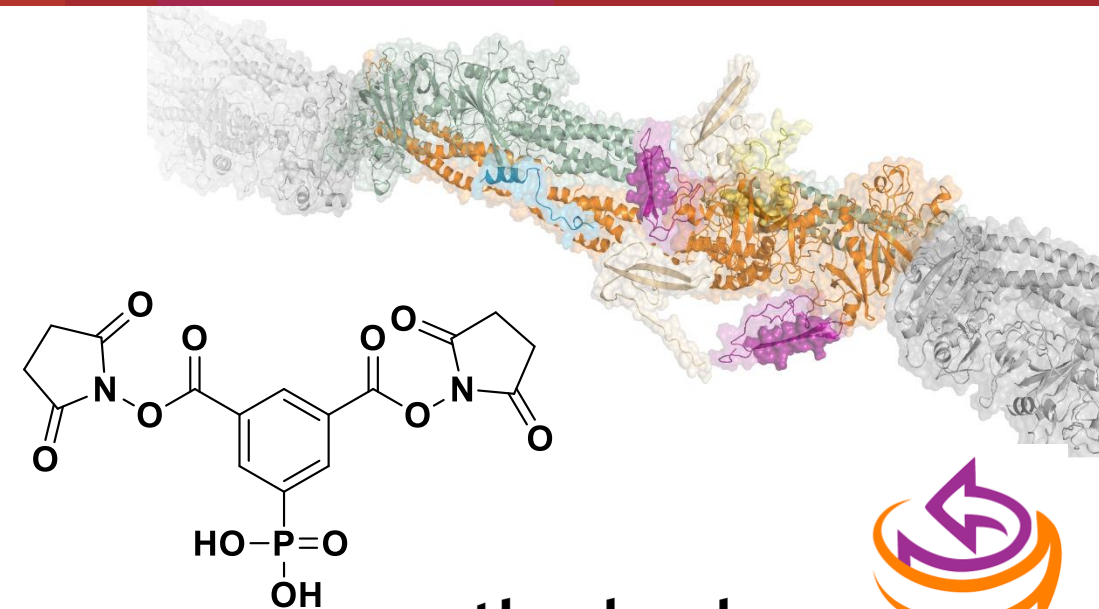
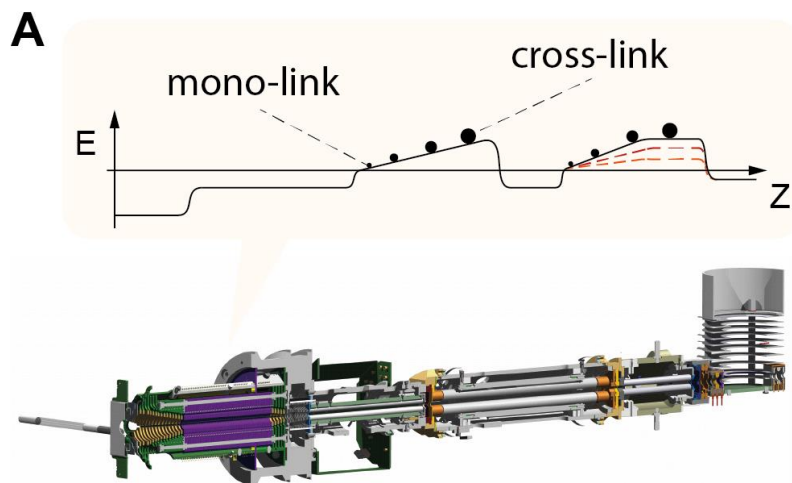


