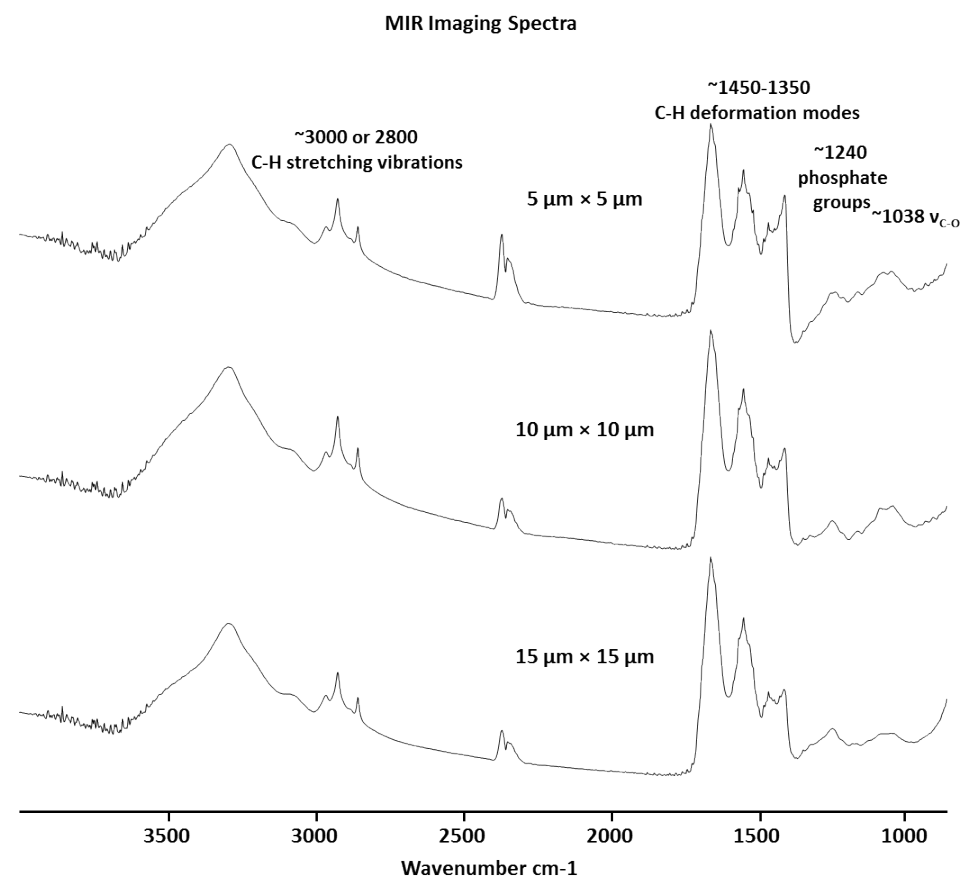


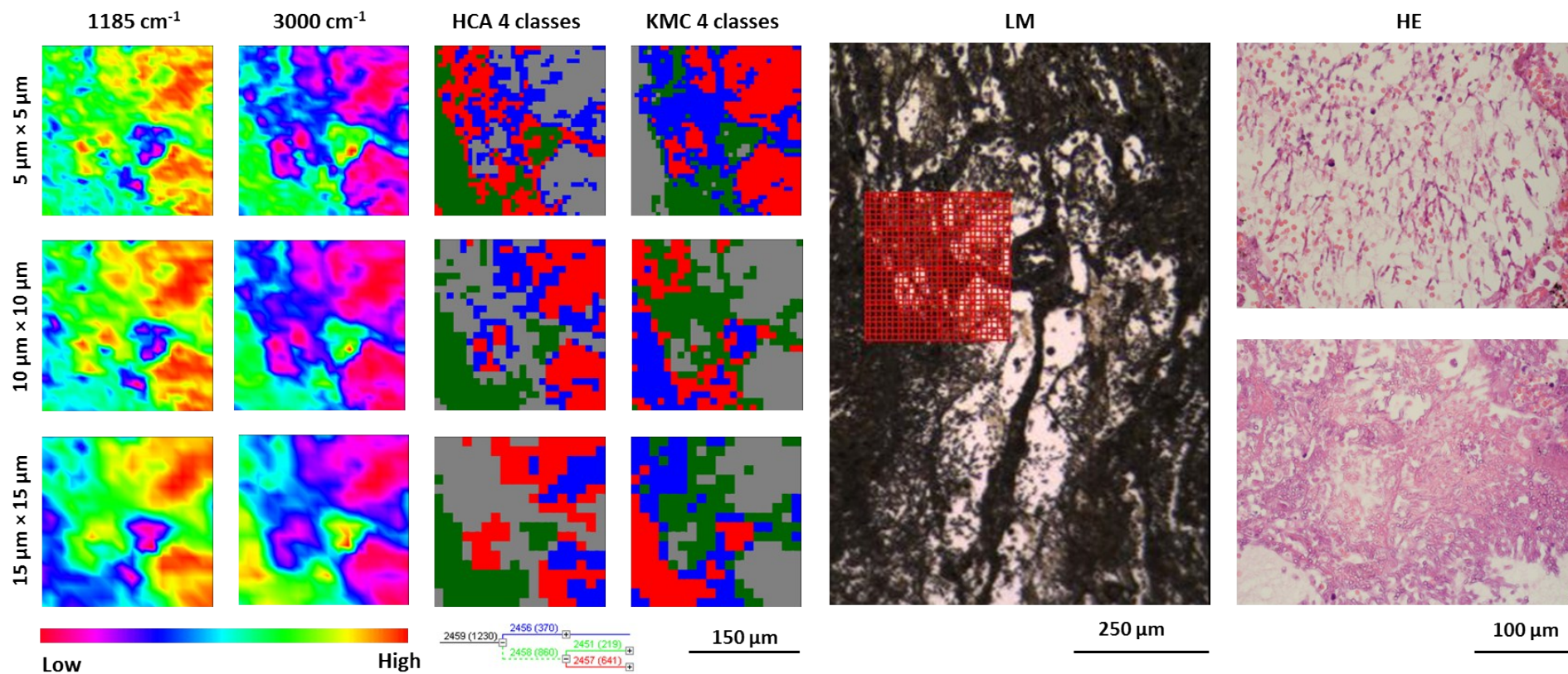
1 Supplementary



2

3 **Fig. I** Effects of the beam focus on spectra quality. Single spectra are chosen from the same *Mucor*-infected lung tissue region measured with a lateral resolution
4 of 15.0 $\mu\text{m} \times 15.0 \mu\text{m}$, 10.0 $\mu\text{m} \times 10.0 \mu\text{m}$ and 5.0 $\mu\text{m} \times 5.0 \mu\text{m}$. It can be demonstrated, that there is no detrimental effect of the beam focus settings on the

- 5 spectra quality. Spectra demonstrate a slight increase in noise as the aperture size decreases. MIR spectra displayed in the range from 4000 cm^{-1} to 850 cm^{-1} .
- 6 Major absorption bands are indicated.



- 7
- 8 **Fig. II** Chemical maps and pseudo-color cluster images generated by multivariate imaging analyses of one individual patient lung tissue sample recorded with
- 9 square apertures of edge sizes: 15.0 $\mu\text{m} \times 15.0 \mu\text{m}$, 10.0 $\mu\text{m} \times 10.0 \mu\text{m}$ and 5.0 $\mu\text{m} \times 5.0 \mu\text{m}$. Results illustrate the capability of spectroscopic imaging to
- 10 accurately reproduce tissue histology of the tissue section. Detailed histological features of the tissue section become clearly visible at a 5.0 $\mu\text{m} \times 5.0 \mu\text{m}$ aperture

