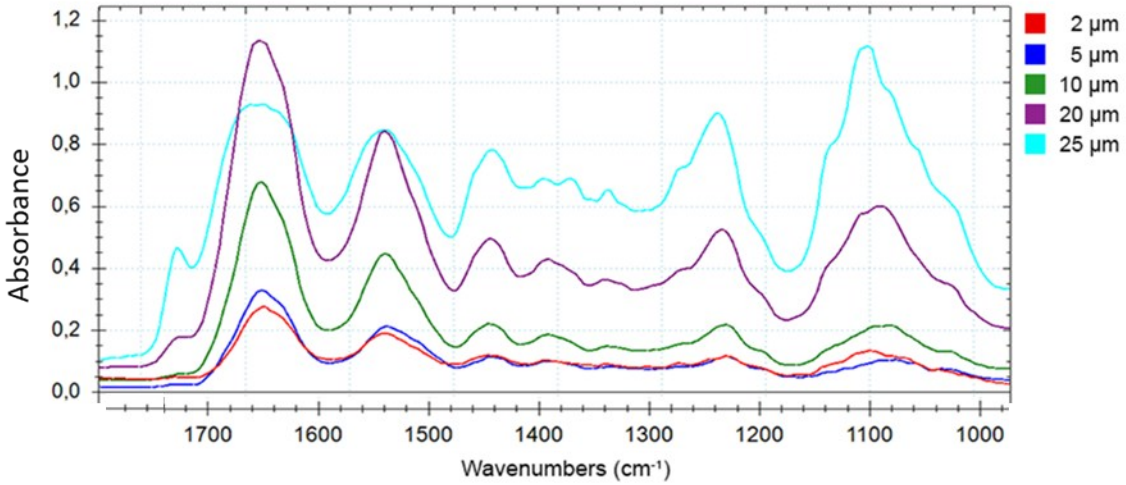
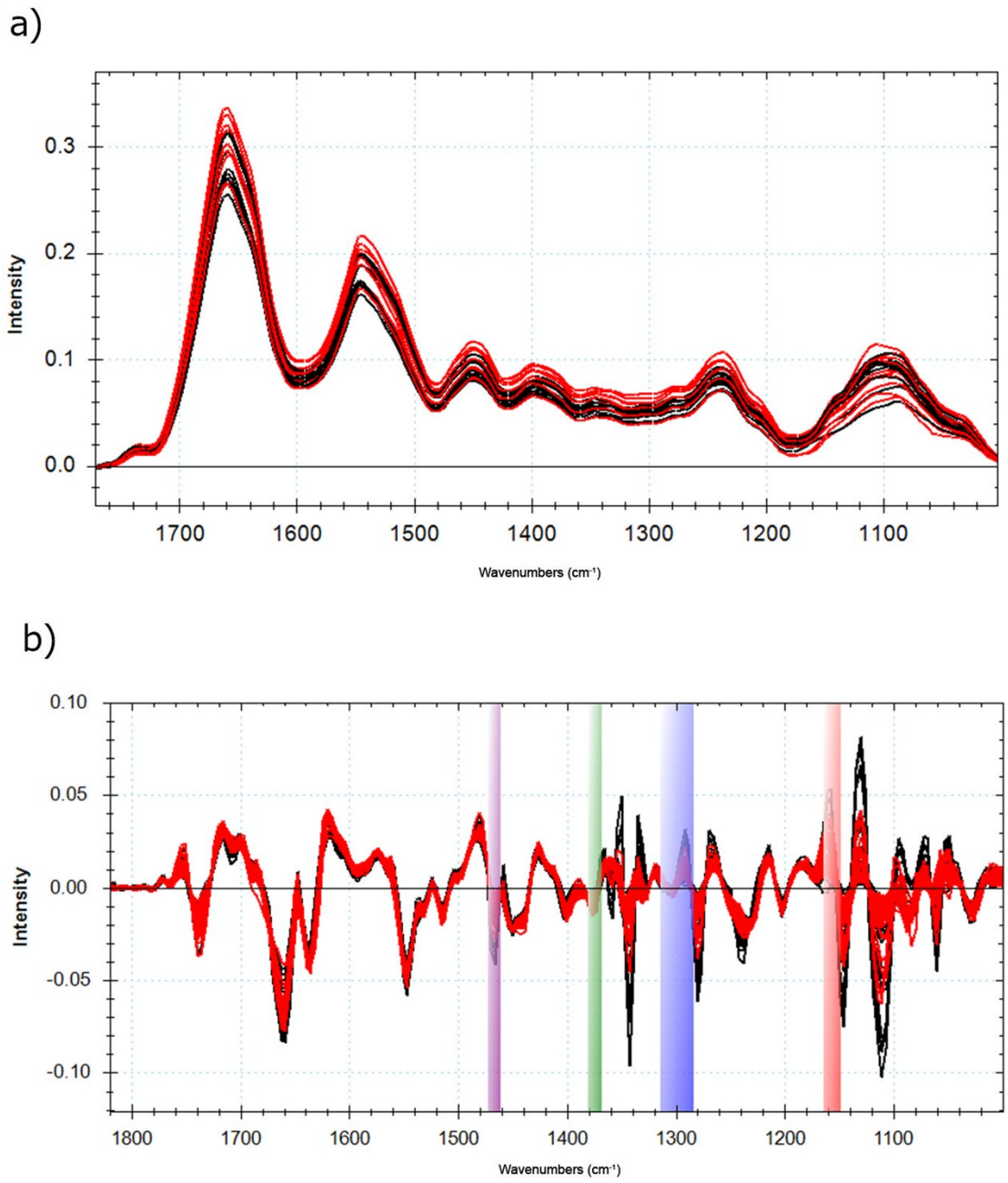
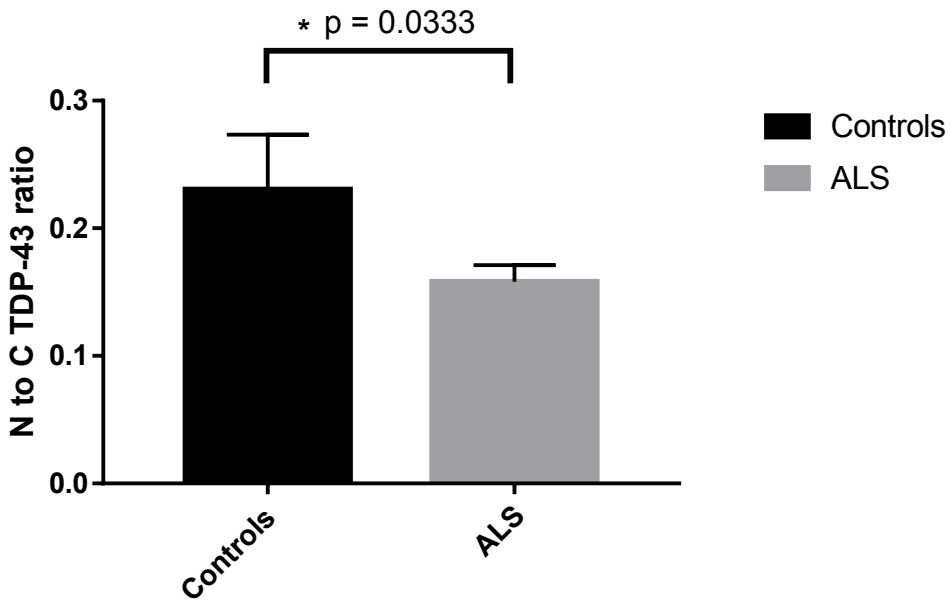


