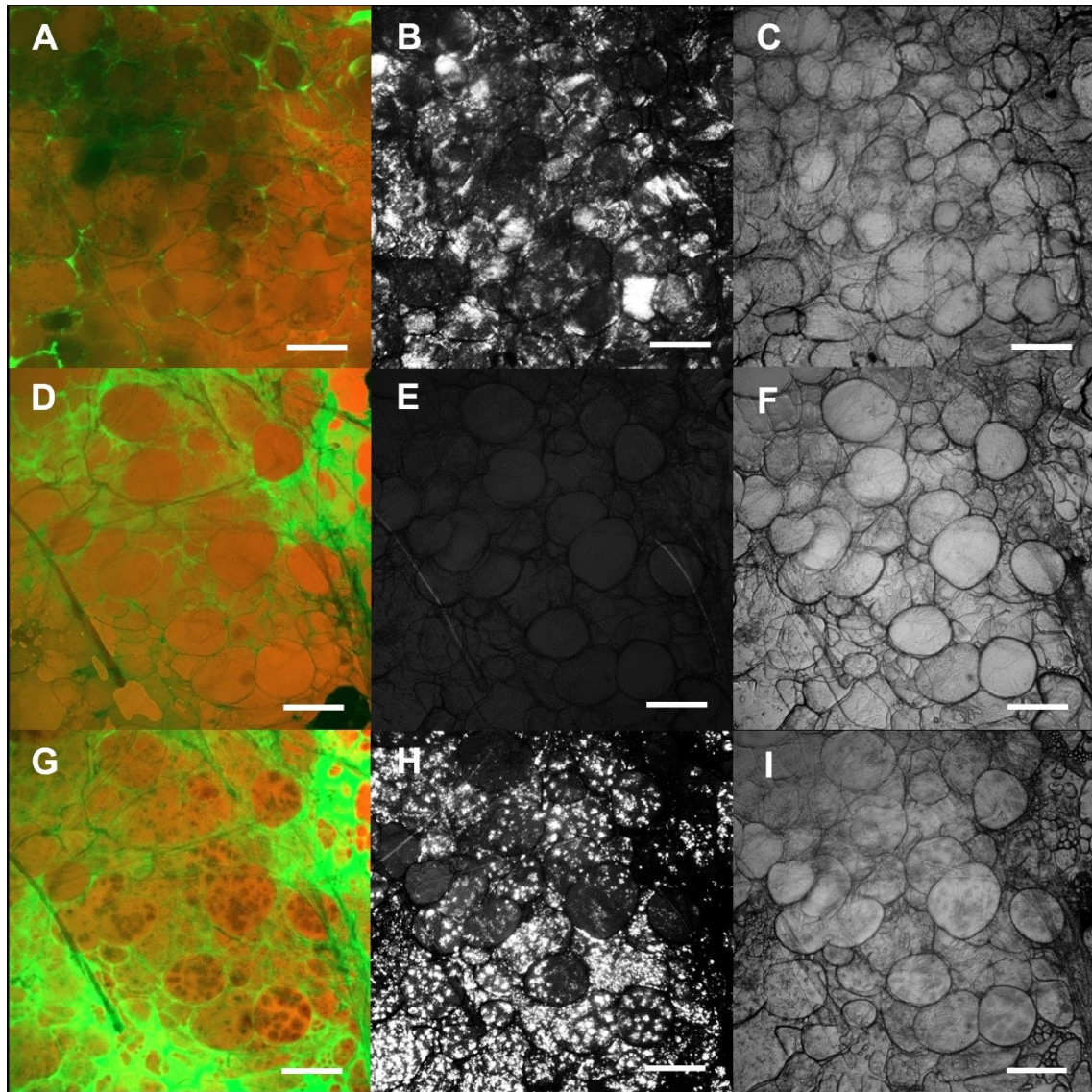


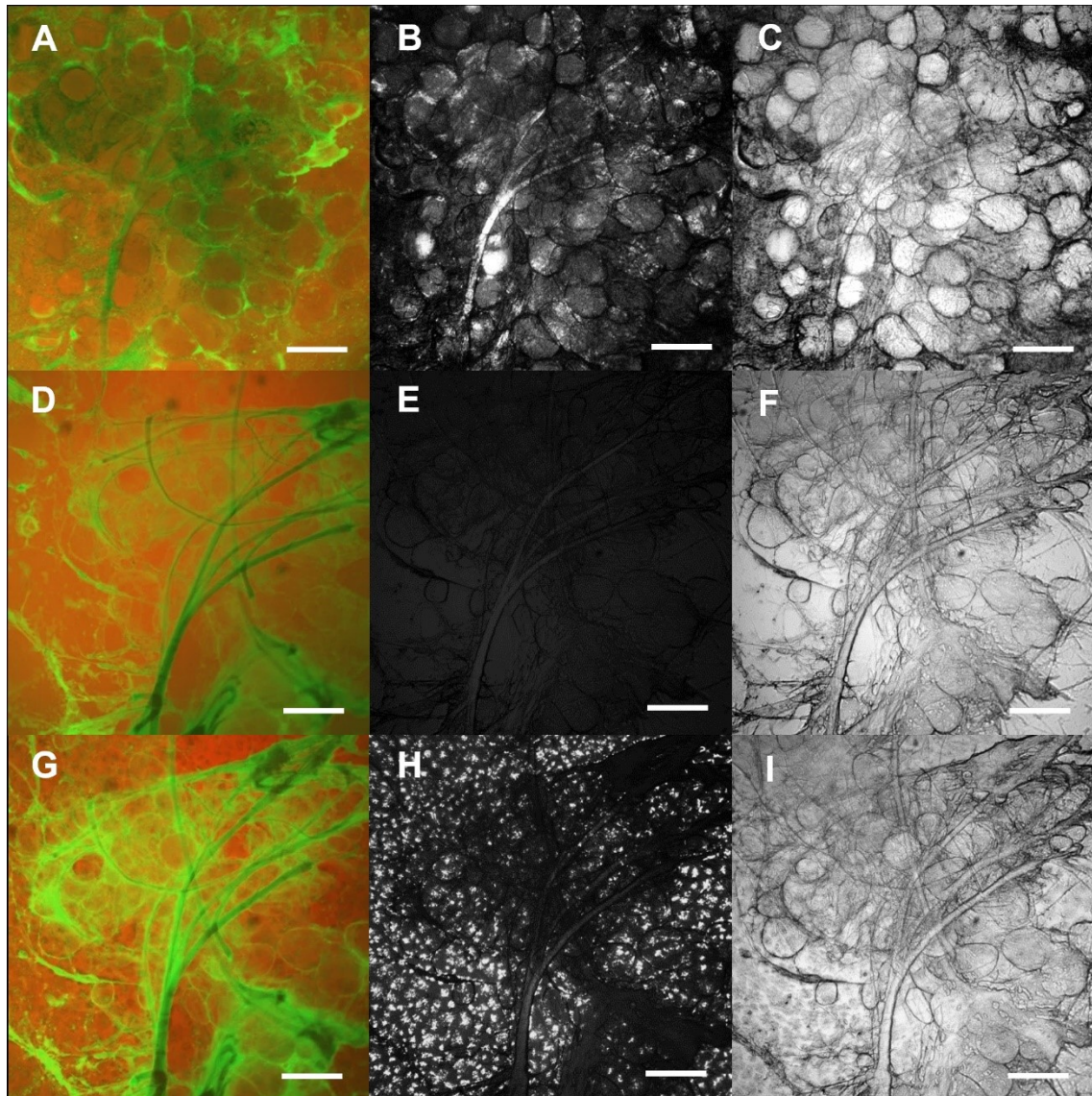
Supplemental

Supplemental Table 1: Main fatty acids found in the three back fats.

