

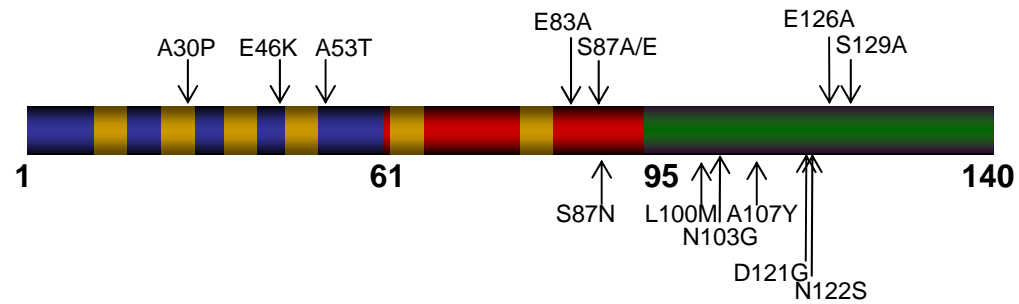
SUPPLEMENTARY FIGURES

Fig.1. Schematic depiction illustrating the various mutants used to probe the specificity of Plks mediated phosphorylation of synucleins. Table summarising the *in vitro* phosphorylation of human a-, b- and g-syn, a-syn variants, as well as mouse WT a-syn after 24 hours of phosphorylation. Key: +, > 10% phosphorylation, ++, > 20% phosphorylation, +++, > 50% phosphorylation, +++++, > 75% phosphorylation, +++++, 100% phosphorylation.

Fig. 2. *In vitro* phosphorylation of a-syn harbouring mutations in the NAC region by PLK1-4. MALDI-TOF analysis of the phosphorylated human E83A, S87A and S87E a-syn by PLK1-4.

Fig. 3. *In vitro* phosphorylation of α -syn harbouring mutations in the C-terminus by PLK1-4. (A) MALDI-TOF analysis of the phosphorylated S129A α -syn by PLK2. (B) MALDI-TOF analysis of the phosphorylated mouse WT and human E126A α -syn by PLK1-4.

Supplementary Figure 1



	PLK1	PLK2	PLK3	PLK4
wt α-syn	++++	+++++	+++++	-
wt β-syn	+++++	+	+++++	-
wt γ-syn	-	-	-	-
A30P α-syn	++++	+++++	+++++	-
A53T α-syn	++++	+++++	+++++	-
E46K α-syn	++++	+++++	+++++	-
S87A α-syn	-	+++	+++++	-
S87E α-syn	-	++++	+++++	-
S129A α-syn	-	-	-	-
E83A α-syn	+++	+++++	+++++	-
E126A α-syn	+	+++	+	-
wt α-syn (103-140)	-	+	++	-
Mouse wt α-syn	++	+++++	+++++	-
α-syn fibrils	+	+++	+++++	-

Supplementary Figure 2

