

# Chromosome 17 Missing Proteins: Recent Progress and Future Directions as Part of the Next-50MP Challenge

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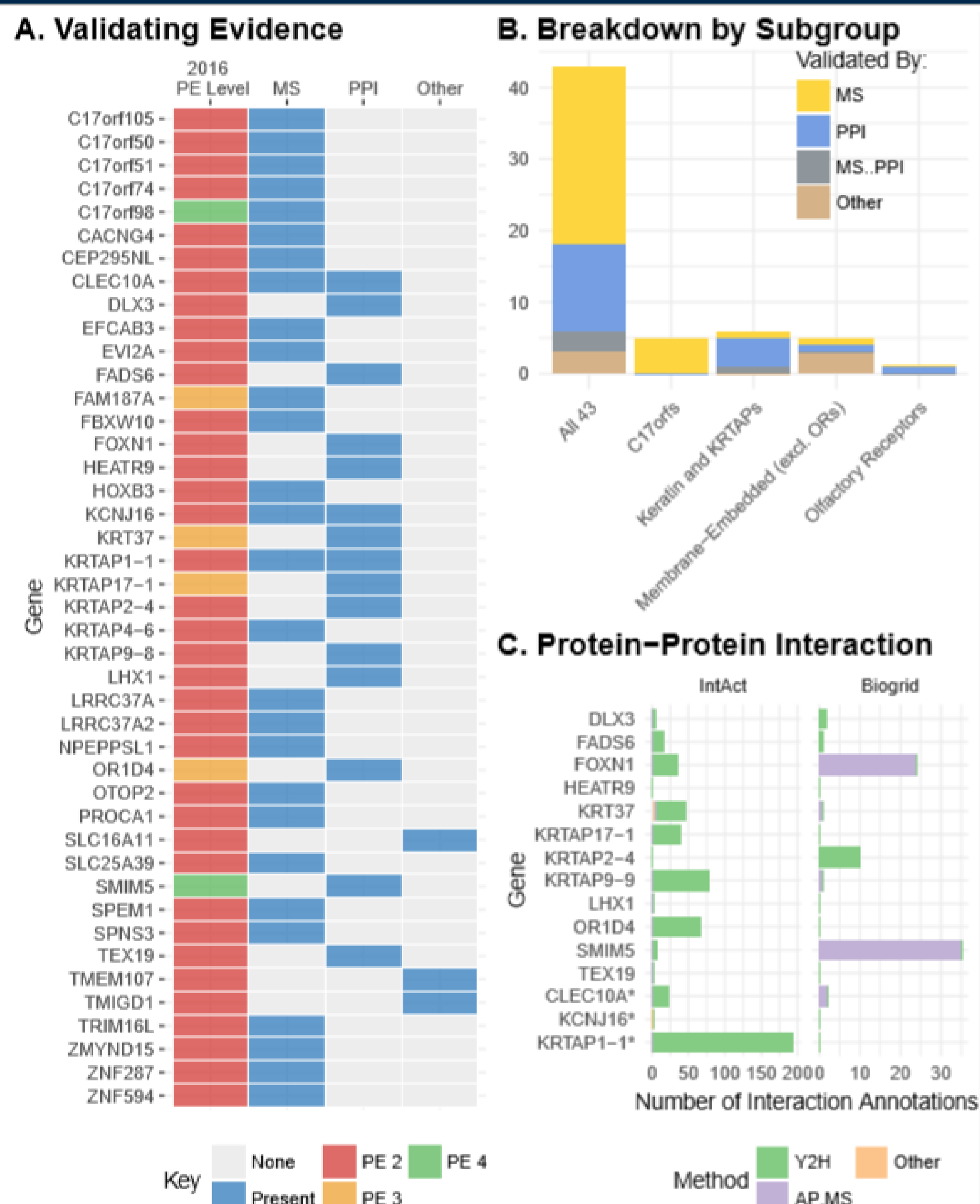
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## Abstract

