

Supplementary Information

Synchrotron-based infrared microspectroscopy unveils the biomolecular response of healthy and tumour cell lines to neon minibeam radiation therapy

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PCA – 4 Gy irradiations

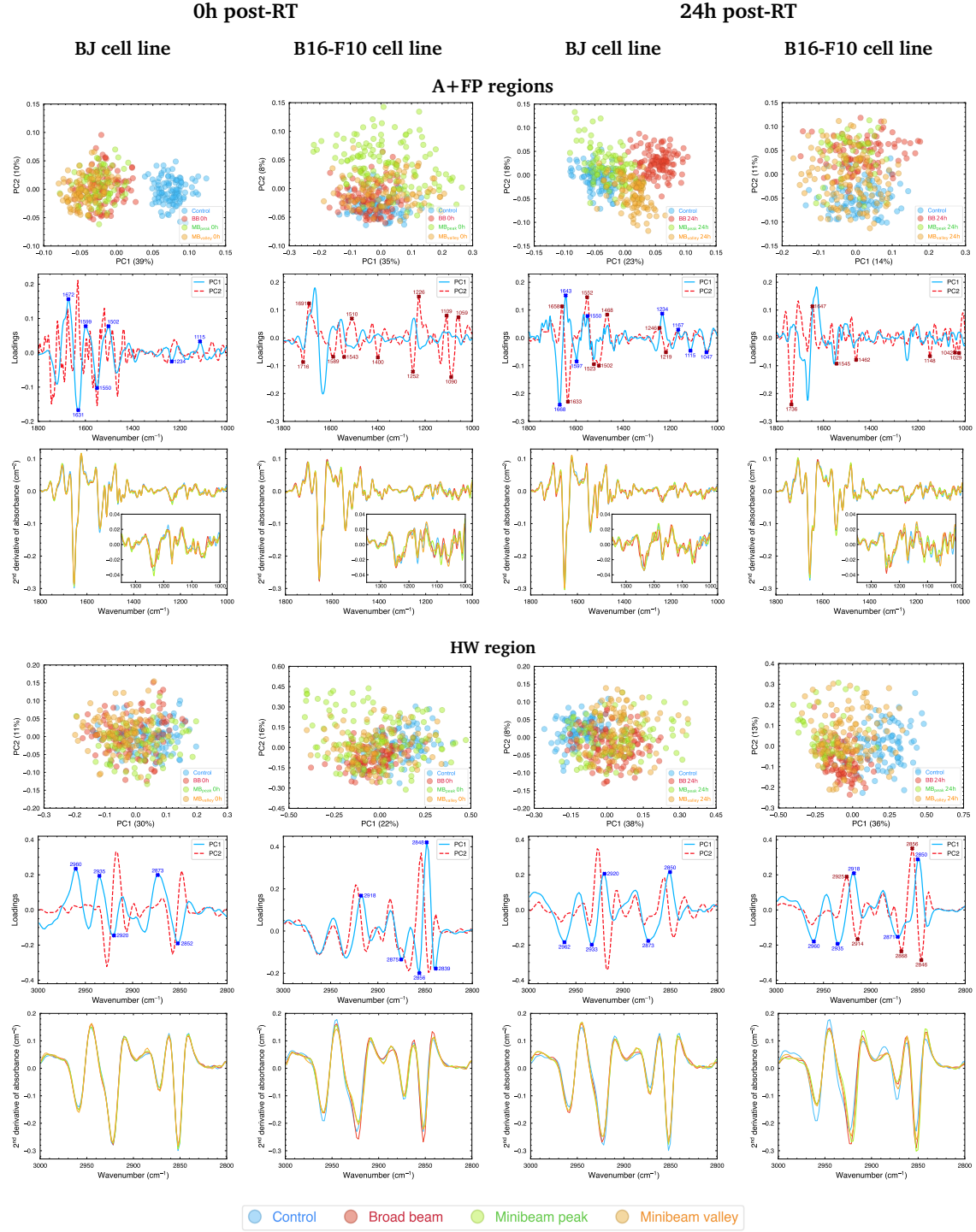


Figure S1. PCA in the A+FP ($1800\text{--}1000\text{ cm}^{-1}$, top) and HW ($3000\text{--}2800\text{ cm}^{-1}$, bottom) spectral regions for cell lines irradiated with 4 Gy and fixated at 0h (left) and 24h (right) post-treatment. For each spectral region and fixation time-point, the PCA scores (upper row), loadings (middle row) and average second-derivative absorbance spectra (lower row) are included for the BJ (left column) and B16-F10 (right column) cell lines. Each point of the PCA scores is a cell spectrum, and colours correspond to the irradiation configurations: blue for Control (non-irradiated), red for BB, green for MB_{peak} and orange for MB_{valley}. Explained variances by the PCs are included in parentheses. In the loadings, the contribution of each spectral band to data separation along PC1 is indicated by solid blue lines, while the bands contributing to the separation along PC2 are indicated by dashed red lines. The most relevant IR peaks contributing to the cluster delineation along PC1 or PC2 are indicated with blue or red labels and crosses, respectively. Indicated doses refer to the mean dose for both NeBB and NeMBRT configurations.