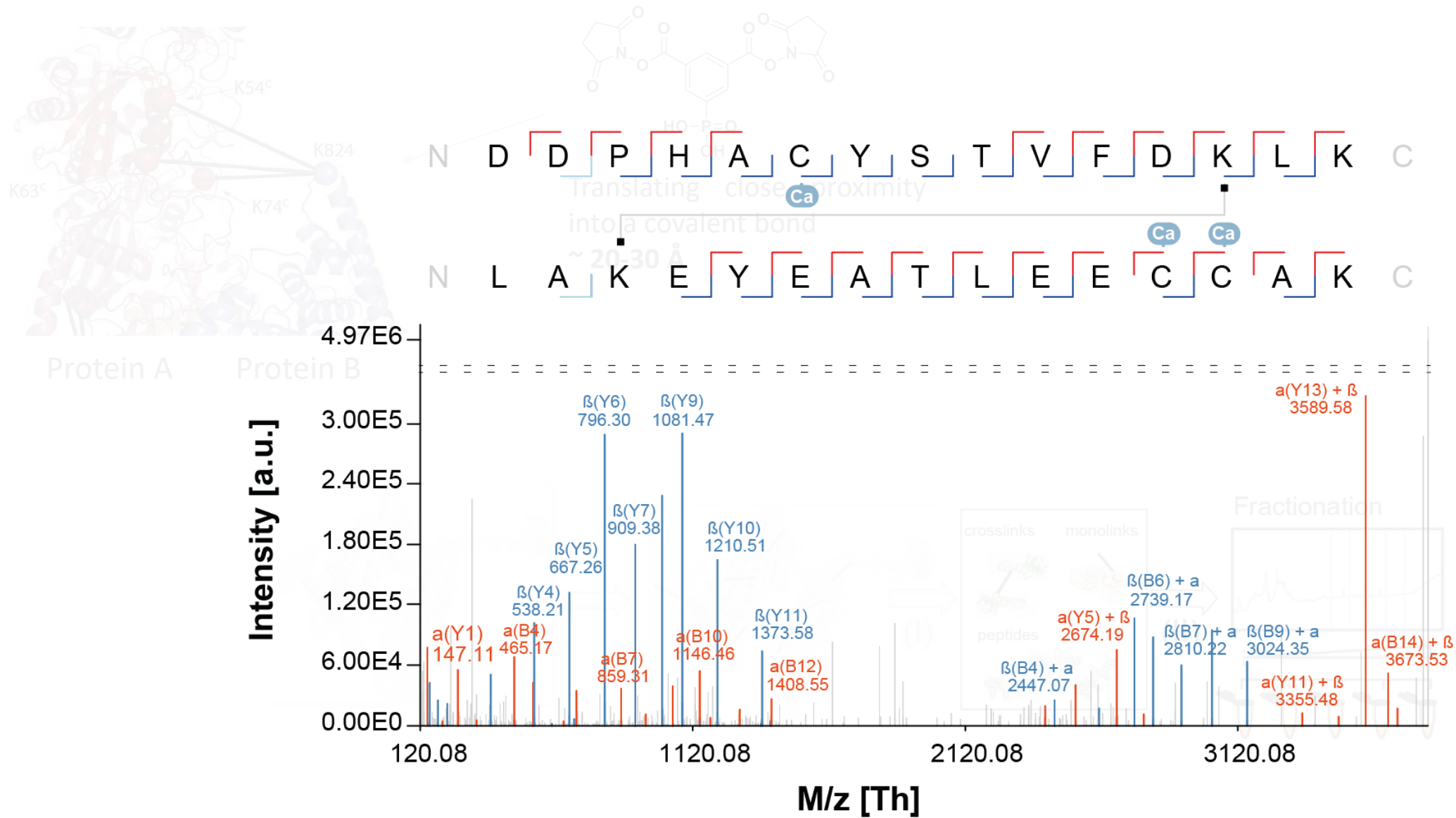
Benefits of Collisional Cross Section Assisted Precursor Selection (caps-PASEF) for Cross-linking Mass Spectrometry (XL-MS)

Markus Lubeck³, Barbara Steigenberger^{1,2}, Henk W.P. van den Toorn^{1,2}, Jean-François Greisch^{1,2}, Oliver Räther³, Albert J.R. Heck^{1,2}, Richard A. Scheltema^{1,2}

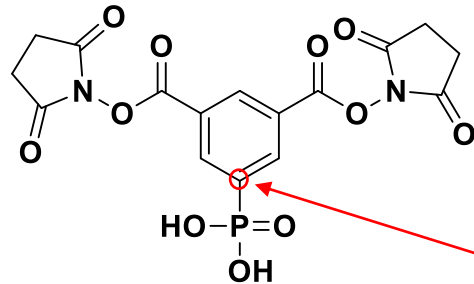
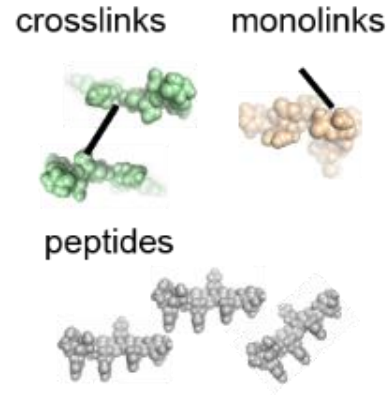


