

Supplementary Materials

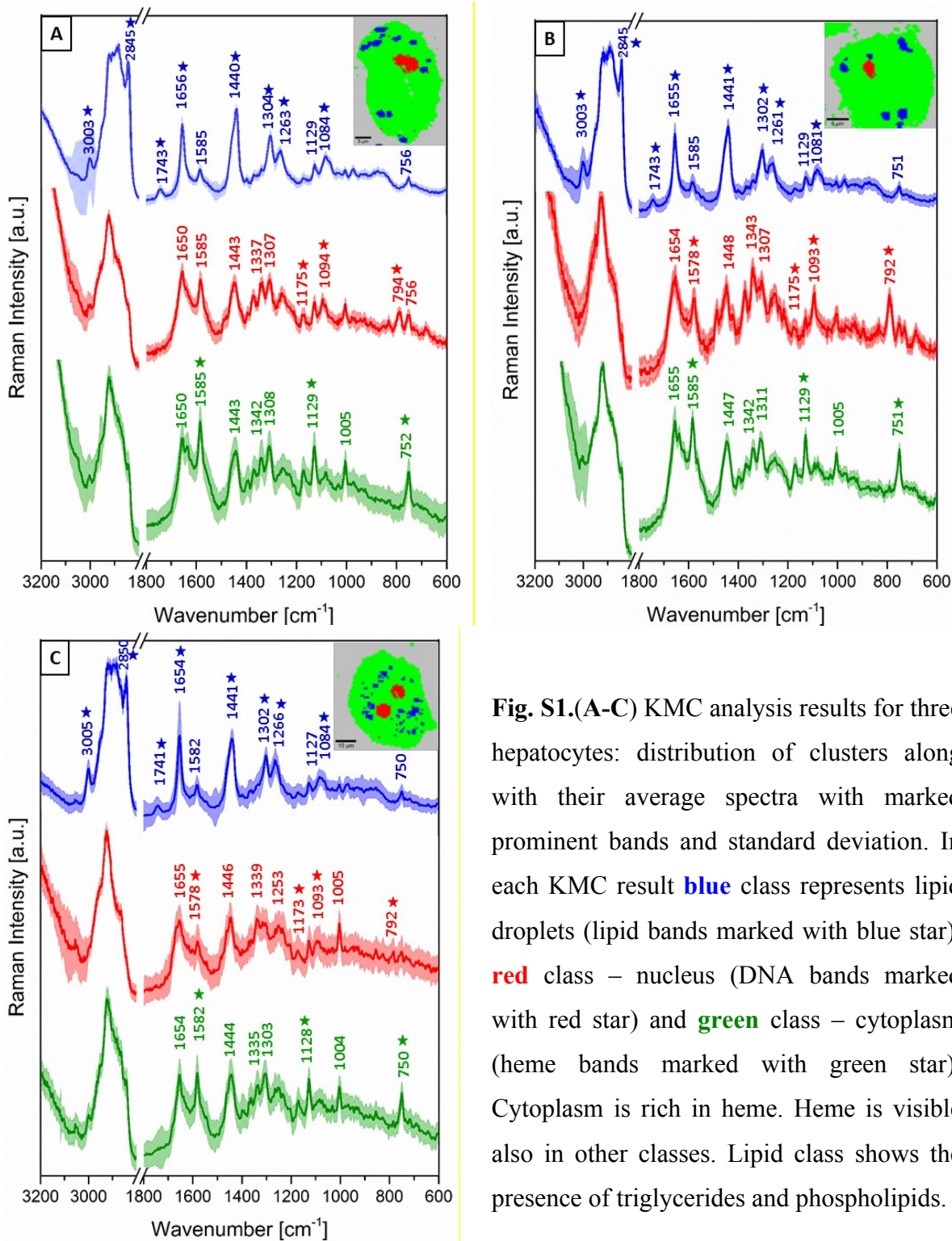


Fig. S1.(A-C) KMC analysis results for three hepatocytes: distribution of clusters along with their average spectra with marked prominent bands and standard deviation. In each KMC result **blue** class represents lipid droplets (lipid bands marked with blue star), **red** class – nucleus (DNA bands marked with red star) and **green** class – cytoplasm (heme bands marked with green star). Cytoplasm is rich in heme. Heme is visible also in other classes. Lipid class shows the presence of triglycerides and phospholipids.

