

Table 1: List of biomolecular reactions and parameters categorized per model compartment. The last column provides the parameter groups as described in the section ‘Model development’.

Description	Name	Reaction	Parameter	Parameter group
ASYN & Dopamine production and modification				
WT ASYN production	WTasynSynthesis	SOURCE -> WTasyn{Cytosol}	$k_{WTasynSynth}$	
Dopamine production	DopProduction	SOURCE -> Dopamine	$k_{DopProd}$	
WT ASYN modification from Dopamine	WTasynDopModification	WTasyn{Cytosol} + Dopamine -> DopModWTasyn{Cytosol}	$k_{WTasynDopMod}$	
Dopamine degradation	DopamineDegr	Dopamine -> Dopamine_degraded	$k_{DopDegr}$	
ASYN oligomerization				
WT ASYN Dimer formation	2merForm	2 * WTasyn{Cytosol} -> WTasyn2{Cytosol}	$k_{WTasyn2merForm}$	$k_{2merForm}$
Formation of modified ASYN Dimer	DopMod2merForm	2 * DopModWTasyn{Cytosol} -> DopModWTasyn2{Cytosol}	$k_{DopModWTasyn2merForm}$	$k_{2merForm}$
WT ASYN 3mer formation	3merForm	WTasyn2{Cytosol} + WTasyn{Cytosol} -> WTasyn3{Cytosol}	$k_{WTasyn3merForm}$	$k_{OligomerForm}$
WT ASYN 4mer formation	4merForm	WTasyn3{Cytosol} + WTasyn{Cytosol} -> WTasyn4{Cytosol}	$k_{WTasyn4merForm}$	$k_{OligomerForm}$
WT ASYN 5mer formation	5merForm	WTasyn4{Cytosol} + WTasyn{Cytosol} -> WTasyn5{Cytosol}	$k_{WTasyn5merForm}$	$k_{OligomerForm}$

WT ASYN 6mer formation	6merForm	WTasyn5{Cytosol} + WTasyn{Cytosol} -> WTasyn6{Cytosol}	$k_{WTasyn6merForm}$	$k_{OligomerForm}$
WT ASYN 7mer formation	7merForm	WTasyn6{Cytosol} + WTasyn{Cytosol} -> WTasyn7{Cytosol}	$k_{WTasyn7merForm}$	$k_{OligomerForm}$
WT ASYN 8mer formation	8merForm	WTasyn7{Cytosol} + WTasyn{Cytosol} -> WTasyn8{Cytosol}	$k_{WTasyn8merForm}$	$k_{OligomerForm}$
WT ASYN 9mer formation	9merForm	WTasyn8{Cytosol} + WTasyn{Cytosol} -> WTasyn9	$k_{WTasyn9merForm}$	$k_{OligomerForm}$
Formation of modified ASYN 3mer	DopMod3merForm	DopModWTasyn2{Cytosol} + DopModWTasyn{Cytosol} -> DopModWTasyn3{Cytosol}	$k_{DopModWTasyn3merForm}$	$k_{OligomerForm}$
Formation of modified ASYN 4mer	DopMod4merForm	DopModWTasyn3{Cytosol} + DopModWTasyn{Cytosol} -> DopModWTasyn4{Cytosol}	$k_{DopModWTasyn4merForm}$	$k_{OligomerForm}$
Formation of modified ASYN 5mer	DopMod5merForm	DopModWTasyn4{Cytosol} + DopModWTasyn{Cytosol} -> DopModWTasyn5{Cytosol}	$k_{DopModWTasyn5merForm}$	$k_{OligomerForm}$
Formation of modified ASYN 6mer	DopMod6merForm	DopModWTasyn5{Cytosol} + DopModWTasyn{Cytosol} -> DopModWTasyn6{Cytosol}	$k_{DopModWTasyn6merForm}$	$k_{OligomerForm}$
Formation of modified ASYN 7mer	DopMod7merForm	DopModWTasyn6{Cytosol} + DopModWTasyn{Cytosol} -> DopModWTasyn7{Cytosol}	$k_{DopModWTasyn7merForm}$	$k_{OligomerForm}$
Formation of modified ASYN	DopMod8merForm	DopModWTasyn7{Cytosol} +	$k_{DopModWTasyn8merForm}$	$k_{OligomerForm}$