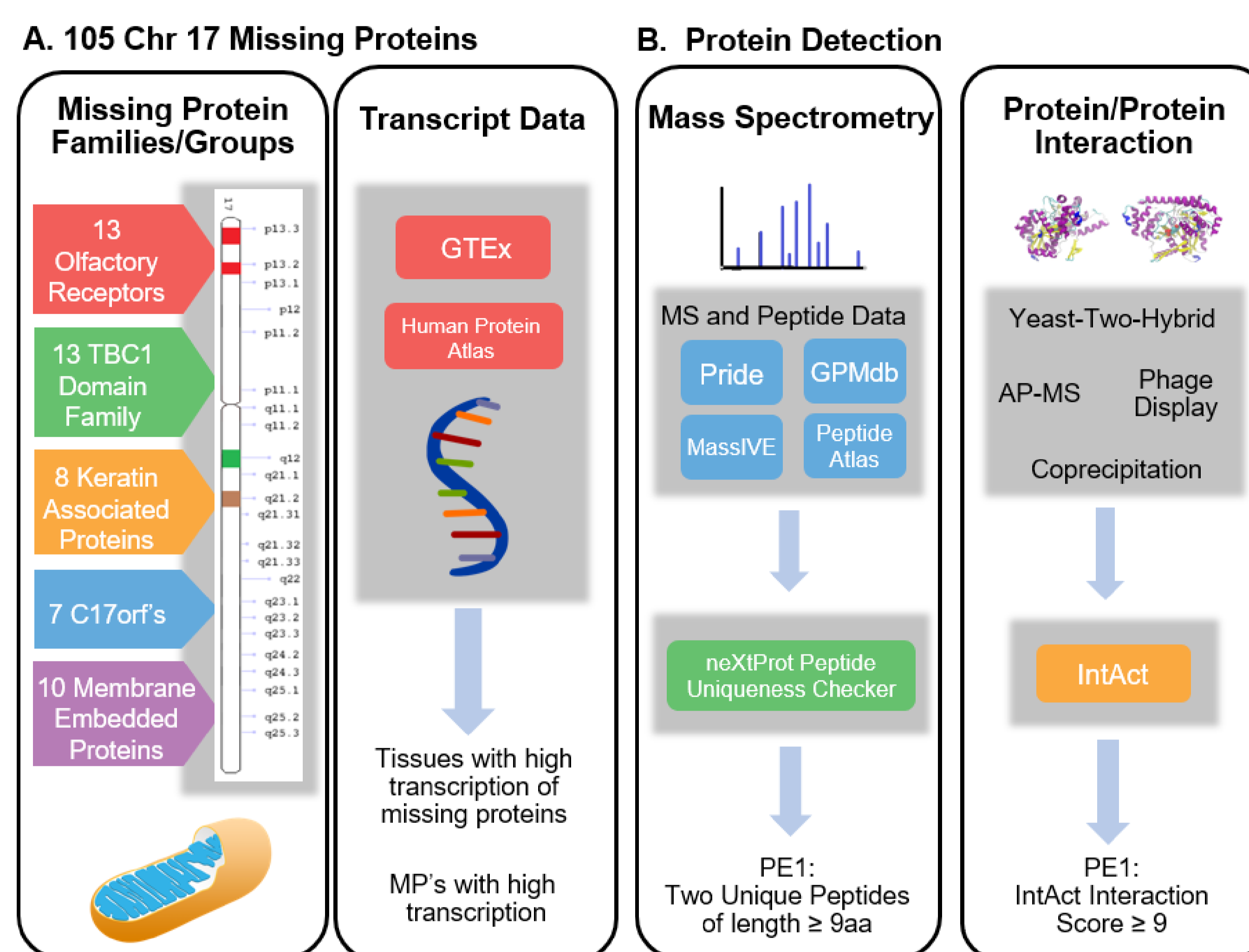
The Chromosome-centric Human Proteome Project (C-HPP) announced in September 2016 an initiative to accelerate progress on detection and characterization of neXtProt PE2,3,4 “missing proteins” (MPs) with a mandate to each chromosome team to find about 50 MPs over 2 years. Here we report major progress toward the next-50 MP Challenge with 43 newly-validated Chr17 PE1 proteins, of which 25 were based on mass spectrometry (MS), 12 on protein-protein interactions, 3 on a combination of MS and PPI, and 3 with other types of data. Notable among these new PE1 proteins were 5 keratin-associated proteins, a single olfactory receptor, and five additional membrane-embedded proteins. We evaluate the prospects of finding the remaining 105 MPs coded for on Chr17, focusing on MS and protein-protein interaction approaches. We present a list of 35 prioritized MPs with specific approaches that may be used in further MS and PPI experimental studies. Among the 35 prioritized MPs, 25 are considered suitable for MS detection, 10 of which have a proteotypic peptide already detected. The other 10 prioritized MPs are prioritized for protein-protein interaction assays, similarly to keratin-associated proteins and a single olfactory receptors detected in the past 18 months. Additionally, we demonstrate how in silico studies can be used to capture individual peptides from major data repositories, documenting 1MP that appears to be a strong candidate for PE1. We are close to our goal of finding 50 MPs for Chr17.

