

Supporting Information

Enhanced Top-Down Protein Characterization with Electron Capture Dissociation and Cyclic Ion Mobility Spectrometry

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Contents

Figure S1. Product ion maps for pre-IMS ECD of 10+ ubiquitin produced by the combined results of four mobility fraction (top), or a single mass spectrum produced by combing the entire drift time range.

Figure S2. Product ion maps for each mobility fraction from pre-IMS ECD of 10+ ubiquitin.

Figure S3. Product ion maps for the five mobility fractions produced by pre-IMS ECD of 35+ bovine carbonic anhydrase II.

Figure S4. Raw mass spectra for the five mobility fractions and combined drift time produced by pre-IMS ECD of 35+ bovine carbonic anhydrase. Spectra in the right column are zoomed in to an intensity of 4.8E3.

Figure S5. Product ion maps for pre-IMS ECD of 35+ bovine carbonic anhydrase II produced by the combined results of five mobility fraction (top) or a single mass spectrum produced by combing the entire drift time range.

Figure S6. The 2D mobiligram (m/z vs. drift time) for pre-cIMS ECD of the 11+ charge state of bovine carbonic anhydrase II (A) with outlined mobility fractions. The number of annotated isotope clusters/unique ions and sequence coverage for in each mobility fraction (B). Comparison of the number of unique isotope clusters and unique ions observed from a single mass spectrum from all drift times combined and the combined results of the four mobility fractions (C).

Figure S7. Product ion maps for the five mobility fractions produced by pre-IMS ECD of 11+ bovine carbonic anhydrase II.

Figure S8. Product ion maps for pre-IMS ECD of 11+ bovine carbonic anhydrase II produced by a single mass spectrum of the entire drift time range combined.

Combined mobility fractions: 96% coverage



Combined drift time: 96% coverage



Figure S1. Product ion maps for pre-IMS ECD of 10+ ubiquitin produced by the combined results of four mobility fraction (top), or a single mass spectrum produced by combing the entire drift time range.

F1: 40% coverage



F2: 92% coverage



F3: 67% coverage

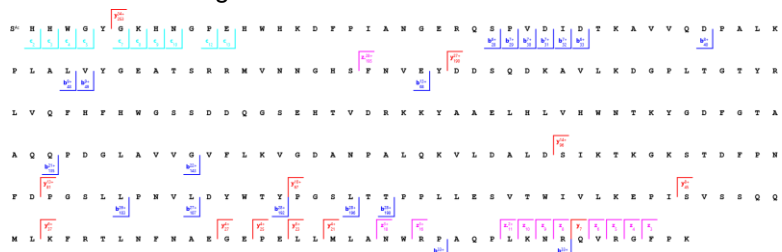


F4: 47% coverage

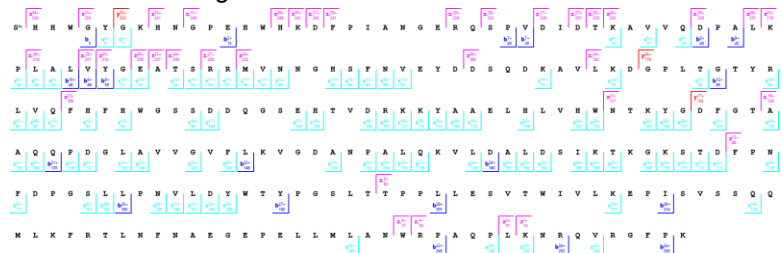


Figure S2. Product ion maps for each mobility fraction from pre-IMS ECD of 10+ ubiquitin.

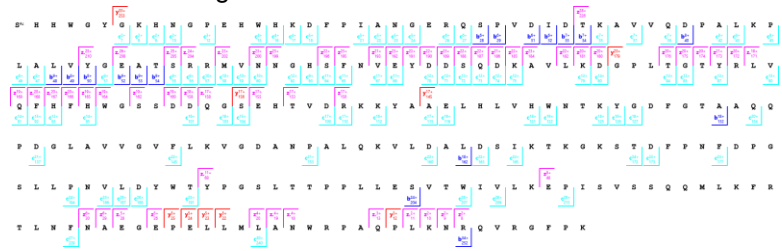
F1: 20% coverage



F2: 52% coverage



F3: 51% coverage



F4: 67% coverage



F5: 56% coverage



Figure S3. Product ion maps for the five mobility fractions produced by pre-IMS ECD of 35+ bovine carbonic anhydrase II.

