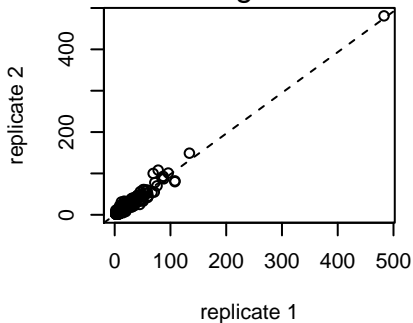
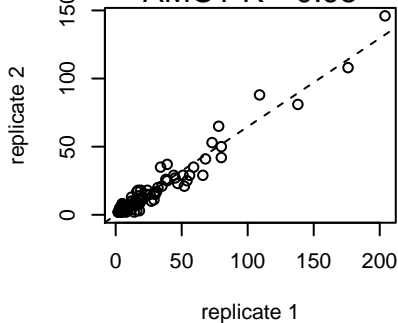


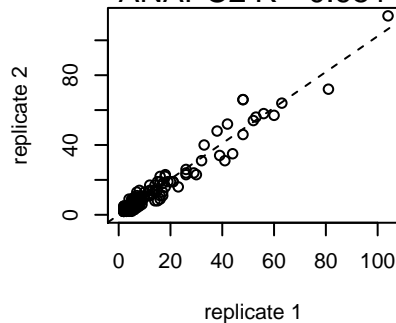
AKAP1_target $R^2=0.966$



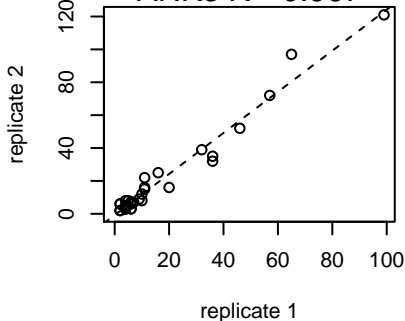
AMOT $R^2=0.95$



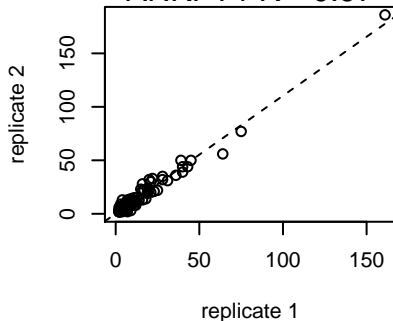
ANAPC2 $R^2=0.951$



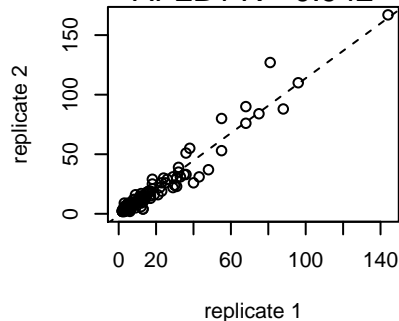
ANK3 $R^2=0.967$



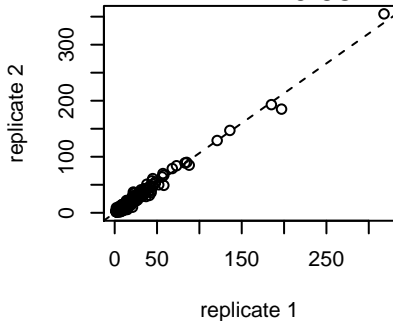
ANKFY1 $R^2=0.97$



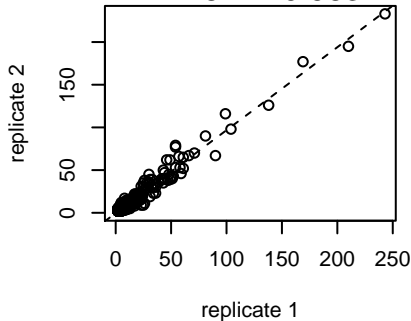
AP2B1 $R^2=0.942$



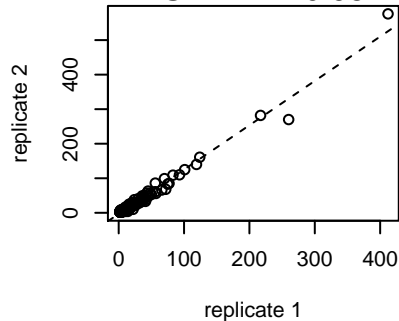
APEX1 $R^2=0.981$

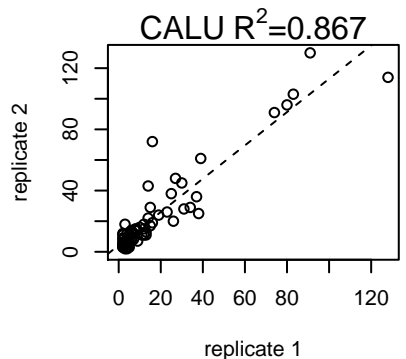
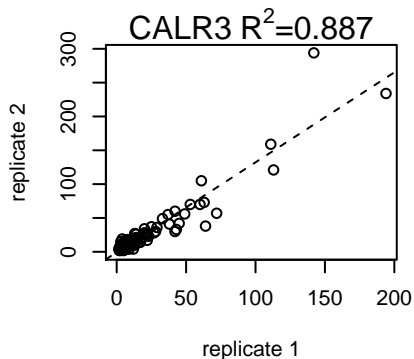
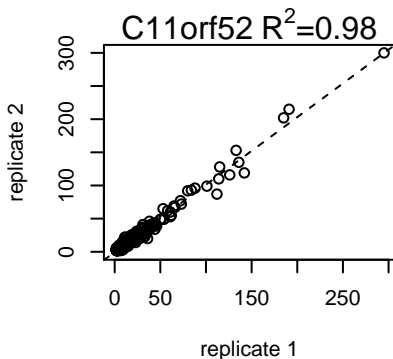
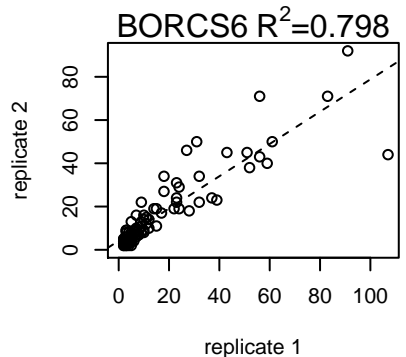
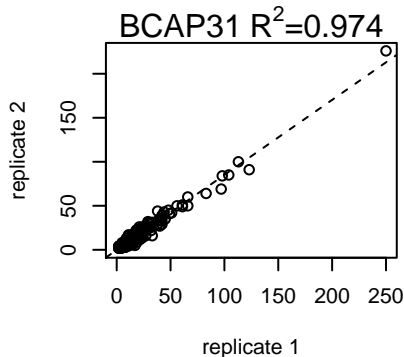
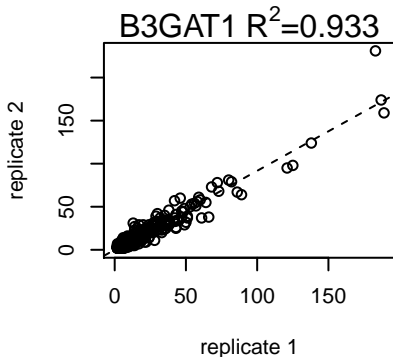
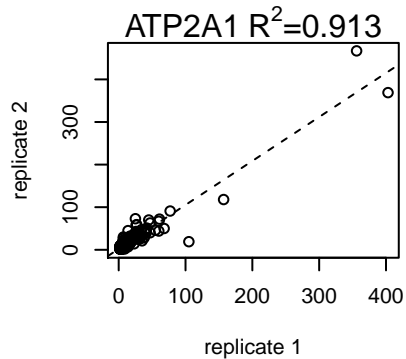
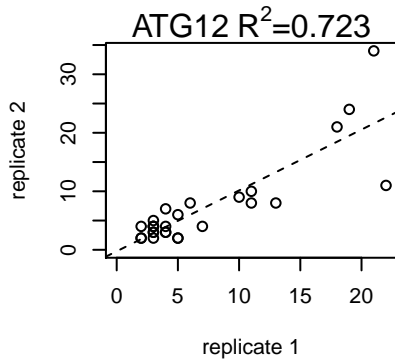
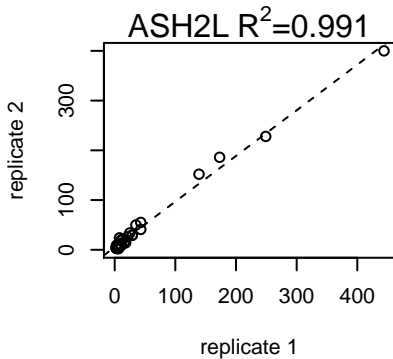


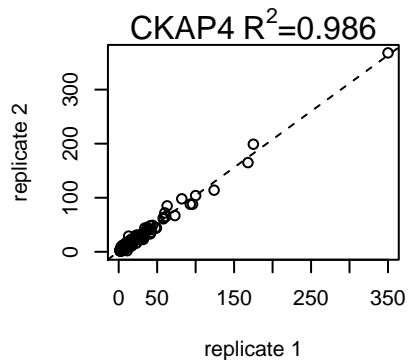
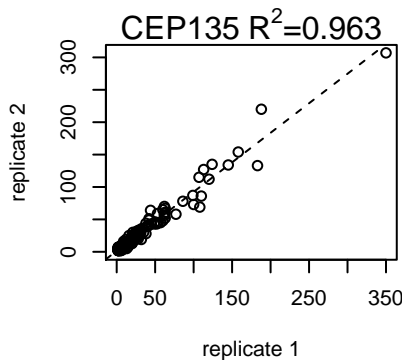
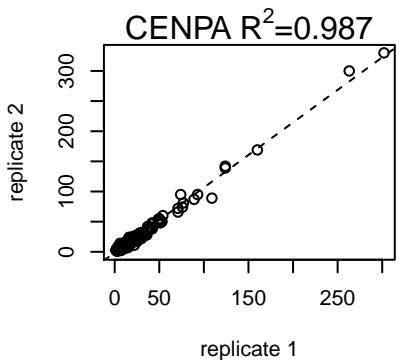
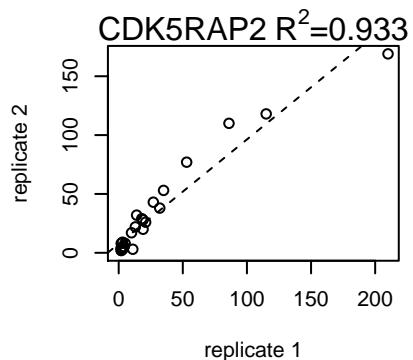
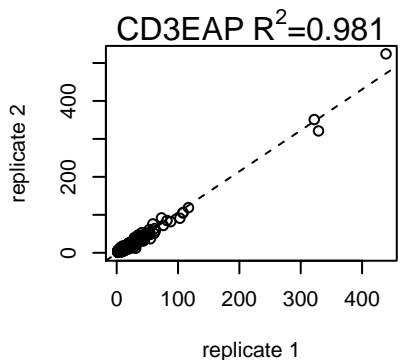
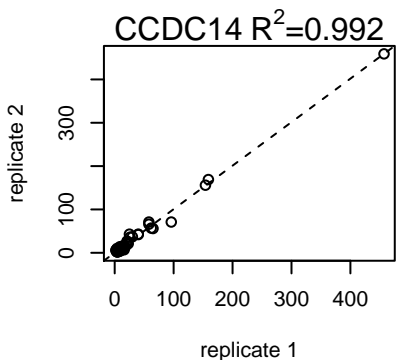
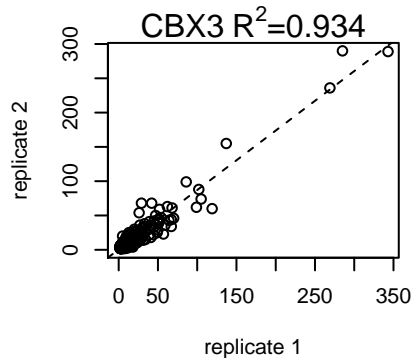
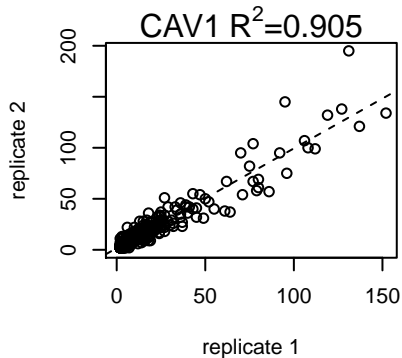
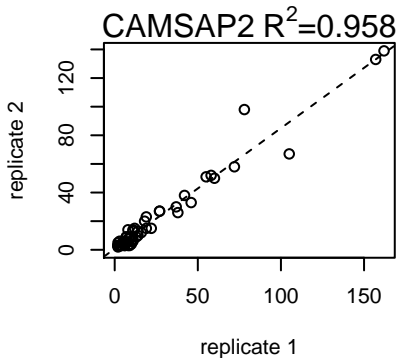
ARF6 $R^2=0.963$