8mer		DopModWTasyn{Cytosol} -> DopModWTasyn8{Cytosol}		
Formation of modified ASYN 9mer	DopMod9merForm	DopModWTasyn8{Cytosol} + DopModWTasyn{Cytosol} -> DopModWTasyn9	$k_{DopModWTasyn9merForm}$	$k_{OligomerForm}$
Aggregate Formation	AggregForm	WTasyn9 + WTasyn{Cytosol} -> HigherWTasynSPC + WTasynInHigher	$k_{AggrForm}$	$k_{OligomerForm}$
Aggregate growth	AggregGrowth	HigherWTasynSPC + WTasyn{Cytosol} -> HigherWTasynSPC + WTasynInHigher	$k_{AggrGrowth}$	
WT asyn Dimer disassociation	2merDis	WTasyn2{Cytosol} -> 2 * WTasyn{Cytosol}	$k_{WTasyn2merDis}$	$k_{DisRate}$
WT asyn 3mer disassociation	3merDis	WTasyn3{Cytosol} -> WTasyn2{Cytosol} + WTasyn{Cytosol}	$k_{WTasyn3merDis}$	$k_{DisRate}$
WT asyn 4mer disassociation	4merDis	WTasyn4{Cytosol} -> WTasyn3{Cytosol} + WTasyn{Cytosol}	$k_{WTasyn4merDis}$	$k_{DisRate}$
WT asyn 5mer disassociation	5merDis	WTasyn5{Cytosol} -> WTasyn4{Cytosol} + WTasyn{Cytosol}	$k_{WTasyn5merDis}$	$k_{DisRate}$
WT asyn 6mer disassociation	6merDis	WTasyn6{Cytosol} -> WTasyn5{Cytosol} + WTasyn{Cytosol}	$k_{WTasyn6merDis}$	$k_{DisRate}$
WT asyn 7mer disassociation	7merDis	WTasyn7{Cytosol} -> WTasyn6{Cytosol} + WTasyn{Cytosol}	$k_{WTasyn7merDis}$	$k_{DisRate}$
WT asyn 8mer disassociation	8merDis	WTasyn8{Cytosol} -> WTasyn7{Cytosol} + WTasyn{Cytosol}	$k_{WTasyn8merDis}$	$k_{DisRate}$

WT asyn 9mer disassociation	9merDis	WTasyn9 -> WTasyn8{Cytosol} + WTasyn{Cytosol}	$k_{WTasyn9merDis}$	$k_{DisRate}$
Disassociation of modified ASYN Dimer	DopMod2merDis	DopModWTasyn2{Cytosol} -> 2 * DopModWTasyn{Cytosol}	$k_{DopModWTasyn2merDis}$	$k_{DisRate}$
Disassociation of modified ASYN 3mer	DopMod3merDis	DopModWTasyn3{Cytosol} -> DopModWTasyn2{Cytosol} + DopModWTasyn{Cytosol}	$k_{DopModWTasyn3merDis}$	$k_{DisRate}$
Disassociation of modified ASYN 4mer	DopMod4merDis	DopModWTasyn4{Cytosol} -> DopModWTasyn3{Cytosol} + DopModWTasyn{Cytosol}	$k_{DopModWTasyn4merDis}$	$k_{DisRate}$
Disassociation of modified ASYN 5mer	DopMod5merDis	DopModWTasyn5{Cytosol} -> DopModWTasyn4{Cytosol} + DopModWTasyn{Cytosol}	$k_{DopModWTasyn5merDis}$	$k_{DisRate}$
Disassociation of modified ASYN 6mer	DopMod6merDis	DopModWTasyn6{Cytosol} -> DopModWTasyn5{Cytosol} + DopModWTasyn{Cytosol}	$k_{DopModWTasyn6merDis}$	$k_{DisRate}$
Disassociation of modified ASYN 7mer	DopMod7merDis	DopModWTasyn7{Cytosol} -> DopModWTasyn6{Cytosol} + DopModWTasyn{Cytosol}	$k_{DopModWTasyn7merDis}$	$k_{DisRate}$
Disassociation of modified ASYN 8mer	DopMod8merDis	DopModWTasyn8{Cytosol} -> DopModWTasyn7{Cytosol} + DopModWTasyn{Cytosol}	$k_{DopModWTasyn8merDis}$	$k_{DisRate}$
Disassociation of modified ASYN 9mer	DopMod9merDis	DopModWTasyn9 -> DopModWTasyn8{Cytosol} + DopModWTasyn{Cytosol}	$k_{DopModWTasyn9merDis}$	$k_{DisRate}$

