

**Supplemental Table 1**

	MUDPIT_ICAT	MUDPIT_ESI	PAGE_ESI	PAGE_MALDI
ICAT Labeling	Yes	No	No	No
Fractionation	Ion Exchange Column	Ion Exchange Column	PAGE	PAGE
Proteolysis	Trypsin	Trypsin	Trypsin	Trypsin
Cysteine Selection	Yes	No	No	No
Ionization	ESI	ESI	ESI	MALDI
Identification	SEQUEST	SEQUEST	Mascot	Mass Fingerprinting
Distinct Proteins Observed	2,740	1,095	951	2,730
Peptides Observed (Distinct)	263,905 (6,770)	20,722 (3,454)	32,959 (7,231)	328,176 (45,357)
Distinct Proteotypic Peptides	3,310	1,034	1,238	10,564

Description of the four large scale yeast datasets used for the development and evaluation of proteotypic peptide predictors. Each dataset exemplifies one of the most common experimental strategies in current proteomics. Lists of empirically observed proteotypic peptides and observed proteins are provided in the supplementary information.