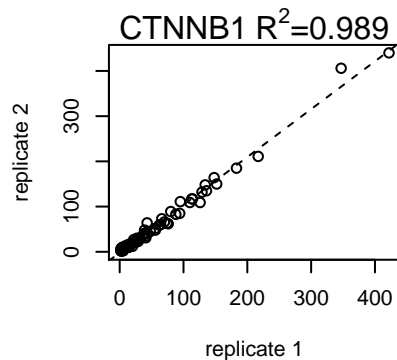
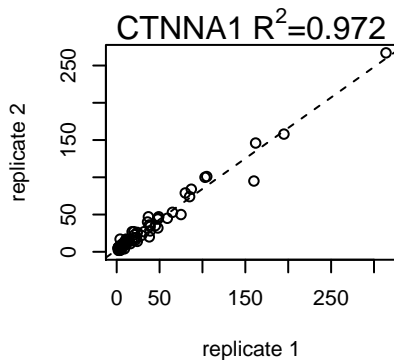
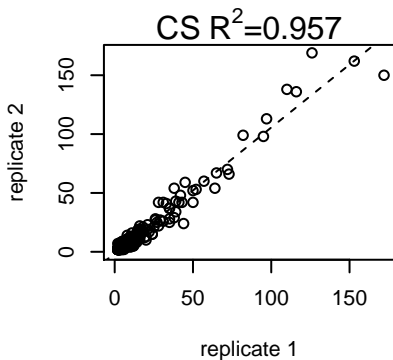
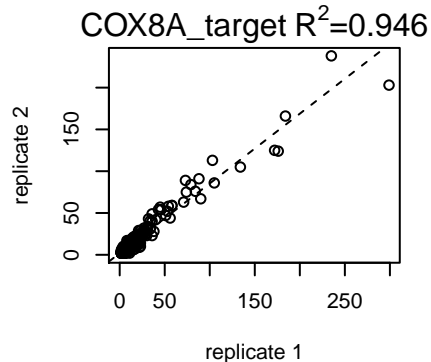
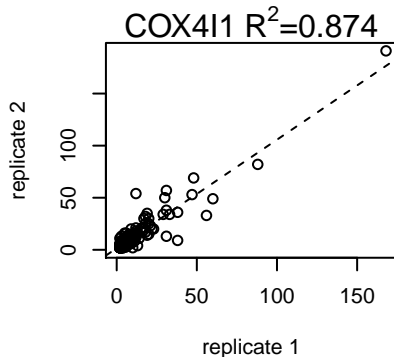
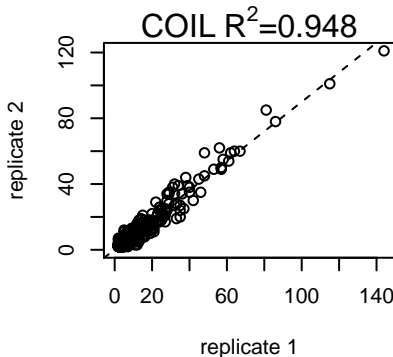
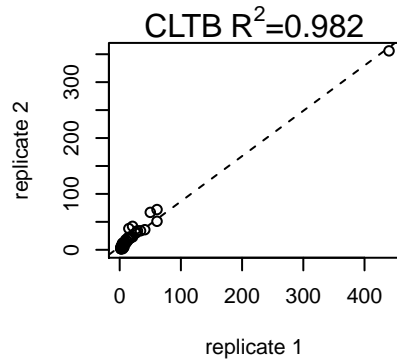
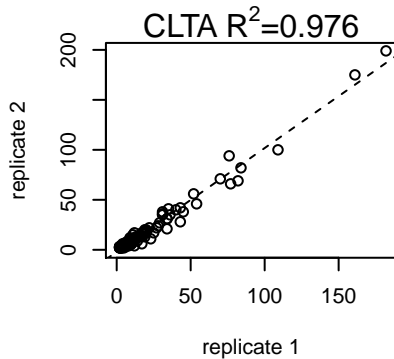
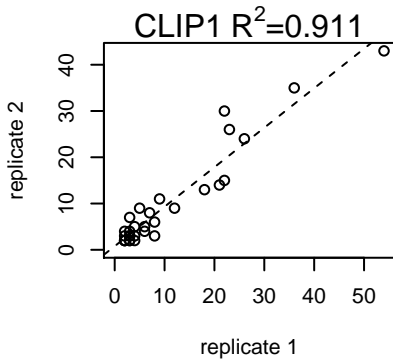


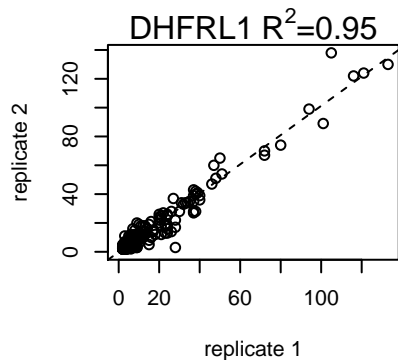
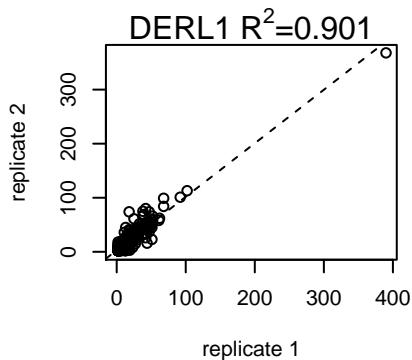
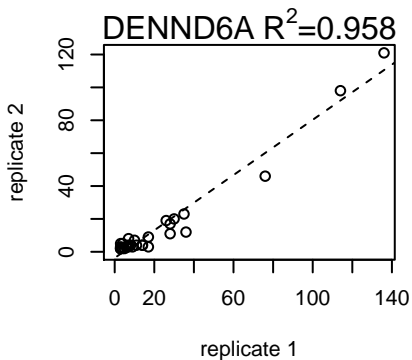
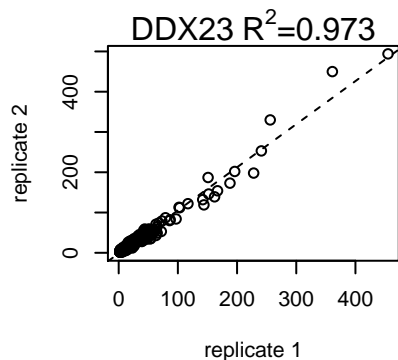
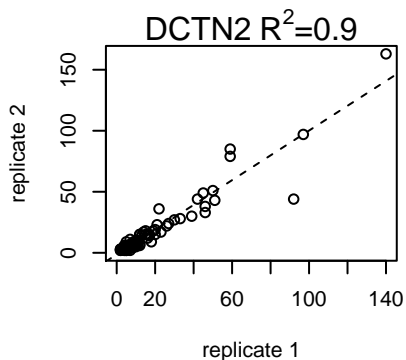
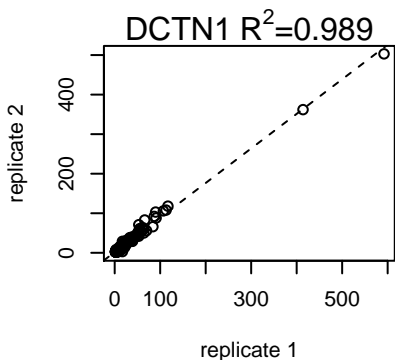
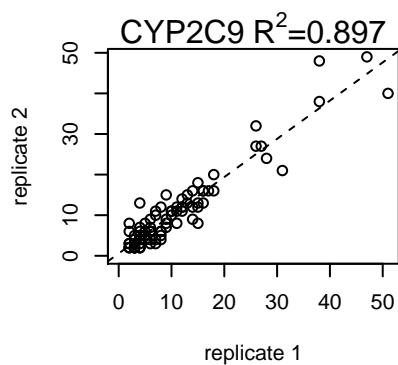
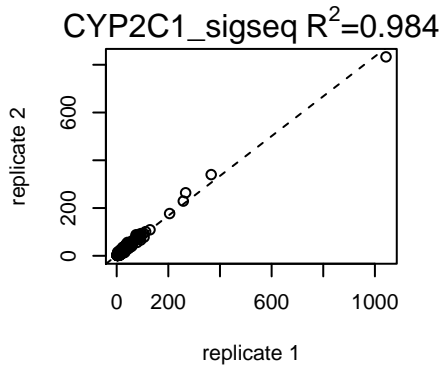
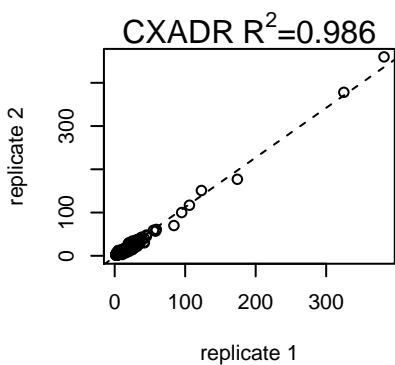
ASF1A $R^2=0.98$

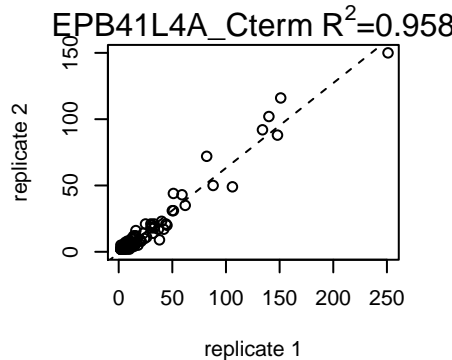
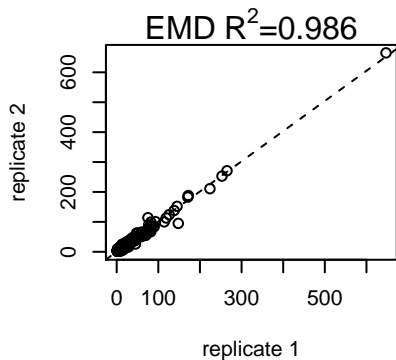
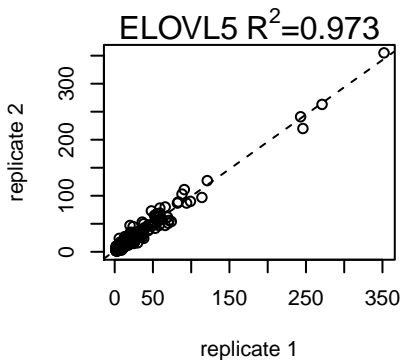
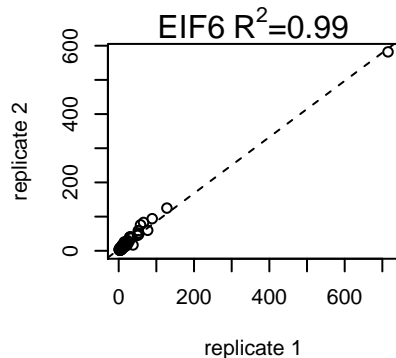
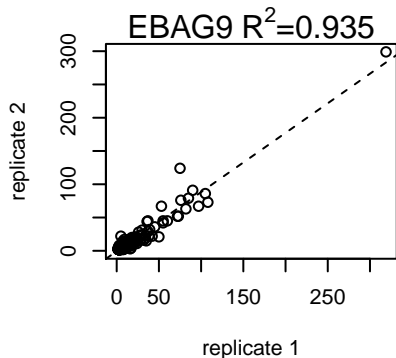
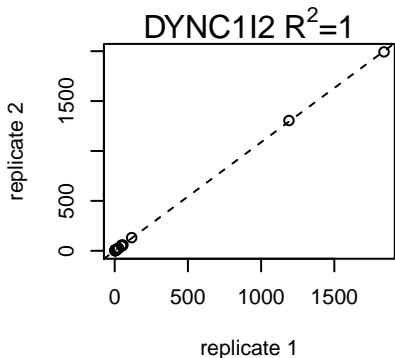
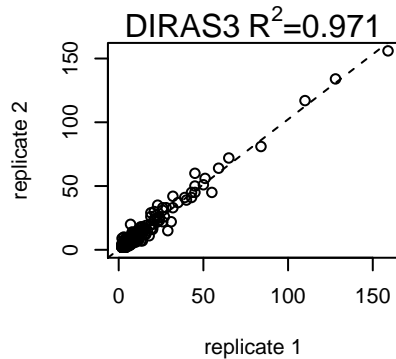
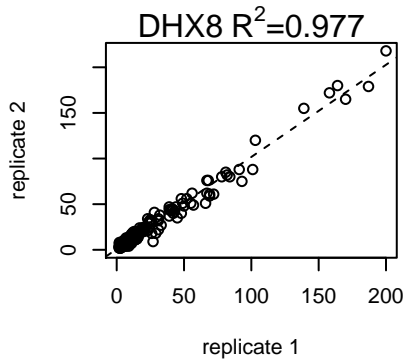
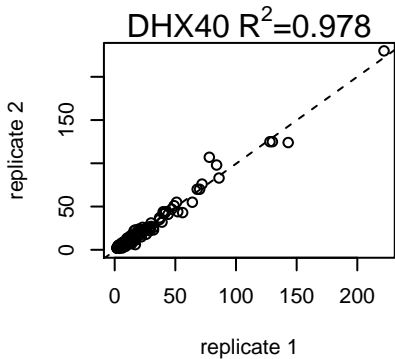