CMA component				
Binding of WT ASYN Monomer with Lamp2a	WTasynLampBind	WTasyn{Cytosol} + Lamp2a -> WTasyndegr	$k_{WTasynLampBind}$	$k_{WTasyn1_2merBindOnLamp}$
Binding of WT ASYN Dimer with Lamp2a	WTasyn2LampBind	WTasyn2{Cytosol} + Lamp2a -> WTasyn2degr	$k_{WTasyn2merLampBind}$	$k_{WTasyn1_2merBindOnLamp}$
Binding of WT ASYN 3mer on Lamp2a	WTasyn3merBindOnLamp	Lamp2a + WTasyn3{Cytosol} -> WTasyn3merOnLamp	$k_{WTasynr3merLampBind}$	$k_{WToligoBindOnLamp}$
Binding of WT ASYN 4mer on Lamp2a	WTasyn4merBindOnLamp	Lamp2a + WTasyn4{Cytosol} -> WTasyn4merOnLamp	$k_{WTasynr4merLampBind}$	$k_{WToligoBindOnLamp}$
Binding of WT ASYN 5mer with Lamp2a	WTasyn5merBindOnLamp	WTasyn5{Cytosol} + Lamp2a -> WTasyn5merOnLamp	$k_{WTasynr5merLampBind}$	$k_{WToligoBindOnLamp}$
Binding of WT ASYN 6mer on Lamp2a	WTasyn6merBindOnLamp	Lamp2a + WTasyn6{Cytosol} -> WTasyn6merOnLamp	$k_{WTasynr6merLampBind}$	$k_{WToligoBindOnLamp}$
Binding of WT ASYN 7mer with Lamp2a	WTasyn7merBindOnLamp	WTasyn7{Cytosol} + Lamp2a -> WTasyn7merOnLamp	$k_{WTasynr7merLampBind}$	$k_{WToligoBindOnLamp}$
Binding of WT ASYN 8mer on Lamp2a	WTasyn8merBindOnLamp	WTasyn8merOnLamp + WTasyn8{Cytosol} -> Lamp2a	$k_{WTasynr8merLampBind}$	$k_{WToligoBindOnLamp}$
Binding of WT ASYN 9mer with Lamp2a	WTasyn9merBindOnLamp	WTasyn9 + Lamp2a -> WTasyn9merOnLamp	$k_{WTasynr9merLampBind}$	$k_{WToligoBindOnLamp}$
WT ASYN Monomer uptake from lysosome	WTasynLysosUptake	WTasyndegr -> Lamp2a + WTasyn{Lysosome}	$k_{WTasynLysUptk}$	
WT ASYN Dimer uptake from lysosome	WTasyn2LysosUptake	WTasyn2degr -> Lamp2a + WTasyn2{Lysosome}	$k_{WTasyn2LysUptk}$	

