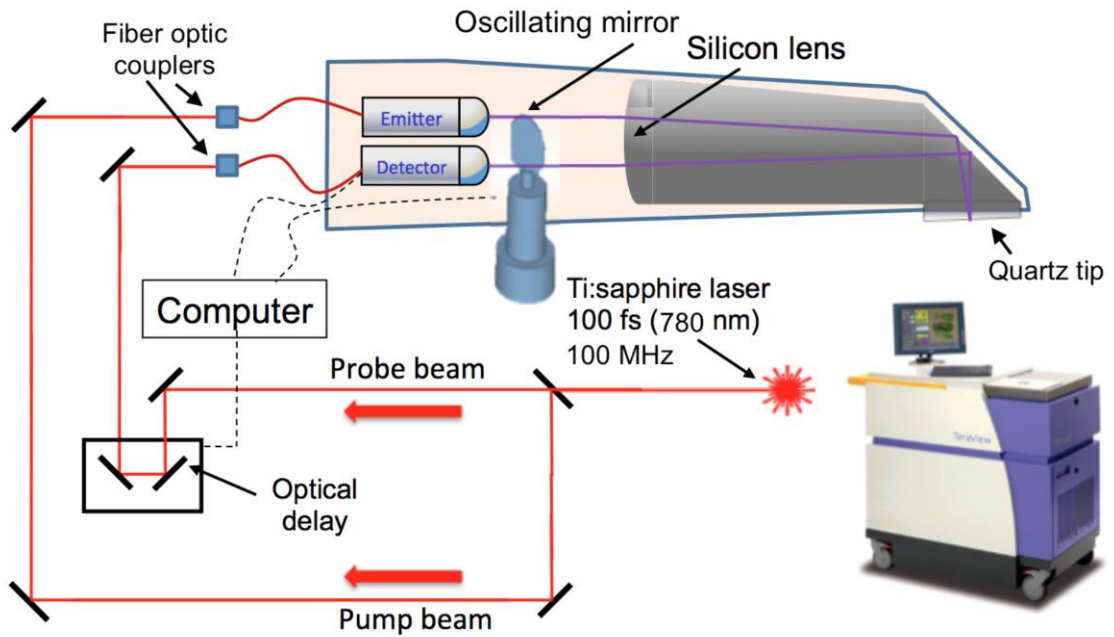
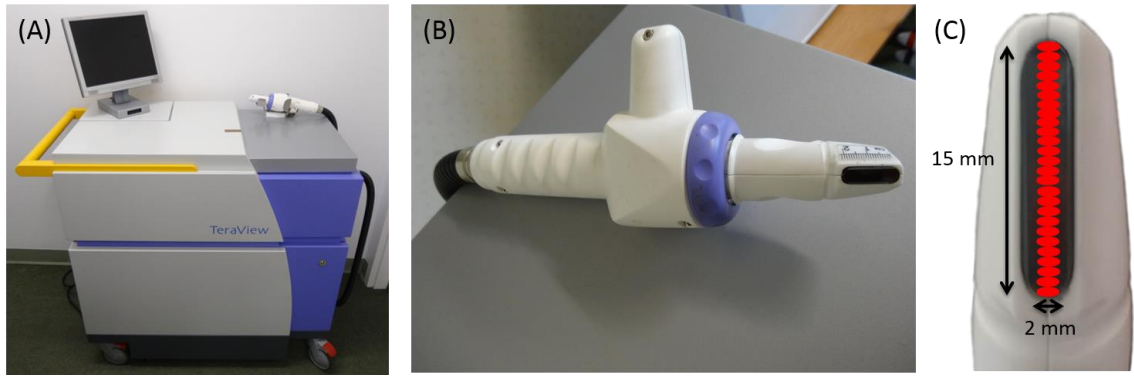