Table S1. Assignment of the bands visible on average spectra of KMC classes of hepatocytes (Fig. S.1.). Bands marked with stars on Fig.S.1. are color-coded: lipids – blue, DNA – red, heme – green.

Band position [cm ⁻¹]	Assignment	Band position [cm ⁻¹]	Assignment
751 – 756	Heme	1303 – 1311	Collagen:CH ₃ & CH ₂ twisting
792 – 794	DNA: O-P-O, cytosine, uracil, thymine	1335 – 1342	CH ₃ & CH ₂ wagging of collagen, tryptophan and polynucleotide chain (DNA)
1004 – 1005	Phenylalanine	1440 – 1448	CH ₂ deformation (lipids and proteins)
1081 – 1084	Phospholipids: C-C & C-O stretching	1578 – 1585	Guanine (N ₃), adenine, nucleic acid mode (DNA)
1093 – 1094	Phosphodiester groups in DNA: symmetric PO ₂ ⁻ stretching	1582 – 1585	Heme
1127 – 1129	Heme	1650 – 1656	C = C stretching of lipids and/or amide I (α -helix)
1173 – 1175	DNA: cytosine, guanine	1741 – 1743	C = O stretching of esters (lipids)
1253	DNA: cytosine, guanine (NH ₂)	2845 – 2850	Symmetric stretching of CH ₂ in lipids
1261 – 1266	Lipids: deformation vibration of =C-H; <i>cis</i>	3003 – 3005	Asymmetric stretching of =C-H in lipids

Table S2. Assignment of the most prominent bands visible on average spectra of hepatocytes.

Band position [cm⁻¹]	Assignment
750 – 752	Heme
1004 – 1005	Phenylalanine
1126 – 1131	Heme
1305 – 1311	CH ₂ twisting/bending (lipids, collagen)
1442 – 1447	CH ₂ deformation (lipids, proteins)
1582 – 1585	Heme
1655 – 1656	Amide I, C = C stretching of lipids

