Tumour Vascular Shutdown and Cell Death Following Ultrasound-Microbubble Enhanced Radiation Therapy

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Running Title: Correlation of Tumour Vascular Shutdown and Tumour Cell Death

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Supplementary Figure S1

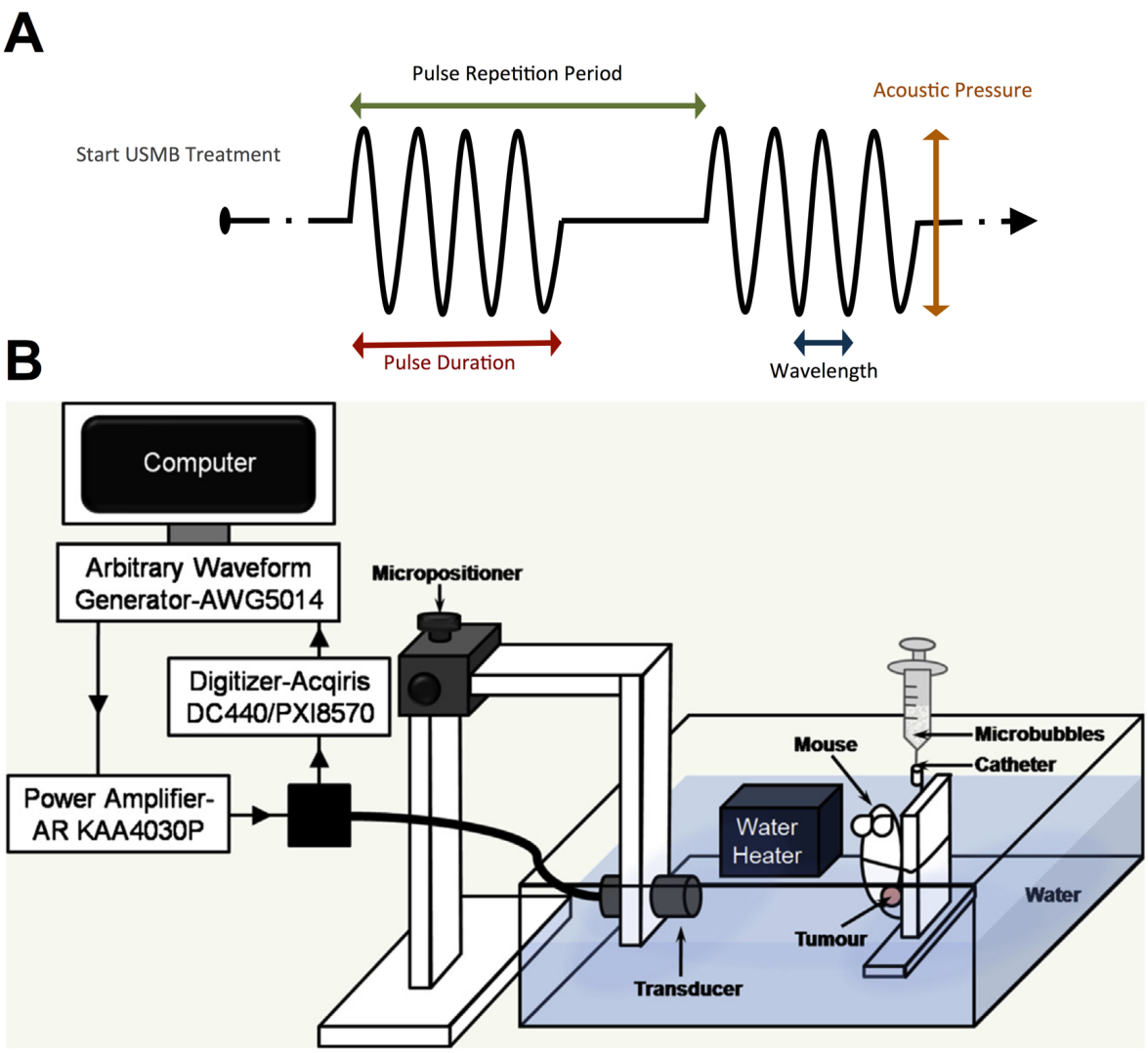

Figure S1. (A) Schematic of treatment pulse used to stimulate microbubbles (total USMB treatment time was 5 min with: 16-cycle tone burst, 3 kHz pulse repetition frequency, duty cycle of 10%, peak negative acoustic pressure of 500 kPa, mechanical index of 0.8). (B) USMB method. System consists of a pulse generator connected to computer, power amplifier and digital acquisition system. A mouse secured in water bath with tumour facing the transducer. The tail vein catheter is mounted upward, allowing the microbubbles to be easily injected (black arrows indicate the direction of acoustic signals) (15).