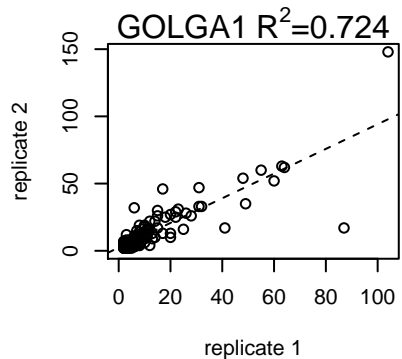
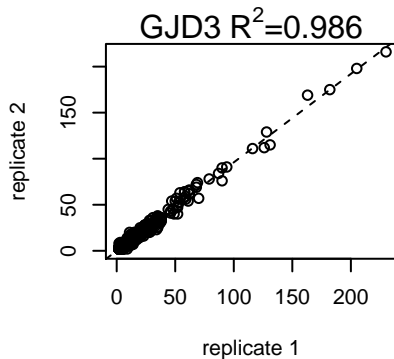
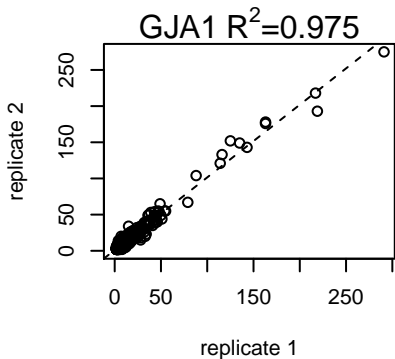
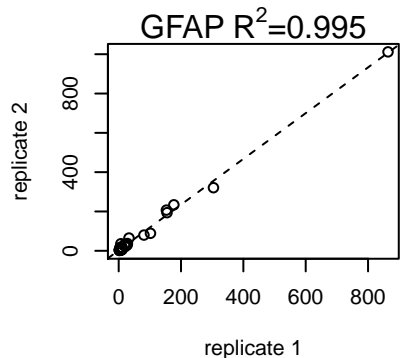
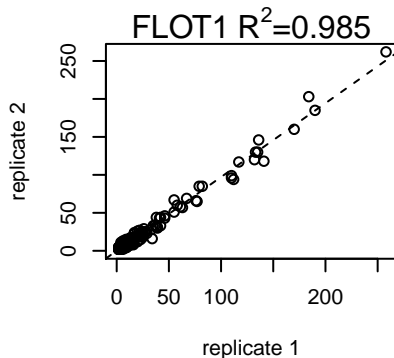
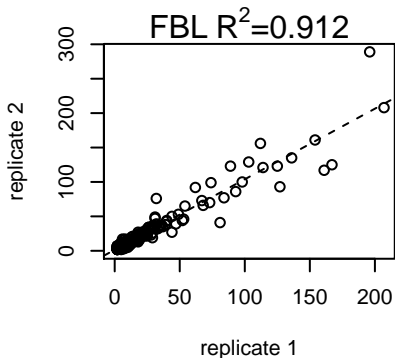
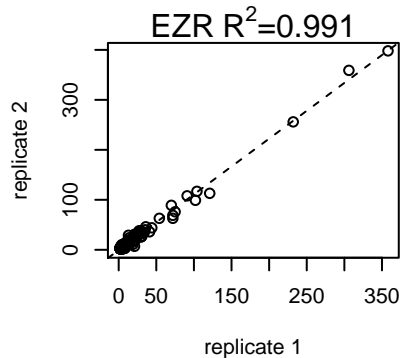
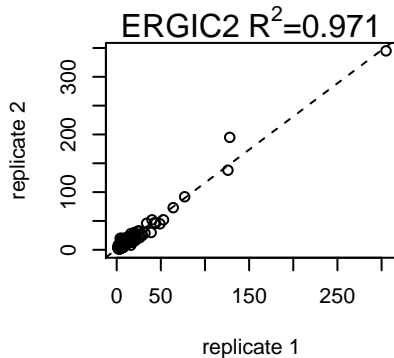
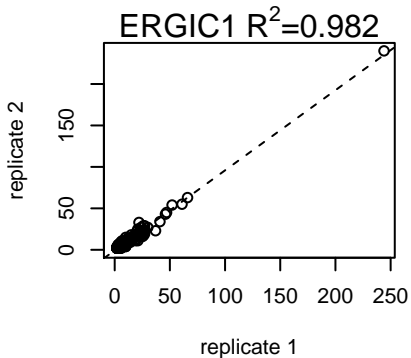


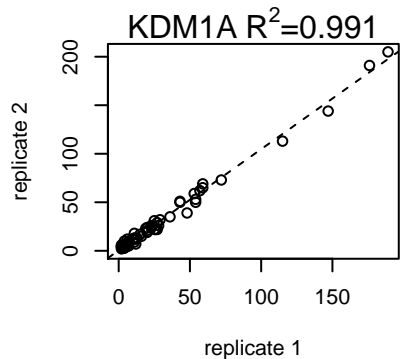
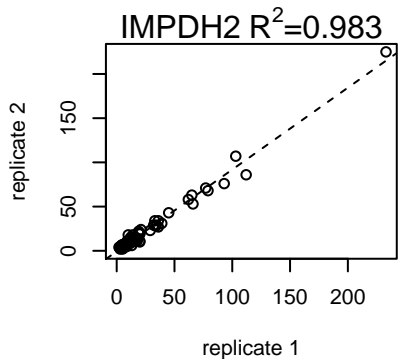
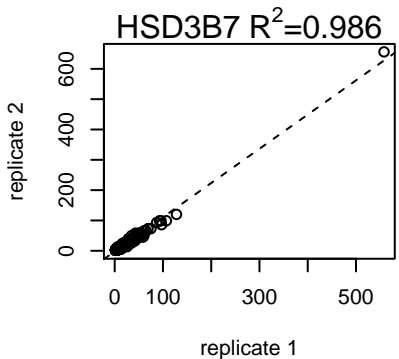
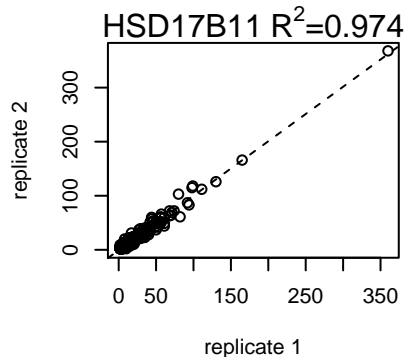
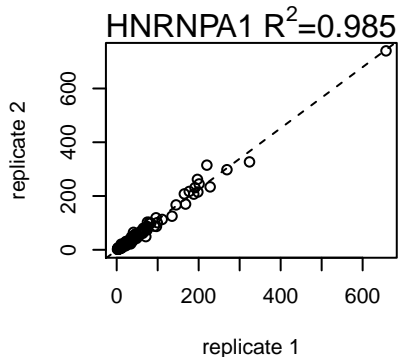
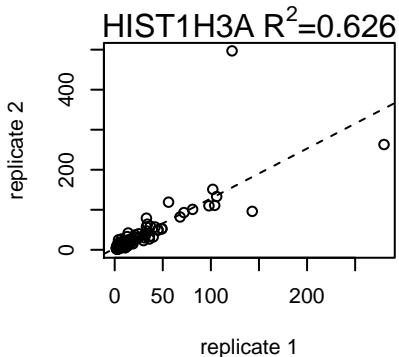
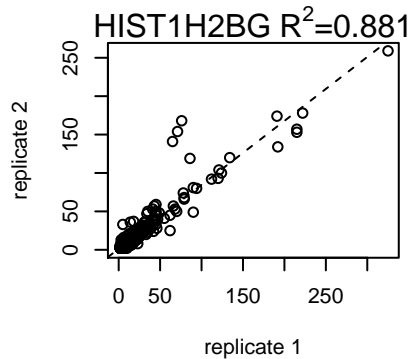
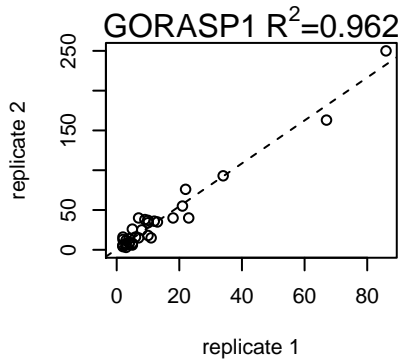
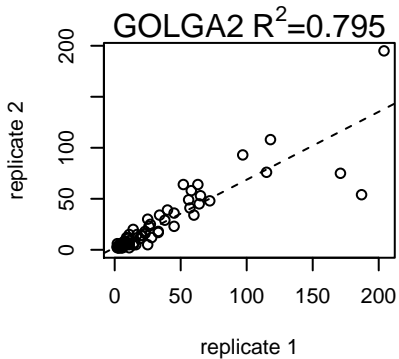


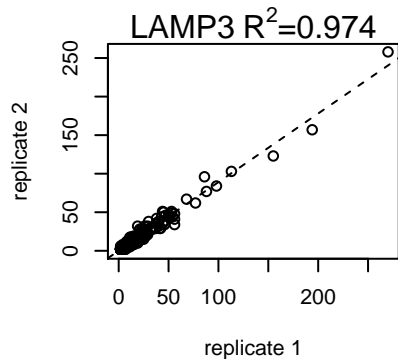
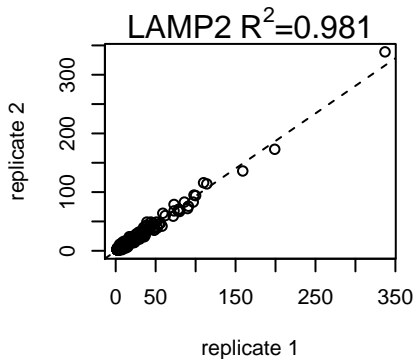
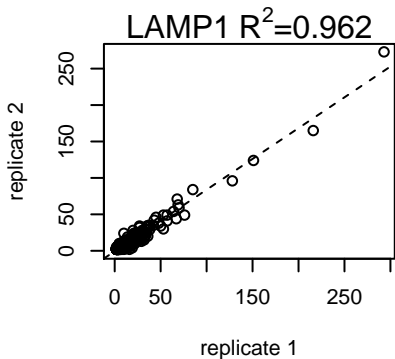
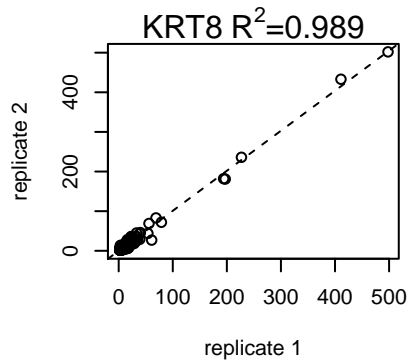
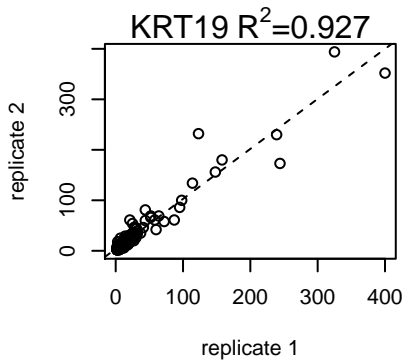
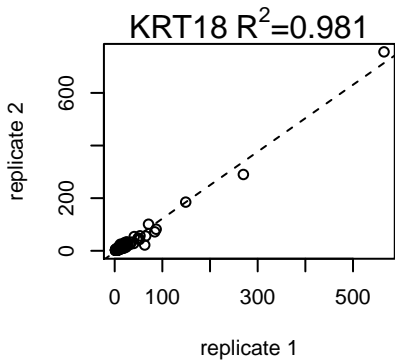
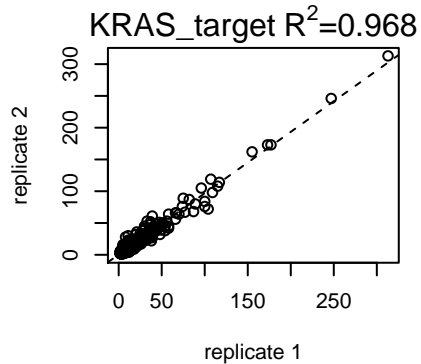
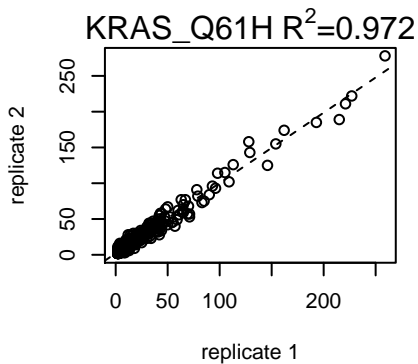
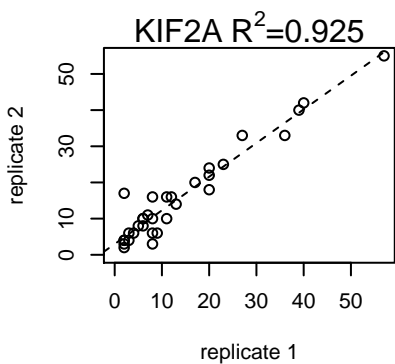


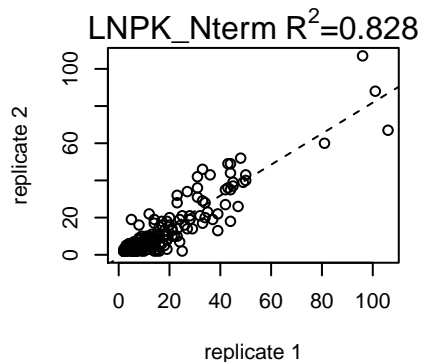
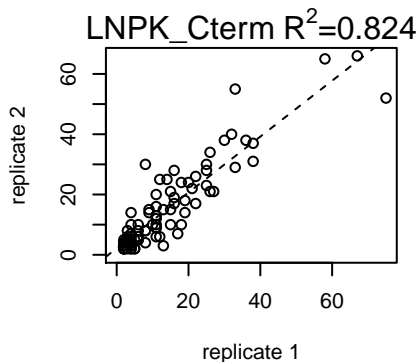
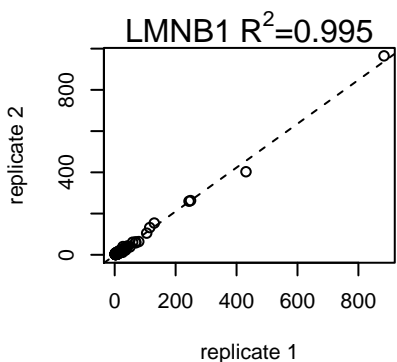
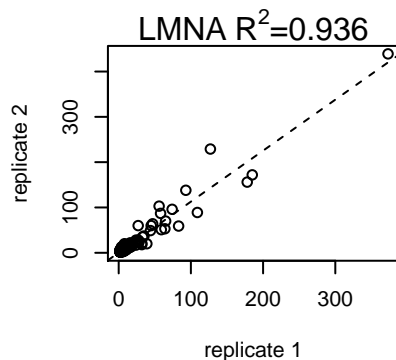
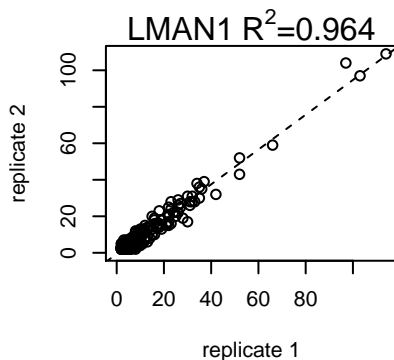
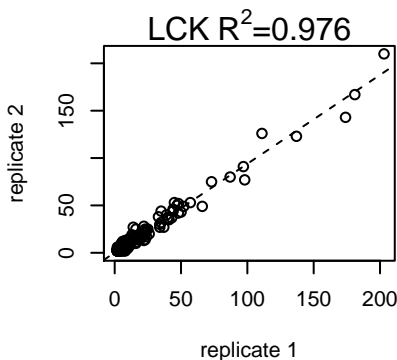
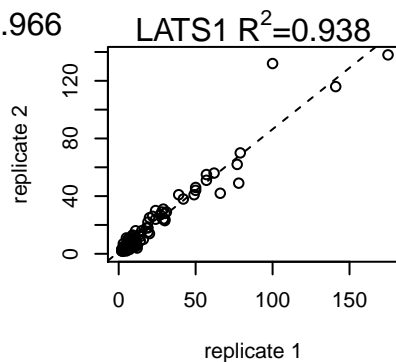
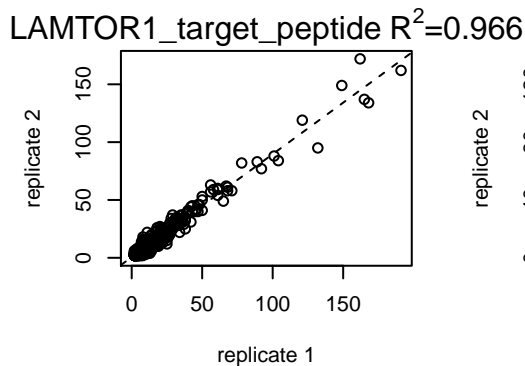
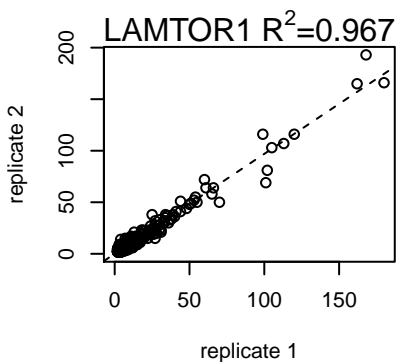


