

**Table S5. Data sets used in algorithm comparison**

| <b>Dataset</b>                               | <b>No. proteins in data set</b> | <b>Known Motif</b>  | <b>Motif name</b>  |
|--|---------------------------------|---------------------|--|
| Ymr139w (Rim11) interactors                  | 41                              | SxxxSP              | Gsk3 substrate motif                                     |
| Ygl059w (Pkp2) interactors                   | 92                              | RRxS                | Pka substrate motif                                      |
| Ybr160w (Cdc28) interactors                  | 241                             | [ST]Px[RK]          | Cdk substrate motif                                      |
| Mitochondrial localization (Huh et al, 2003) | 526                             | RxxS (RFxS or RxFs) | Mitochondrial processing peptidase (MPP) cleavage signal |
| Nucleus (GO:0044428)                         | 991                             | KKRK                | Nuclear Localization Signal (NLS)                        |