In addition, we commend C-HPP colleagues this strategy of examining families of proteins across the entire proteome for those most amenable to focused detection with MS, with protein-protein interaction assays, with enrichment methods, with guidance from tissue-specific transcript expression, and with additional approaches pioneered by various C-HPP teams.

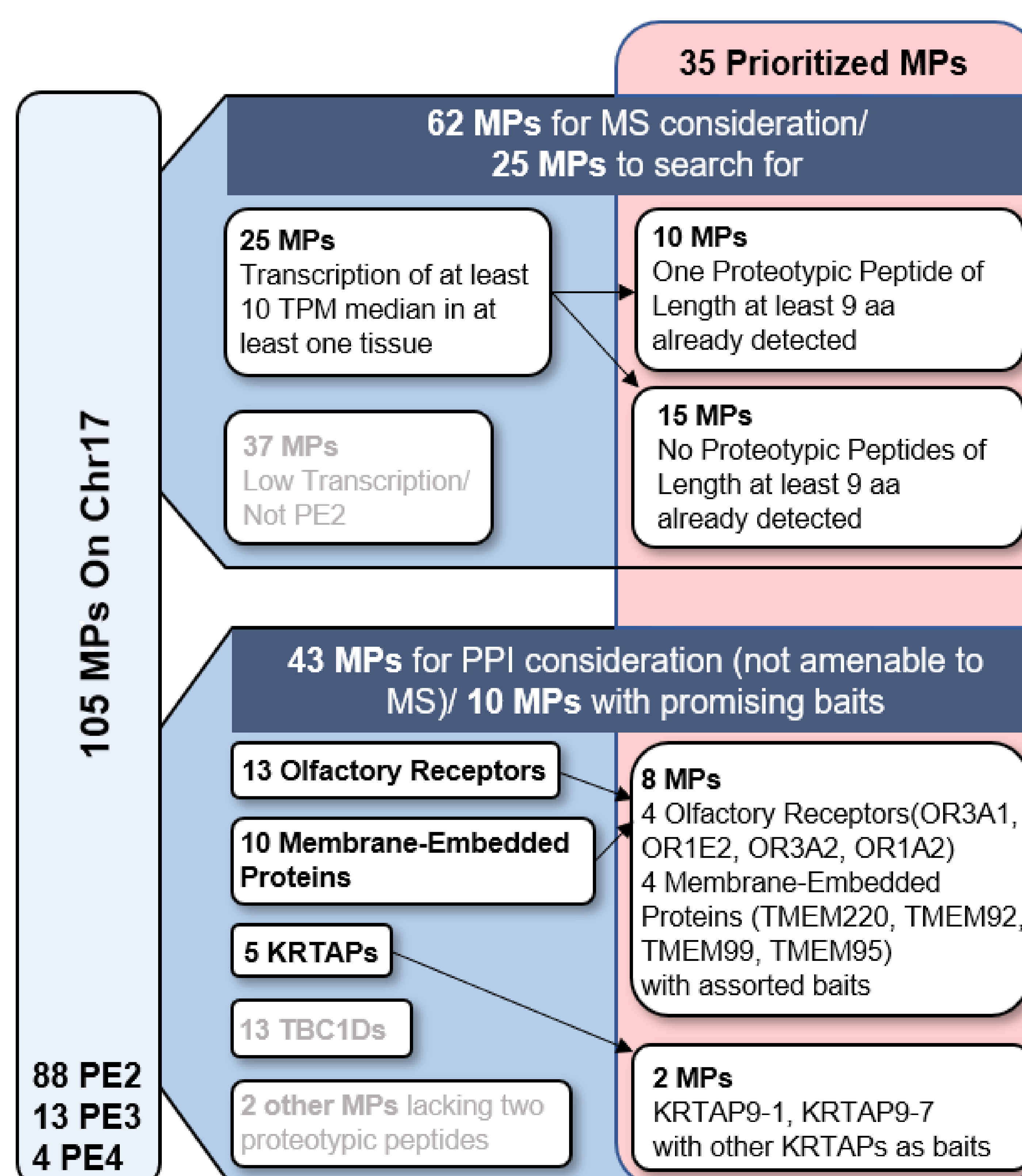
## Progress since September 2016



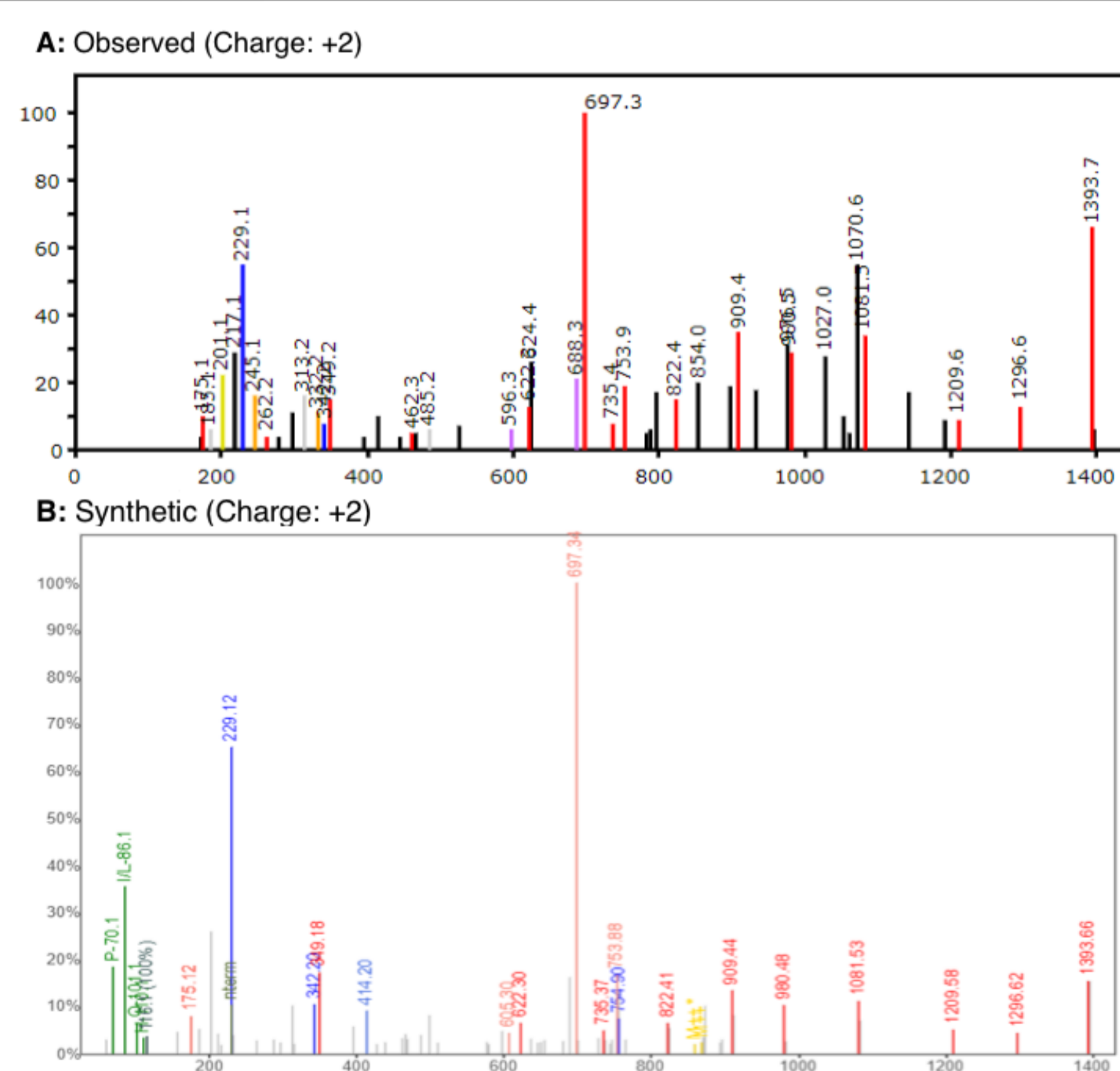
## Overview of Chr17 Missing Proteins



## Prioritized targets



## Mass Spectra Search for Stranded Peptides



## Contact

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