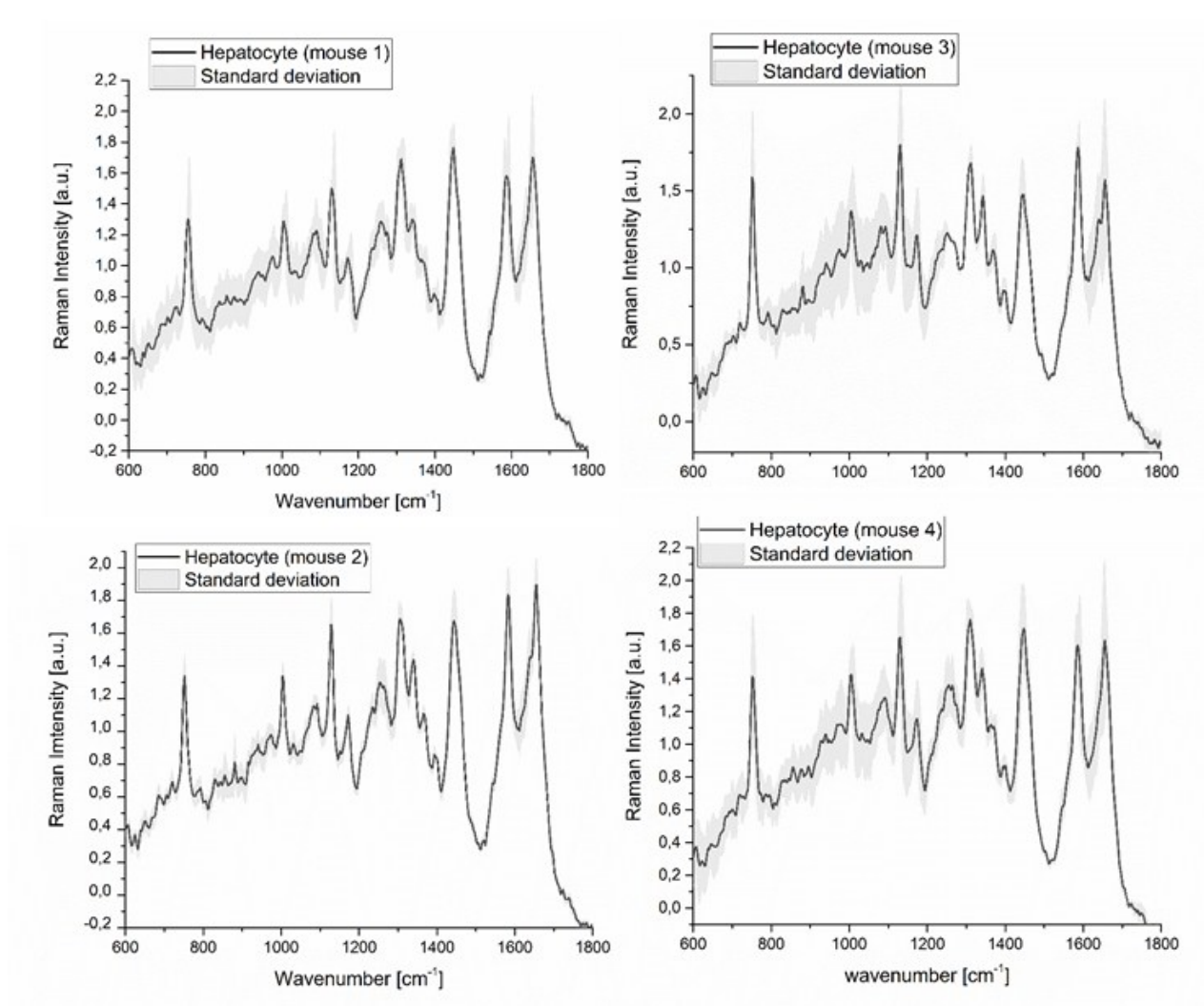


Fig. S2. Average spectra of hepatocytes from each mouse ($n=4$) in the range $600 - 1800 \text{ cm}^{-1}$ (in black) with their standard deviation (grey background). Each spectrum is an average of 5 spectra.