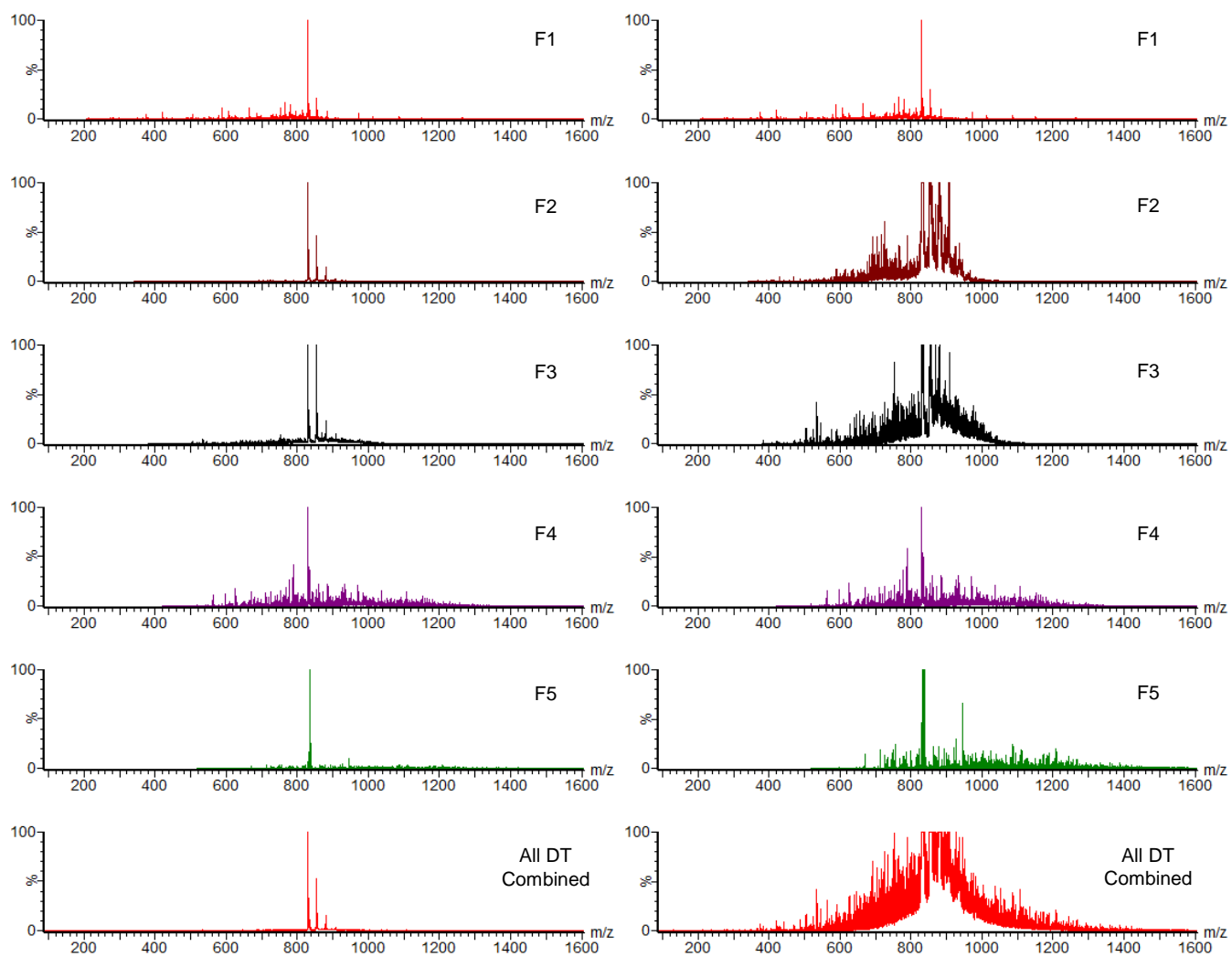


Figure S4. Raw mass spectra for the five mobility fractions and combined drift time produced by pre-IMS ECD of 35+ bovine carbonic anhydrase. Spectra in the right column are zoomed in to an intensity of $4.8E3$.

