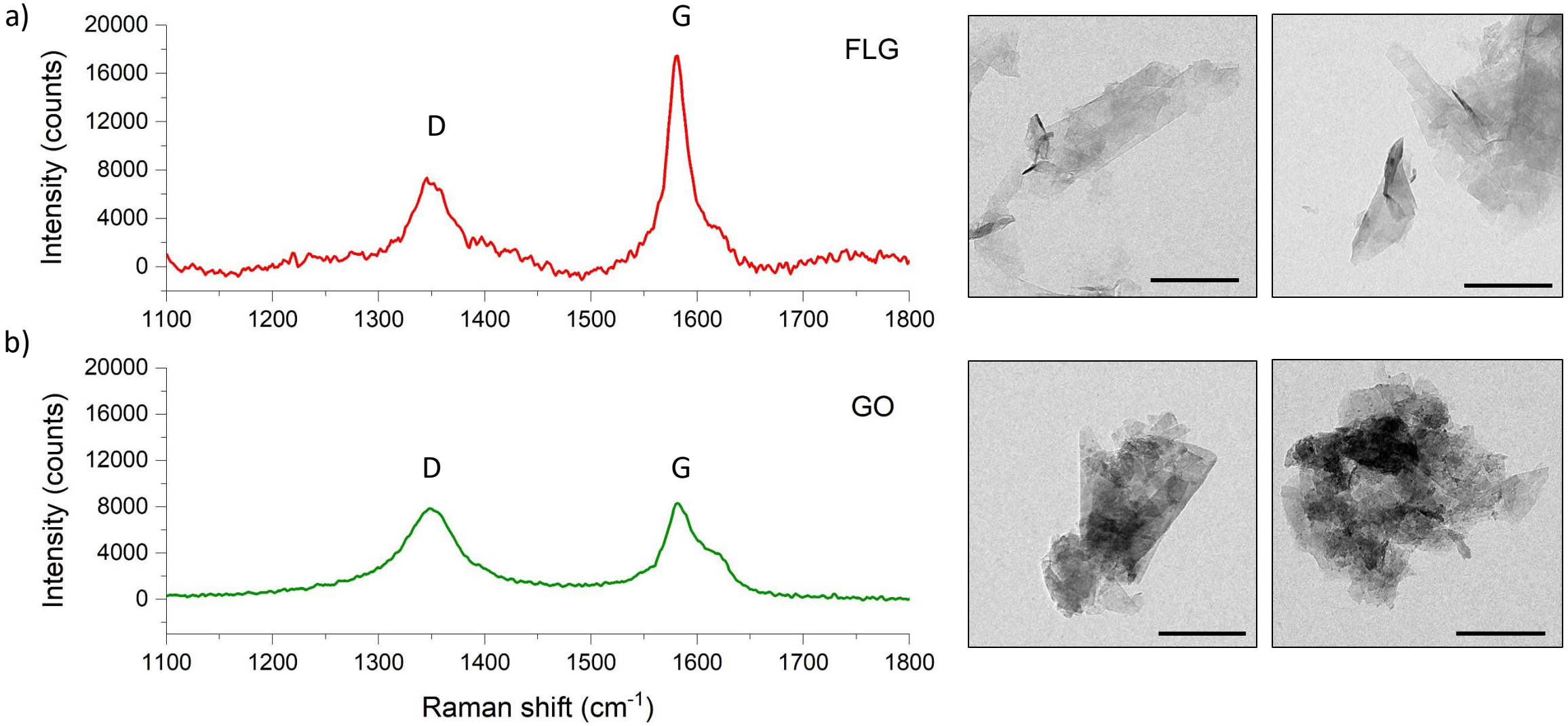


Figure S1: Raman spectra (left) and representative TEM micrographs (right, scale bars = 250 nm) for a) FLG and b) GO in water. The Raman spectra, using laser excitation at 532 nm, show the typical D (~1350 cm^{-1}) and G (~1580 cm^{-1}) peaks with different ratio, as expected for FLG and GO.

