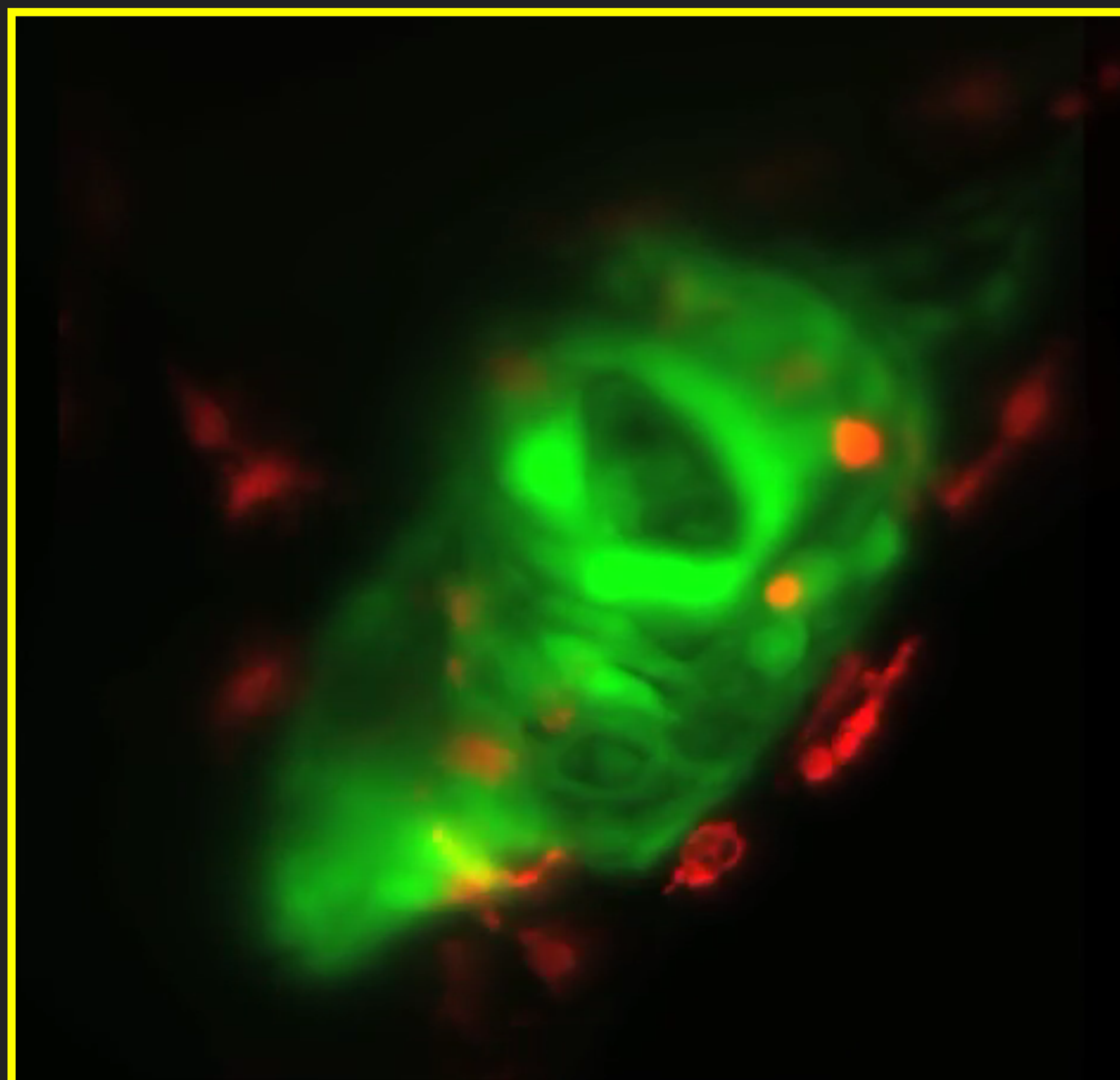
Manual



Automated







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