Multimodal, Multiresolution, Multivolume Data

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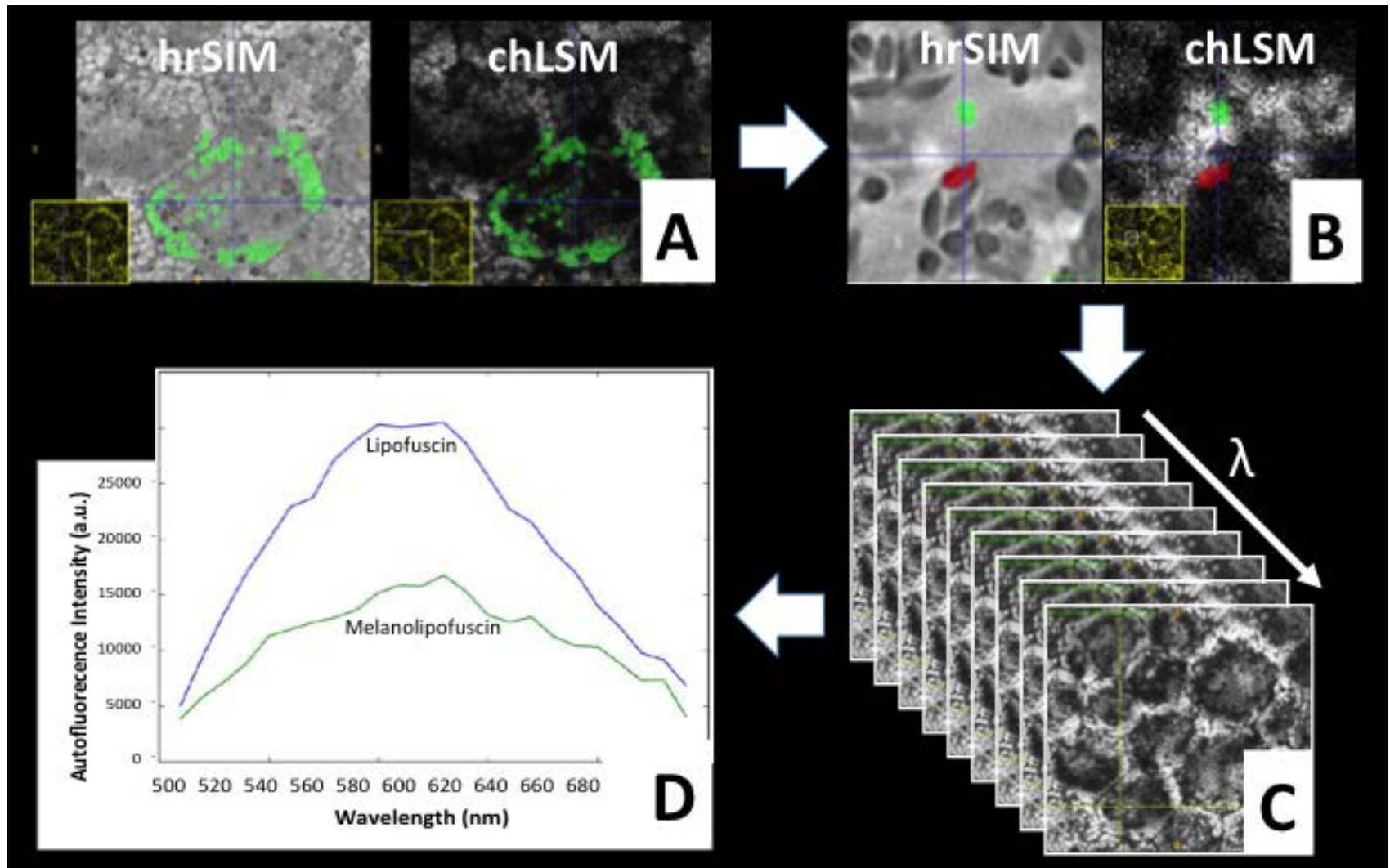NYU Tandon School of Engineering, Computer Science & Engineering