Supplementary Figure S2

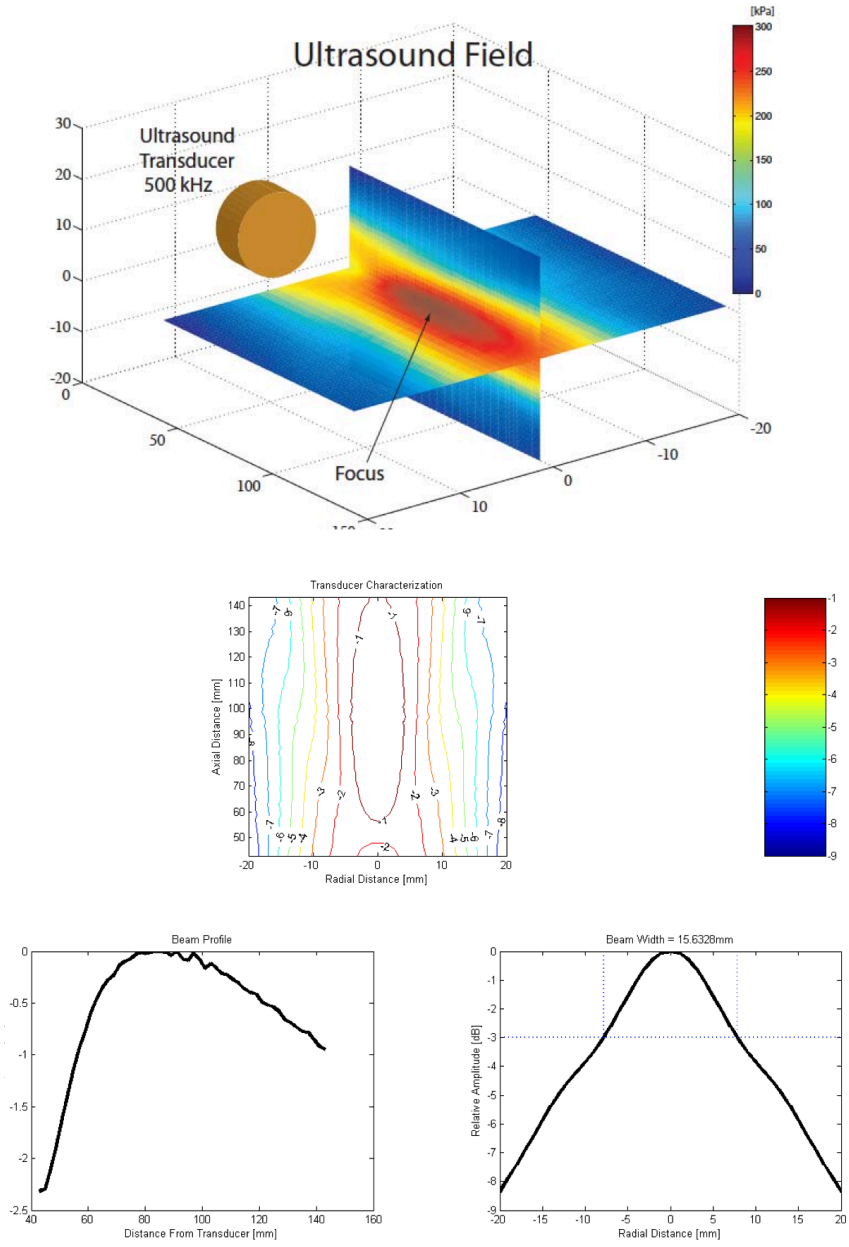

Figure S2. Characterization maps of transducer used for USMB therapy. The transducer was characterized using a calibrated membrane hydrophone (Sonora Medical Systems Inc, Longmont, CO). The spatial peak negative pressure was measured by placing the hydrophone at the focus of the transducer beam, where the exposure cell would be located during treatment – this was used as a measure of acoustic amplitude. Measurements indicate that the −6 dB beamwidth was 31 mm and the −3 dB beamwidth was 18 mm. Details of the calibration procedure are described elsewhere (31).