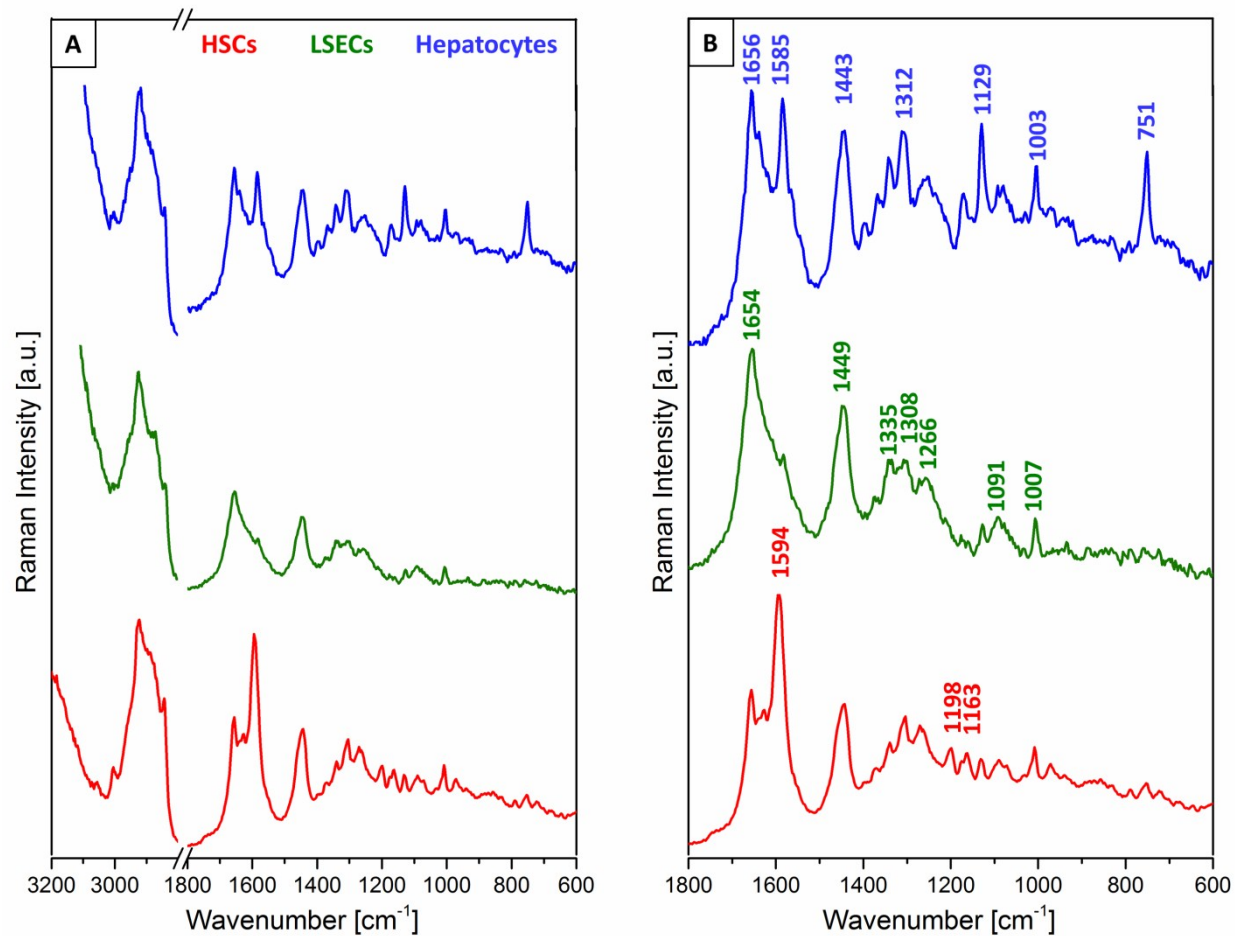


Fig. S3. A direct comparison of average spectra of all measured hepatocytes, HSCs and LSECs in the ranges: **(A)** 3100 – 600 cm⁻¹ and **(B)** 1800 – 600 cm⁻¹ with marked bands characteristic for dominant components in spectra.

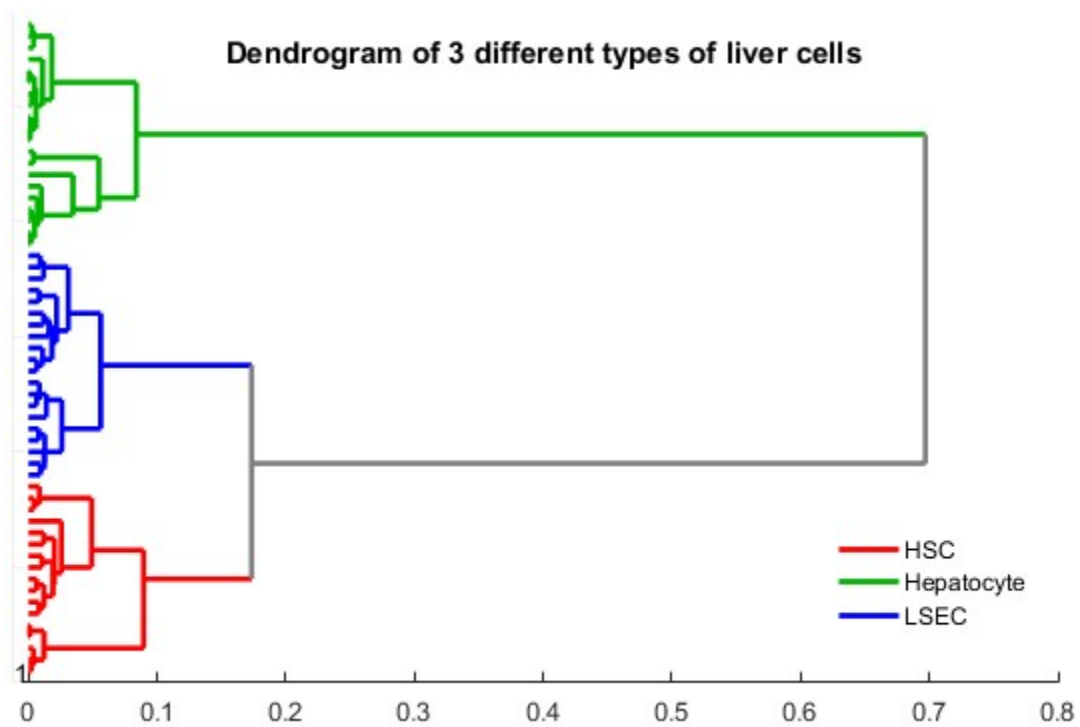


Fig. S4. Results of HCA analysis in the spectral range of 600 – 1800 cm^{-1} of a dataset containing 60 average spectra cells from different types (HSCs, Hepatocyte, LSECs).