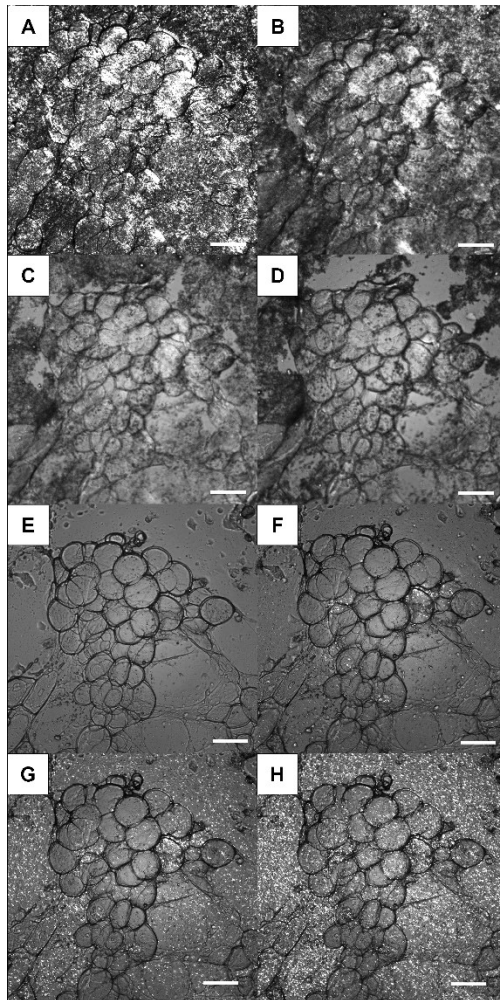
Fatty acids (%)	Pork	Beef	Lamb
C14:0	1.5 ± 0.1	3.3 ± 0.1	3.0 ± 0.3
C16:0	23.4 ± 1.0	25.8 ± 0.8	22.1 ± 0.8
C16:1n7	1.7 ± 0.5	3.1 ± 0.1	1.3 ± 0.3
C18:0	18.0 ± 0.2	16.5 ± 1.3	26.0 ± 5.1
C18:1n9	38.4 ± 0.3	34.8 ± 2.1	25.3 ± 3.0
C18:1n7	2.3 ± 0.1	1.7 ± 0.1	1.3 ± 0.2
C18:2n6	9.0 ± 0.9	2.3 ± 0.5	4.7 ± 0.4
Other	5.7 ± 0.2	12.5 ± 2.3	16.3 ± 2.5



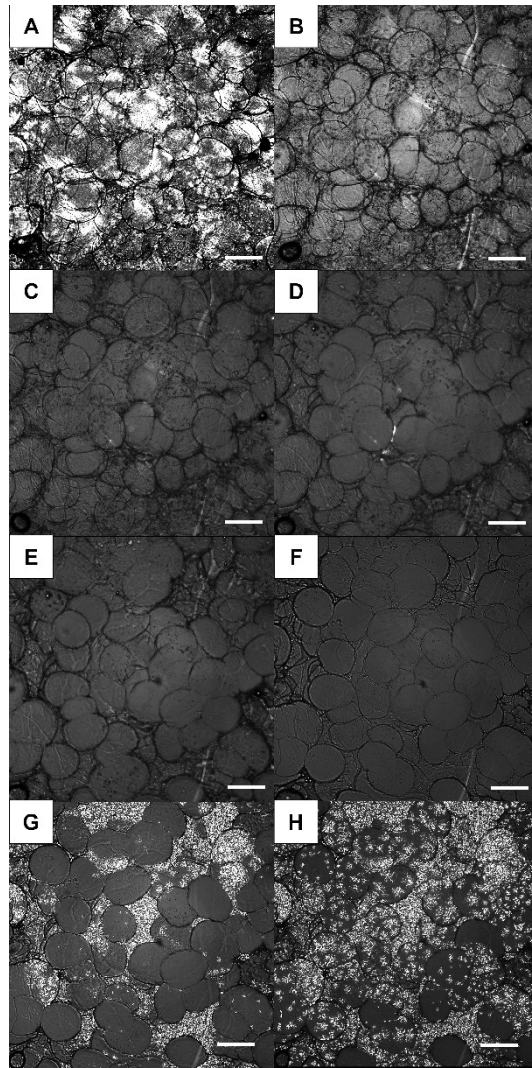
Supplemental Figure 1: CLSM imaging of beef adipose tissue at 20 °C (A-C), at 80 °C (D-F) and cooled back to 20 °C (G-I). The same field of view was imaged during temperature-cycling. Left column: fluorescence imaging with protein in green and fat phase in red; Central column: polarised light images; Right column: brightfield images. Scale bar = 200 μm .