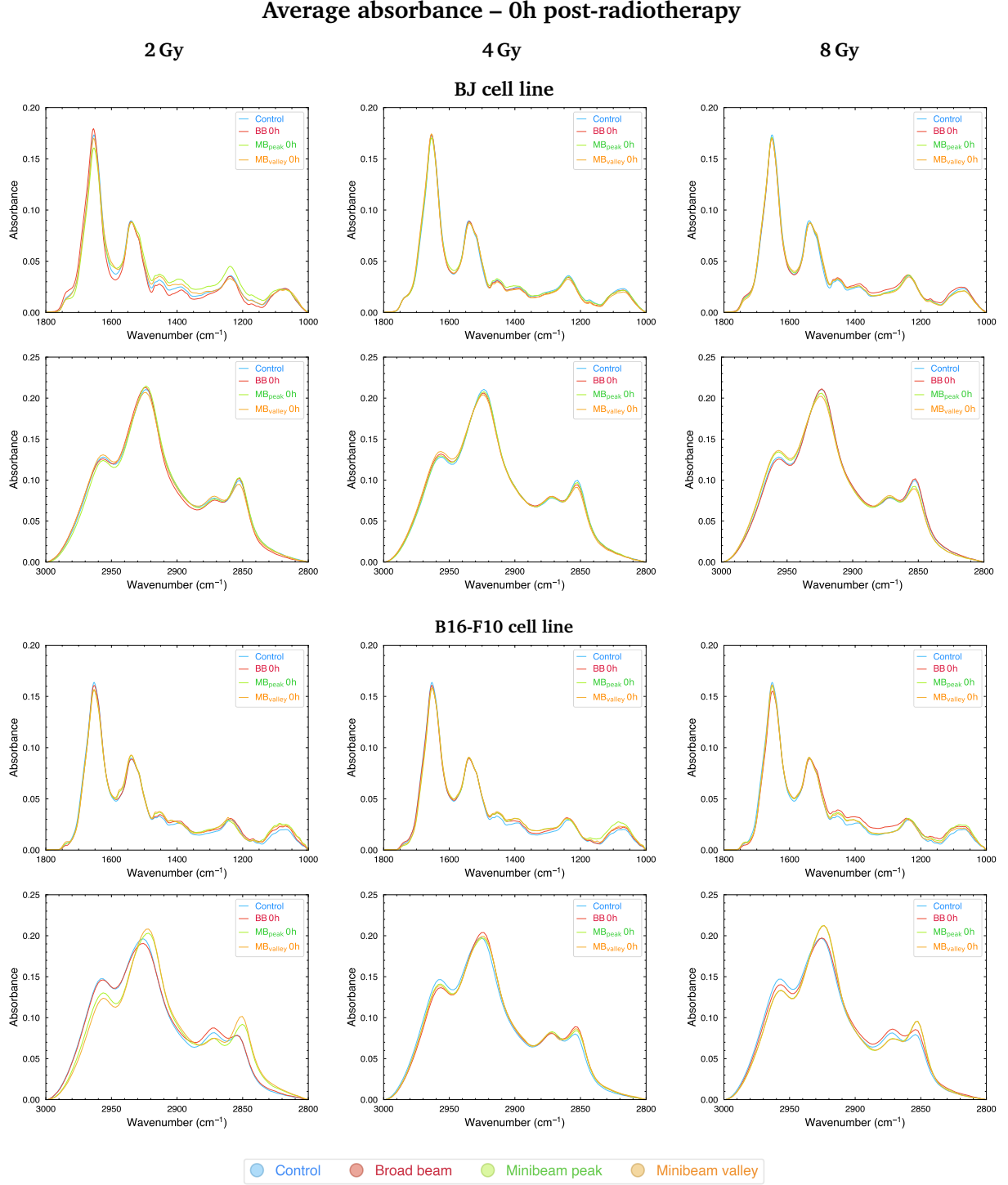


Figure S2. Average absorbance spectra of BJ (top) and B16-F10 (bottom) cell lines fixated at 0h post-RT. For each cell line, average absorbance spectra in the A+FP ($1800\text{--}1000\text{ cm}^{-1}$, upper row) and HW ($3000\text{--}2800\text{ cm}^{-1}$, lower row) spectral regions are included. Colours correspond to the irradiation configurations: blue for Control (non-irradiated), red for BB, green for MB_{peak} and orange for MB_{valley}. Indicated doses refer to the mean dose for both NeBB and NeMBRT configurations.