Combined mobility fractions: 89% sequence coverage



Combined drift time: 64% sequence coverage

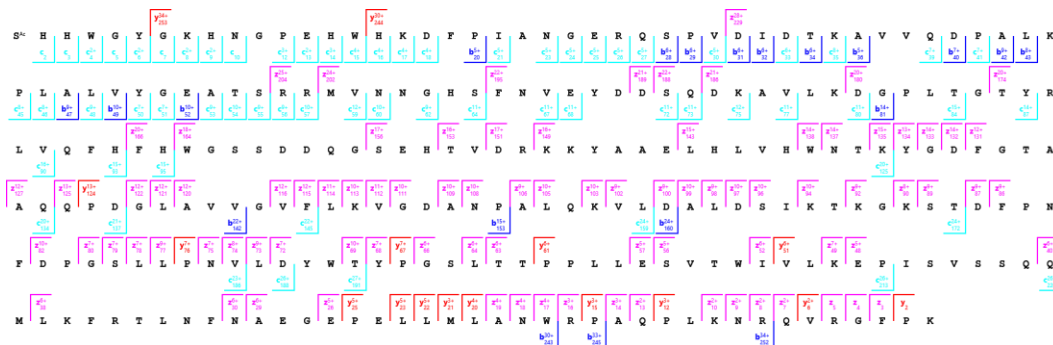


Figure S5. Product ion maps for pre-IMS ECD of 35+ bovine carbonic anhydrase II produced by the combined results of five mobility fraction (top) or a single mass spectrum produced by combining the entire drift time range.

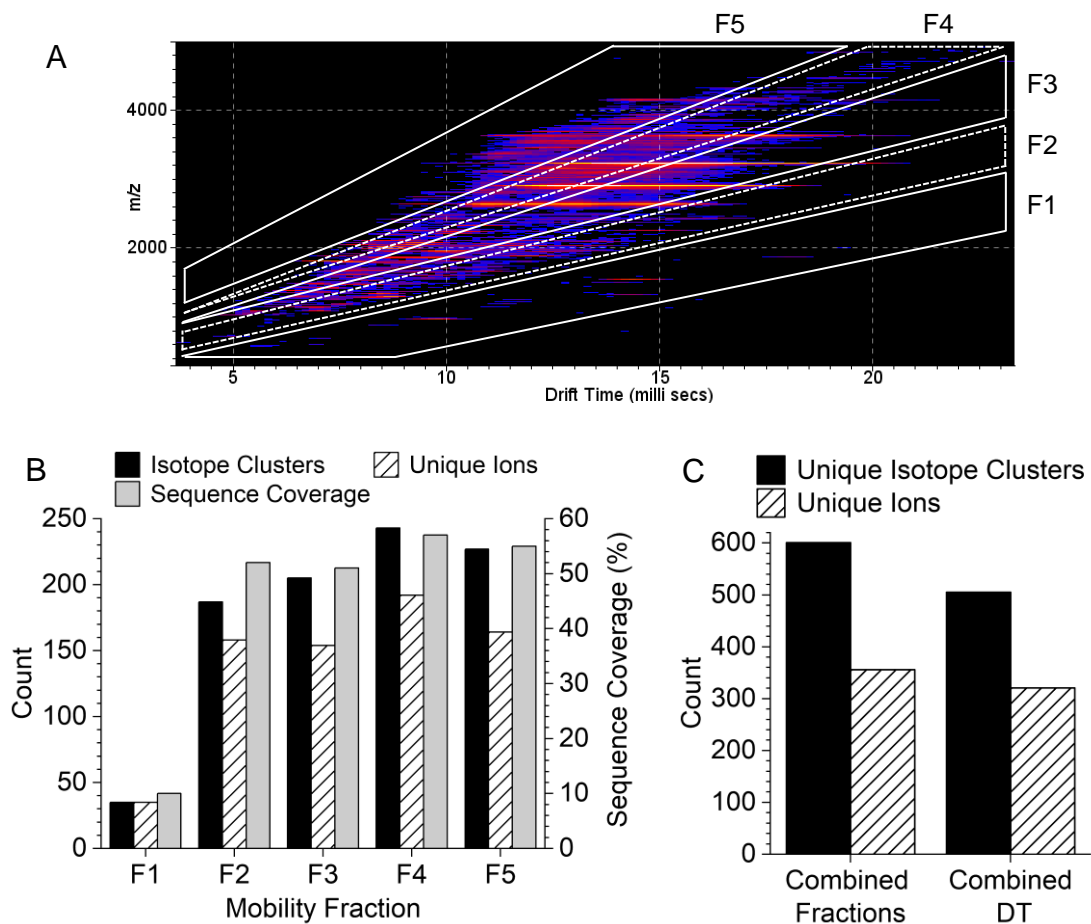
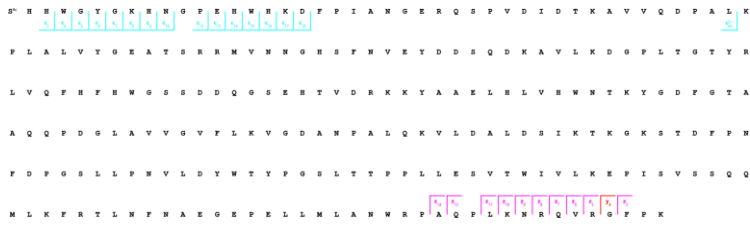
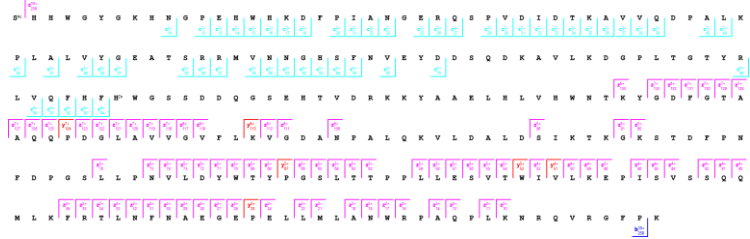