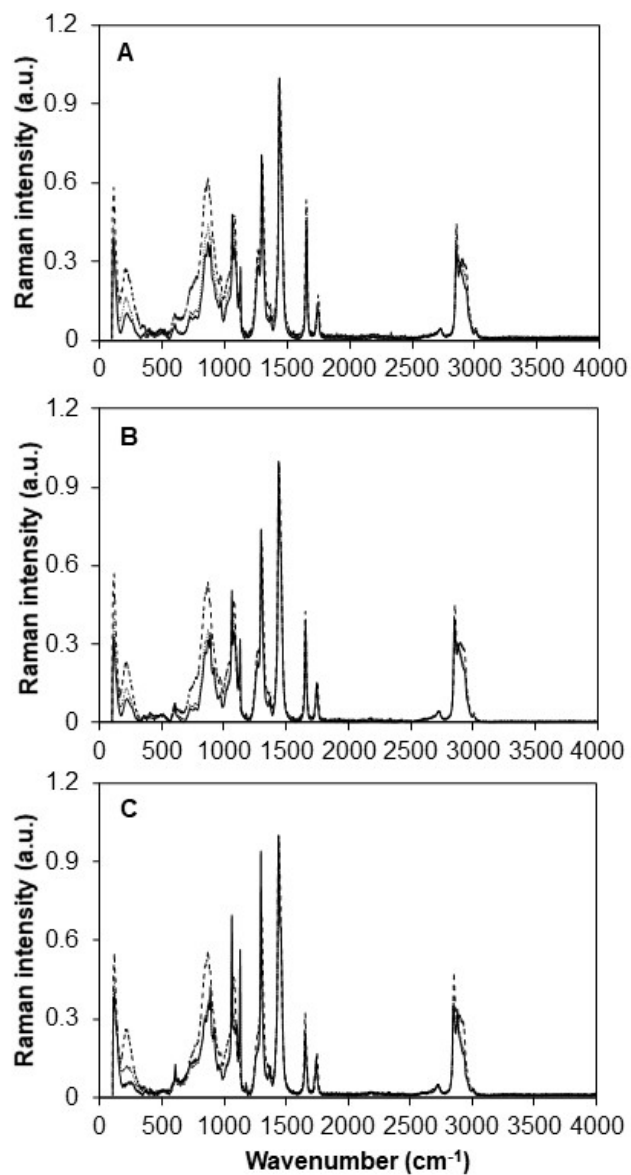
Supplemental Figure 2: CLSM imaging of lamb adipose tissue at 20 °C (A-C), at 80 °C (D-F) and cooled back to 20 °C (G-I). The same field of view was imaged during temperature-cycling. Left column: fluorescence imaging with protein in green and fat phase in red; Central column: polarised light images; Right column: brightfield images. Scale bar = 200 μm .



Supplemental Figure 3: PLM of PBF heated and cooled from 20 °C to 80 °C at 1 °C/min. The same field of view was imaged during the entire temperature cycle. Temperatures: A) 20 °C; B) 30 °C; C) 45 °C; D) 40 °C; E) 80 °C; and F) – H) 20 °C. Scale bar = 100 μ m.



Supplemental Figure 4: PLM of BBF heated and cooled from 20 °C to 80 °C at 1 °C/min. The same field of view was imaged during the entire temperature cycle. Temperatures: A) 20 °C; B) 30 °C; C) 35 °C; D) 37 °C; E) 40 °C; F) 80 °C; G) 30 °C; and H) 20 °C. Scale bar = 100 μ m.



Supplemental Figure 5: Raman spectra of PBF (A), BBF (B), and LBF (C) in region 100 – 4000 cm^{-1} . Spectra were initially collected at 20 °C (solid line), then at 80 °C following heating at 1 °C/min (dashed line) and then at 20 °C following a controlled cool at 1 °C/min (dotted line).