WT ASYN Monomer degradation in the lysosome	WTasyn1merCMADegr	WTasyn{Lysosome} -> WTasynCMADegr	$k_{WTasynLysDegr}$	
WT ASYN Dimer degradation in the lysosome	WTasyn2merCMADegr	WTasyn2{Lysosome} -> WTasyn2merCMADegr	$k_{WTasyn2merLysDegr}$	
Release of WT ASYN 3mer from lamp2a	LampFree3merWT	WTasyn3merOnLamp -> WTasyn3{Cytosol} + Lamp2a	$k_{WTasyn3merLampFree}$	$k_{LampFreeWTasyn}$
Release of WT ASYN 4mer from lamp2a	LampFree4merWT	WTasyn4merOnLamp -> WTasyn4{Cytosol} + Lamp2a	$k_{WTasyn4merLampFree}$	$k_{LampFreeWTasyn}$
Release of WT ASYN 5mer from lamp2a	LampFree5merWT	WTasyn5merOnLamp -> WTasyn5{Cytosol} + Lamp2a	$k_{WTasyn5merLampFree}$	$k_{LampFreeWTasyn}$
Release of WT ASYN 6mer from lamp2a	LampFree6merWT	WTasyn6merOnLamp -> WTasyn6{Cytosol} + Lamp2a	$k_{WTasyn6merLampFree}$	$k_{LampFreeWTasyn}$
Release of WT ASYN 7mer from lamp2a	LampFree7merWT	WTasyn7merOnLamp -> WTasyn7{Cytosol} + Lamp2a	$k_{WTasyn7merLampFree}$	$k_{LampFreeWTasyn}$
Release of WT ASYN 8mer from lamp2a	LampFree8merWT	WTasyn8merOnLamp -> WTasyn8{Cytosol} + Lamp2a	$k_{WTasyn8merLampFree}$	$k_{LampFreeWTasyn}$
Release of WT ASYN 9mer from lamp2a	LampFree9merWT	WTasyn9merOnLamp -> WTasyn9 + Lamp2a	$k_{WTasyn9merLampFree}$	$k_{LampFreeWTasyn}$
Formation of WT ASYN Dimer on Lamp2a	WTasyn2merFormOnLamp	WTasyn{Cytosol} + WTasyndegr -> WTasyn2degr	$k_{WTasyn2merLampForm}$	$k_{2merForm}$
Formation of WT ASYN 3mer on Lamp2a	WTasyn3merFormOnLamp	WTasyn{Cytosol} + WTasyn2merOnLamp -> WTasyn3merOnLamp	$k_{WTasyn3merLampForm}$	$k_{OligomerForm}$

Formation of WT ASYN 4mer on Lamp2a	WTasyn4merFormOnLamp	WTasyn{Cytosol} + WTasyn3merOnLamp -> WTasyn4merOnLamp	$k_{WTasyn4merLampForm}$	$k_{OligomerForm}$
Formation of WT ASYN 5mer on Lamp2a	WTasyn5merFormOnLamp	WTasyn{Cytosol} + WTasyn4merOnLamp -> WTasyn5merOnLamp	$k_{WTasyn5merLampForm}$	$k_{OligomerForm}$
Formation of WT ASYN 6mer on Lamp2a	WTasyn6merFormOnLamp	WTasyn5merOnLamp + WTasyn{Cytosol} -> WTasyn6merOnLamp	$k_{WTasyn6merLampForm}$	$k_{OligomerForm}$
Formation of WT ASYN 7mer on Lamp2a	WTasyn7merFormOnLamp	WTasyn6merOnLamp + WTasyn{Cytosol} -> WTasyn7merOnLamp	$k_{WTasyn7merLampForm}$	$k_{OligomerForm}$
Formation of WT ASYN 8mer on Lamp2a	WTasyn8merFormOnLamp	WTasyn{Cytosol} + WTasyn7merOnLamp -> WTasyn8merOnLamp	$k_{WTasyn8merLampForm}$	$k_{OligomerForm}$
Formation of WT ASYN 9mer on Lamp2a	WTasyn9merFormOnLamp	WTasyn{Cytosol} + WTasyn8merOnLamp -> WTasyn9merOnLamp	$k_{WTasyn9merLampForm}$	$k_{OligomerForm}$
Binding of modified WT ASYN on Lamp2a and inhibition of it	DopModWTasynCMAInhibition	Lamp2a + DopModWTasyn{Cytosol} -> DopModWTasynOnLamp	$k_{DopModWTasynLampBind}$	
Formation of modified ASYN Dimer on Lamp2a	DopWTasyn2merFormOnLamp	WTasyn{Cytosol} + WTasyndegr -> WTasyn2degr	$k_{DopModWTasyn2merFormLamp}$	$k_{2merForm}$
Formation of modified WT ASYN 3mer on Lamp2a	DopWTasyn3merFormOnLamp	WTasyn{Cytosol} + WTasyn2degr -> WTasyn3merOnLamp	$k_{DopModWTasyn3merFormLamp}$	$k_{OligomerForm}$