Dr. Thomas Ach, University Hospital Würzburg, Dept. of Ophthalmology

Goal: Study/diagnosis of AMD (age-related macular disease)

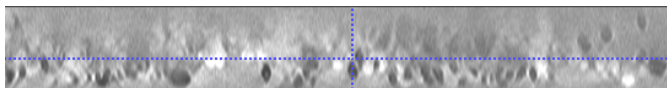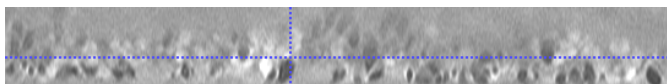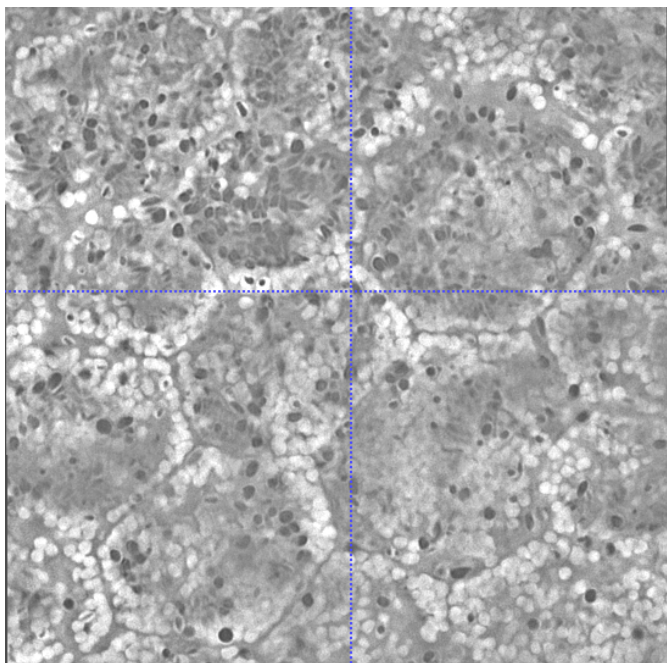**Current data:** RPE (retinal pigment epithelium) tissue from donors
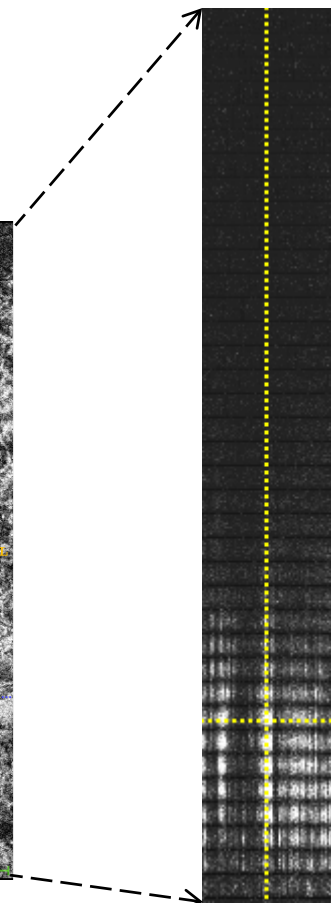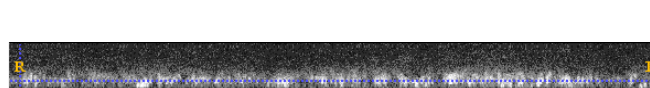
Future data: In-vivo hyperspectral camera

