Supporting Information:

Multiple ion isolation and accumulation events for selective chemical noise reduction and dynamic range enhancement in MALDI imaging mass spectrometry

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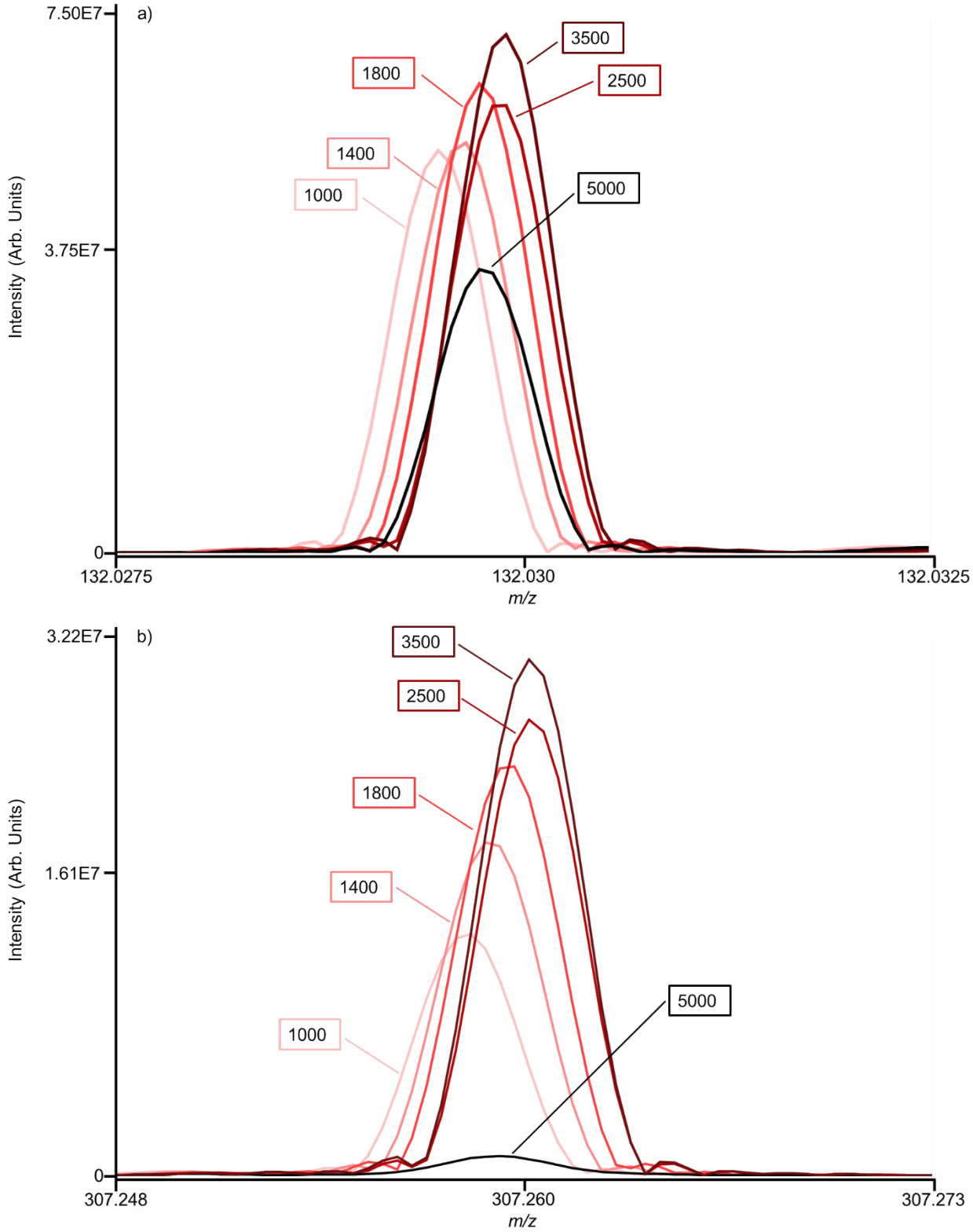
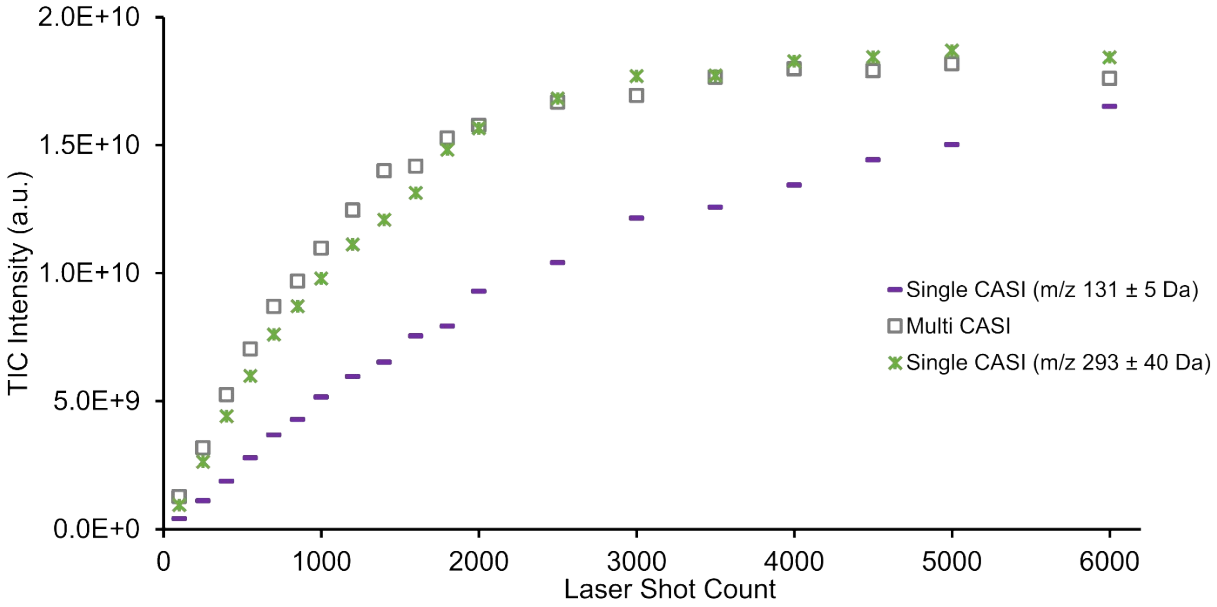
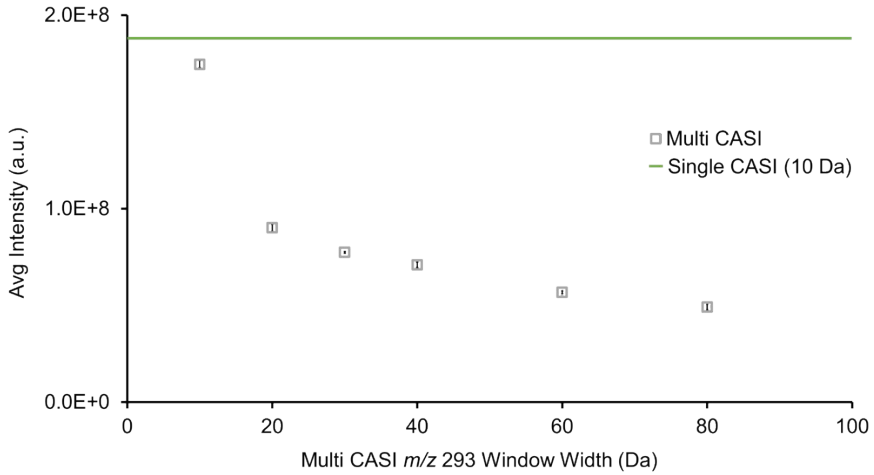


Supplemental Figure 1. Mass spectra (1,000-5,000 laser shots) of (a) aspartate and (b) eicosadienoate using a Multi CASI (*m/z* 131 ± 5 Da & 293 ± 40 Da) method. All spectra are five scan average measurements.



Supplemental Figure 2. Total ion count (TIC) as a function of the number of MALDI laser shots per window for a single CASI acquisition method (*m/z* 131 ± 5 Da represented by purple bars or *m/z* 293 ± 40 Da represented by a green x's) and a Multi CASI acquisition method (*m/z* 131 ± 5 Da and 293 ± 40 Da represented by grey squares). Each measurement is acquired using five averaged scans.



Supplemental Figure 3. Average intensity of aspartate (*m/z* 132.030, 0.041 ppm) in a Multi CASI acquisition method (*m/z* 131 ± 5 Da and 293 ± 5-40 Da, using 2,000 laser shots, represented by grey squares) as a function of the *m/z* 293 isolation window width. Each measurement represents three, five scan average measurements. The green line represents the average intensity of aspartate in a single CASI acquisition method (*m/z* 131 ± 5 Da).