A

PP2A-PTPA metalloenzymes exchanged for different metal ions

Metal ions incubated with PP2Ac		Zn^{2+}	Fe^{2+}	Zn^{2+}/Mn^{2+}
pThr (23°C)	K_{cat} (min^{-1})	426±50	367±42	461±36
	K_m (μM)	458±86	460±85	311±44
	K_{cat}/K_m ($min^{-1}\mu M^{-1}$)	0.93	0.80	1.48
pNPP (37°C)	K_{cat} (min^{-1})	12.0±0.3	15.6±0.5	115±9
	K_m (μM)	449±43	569±56	952±210
	K_{cat}/K_m ($min^{-1}\mu M^{-1}$)	0.03	0.03	0.12
Relative specificity toward pThr versus pNPP		31	27	12

B

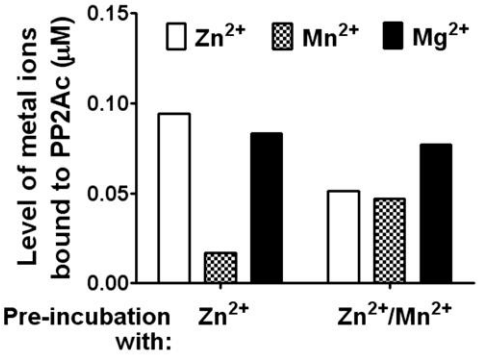

Fig. S5. Effect of different metal ions on phosphatase activity and specificity. (A) Summary of K_m and K_{cat} of the PP2Ac-PTPA metalloenzymes toward a pThr peptide and a chemical mimic of phospho-Tyr, pNPP. The PP2Ac metalloenzymes had been exchanged for different metal ions followed by removal of free metal ions in the presence of PTPA. PP2Ac-PTPA complexes exchanged for Zn^{2+}/Mn^{2+} exhibited the highest nonspecific activity toward pNPP. (B) ICP-MS showed enrichment of metal ions in the PP2Ac-PTPA metalloenzymes after metal exchange as in (A). All PP2A samples retained a significant level of Mg^{2+}. Co-incubation with Zn^{2+}/Mn^{2+} led to binding of similar levels of Zn^{2+} and Mn^{2+}.