



Supplementary information

# CARS Imaging Advances Early Diagnosis of Cardiac Manifestation of Fabry Disease

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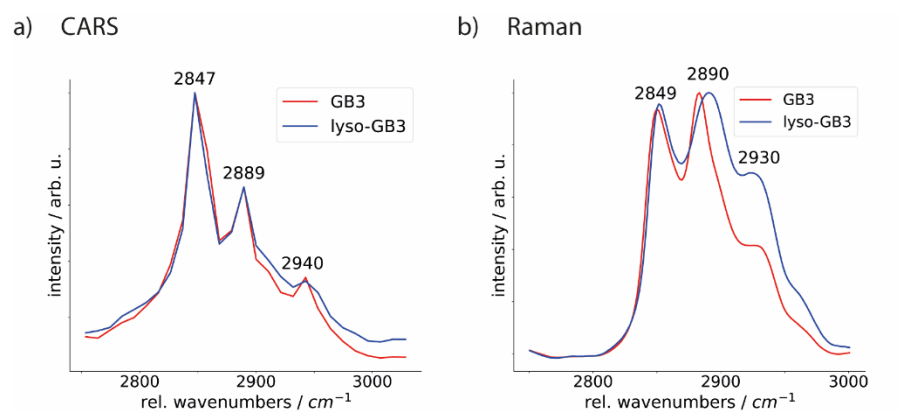


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## Supplementary information

### Reference Spectra Measurements of Gb3 and Lyso-Gb3 using Raman spectroscopy.

Aiming to prove our data analysis with the biomarker accumulations in FD cardiac tissues, we measured additionally the reference spectra of Gb3 and lyso-Gb3 substances in synthetic (crystalline) form. Due to lower spectral resolution no significant differentiation between both biomarkers could be obtained applying CARS microscopy and therewith no bimolecular changes could be found. To address this issue, we measured Gb3 and lyso-Gb3 at the confocal Raman micro-spectroscopy (see Material and Methods for the detailed description), which possesses higher spectral and lateral resolutions. Indeed, the Raman bands have slight shifts at CH stretching vibrations (e.g. at 2890 cm<sup>-1</sup> and at 2930 cm<sup>-1</sup>) providing detailed information. This advantage could support therapeutic strategies for FD and allows further investigation of molecular interactions (see “Discussion” section for more details on all advantages and disadvantages of Raman spectroscopy compared to CARS microscopy).



**Figure S1.** Reference spectra of globotriaosylceramide (Gb3, depicted in red) and its metabolite globotriaosylsphingosine (lyso-Gb3, depicted in blue) recorded using (a) CARS microscopy and (b) Raman micro-spectroscopy in C-H stretching region.