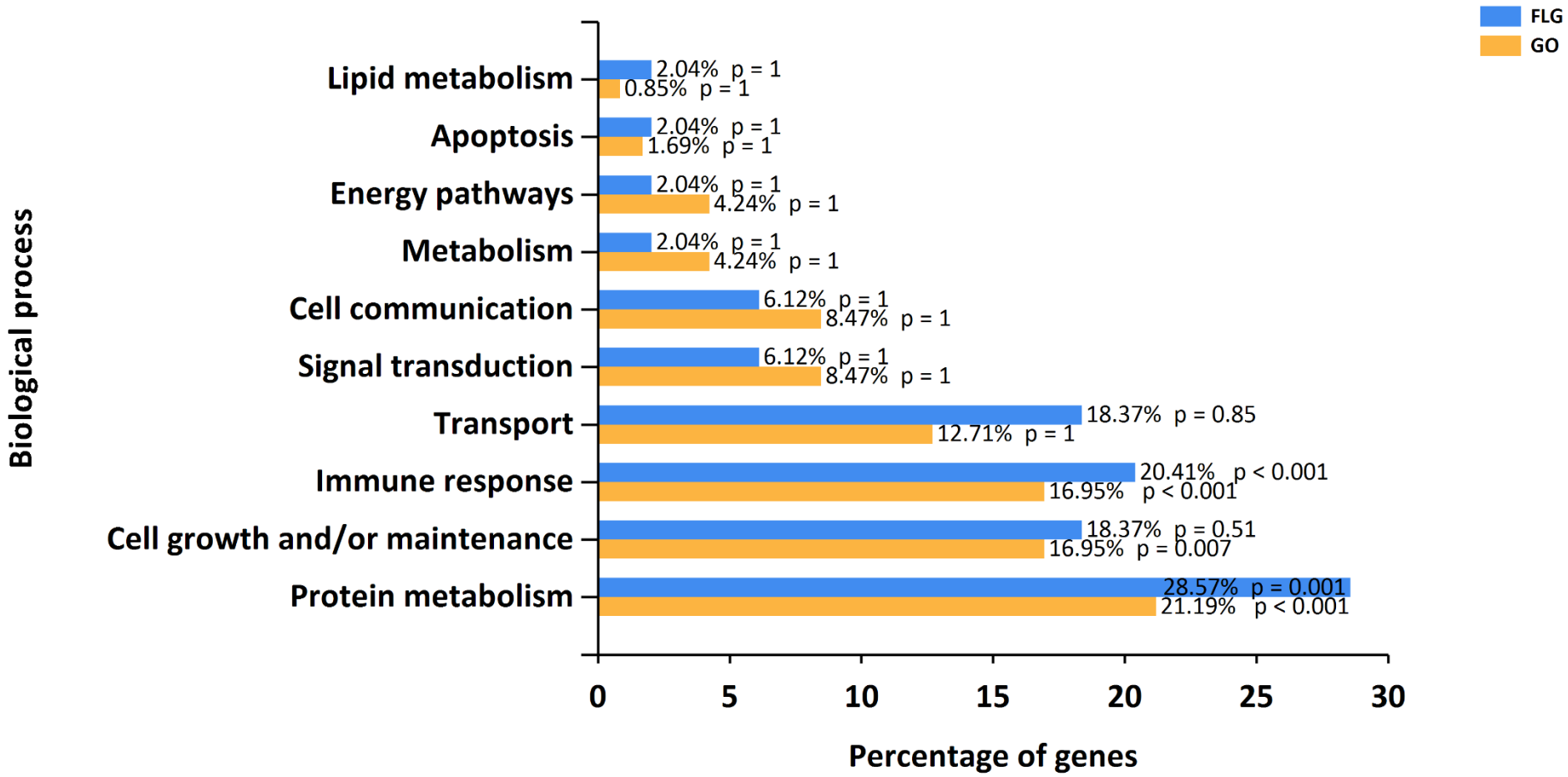


Figure S2. Gene enrichment analysis reporting the 10 most significantly altered biological processes enriched in FLG and GO protein corona

