

**Raman spectroscopic signatures of carotenoids and polyenes enable label-free  
visualization of microbial distributions within pink biofilms**

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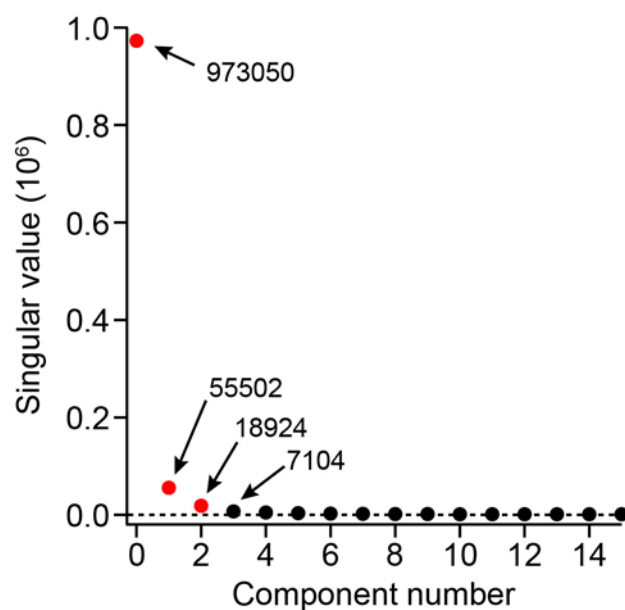
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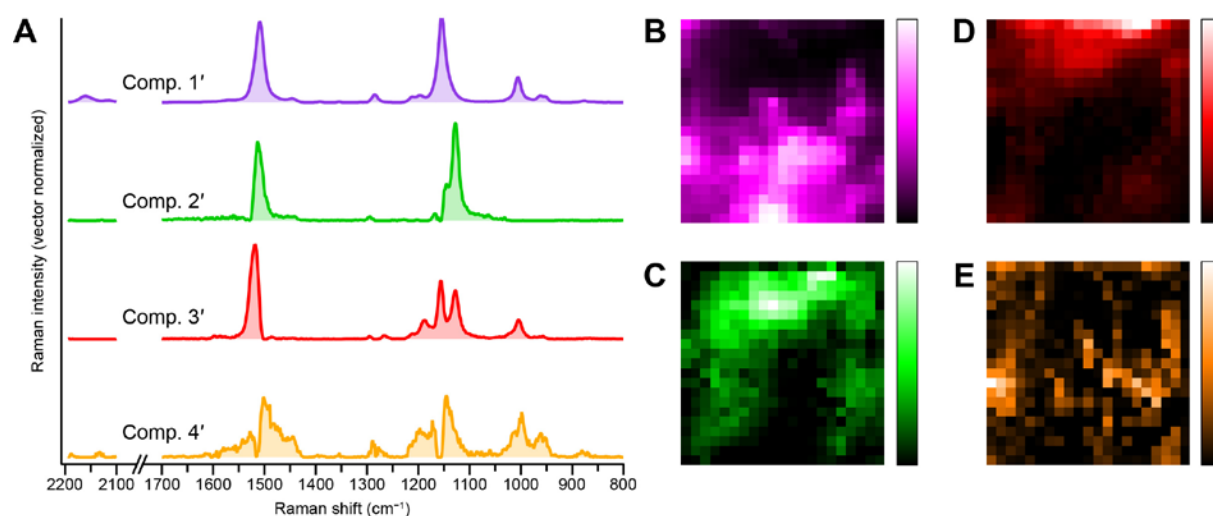
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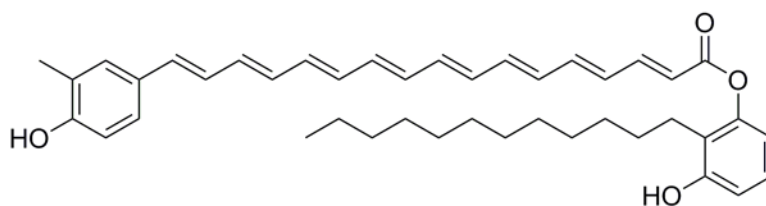
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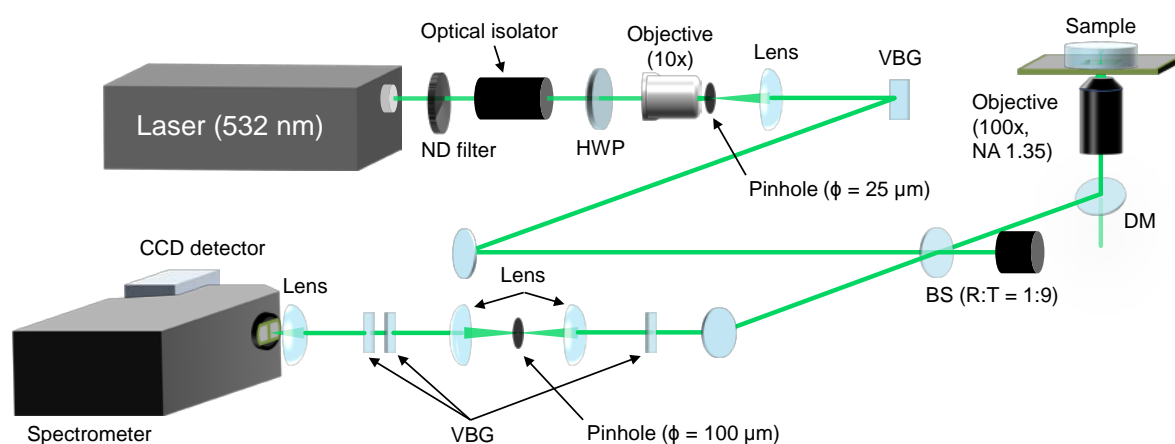
**Supplementary Figure S1.** Plot of singular values obtained from SVD of the Raman hyperspectral imaging data of the pink biofilm.



**Supplementary Figure S2.** MCR-ALS results assuming four components ( $k = 4$ ). (A) Intrinsic Raman spectra of the four components (denoted 1'–4'). Each spectrum has been normalized so that the sum of intensities at all Raman shifts is equal to unity. The spectra are vertically offset for clarity of display. (B–E) Raman images of components 1' (B), 2' (C), 3' (D), and 4' (E). The Raman images are shown in pseudocolor.



**Supplementary Figure S3.** Molecular structure of flexirubin.



**Supplementary Figure S4.** Schematic diagram of the laboratory-built, 532 nm-excited confocal Raman microspectrometer. Abbreviations: ND, neutral density; HWP, half-wave plate; VBG, volume Bragg grating; BS, beam splitter; DM, dichroic mirror; CCD, charge-coupled device.