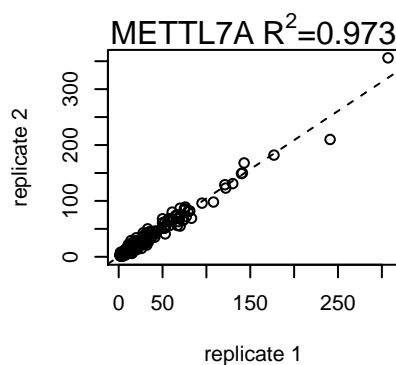
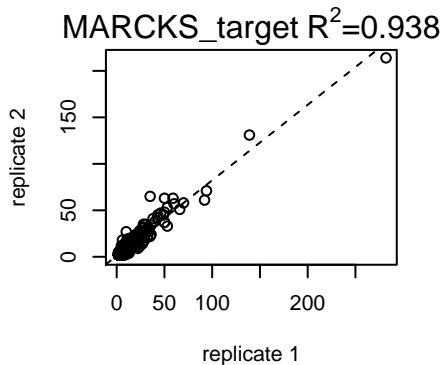
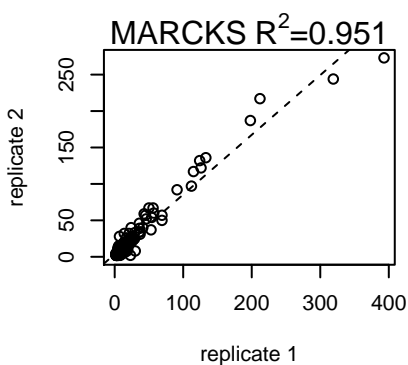
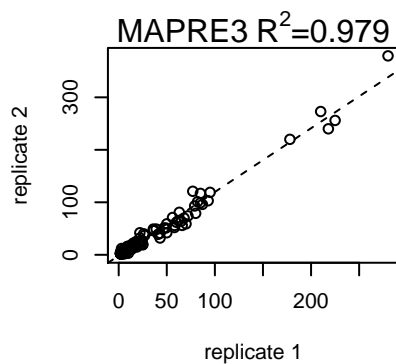
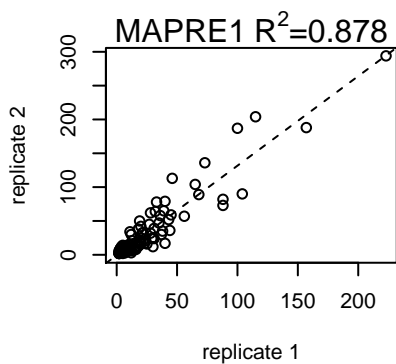
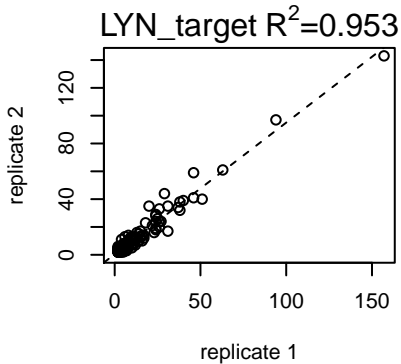
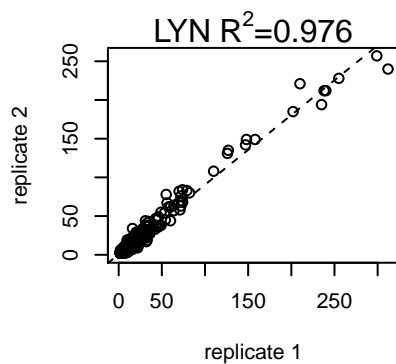
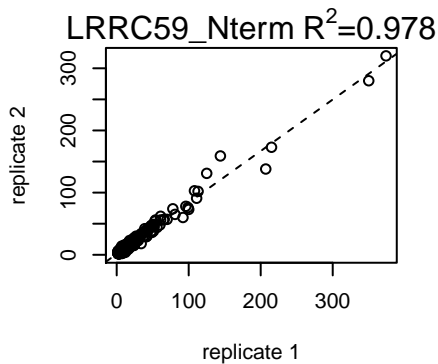
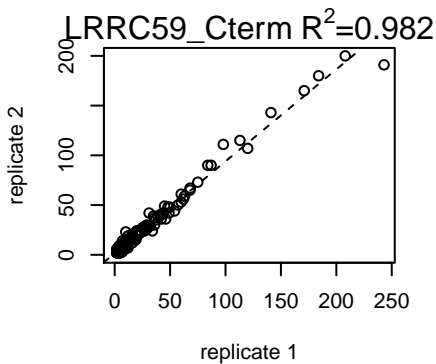


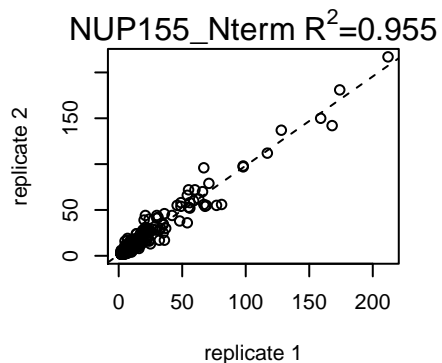
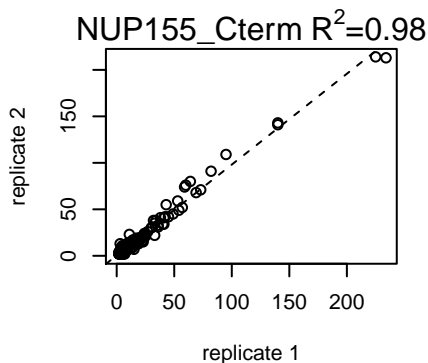
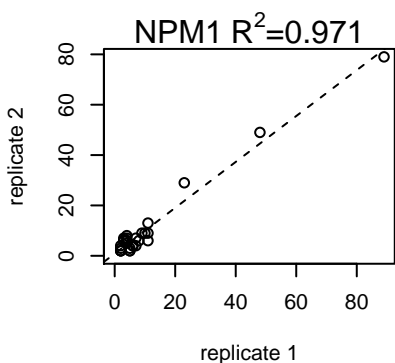
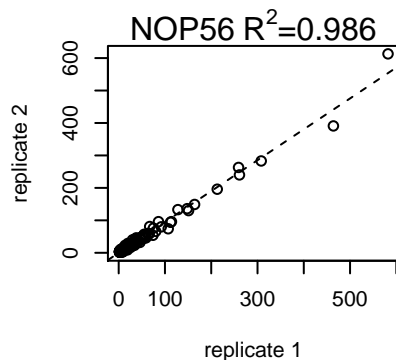
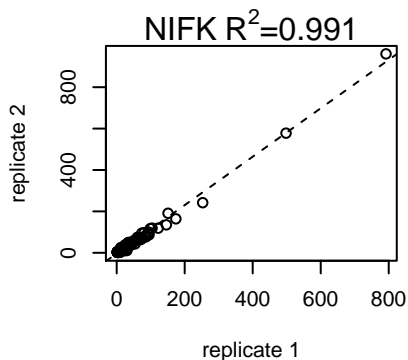
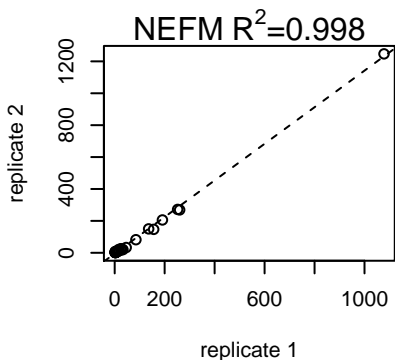
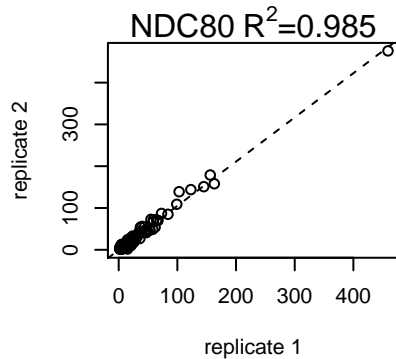
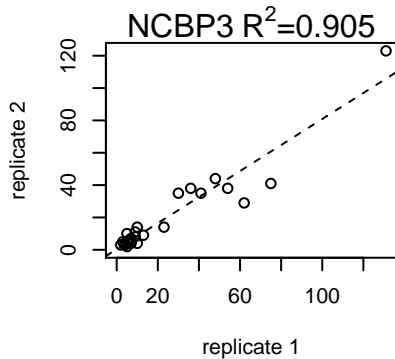
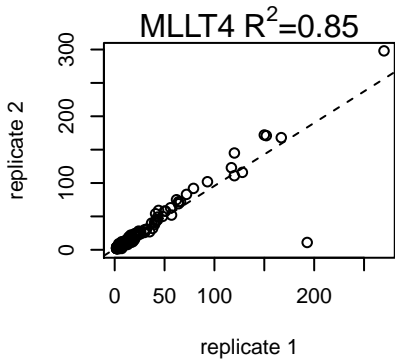


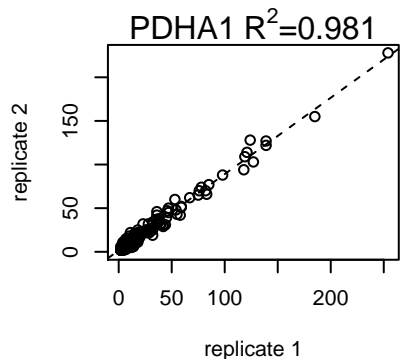
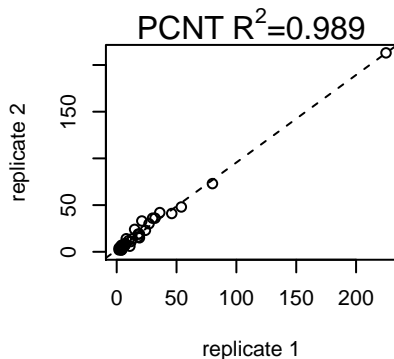
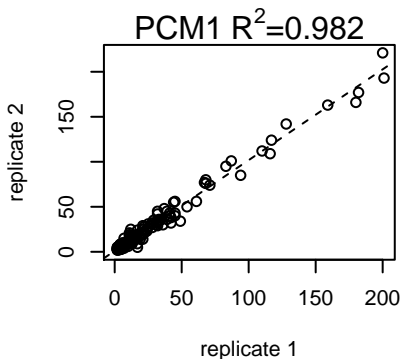
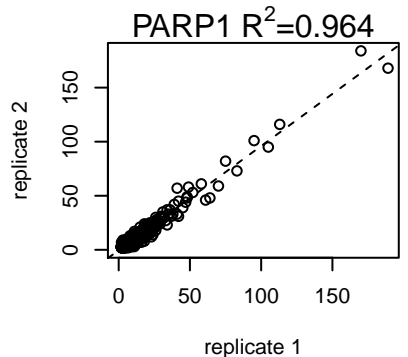
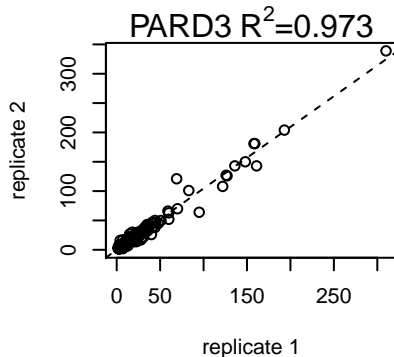
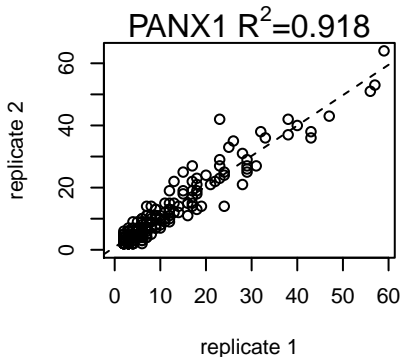
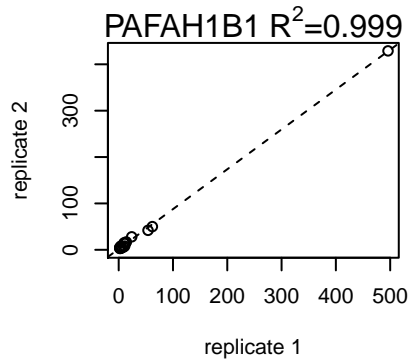
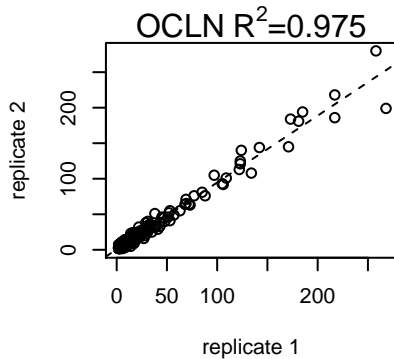
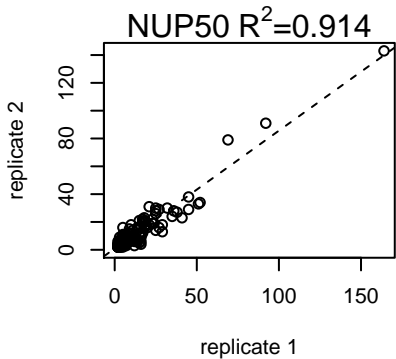