Supplementary Figure S3

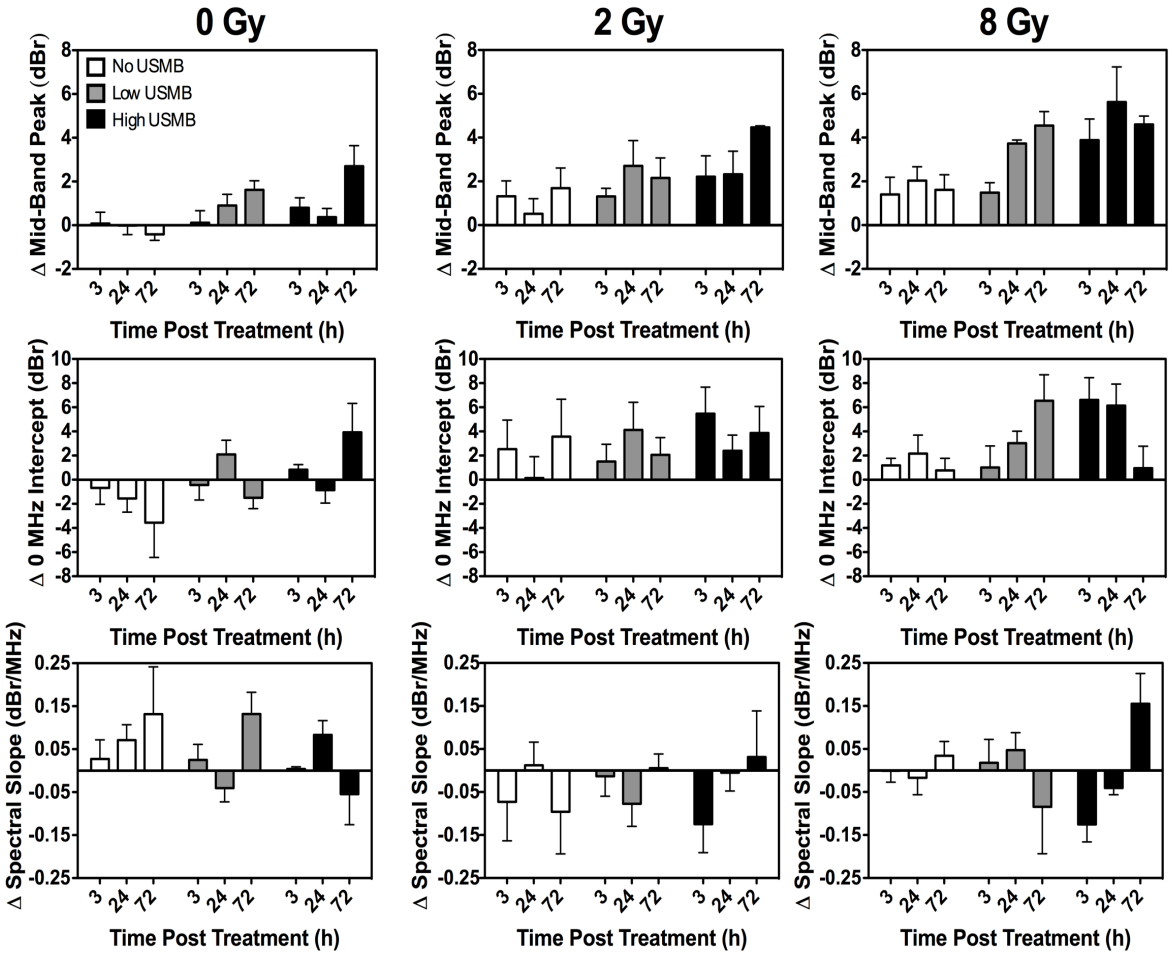

Figure S3. Quantified Mid-Band Fit (MBF) (top), SS (mid) and SI (bottom), extracted from QUS analysis.