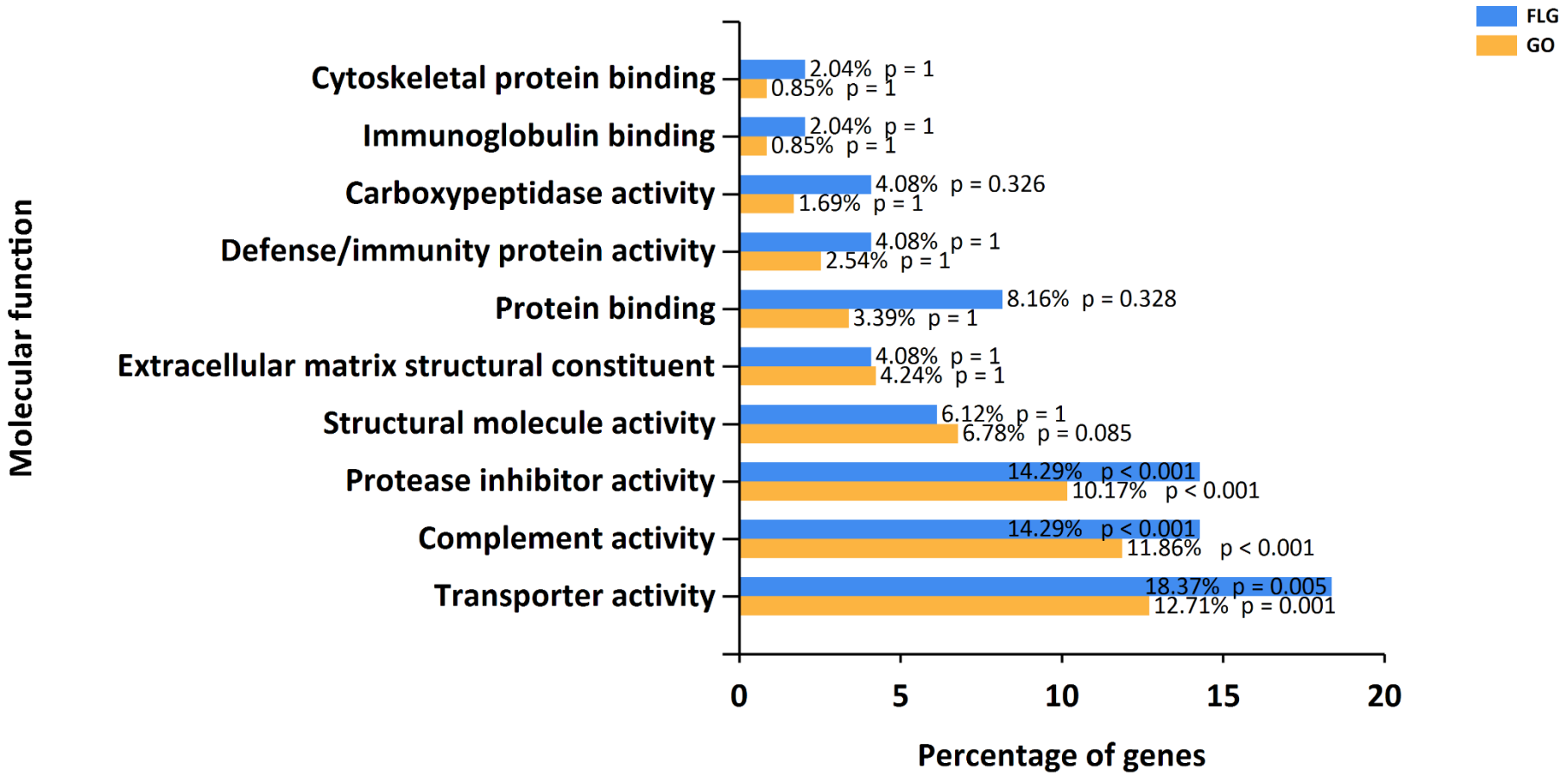


Figure S3. Gene enrichment analysis reporting the 10 most significantly altered molecular functions enriched in FLG and GO protein corona