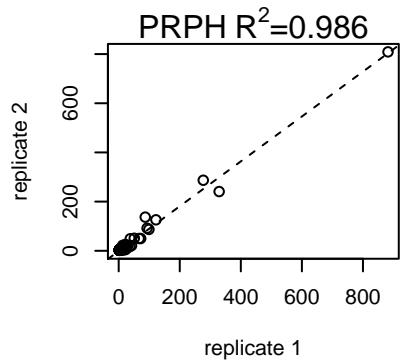
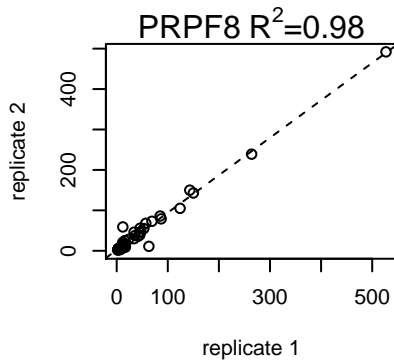
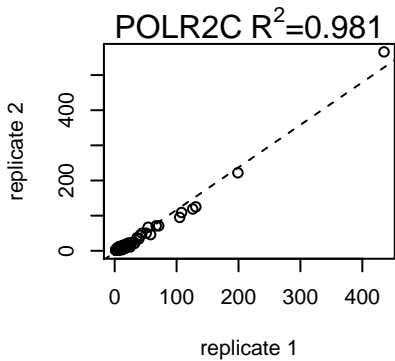
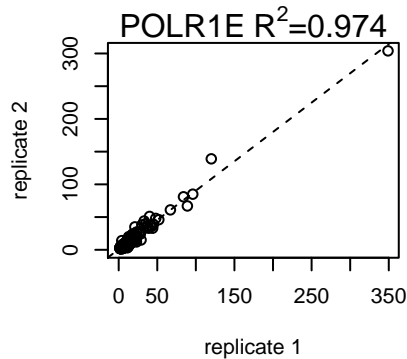
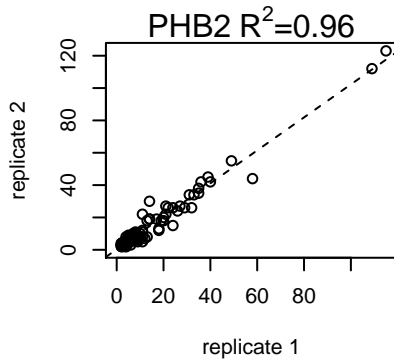
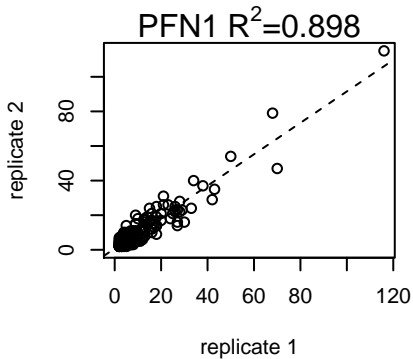
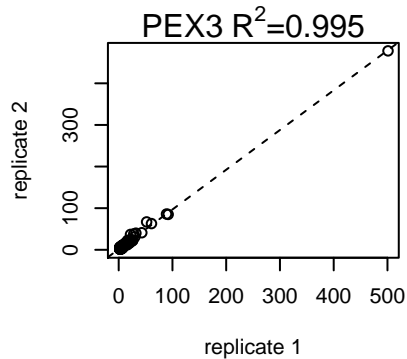
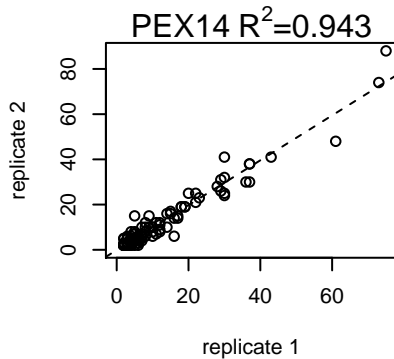
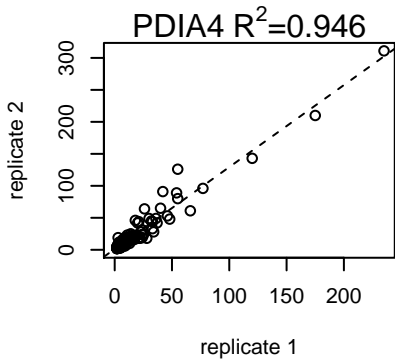


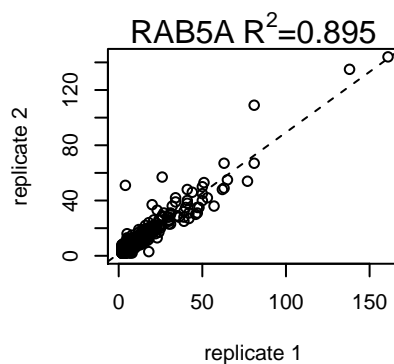
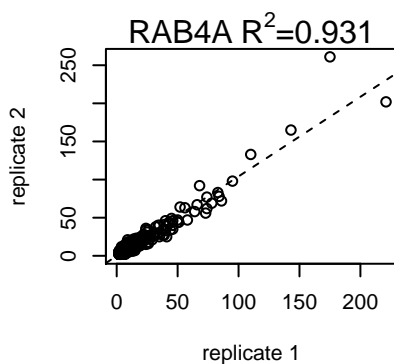
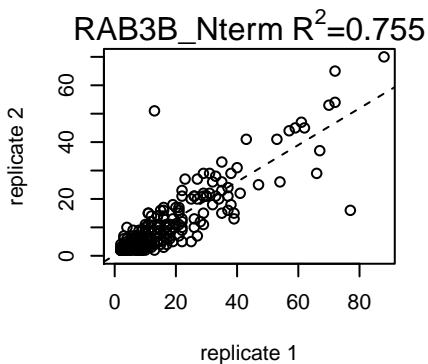
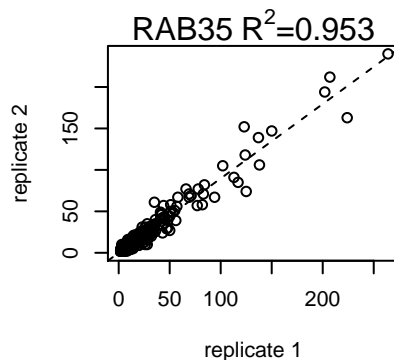
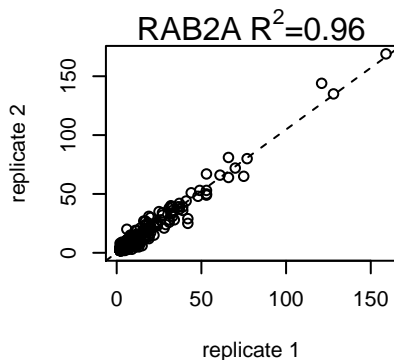
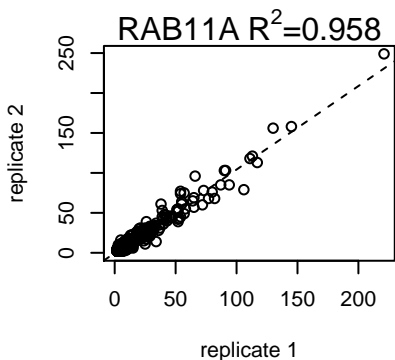
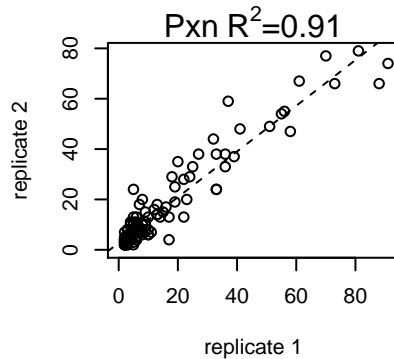
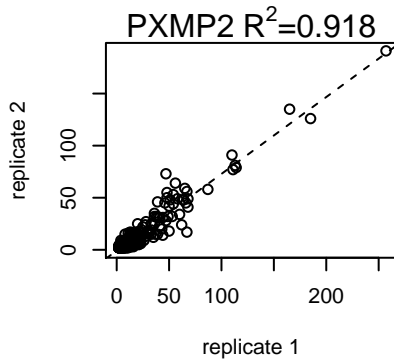
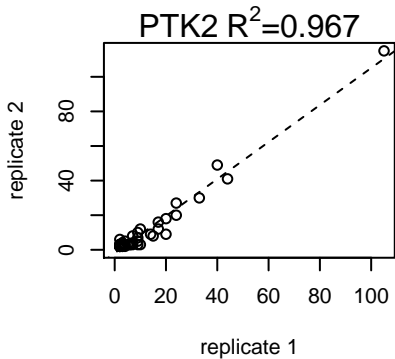