- 11 sizes. The MIR microscopic imaging results of the given example demonstrate that it is possible to acquire MIR images at aperture size of $5.0 \mu\text{m} \times 5.0 \mu\text{m}$ and
- 12 that the resolution corresponds with hyphael elements seen in the tissue sample.

14 **Tab.I** Assignment of some characteristic bands in the MIR spectra of *mucormycete*- infected (M) and human tissue (H). Upward arrows indicate strong
 15 absorption band.

Wavenumber (cm ⁻¹)	Tentative Assignment	M	H
~3300	protein amide A vibration ^{17, 62}	↑	↑
~3000 - 2800	C-H stretching vibrations of phospholipids, of protein side chains, nucleic acid sugars, complex carbohydrates as well as that of amorphous or fully hydrated sugars ^{17, 18}	↑	
~1740	$\nu_{C=O}$ esters, phospholipids as well as carbohydrates ^{50, 63}	↑	↑
~1630	amide-I proteins ^{48, 49}	↑	↑
~1550	amide-II proteins ^{37, 47}	↑	↑
~1515	amide-II proteins with high tyrosine content ^{33, 37, 47}	↑	
~1450-1350	C-H deformation modes and some carboxylic acid modes ^{33, 37, 47}	↑	↑
~1240	phosphate groups of DNA, RNA as well as some phospholipids ⁴⁴⁻⁴⁶	↑	↑
~1185	carbohydrate bands ⁴³	↑	
~1084	$\nu_{P=O}$ symmetric vibrations of the > PO ₂ - groups nucleic acids and phospholipids ⁵¹⁻⁵³	↑	
~1060	ν_{C-O-C} symmetric vibrations of phospholipids, cholesterol and esters ⁵⁰	↑	
~1038	ν_{C-O} carbohydrates ^{64, 65}	↑	

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