1. Biomolecular Mass Spectrometry and Proteomics, Bijvoet Center for Biomolecular Research and Utrecht Institute for Pharmaceutical Sciences, Utrecht University, Padualaan 8, 3584 CH Utrecht, The Netherlands.
2. Netherlands Proteomics Centre, Padualaan 8, 3584 CH Utrecht, The Netherlands.
3. Bruker Daltonik GmbH, Fahrenheitstrasse 4, 28359 Bremen, Germany





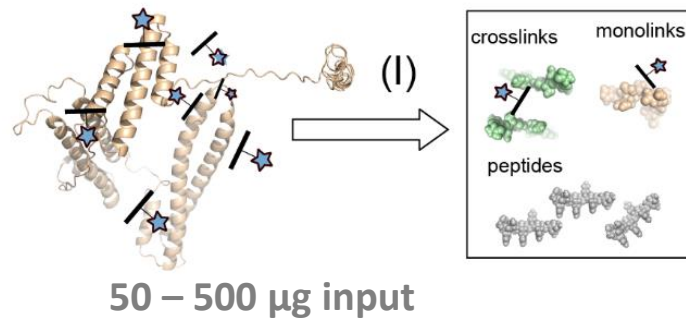
[1] Efficient and robust proteome wide approaches for crosslinking; Klykov *et al*; *Nat Prot*; 2018



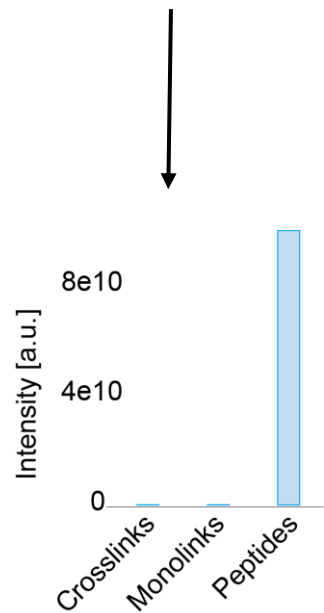
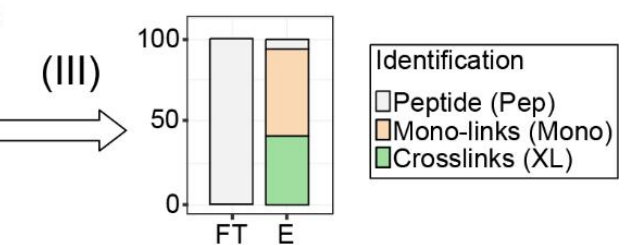
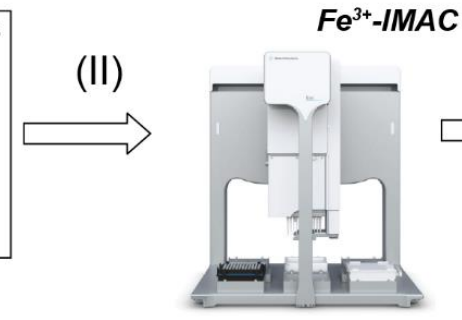
Mimic of phosphorylation
> IMAC enrichment <

Rock stable P-C bond

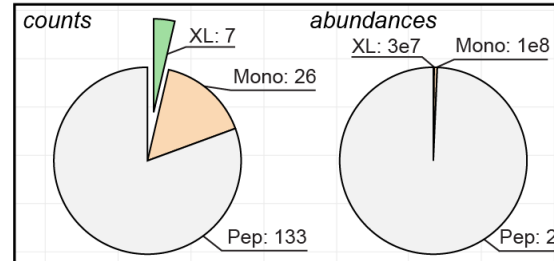
Phosphonic acid Xlinker (PhoX)