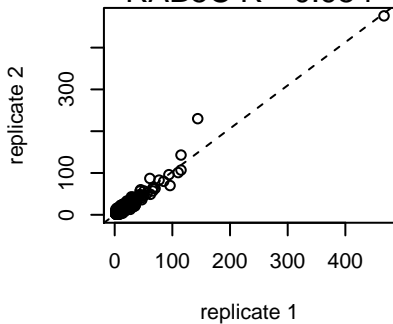




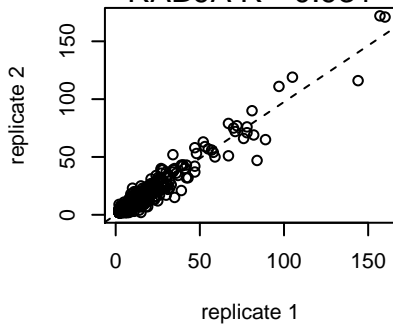




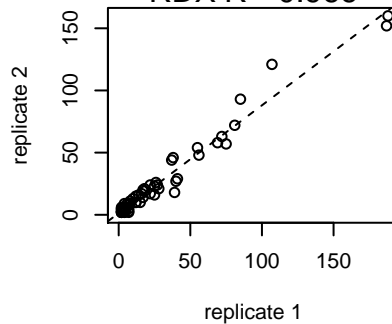
RAB5C $R^2=0.954$



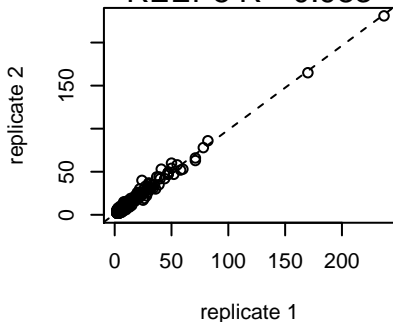
RAB9A $R^2=0.931$



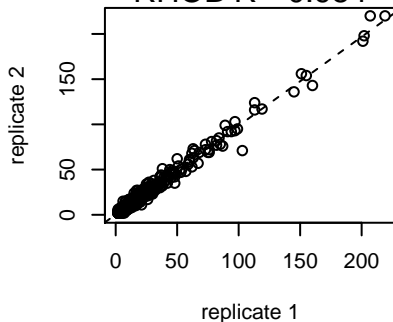
RDX $R^2=0.966$



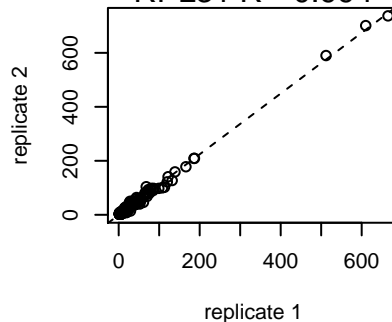
REEP5 $R^2=0.983$



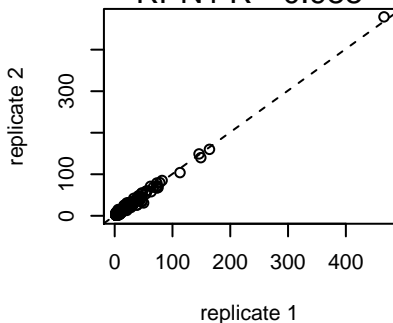
RHOB $R^2=0.984$



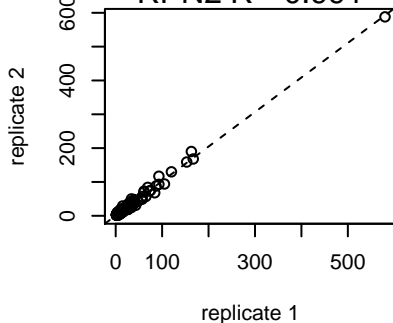
RPL31 $R^2=0.994$



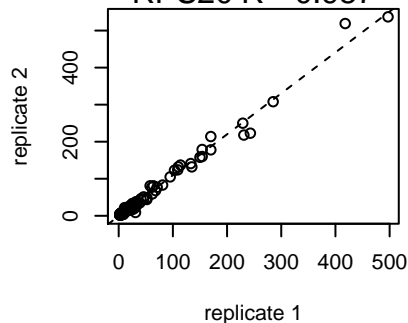
RPN1 $R^2=0.988$

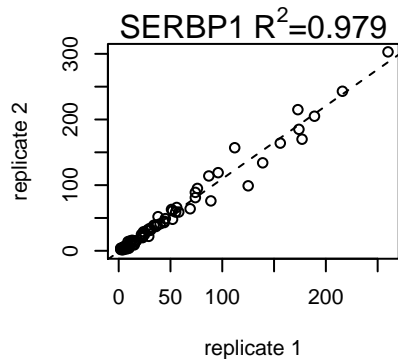
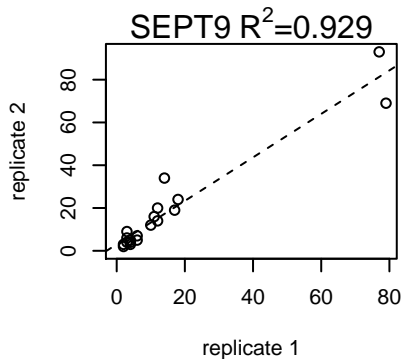
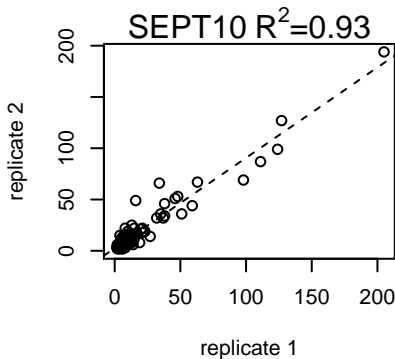
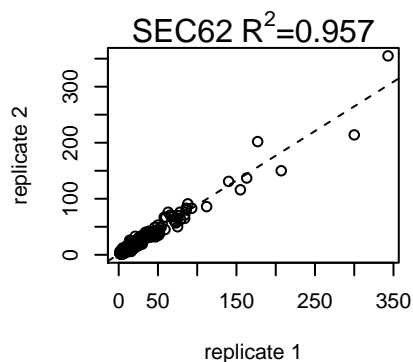
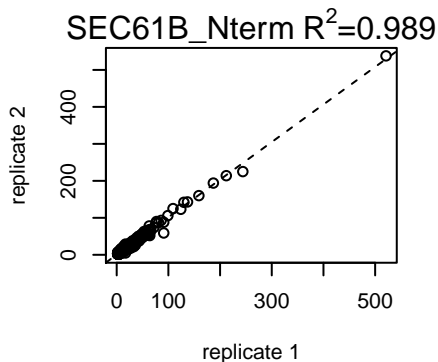
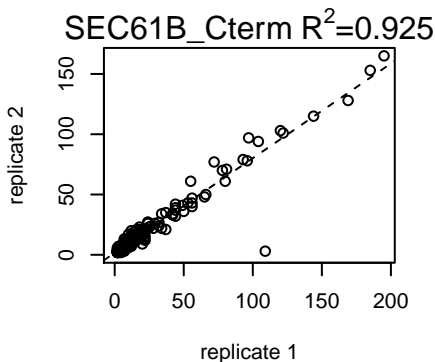
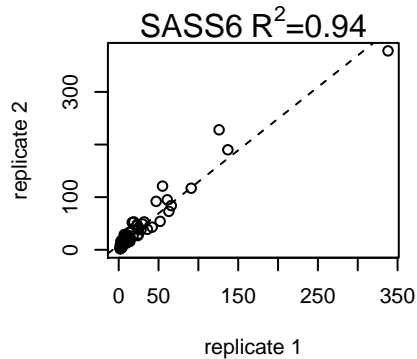
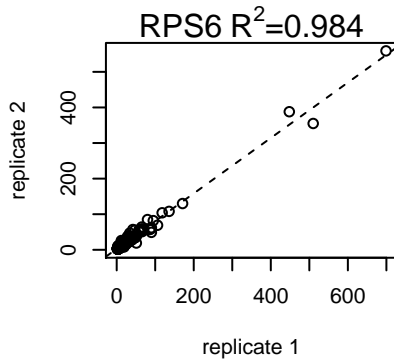
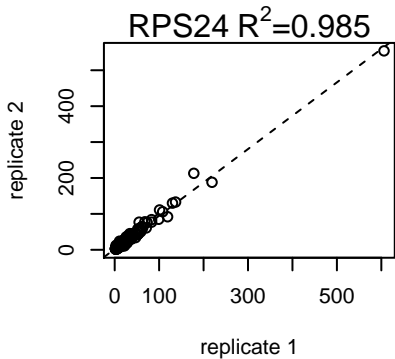


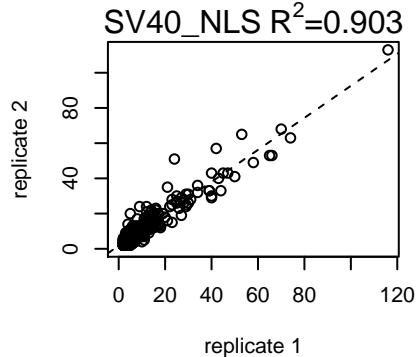
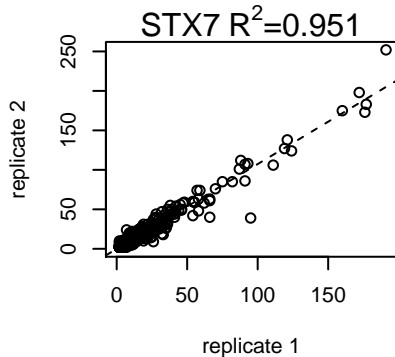
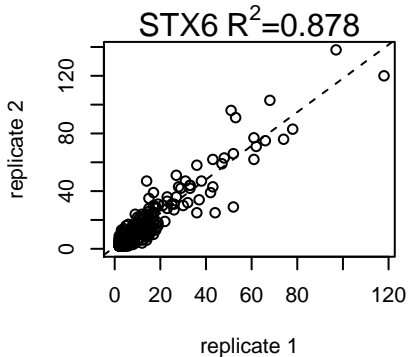
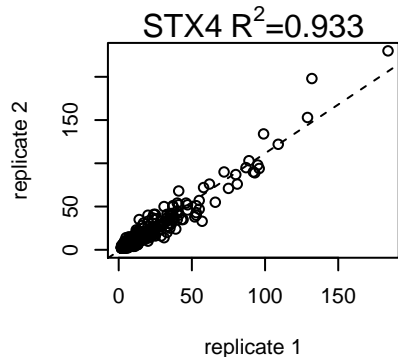
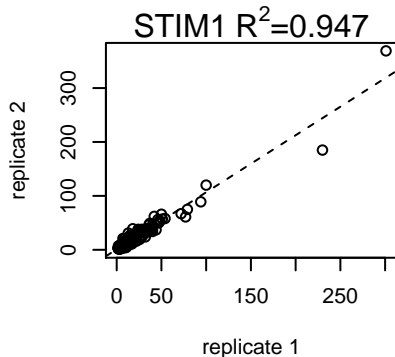
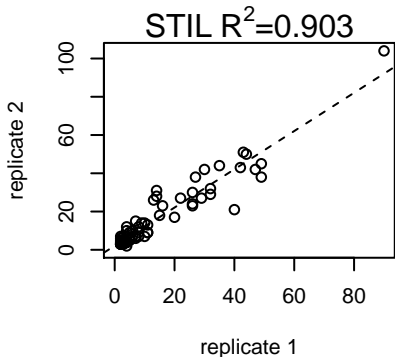
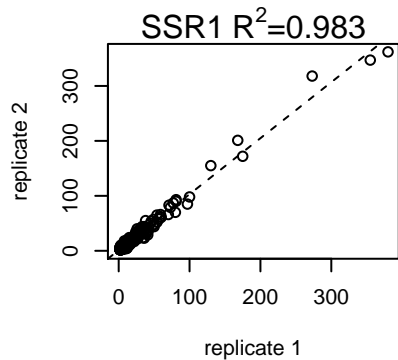
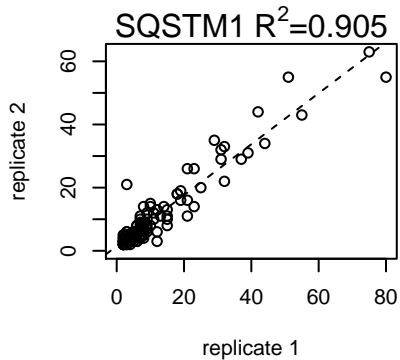
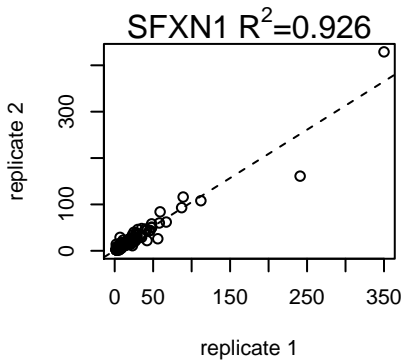
RPN2 $R^2=0.991$