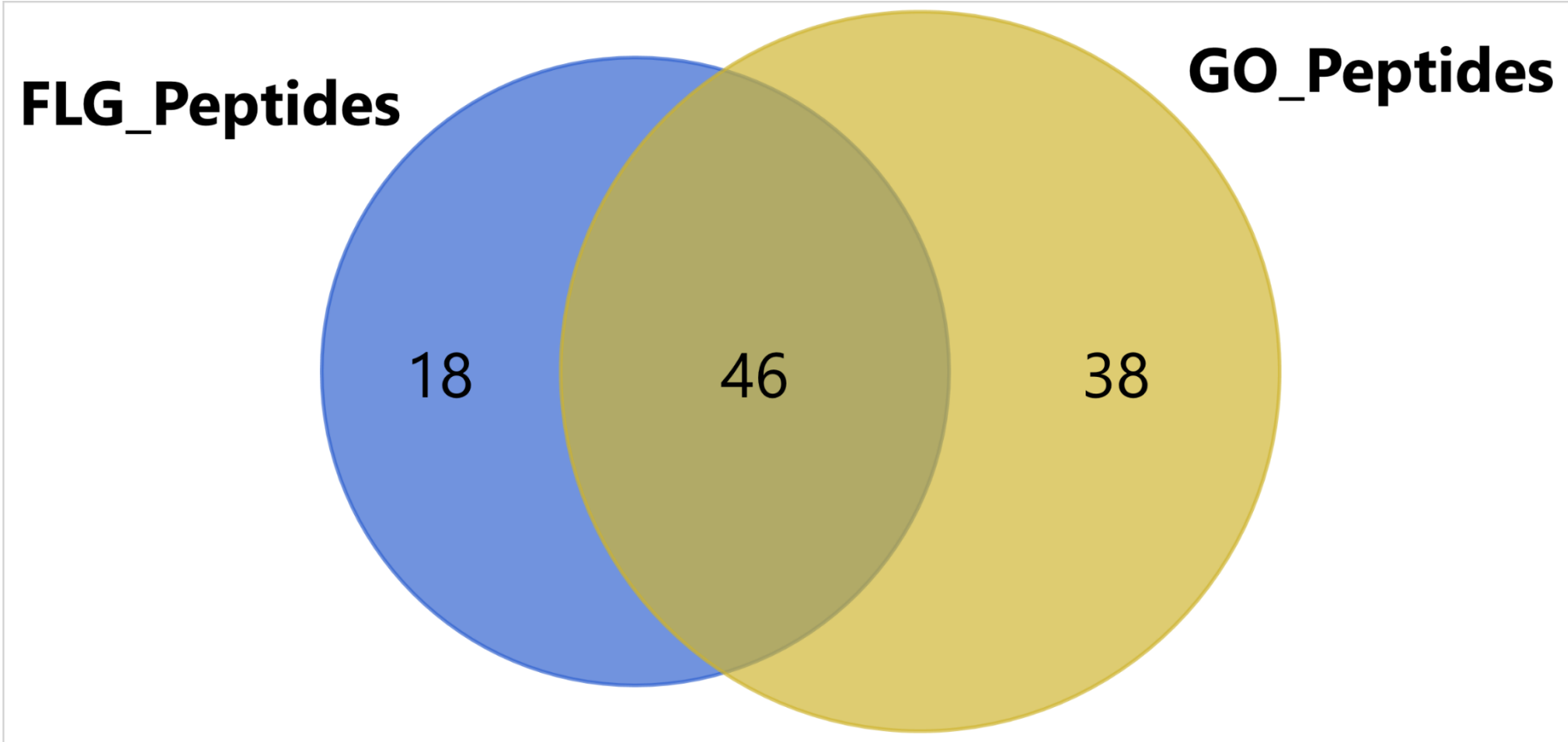


Figure S4. Venn diagram for the assigned peptides

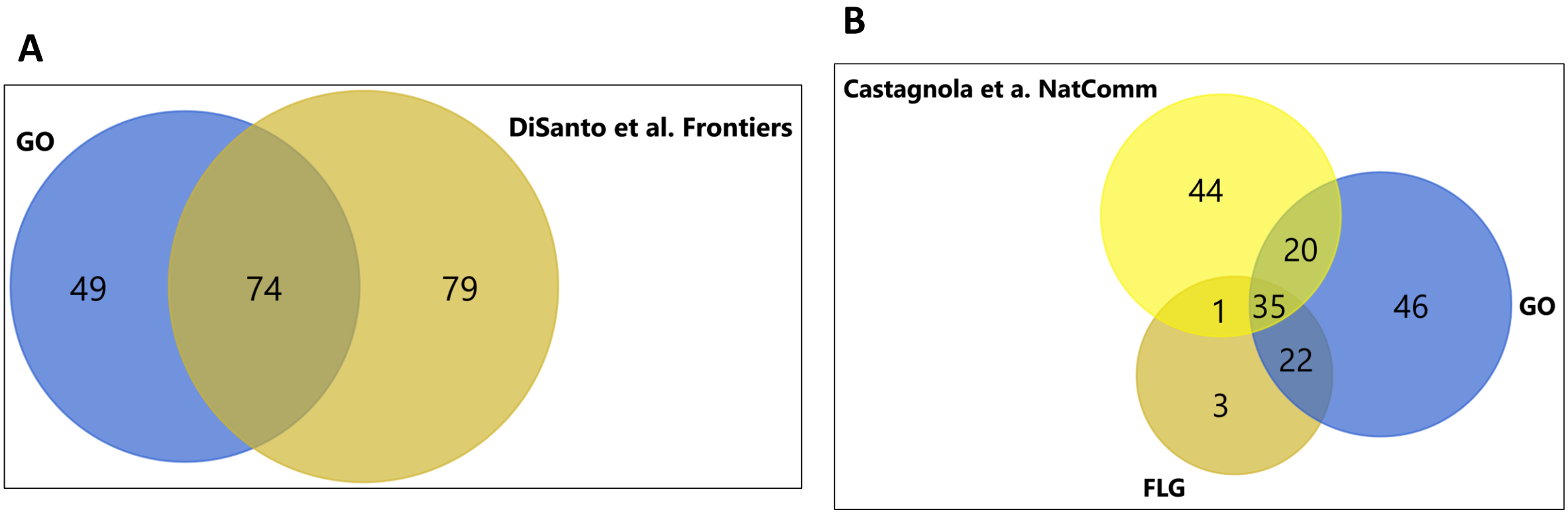


Figure S5. Comparison of the protein corona composition data generated by our work with data from two other papers published: Di Santo et al. *Front.Bioeng.Biotechnol.* 2020 (Panel A) and Castagnola et al. *Nat.Comm.* 2018 (Panel B).