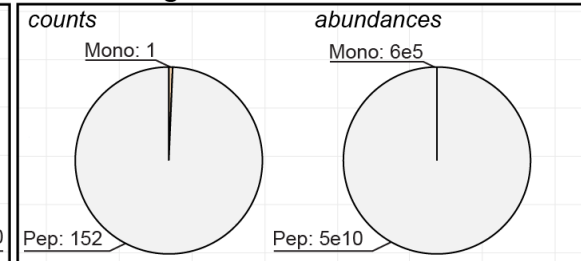
50 – 500 µg input



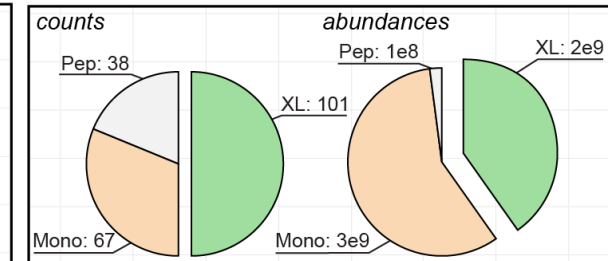
No enrichment

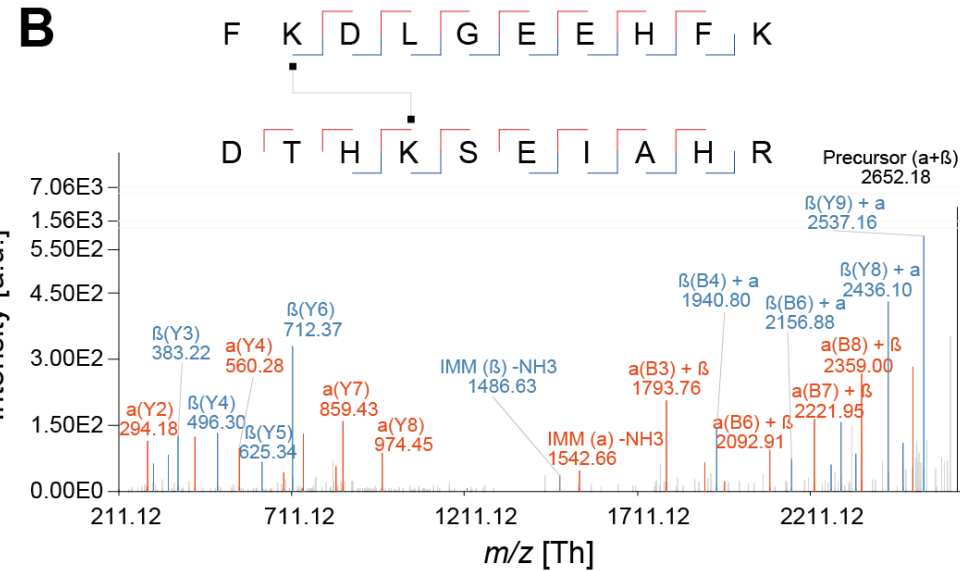
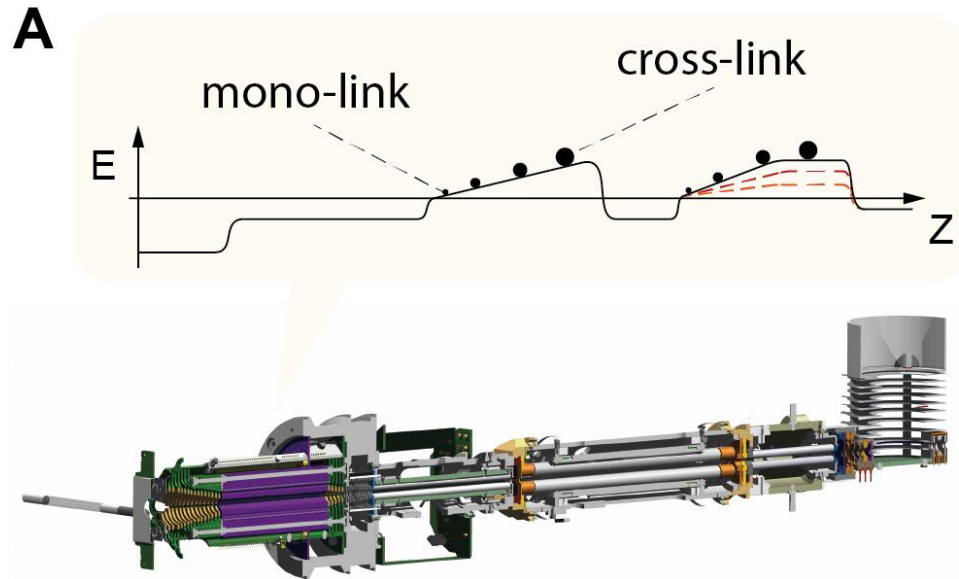