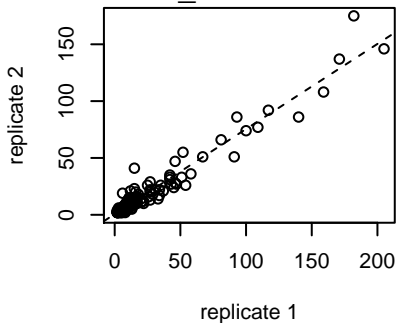
RPS20 $R^2=0.987$



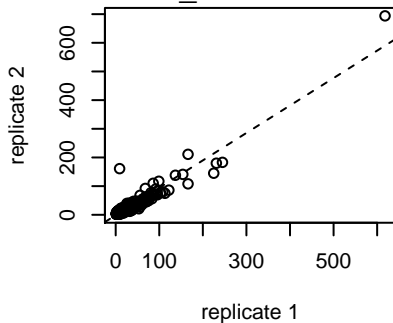




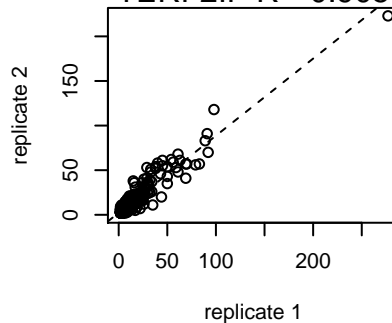
SYNE3_Cterm $R^2=0.943$



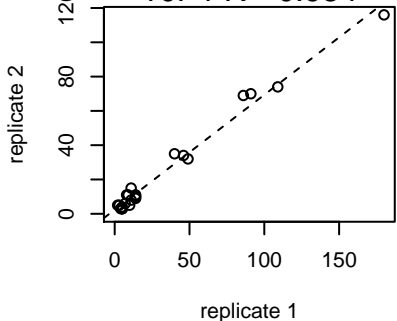
SYNE3_Nterm $R^2=0.908$



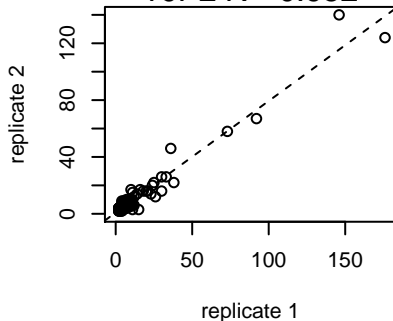
TERF2IP $R^2=0.905$



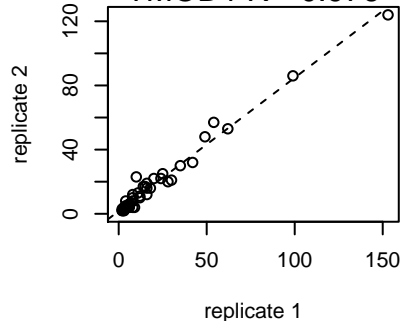
TJP1 $R^2=0.984$



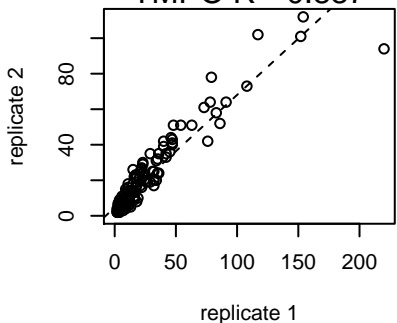
TJP2 $R^2=0.952$



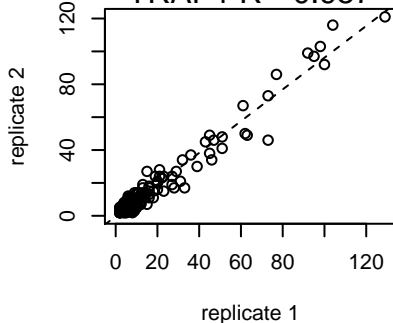
TMOD1 $R^2=0.976$



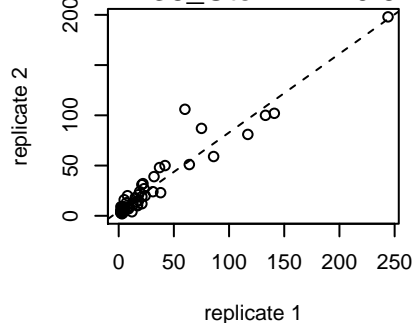
TMPO $R^2=0.887$



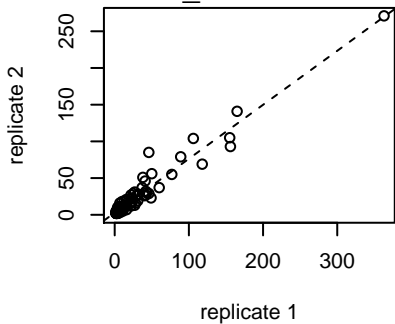
TRAP1 $R^2=0.957$



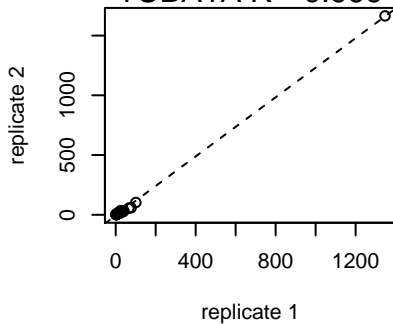
TRIM36_Cterm $R^2=0.919$



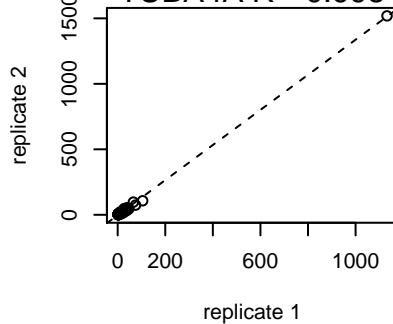
TRIM36_Nterm $R^2=0.944$



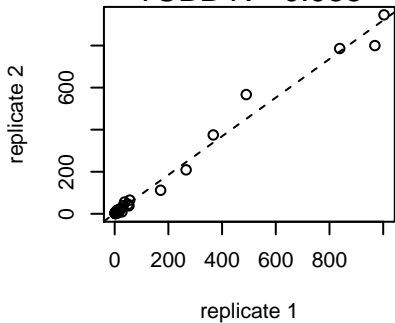
TUBA1A $R^2=0.999$



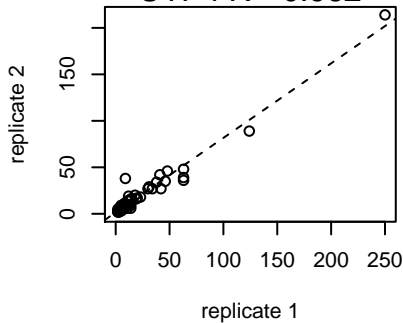
TUBA4A $R^2=0.998$



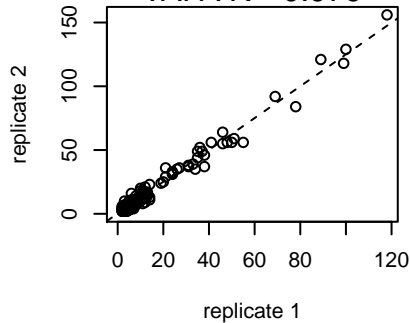
TUBB $R^2=0.988$



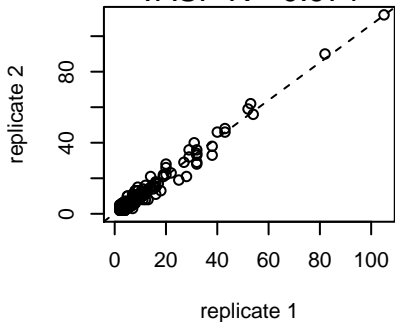
UTP4 $R^2=0.962$



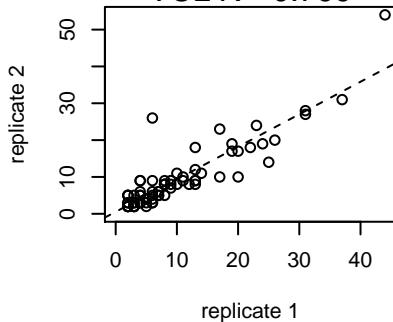
VAPA $R^2=0.979$



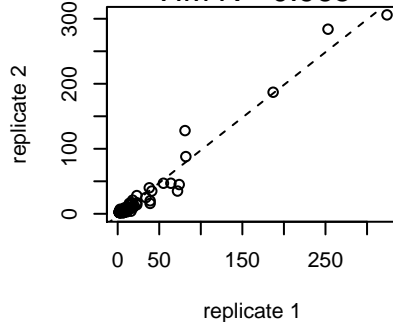
VASP $R^2=0.971$



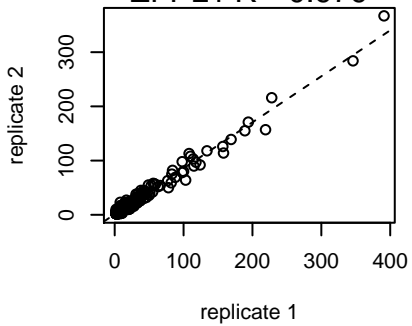
VCL $R^2=0.799$



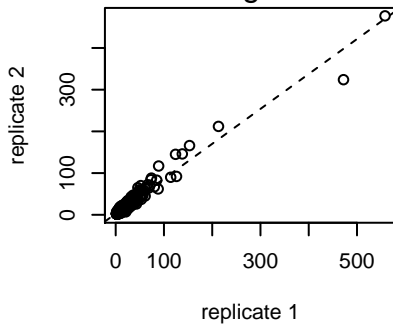
VIM $R^2=0.965$



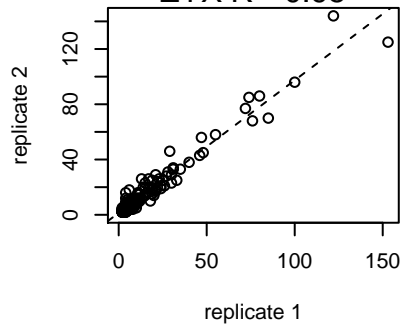
ZFPL1 $R^2=0.979$



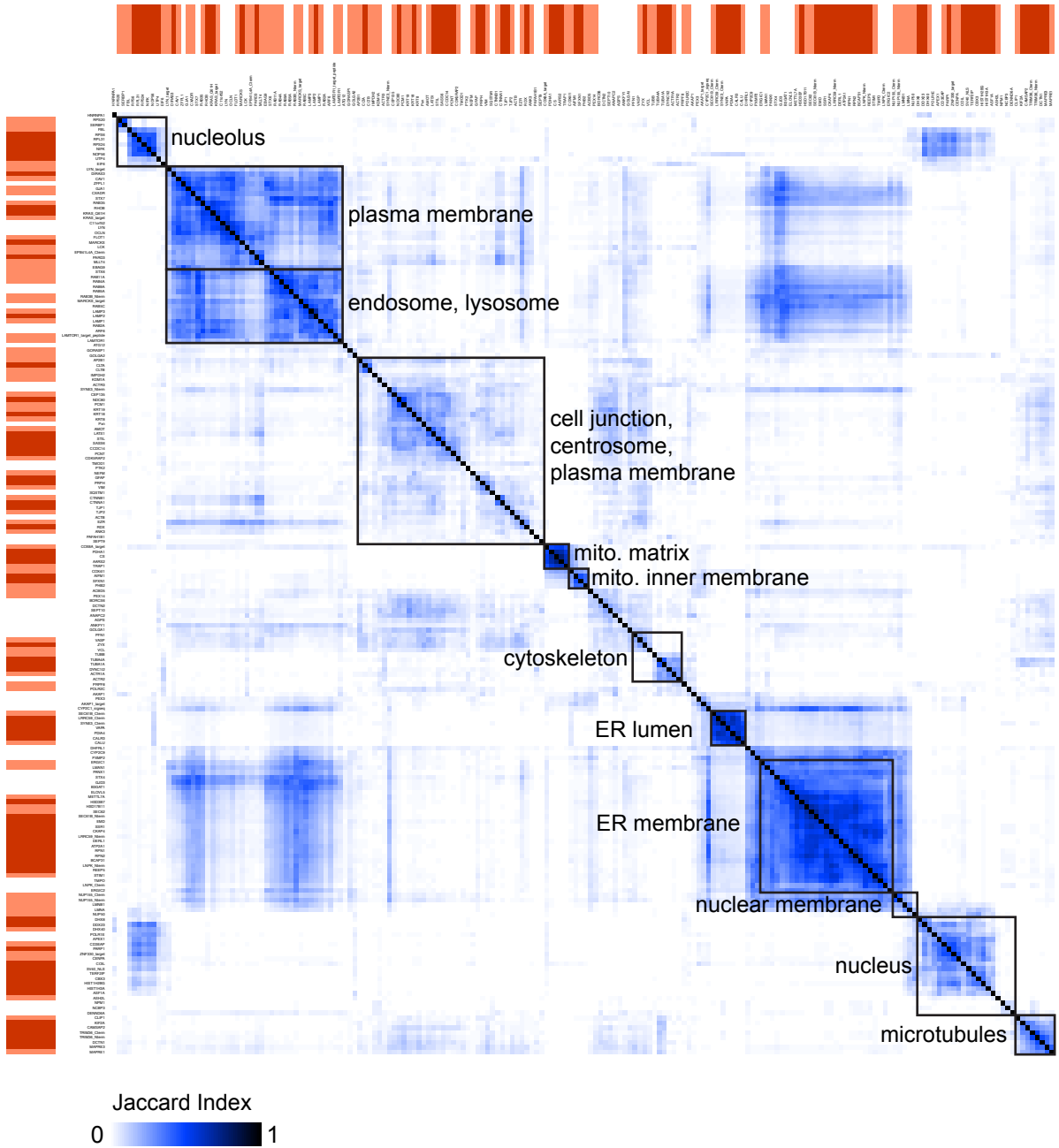
ZNF330_target $R^2=0.959$



ZYX $R^2=0.95$

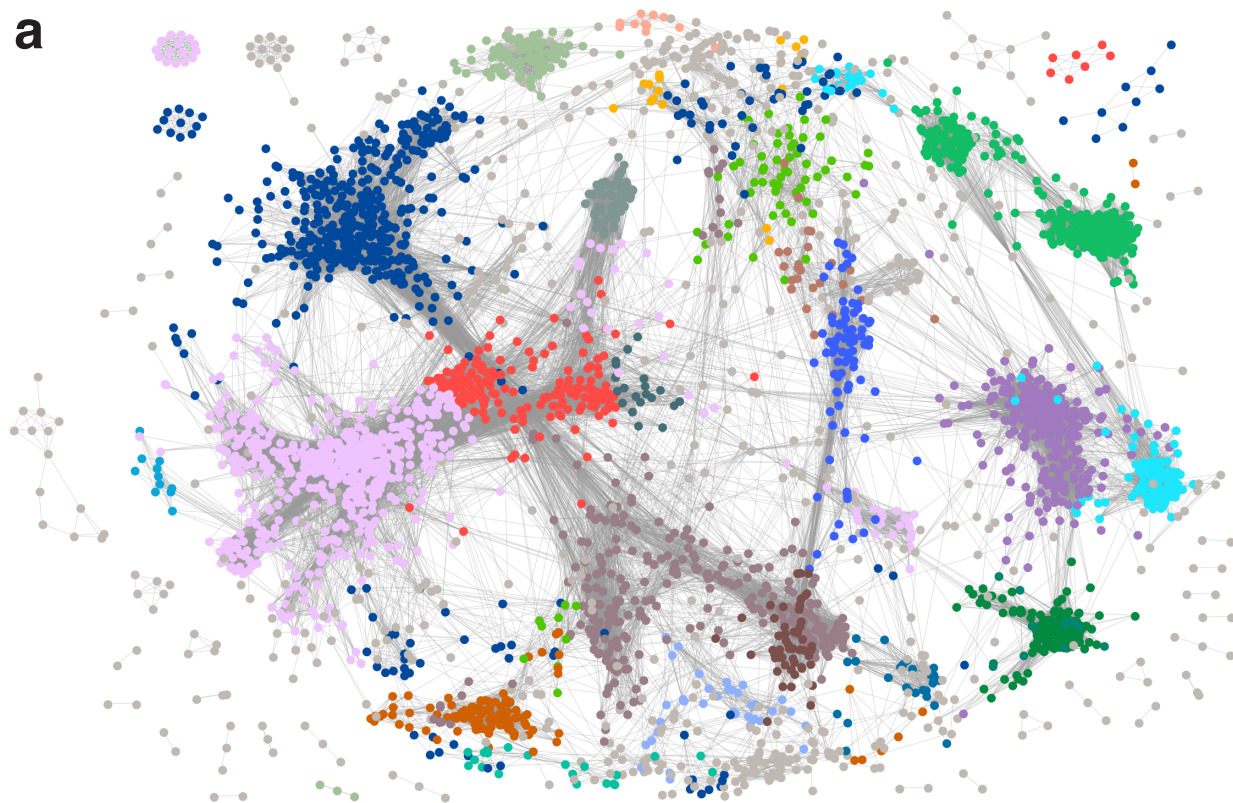


Supplementary Figure 2



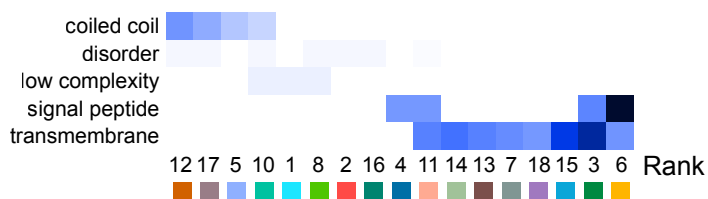
Supplementary Figure 3

a



- | | |
|--|---|
| ■ 1. unknown | ■ 13. cytoplasmic ribonucleoprotein granule |
| ■ 2. mitochondrial outer membrane, peroxisome | ■ 14. centrosome enriched, P-body enriched |
| ■ 3. splicing speckles, nucleolus | ■ 15. microtubule cytoskeleton |
| ■ 4. ER lumen | ■ 16. STRIPAK complex |
| ■ 5. spliceosomal complex I | ■ 17. Arp2/3 protein complex |
| ■ 6. clathrin coat | ■ 18. endosome, lysosome |
| ■ 7. actin cytoskeleton | ■ 19. nuclear outer membrane-ER membrane network |
| ■ 8. paraspeckles | ■ 20. cell junction, plasma membrane |
| ■ 9. Golgi apparatus | ■ 21. mitochondrial inner membrane, mitochondrial intermembrane space, mitochondrial matrix |
| ■ 10. centrosome | ■ 22. chromatin, nucleoplasm |
| ■ 11. chaperonin-containing T-complex, prefoldin complex | ■ 23. spliceosomal complex II |
| ■ 12. anaphase-promoting complex, kinesin complex | ■ 24. nuclear pore |