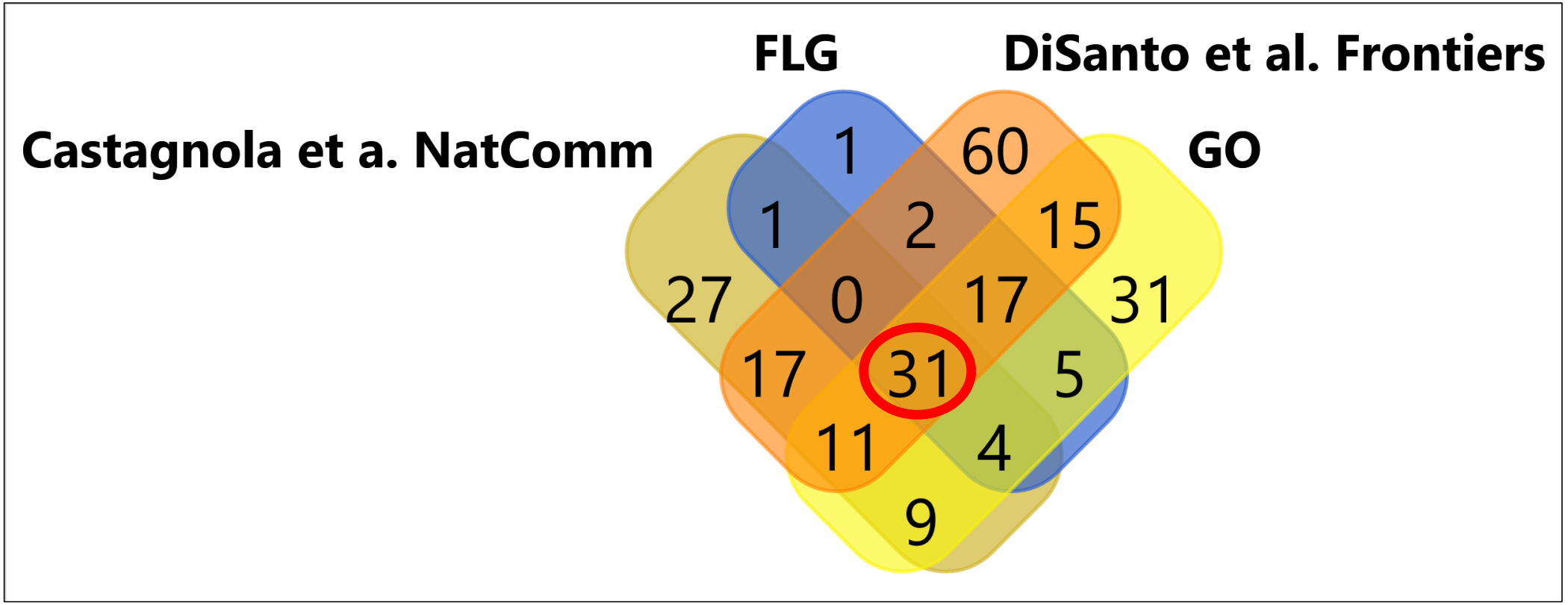
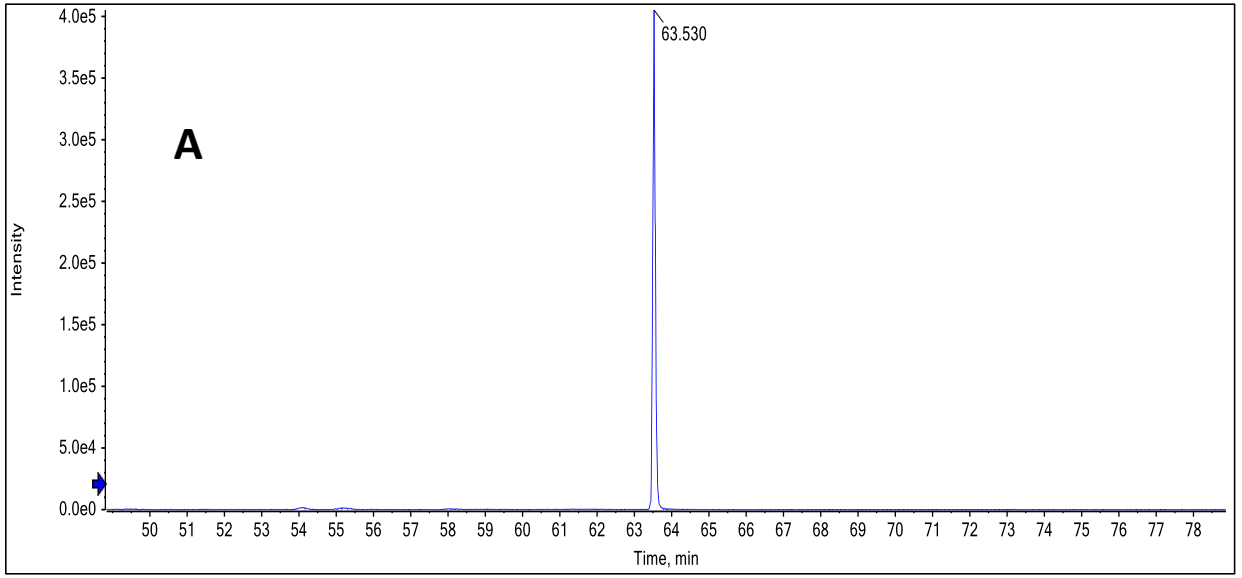