Flow-Through



Eluate





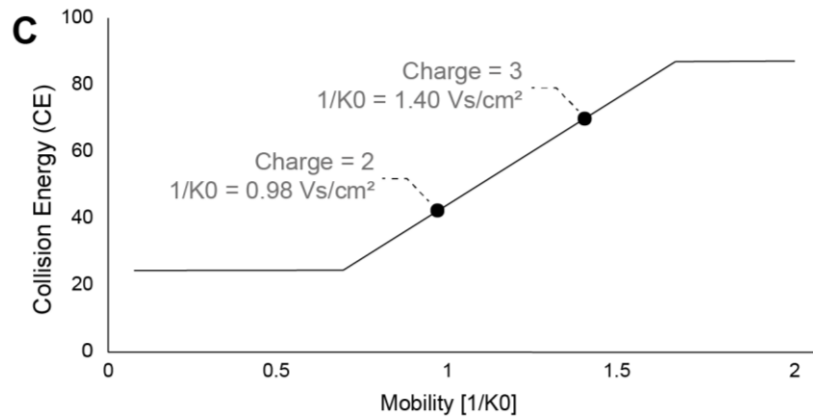
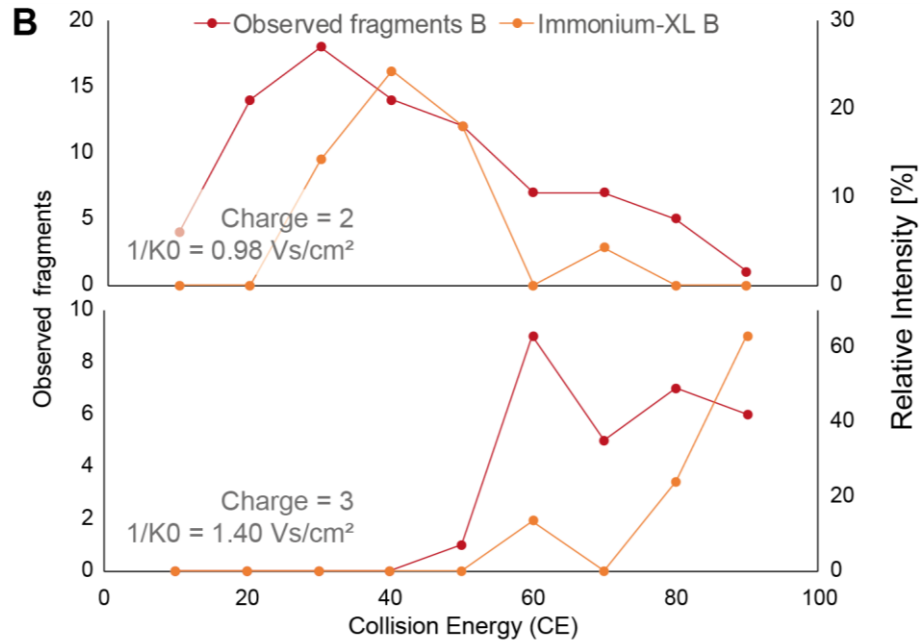
Our premise:

Ion mobility can separate the final frontier of mono- and cross-links.

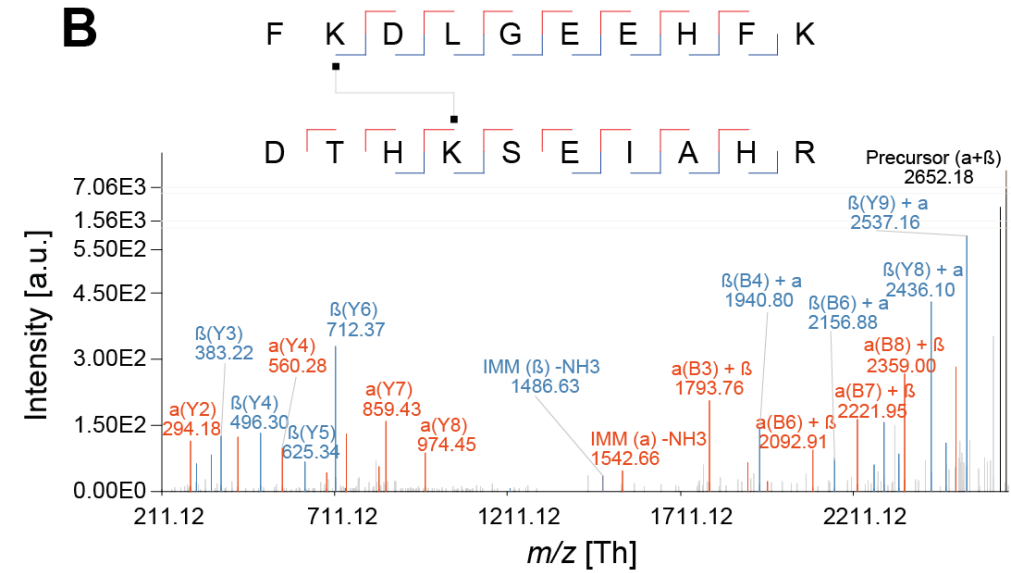
The timsTof Pro produces excellent cross-link peptide fragmentation spectra.