b



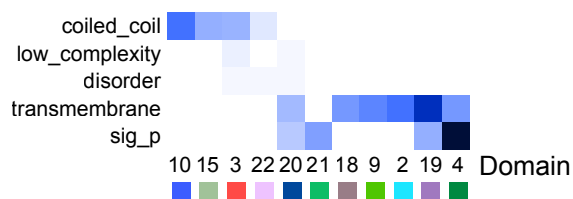
NMF

$\log_2(\text{fold enrichment})$

0

3

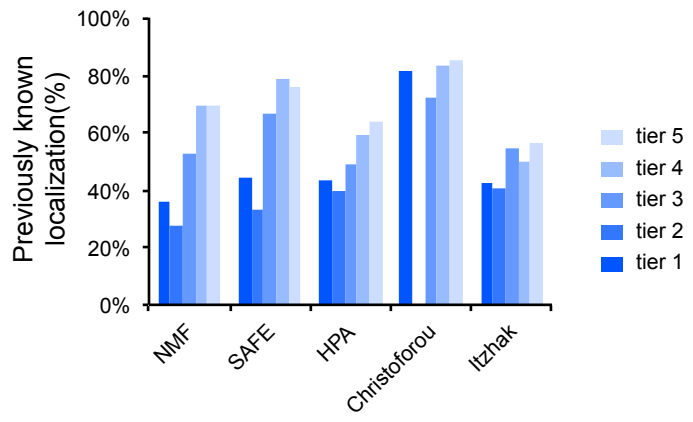
c



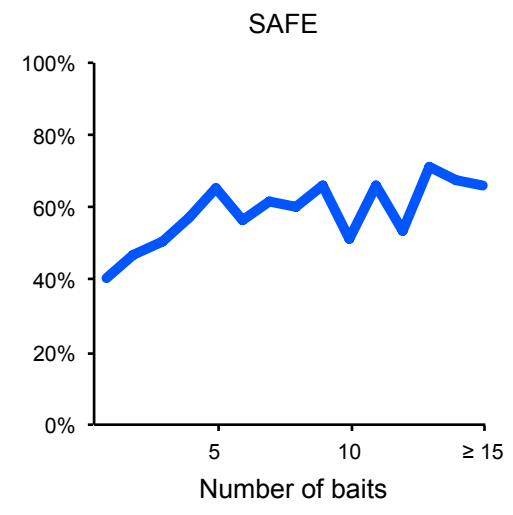
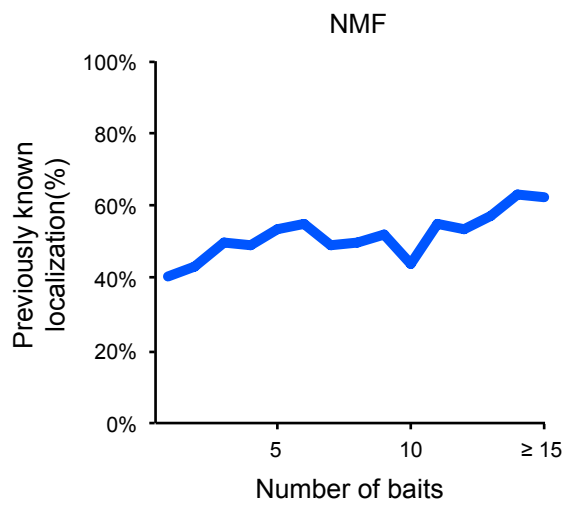
SAFE

Supplementary Figure 4

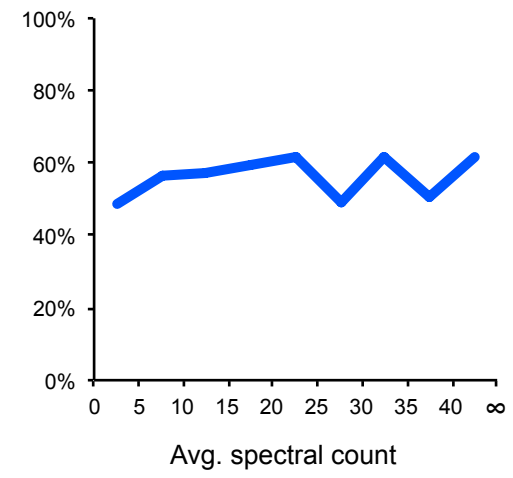
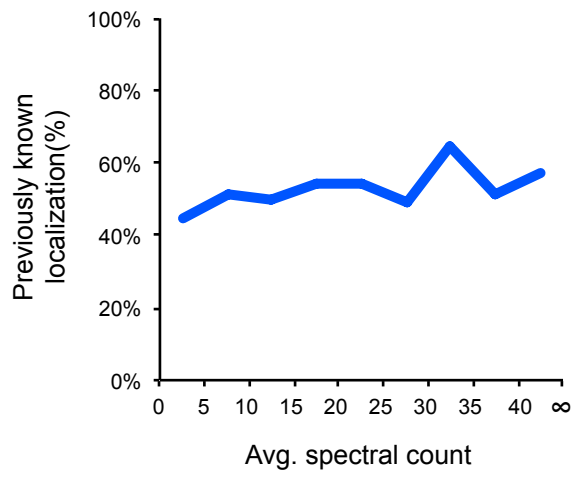
a



b

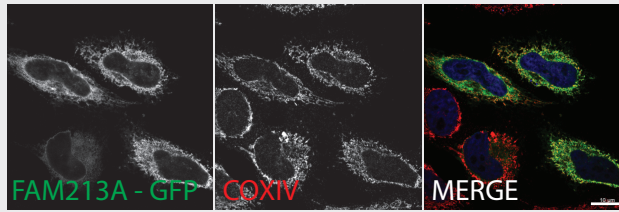
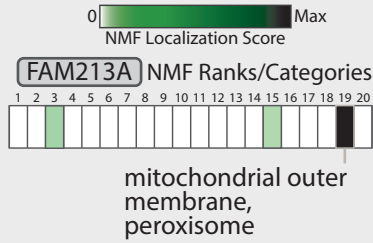


c

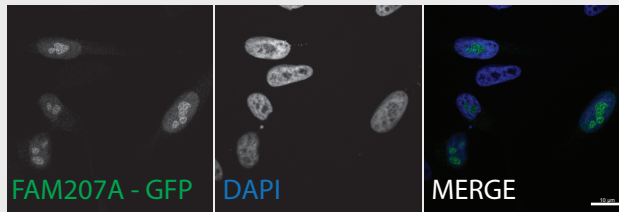
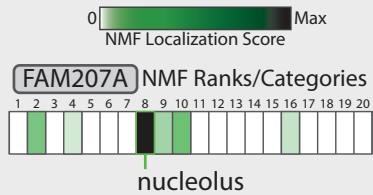


Supplementary Figure 5

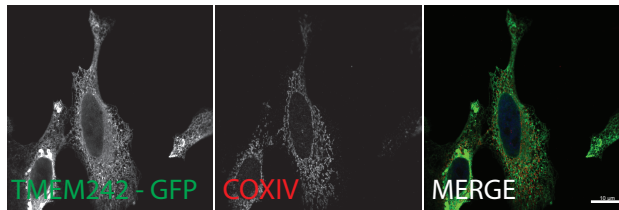
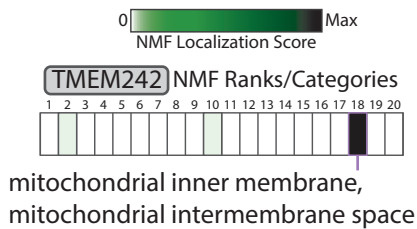
Supported Primary - IF matches NMF or SAFE prediction



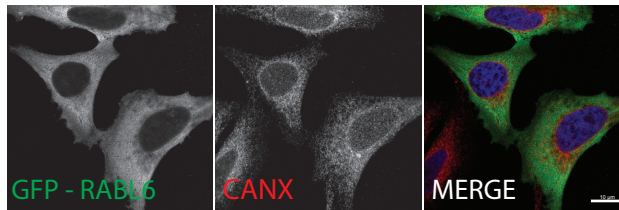
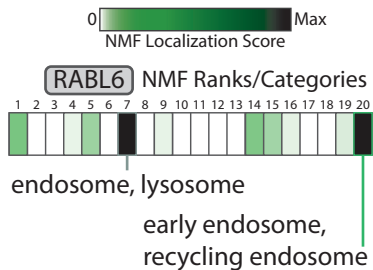
Supported Consistent - No endogenous compartment marker



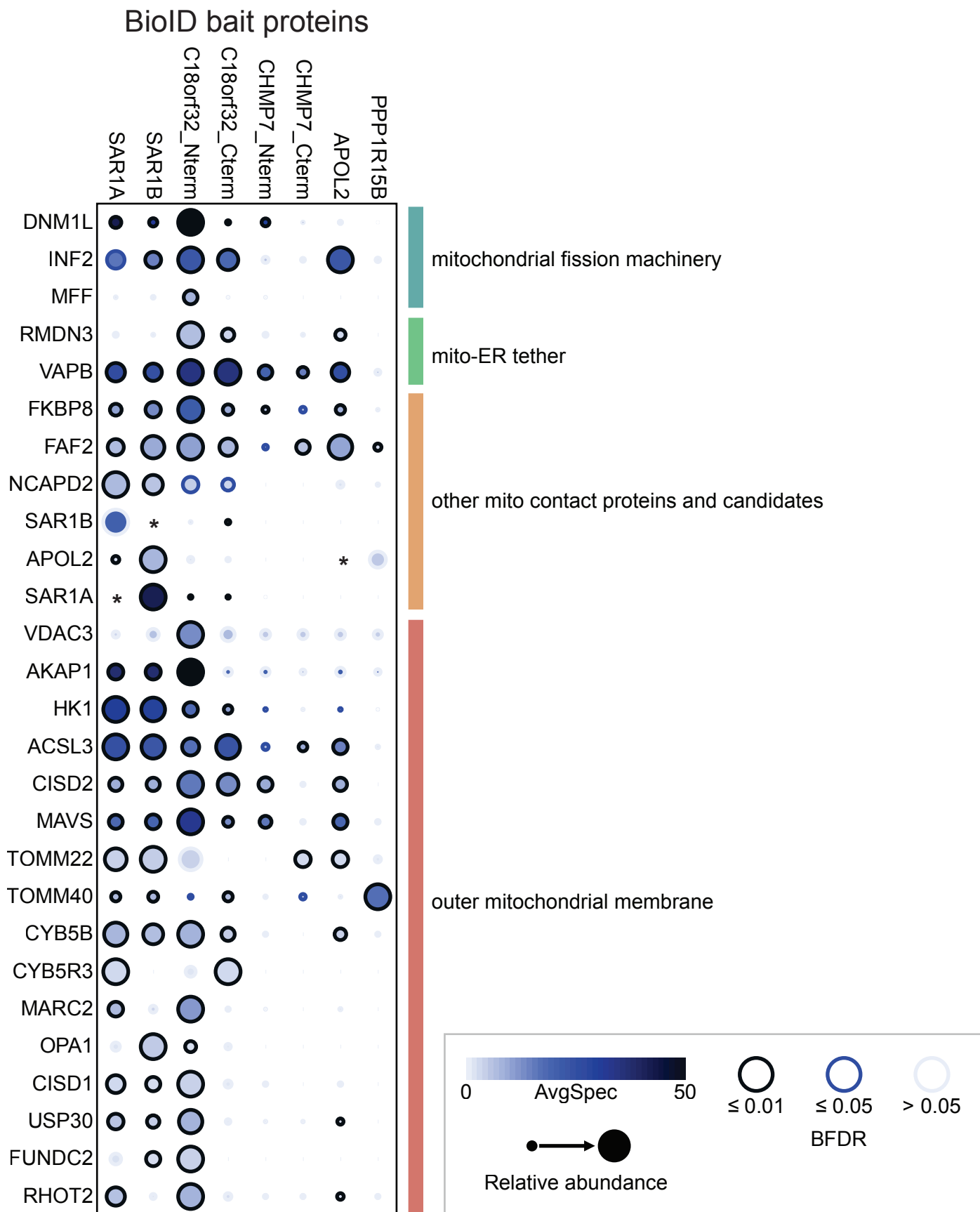
Contradiction - Does not match prediction



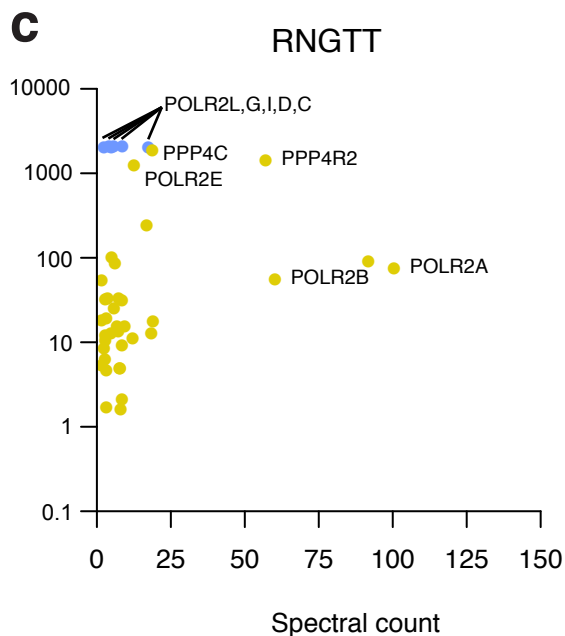
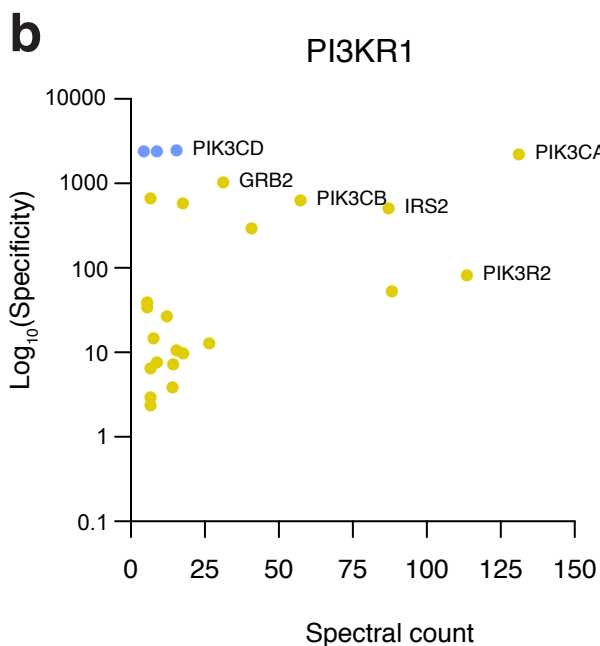
Inconclusive - No observable compartment staining



Supplementary Figure 6



Supplementary Figure 7



Supplementary Figure 8