Formation of modified WT ASYN 4mer on Lamp2a	DopWTasyn4merFormOnLamp	WTasyn{Cytosol} + WTasyn3merOnLamp -> WTasyn4merOnLamp	$k_{DopModWTasyn4merFormLamp}$	$k_{OligomerForm}$
Formation of modified WT ASYN 5mer on Lamp2a	DopWTasyn5merFormOnLamp	WTasyn{Cytosol} + WTasyn4merOnLamp -> WTasyn5merOnLamp	$k_{DopModWTasyn5merFormLamp}$	$k_{OligomerForm}$
Formation of modified WT ASYN 6mer on Lamp2a	DopWTasyn6merFormOnLamp	WTasyn5merOnLamp + WTasyn{Cytosol} -> WTasyn6merOnLamp	$k_{DopModWTasyn6merFormLamp}$	$k_{OligomerForm}$
Formation of modified ASYN 7mer on Lamp2a	DopWTasyn7merFormOnLamp	WTasyn6merOnLamp + WTasyn{Cytosol} -> WTasyn7merOnLamp	$k_{DopModWTasyn7merFormLamp}$	$k_{OligomerForm}$
Formation of modified ASYN 8mer on Lamp2a	DopWTasyn8merFormOnLamp	WTasyn{Cytosol} + WTasyn7merOnLamp -> WTasyn8merOnLamp	$k_{DopModWTasyn8merFormLamp}$	$k_{OligomerForm}$
Formation of modified ASYN 9mer on Lamp2a	WTasyn9merFormOnLamp	WTasyn{Cytosol} + WTasyn8merOnLamp -> WTasyn9merOnLamp	$k_{DopModWTasyn9merFormLamp}$	$k_{OligomerForm}$
Macroautophagy component				
WT ASYN Monomer uptake from the autophagosome	AutophagosomeUptakeWTasyn	WTasyn{Cytosol} -> WTasyn{M/autophagy&OtherLysDegrPath}	$k_{WTasynAutophUptk}$	$k_{OligAutophagUptake}$
WT ASYN Dimer uptake from the autophagosome	AutophagosomeUptakeWTasyn2mer	WTasyn2{Cytosol} -> WTasyn2{M/autophagy&OtherLysDegrPath}	$k_{WTasyn2merAutophUptk}$	$k_{OligAutophagUptake}$