Overview

Input Data
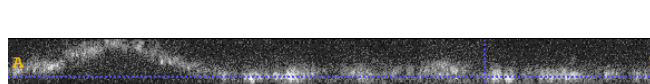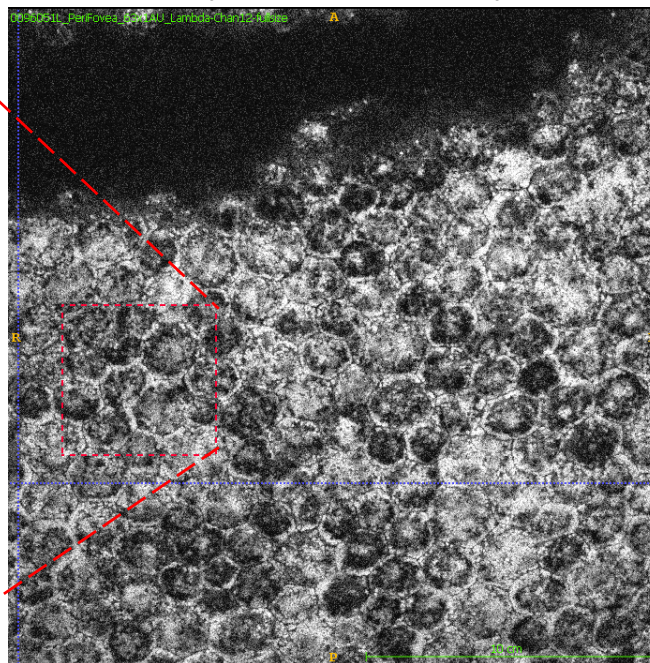
SIM Data (488nm)

xy

xz

yz

LSM Data (shown 597nm)