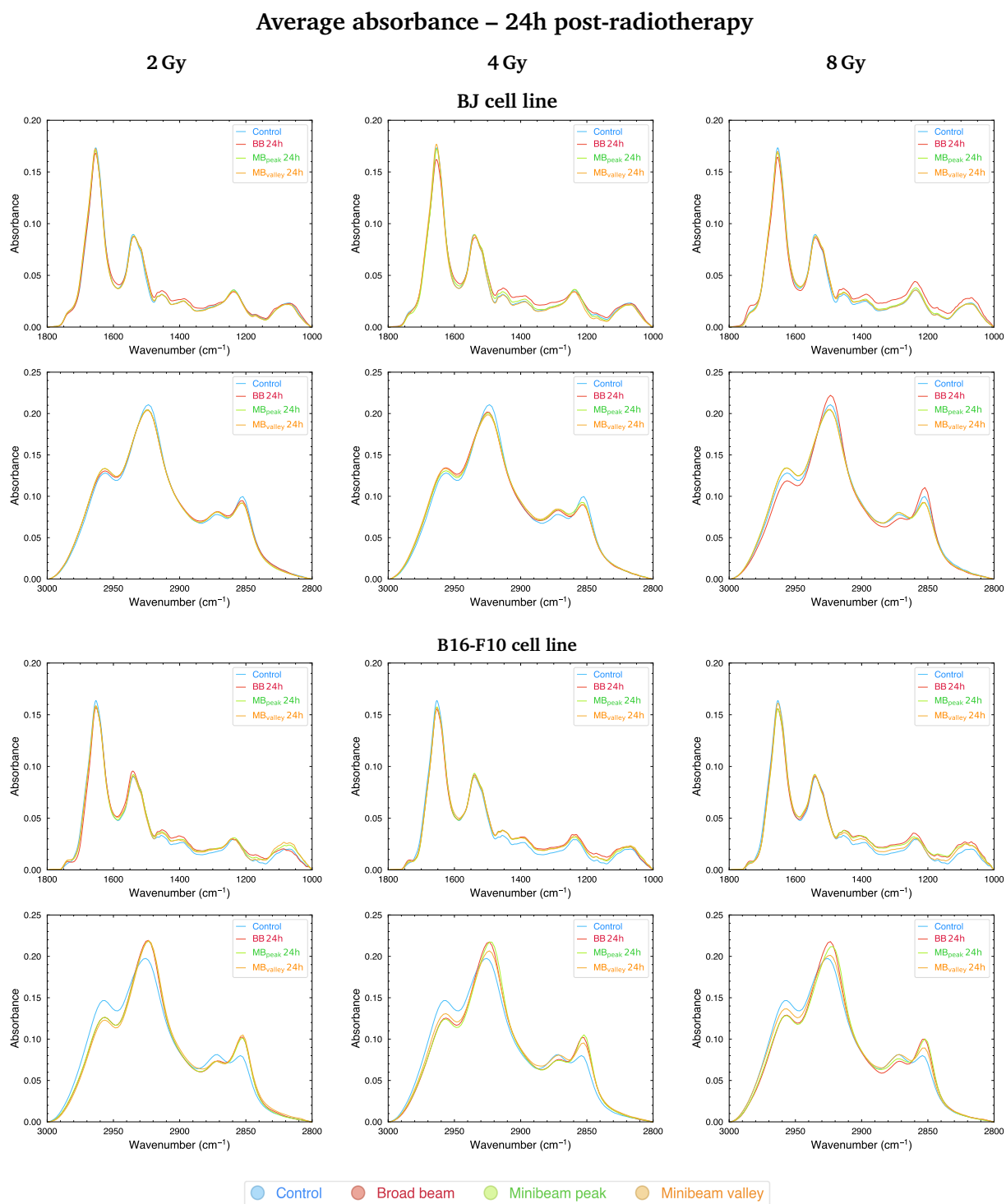


Figure S3. Average absorbance spectra of BJ (top) and B16-F10 (bottom) cell lines fixated at 24h post-RT. For each cell line, average absorbance spectra in the A+FP ($1800\text{--}1000\text{ cm}^{-1}$, upper row) and HW ($3000\text{--}2800\text{ cm}^{-1}$, lower row) spectral regions are included. Colours correspond to the irradiation configurations: blue for Control (non-irradiated), red for BB, green for MB_{peak} and orange for $\text{MB}_{\text{valley}}$. Indicated doses refer to the mean dose for both NeBB and NeMBRT configurations.