## Supplementary Material

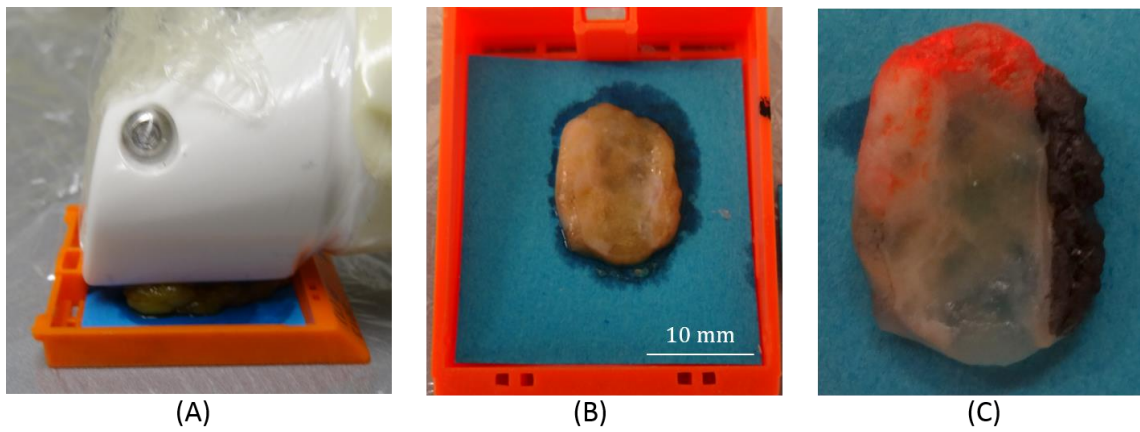
### Supplementary figures with legends



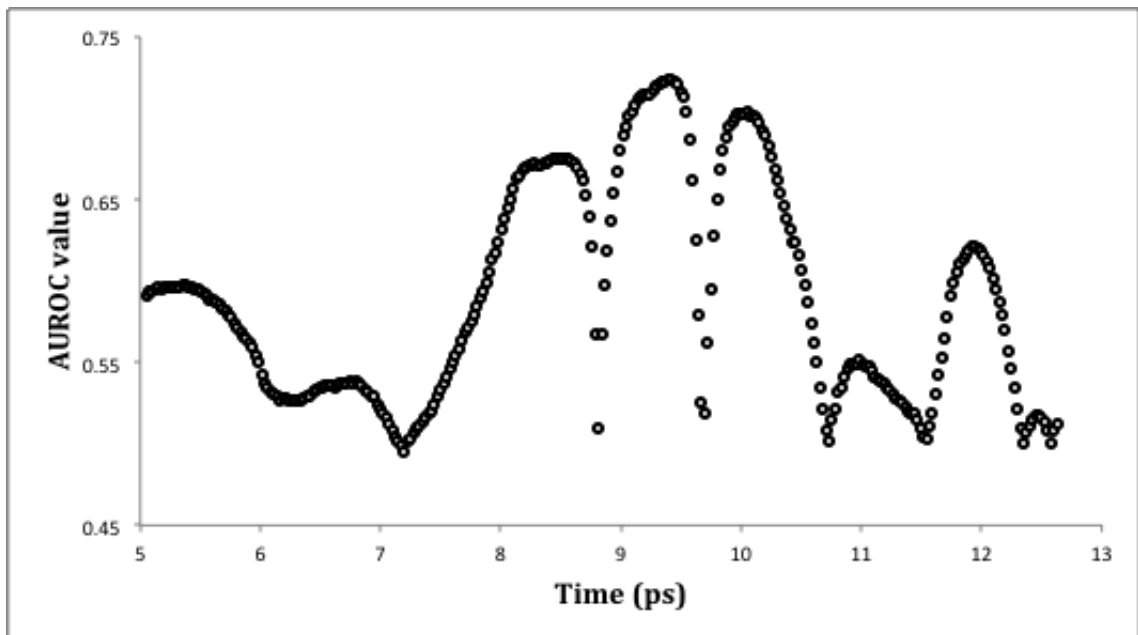
Supplementary Material Figure 1: Schematic illustration of TPI handheld probe system. The emitted laser pulses are split into a "pump beam" and a "probe beam". The pump beam is guided through the optical fibres in the umbilical cord, and subsequently incident on the photoconductive emitter to produce THz pulses. The probe beam is guided onto the photoconductive detector to detect the THz pulses reflected from the tissue sample. By altering the path length of the probe beam, the time of arrival at the detector in respect to the incident THz pulse can be changed, thus sampling the THz pulse in the time domain.



Supplementary Material Figure 2: TPI handheld probe system. (A) Main unit with computer monitor, handheld imaging probe and black umbilical cord (visible on the right). (B) Close up of the handheld imaging probe. (C) Close up of the head of the imaging probe showing the black quartz window. The probe scans an area of 15 x 2 mm, and acquires data from 26 pixels (red).