xy

xz

yz

Multivolume across 24 emission wavelengths
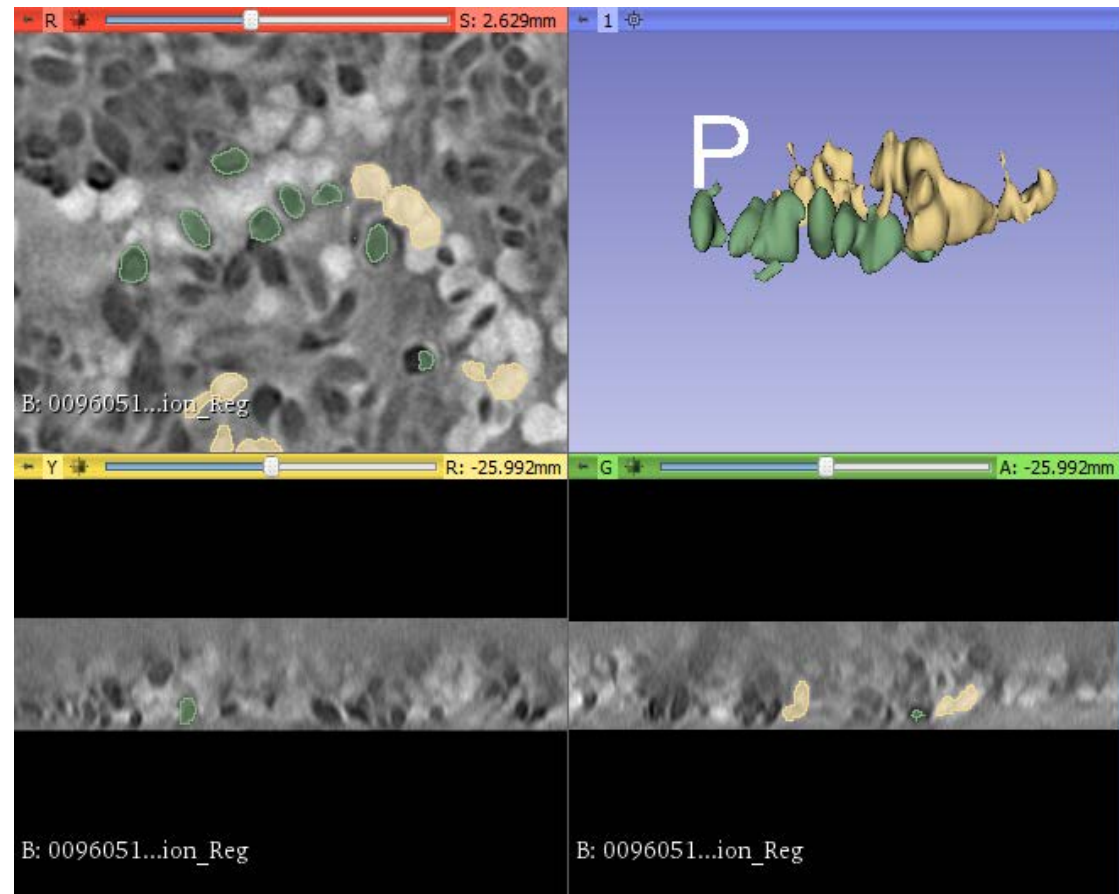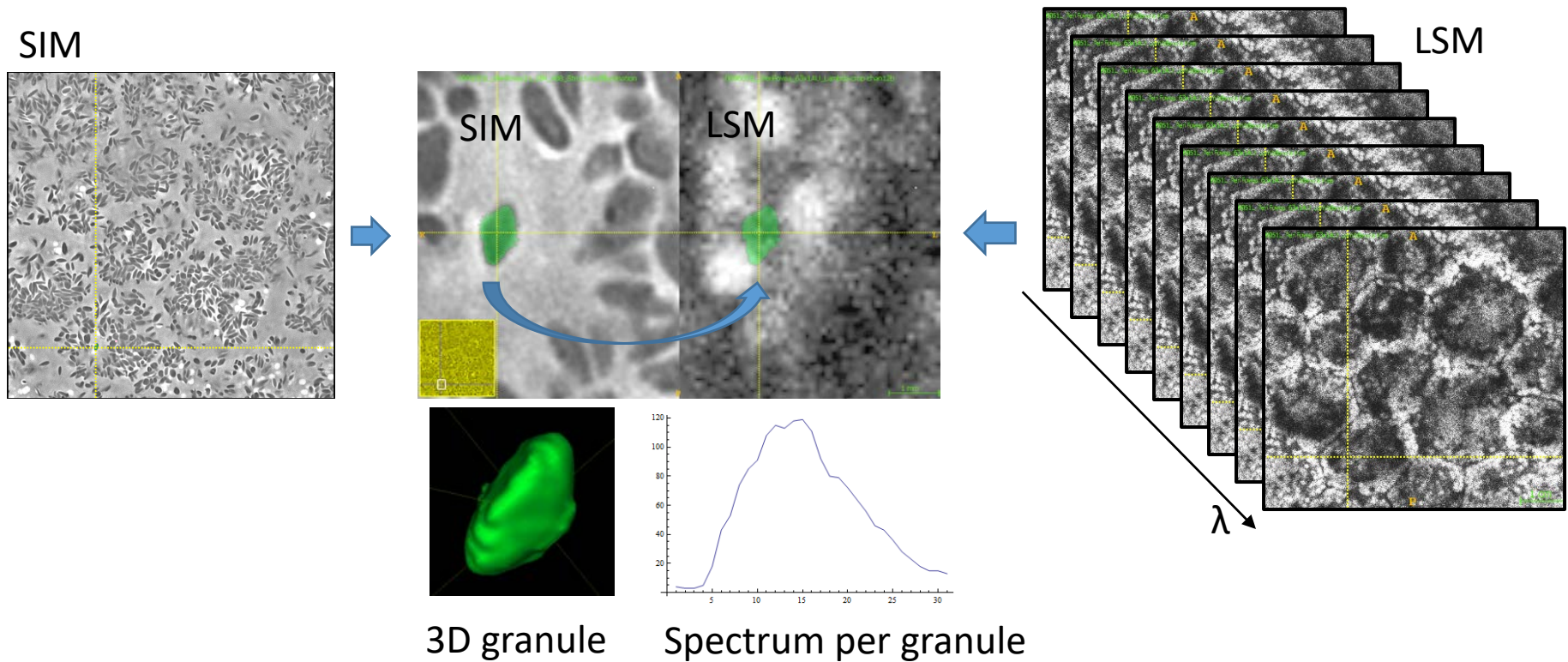
Segmentation of Organelles from SIM
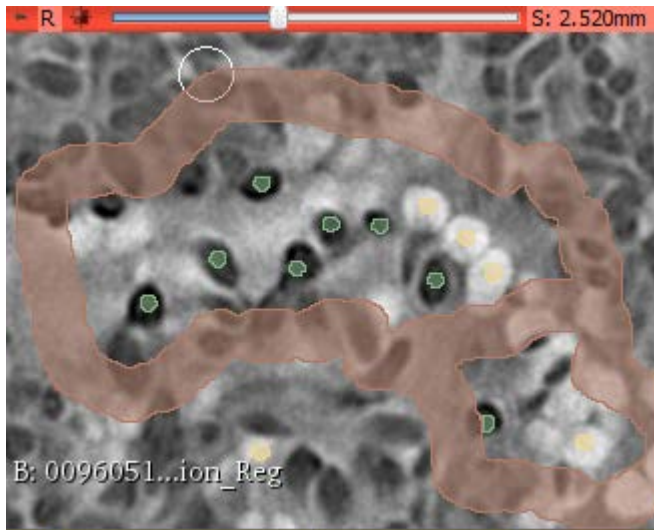
3D Slicer GrowCut: Segmentation of "dark" and "white" organelles