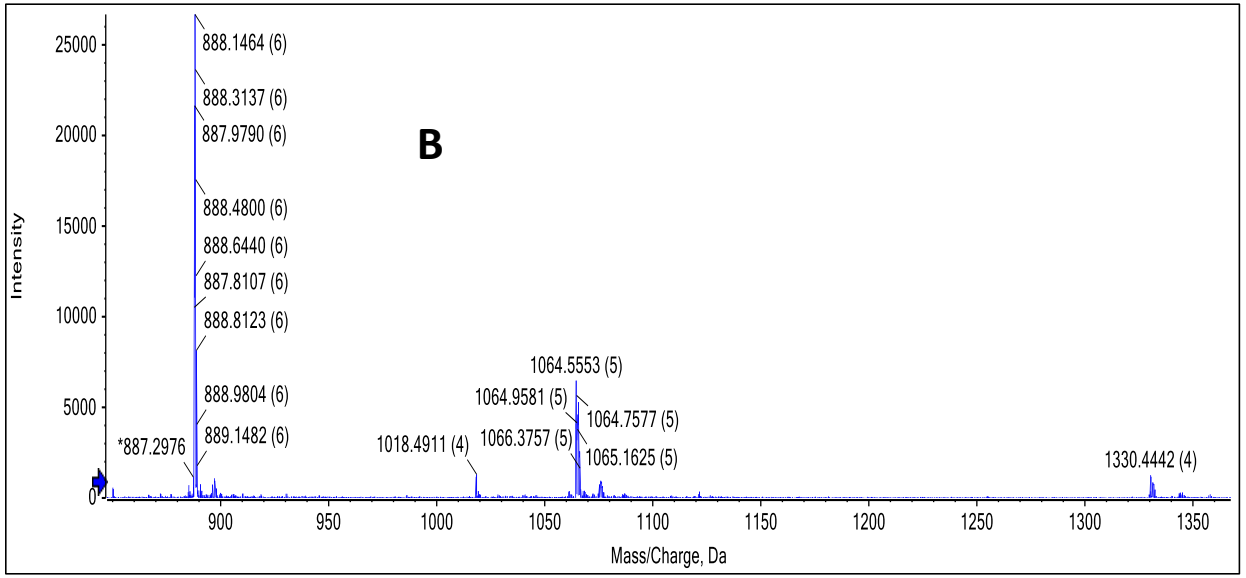


