## Supplemental Table 1: RPPA pathway proteins

| Pathway                  | Predictor  | Weight |
|-------------------------|------------|--------|
| Hormone_receptor        | AR         | 1      |
| Hormone_signaling       | BCL2       | 1      |
|                         | ERALPHAPS118 | 1    |
|                         | GATA3      | 1      |
|                         | INPP4B     | 1      |
| Apoptosis               | Caspase-7-cleaved | 1    |
|                         | Caspase-8-cleaved | 1    |
| Cell_cycle_progression  | 14-3-3-beta | -1    |
|                         | CyclinD1   | -1     |
|                         | p21        | -1     |
|                         | p27_pT198  | -1     |
|                         | cdc25C     | 1      |
|                         | CDK1_pT14  | 1      |
|                         | Chk1       | 1      |
|                         | Cyclin-B1  | 1      |
|                         | PLK1       | 1      |
|                         | Rb_pS807_S811 | 1    |
| G0_G1                   | BRD4       | -1     |
|                         | Cyclin-B1  | -1     |
|                         | 14-3-3-beta | 1      |
|                         | 53BP1      | 1      |
|                         | Cyclin-D1  | 1      |
|                         | p21        | 1      |
|                         | p27_pT198  | 1      |
| G1_S                    | 53BP1      | 1      |
|                         | BRD4       | 1      |
|                         | Cyclin-E1  | 1      |
| G2_M                    | cdc25C     | 1      |
|                         | CDK1_pT14  | 1      |
|                         | Cyclin-B1  | 1      |
|                         | PLK1       | 1      |
|                         | Rb_pS807_S811 | 1    |
| PI3K_Akt                | INPP4b     | 1      |
|                         | PTEN       | 1      |
|                         | Akt_pS473  | 0.5    |
|                         | Akt_pT308  | 0.5    |
|                         | GSK-3a-b_pS21_S9 | 1  |
|                         | p27_pT198  | 1      |
|                         | PRAS40_pT246 | 1    |
|                         | Tuberin_pT1462 | 1    |
|                         | c-Jun_pS73 | 1      |
|                         | C-Ref_pS338 | 1    |
|                         | JNK_pT183_Y185 | 1  |
|                         | MAPK_pT202-Y204 | 1  |
|                         | MEK1_pS217-S221 | 1  |
|                         | p38_pT180_Y182 | 1    |
|                         | p38-MAPK   | 1      |
|                         | p90RSK_pT573 | 1    |
|                         | YB1_pS102  | 1      |
|                         | Src_pY416  | 0.5    |
|                         | Src_pY527  | 0.5    |
|                         | CMET_pY1235 | 1    |
|                         | EGFR_pY1173 | 1     |
|                         | HER2_pY1248 | 1    |
|                         | HER3_pY1289 | 1    |
|                         | IGF1R_pY1135_Y1136 | 1    |
|                         | IRS1       | 1      |
|                         | Shc_pY317  | 1      |
|                         | SHP-2_pY542 | 1    |
|                         | S6_pS235_S236 | 0.5  |
|                         | S6_pS240_S244 | 0.5  |
|                         | 4E-BP1_pS65 | 1      |
|                         | mTOR_pS2448 | 1     |
|                         | p70_S6K_pT389 | 1    |
|                         | Rb_pS807_S811 | 1    |
|                         | Rictor_pT1135 | 1    |