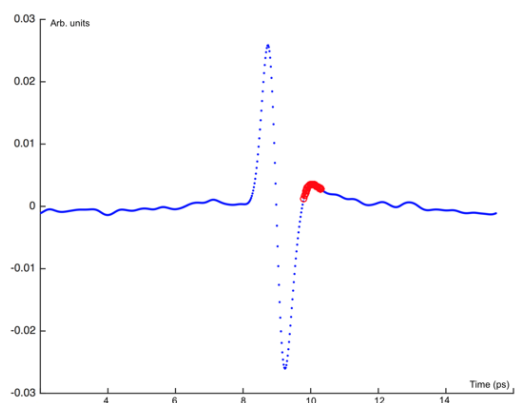


Supplementary Material Figure 3: TPI measurement of tissue sample. (A) TPI handheld probe measurement of tissue sample positioned in histology cassette. Note that the head of the imaging probe tightly fits in the cassette, which facilitates applying a consistent pressure throughout the measurement, while preventing displacement of the probe. (B) Photograph of the tissue sample obtained after the sample was scanned. The imprint of the scan window on the sample is clearly visible. This photograph was used to facilitate accurate correlation of TPI data with histopathology. (C) Photograph of tissue sample after it was inked. Inking was performed to enable spatial orientation of the sample when analysed microscopically by the pathologist.

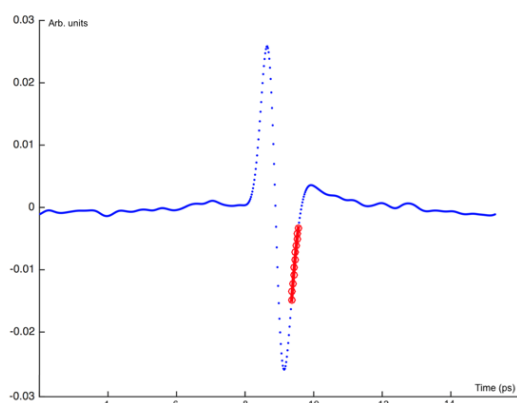


Supplementary Material Figure 4: AUROC analysis to evaluate the discriminative power of the amplitude parameter for time indices 5.0 – 12.6 ps. The highest AUROC values of 0.72 and 0.70 were found at  $t = 9.42$  ps and  $t = 10.05$  ps respectively, and these two parameters were therefore selected for tissue classification with SVM.

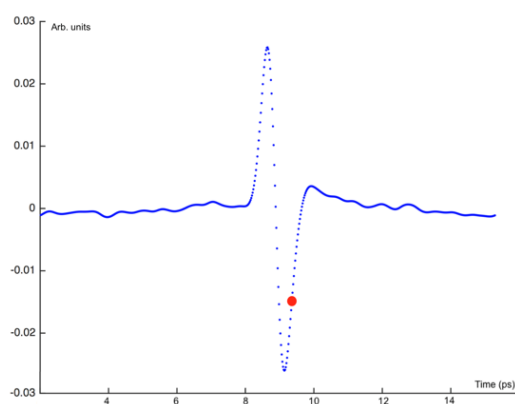
Supplementary Material Figure 5: Visualisation of the selected parameters used in SVM classification. Each parameter is displayed in red.