Figure S6. Comparison of the protein corona composition data generated by our work with data from two other papers published (Castagnola et al. *Nat.Comm*. 2018 and Di Santo et al. *Front.Bioeng.Biotechnol.* 2020). Venn overlap is reported for all the four studies together.





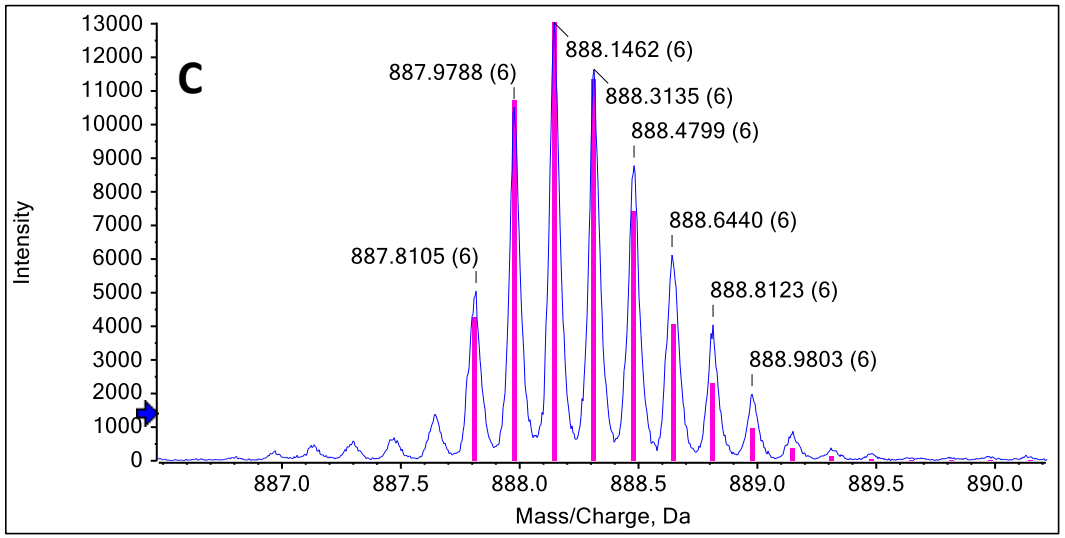


Figure S7: A) extracted ion current of charge state 6+ of peptide QEM(Ox)SK*DLEEVK*AK*VQPYLDD FQK*K*WQEEMELYR, with * indicating TMT tags. B) full scan mass spectrum of the peptide. C) overlapped isotopic distribution of the peptide calculated for charge state 6+ (pink) with experimental one (blue).

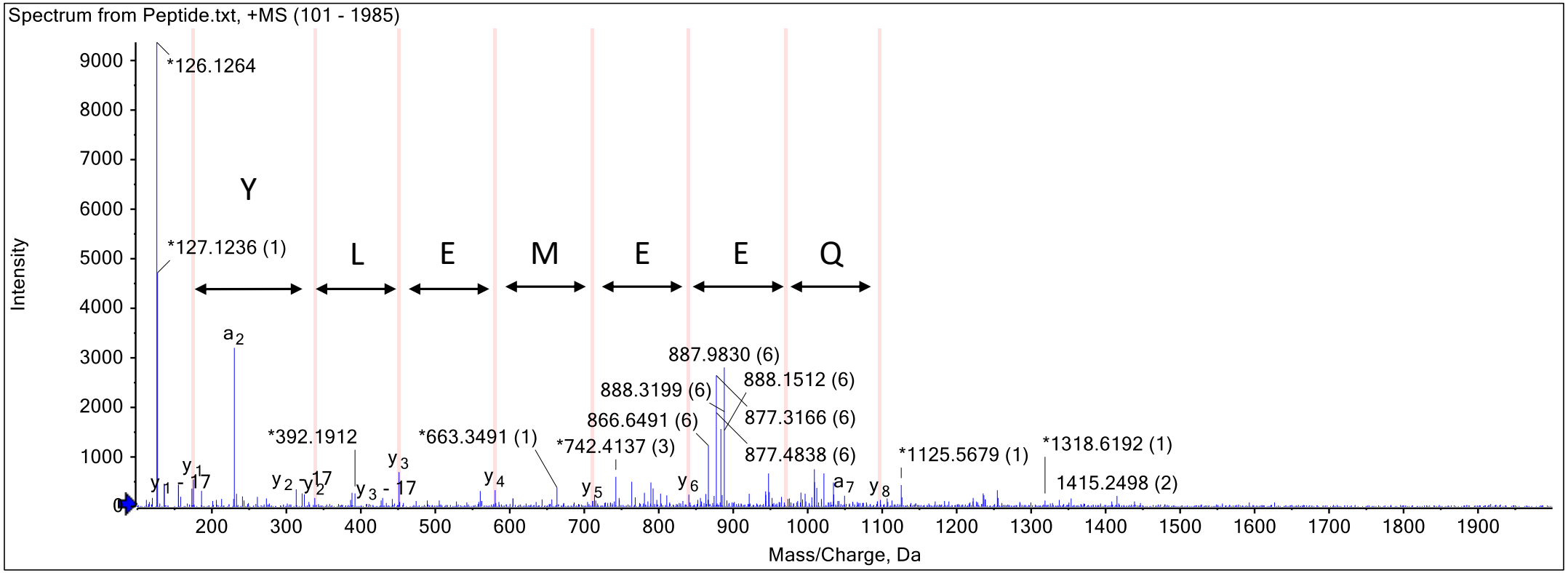


Figure S8: MS/MS spectrum of charge state 6+ of peptide QEM(Ox)SK*DLEEVK*AK*VQPYLDDFQK*K* WQEEMELYR, with * indicating TMT tags. The peptide was confirmed through the y1-y8 series, corresponding to sequence QEEMELYR (unique to ApoA1 in *Homo Sapiens*)