Supplementary figure 1: Averaged FTIR spectra of tissue-engineered skin with variable thicknesses (2-25 µm). 10-um thick tissue section (green) is shown to be the optimal thickness to avoid nonlinear detector response or saturation that may be associated with higher absorbance intensities (> 20-µm) seen in thicker tissue sections. Thinner tissue sections (< 5-µm), given lower absorbance intensities, were also excluded to optimize the signal to noise ratio.



Supplementary Figure 2: Absorbance intensities FTIR spectra variability recorded from the generated tissue-engineered skins.

A) Overlay FTIR spectra from different tissue-engineered skins. B) Second derivative FTIR spectra calculated from the upper panel (A).



Supplementary Figure 3: Increased cytoplasmic aggregated TDP-43 with anti-parallel β-sheet structures in ALS-derived TES quantified by ELISA.
For each sample, the amount of TDP-43 was normalised over the total protein content of the fraction and the ratio of the nuclear fraction over the cytoplasm fraction was calculated. A smaller nuclear to cytoplasm ratio indicates TDP-43 delocalization from the nucleus to the cytoplasm, a well-known pathological signature of ALS. Data is reported as mean ± SEM. Statistically significant smaller nuclear to cytoplasm ration can be observed in ALS-derived TES as expected (one tailed Mann-Whitney, p = 0,0333).

Supplementary Table 1: Parameters of the different absorbance filters used for spectra filtering and their purpose

Region cm^{-1}	Minimum abs. Au.	Maximum abs. Au	Purpose
1700-1600 (Amide I)	0,2	0,9	To remove the spectra from regions within the TES that are too thin (< 0.1 Au) or too thick (>0.9 Au)
1780-1730	0,0	0,1	To remove spectra associated with the presence of OCT.