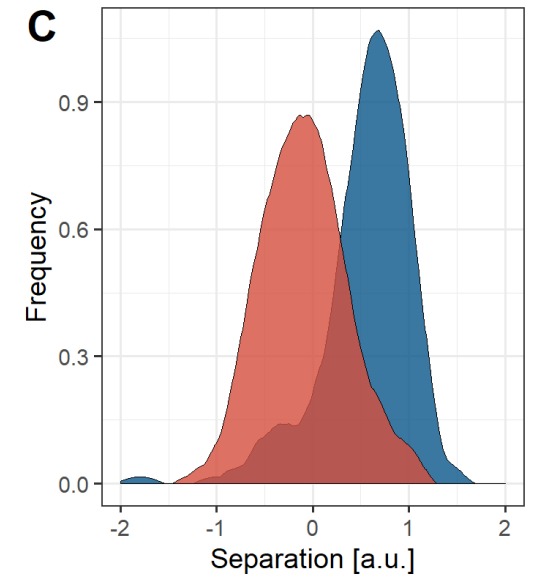
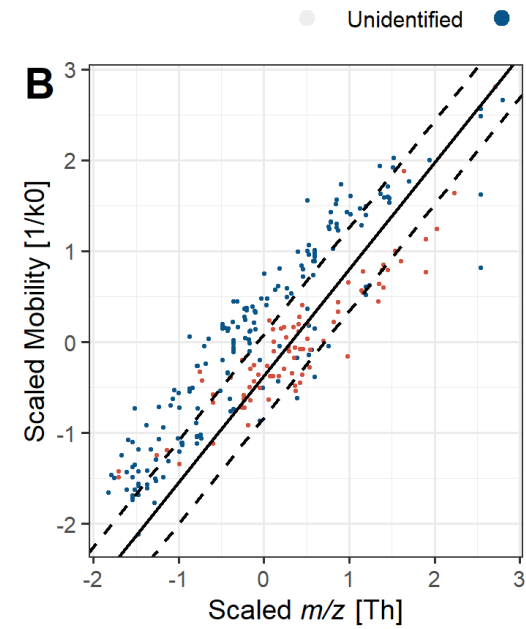
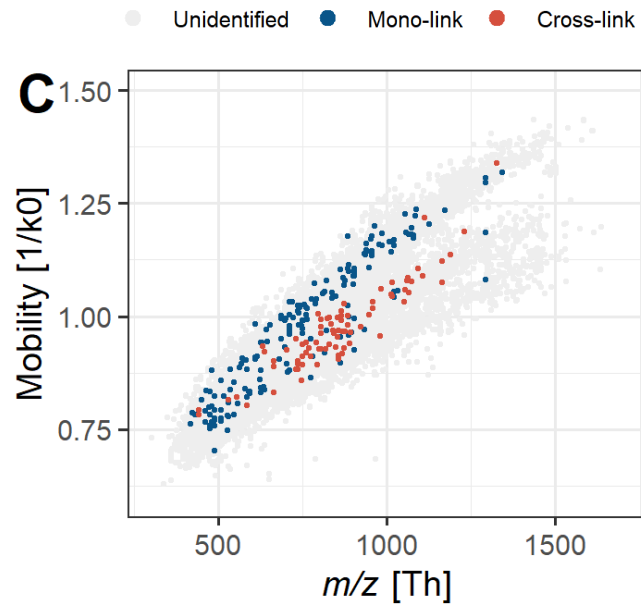
This data quality across the board.