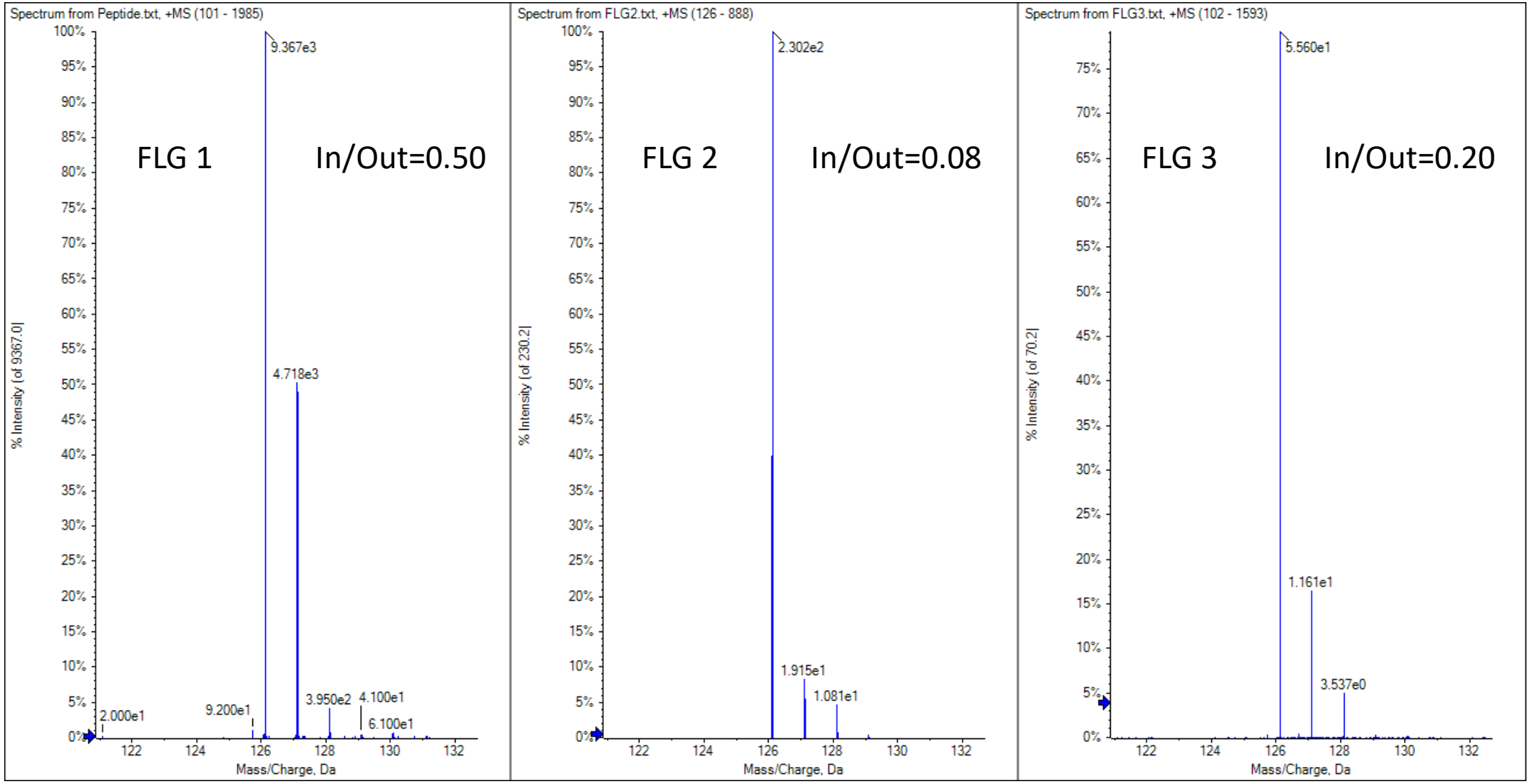


Figure S9: In/Out ratio of the MS/MS spectrum of charge state 6+ of peptide QEM(Ox)SK*DLEEVK*AK*VQPYLDD FQK*K*WQEEMELYR (with * indicating TMT tags) for the three FLG samples.