Figure S6. The 2D mobiligram (m/z vs. drift time) for pre-cIMS ECD of the 11+ charge state of bovine carbonic anhydrase II (A) with outlined mobility fractions. The number of annotated isotope clusters/unique ions and sequence coverage for in each mobility fraction (B). Comparison of the number of unique isotope clusters and unique ions observed from a single mass spectrum from all drift times combined and the combined results of the four mobility fractions (C).

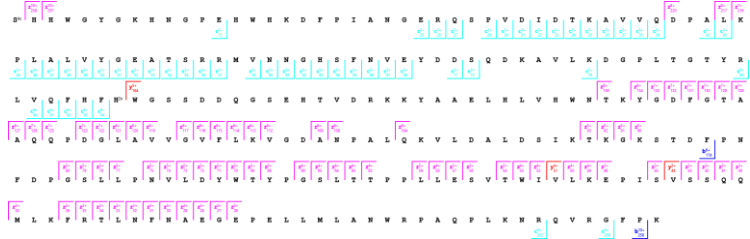
F1: 11% sequence coverage



F2: 52% sequence coverage



F3: 51% sequence coverage



F4: 57% sequence coverage



F5: 55% sequence coverage

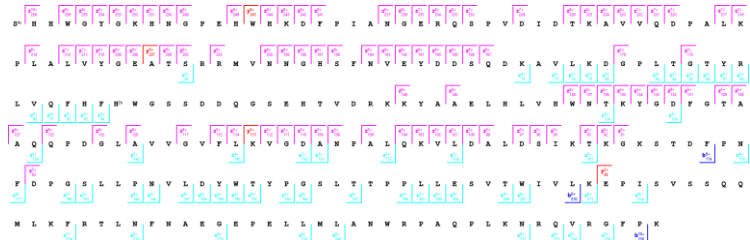


Figure S7. Product ion maps for the five mobility fractions produced by pre-IMS ECD of 11+ bovine carbonic anhydrase II.

Combined drift time: 75% sequence coverage

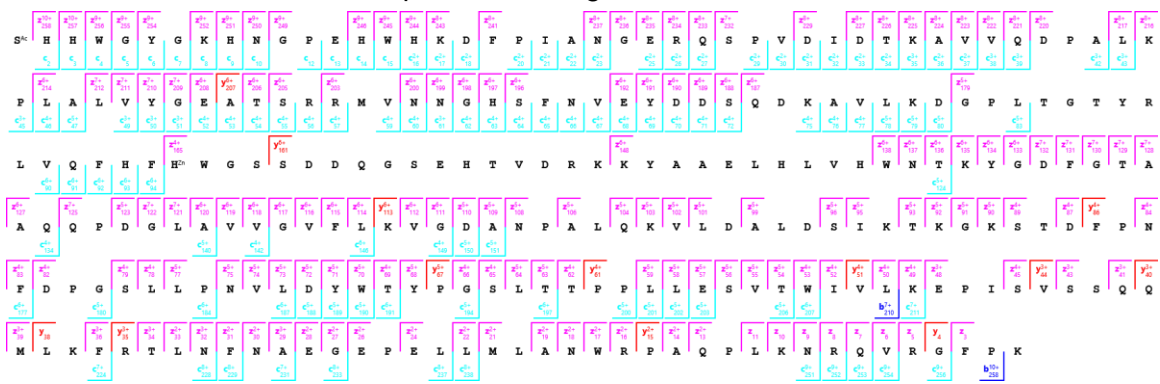


Figure S8. Product ion maps for pre-IMS ECD of 11+ bovine carbonic anhydrase II produced by a single mass spectrum of the entire drift time range combined.