Direct infusion of synthetic, XL'd peptide



With optimized parameters



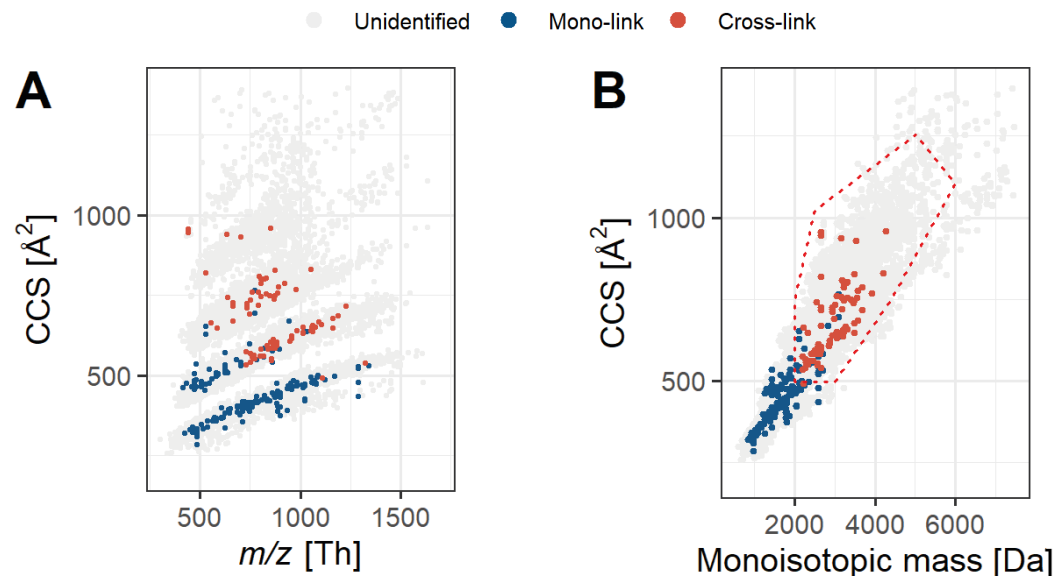


Our premise:

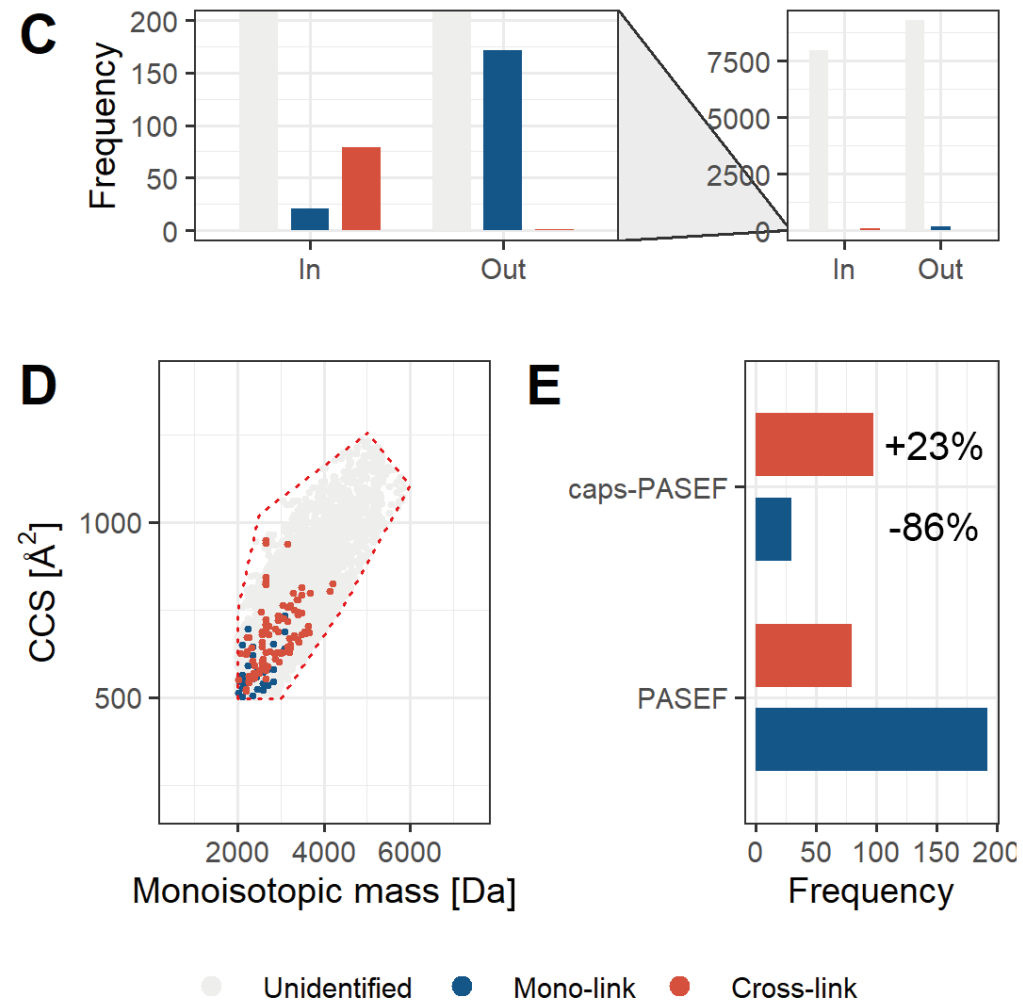
Ion mobility can separate the final frontier of mono- and cross-links?