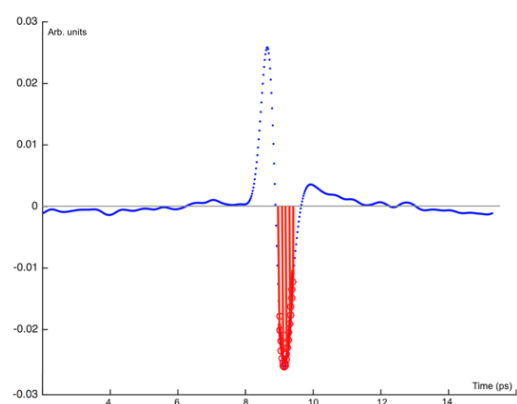
P1: Quadratic fit 9.85 - 10.48 ps



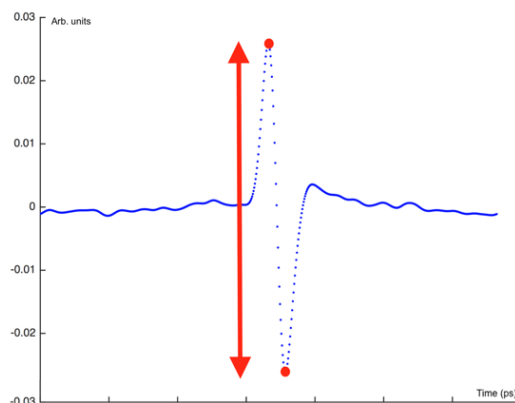
P2: Linear fit 9.42 - 9.67 ps



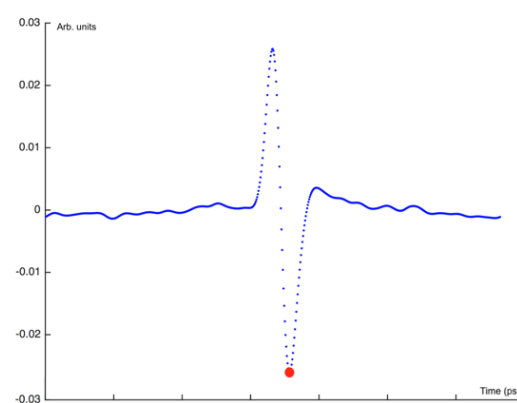
P3: Amplitude at  $t = 9.42$  ps



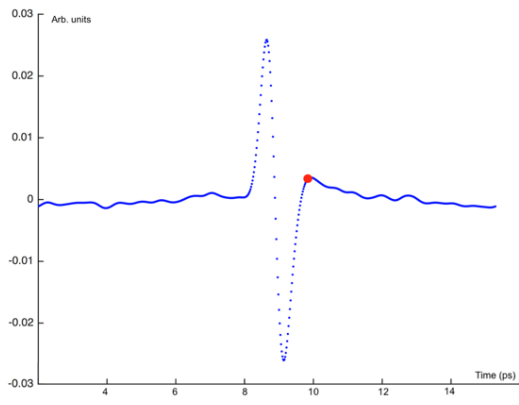
P4: Integral 9.14 - 9.65 ps



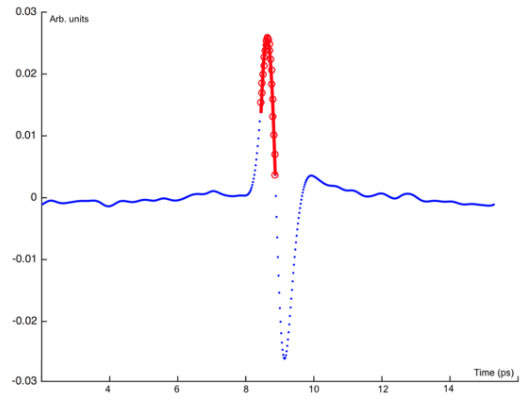
P5: Peak to peak ( $E_{max}$  minus  $E_{min}$ )



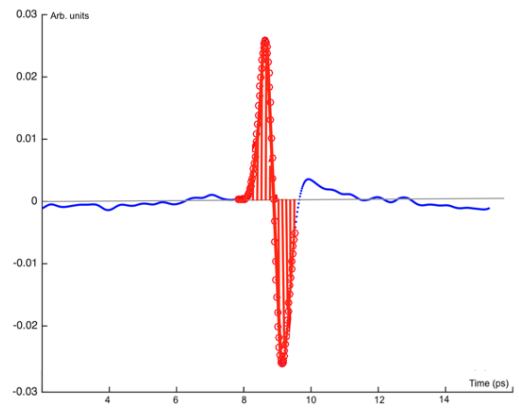
P6:  $E_{min}$  (minimum amplitude)



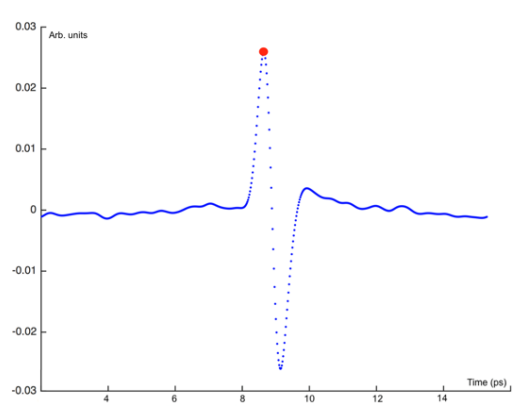
P7: Amplitude at  $t = 10.05$  ps



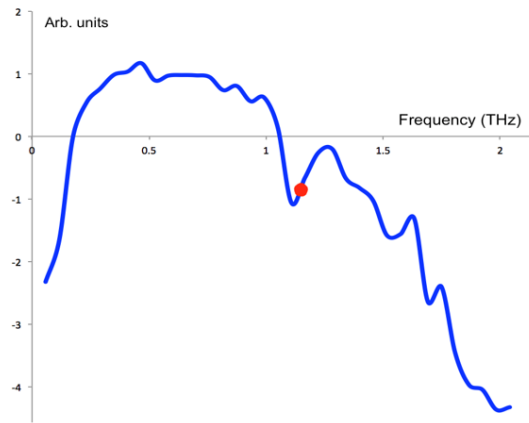
P8: Quadratic fit 8.26 - 8.79 ps



P9: Integral 7.47 - 9.62 ps



P10: Emax (maximum amplitude)



P11: Power in spectrum at frequency = 1.1 THz