Autoflourescence Analysis of Granules

SIM

SIM LSM

LSM

λ

3D granule   Spectrum per granule
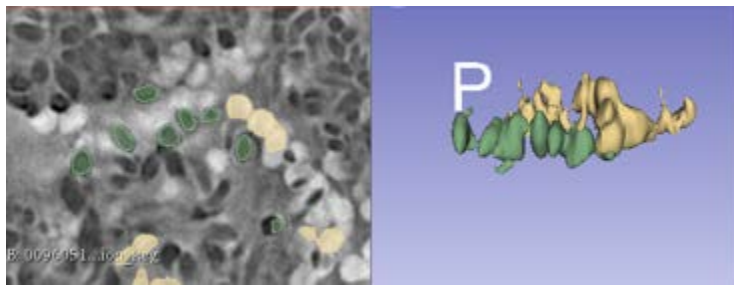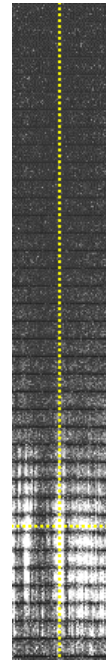
- 3D/4D registration
- 3D segmentation
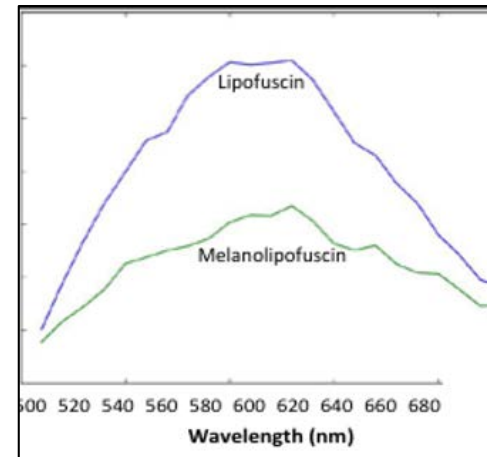- Multivolume quantitative analysis
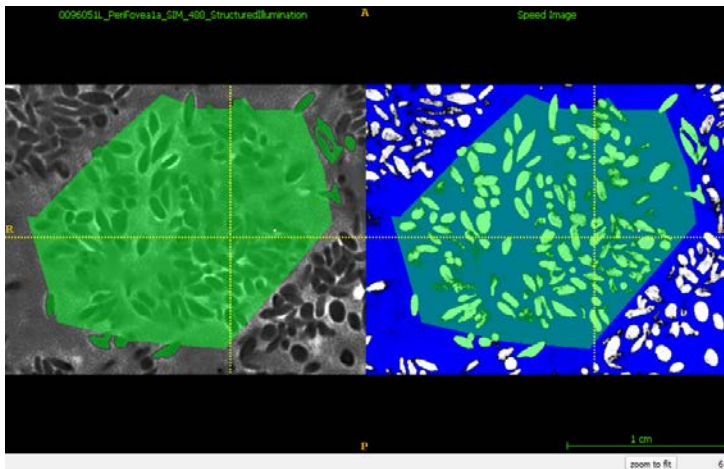
To be developed ...

3D labels

4D multivolume

? so far external python script

? multivolume support for non-Dicom data

Work in Progress:

Research question: Spatial distribution of granules within the cell (granules/layer)

3D segmentation of granules within single cell