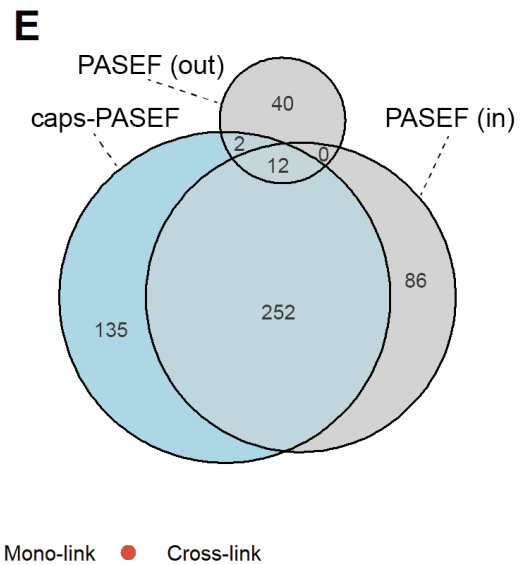
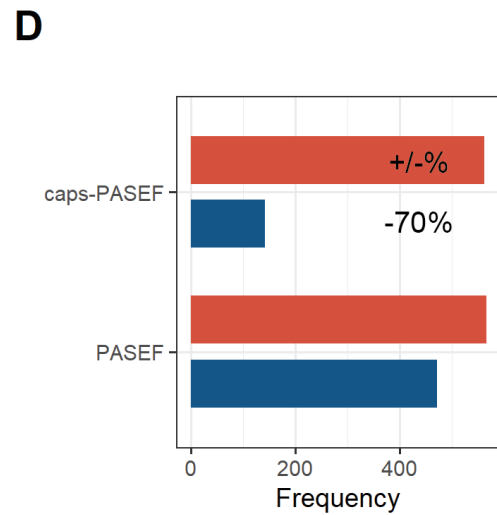
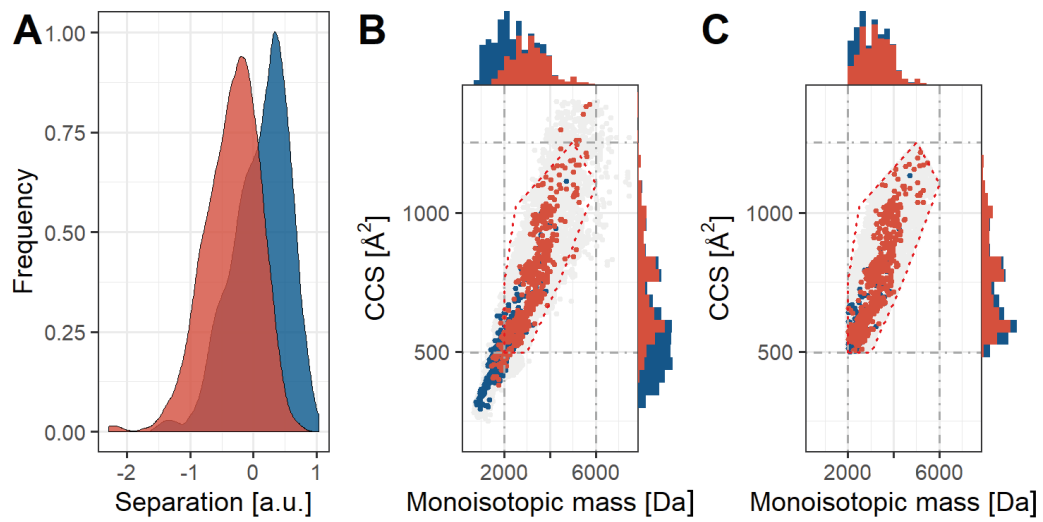
Yes!!

Based on a linear model and distances to the central line we observe physical separation.



Translation of the mobiligram to mono-isotopic mass uncovers excellent separation





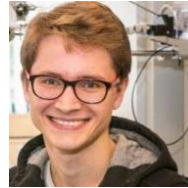
● Unidentified ● Mono-link ● Cross-link



Universiteit Utrecht

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- Prof. Dr. Sander Meijer
- Prof. Dr. Roland Pieters
- Prof. Dr. Friedrich Förster

Current team



Dr. Sem Tamara



Dr. Pascal Albanese



Dr. Katherine Stevens



Dr. Andris Jankevics

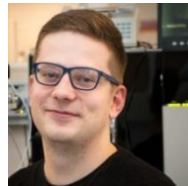


- Dr. Frank Laukien
- Dr. Rohan Thakur
- Dr. Oliver Raether
- Dr. Markus Lubeck

Former members



Dr. Barbara Steigenberger



Dr. Oleg Klykov