WT ASYN 3mer uptake from the autophagosome	AutophagosomeUptakeWT asyn3mer	WTasyn3{Cytosol} -> WTasyn3{M/autophagy&OtherLysDegrPath}	$k_{WTasyn3merAutophUptk}$	$k_{OligAutophagUptake}$
WT ASYN 4mer uptake from the autophagosome	AutophagosomeUptakeWT asyn4mer	WTasyn4{Cytosol} -> WTasyn4{M/autophagy&OtherLysDegrPath}	$k_{WTasyn4merAutophUptk}$	$k_{OligAutophagUptake}$
WT ASYN 5mer uptake from the autophagosome	AutophagosomeUptakeWT asyn5mer	WTasyn5{Cytosol} -> WTasyn5{M/autophagy&OtherLysDegrPath}	$k_{WTasyn5merAutophUptk}$	$k_{OligAutophagUptake}$
WT ASYN 6mer uptake from the autophagosome	AutophagosomeUptakeWT asyn6mer	WTasyn6{Cytosol} -> WTasyn6{M/autophagy&OtherLysDegrPath}	$k_{WTasyn6merAutophUptk}$	$k_{OligAutophagUptake}$
WT ASYN 7mer uptake from the autophagosome	AutophagosomeUptakeWT asyn7mer	WTasyn7{Cytosol} -> WTasyn7{M/autophagy&OtherLysDegrPath}	$k_{WTasyn7merAutophUptk}$	$k_{OligAutophagUptake}$
WT ASYN 8mer uptake from the autophagosome	AutophagosomeUptakeWT asyn8mer	WTasyn8{Cytosol} -> WTasyn8{M/autophagy&OtherLysDegrPath}	$k_{WTasyn8merAutophUptk}$	$k_{OligAutophagUptake}$
Modified WT ASYN Monomer uptake from the autophagosome	DopModAutophagosomeUptake	DopModWTasyn{Cytosol} -> DopModWTasyn{M/autophagy&OtherLysDegrPath}	$k_{DopModAutophUptk}$	$k_{OligAutophagUptake}$
Modified WT ASYN Dimer uptake from the autophagosome	DopModAutophagosomeUptake2mer	DopModWTasyn2{Cytosol} -> DopModWTasyn2{M/autophagy&OtherLysDegrPath}	$k_{DopMod2merAutophUptk}$	$k_{OligAutophagUptake}$
Modified WT ASYN 3mer	DopModAutophagosomeU	DopModWTasyn3{Cytosol} ->	$k_{DopMod3merAutophUptk}$	$k_{OligAutophagUptake}$

uptake from the autophagosome	ptake3mer	DopModWTasyn3{M/autophagy&OtherLysDegrPath}		
Modified WT ASYN 4mer uptake from the autophagosome	DopModAutophagosomeUptake4mer	DopModWTasyn4{Cytosol} -> DopModWTasyn4{M/autophagy&OtherLysDegrPath}	$k_{DopMod4merAutophUptk}$	$k_{OligAutophagUptake}$
Modified WT ASYN 5mer uptake from the autophagosome	DopModAutophagosomeUptake5mer	DopModWTasyn5{Cytosol} -> DopModWTasyn5{M/autophagy&OtherLysDegrPath}	$k_{DopMod5merAutophUptk}$	$k_{OligAutophagUptake}$
Modified WT ASYN 6mer uptake from the autophagosome	DopModAutophagosomeUptake6mer	DopModWTasyn6{Cytosol} -> DopModWTasyn6{M/autophagy&OtherLysDegrPath}	$k_{DopMod6merAutophUptk}$	$k_{OligAutophagUptake}$
Modified WT ASYN 7mer uptake from the autophagosome	DopModAutophagosomeUptake7mer	DopModWTasyn7{Cytosol} -> DopModWTasyn7{M/autophagy&OtherLysDegrPath}	$k_{DopMod7merAutophUptk}$	$k_{OligAutophagUptake}$
Modified WT ASYN 8mer uptake from the autophagosome	DopModAutophagosomeUptake8mer	DopModWTasyn8{Cytosol} -> DopModWTasyn8{M/autophagy&OtherLysDegrPath}	$k_{DopMod8merAutophUptk}$	$k_{OligAutophagUptake}$
Degradation of WT ASYN monomer from macroautophagy	M/autophagyWTasyn1Degr	WTasyn{M/autophagy&OtherLysDegrPath} -> WTasynmerM/Adegr	$k_{WTasynM/Adegr}$	$k_{M/autophagyDegr}$
WT ASYN Dimer degradation by macroautophagy	M/autophagyWTasyn2Degr	WTasyn2{M/autophagy&OtherLysDegrPath} -> WTasyn2merM/Adegr	$k_{WTasyn2merM/Adegr}$	$k_{M/autophagyDegr}$
WT ASYN 3mer degradation by macroautophagy	M/autophagyWTasyn3Degr	WTasyn3{M/autophagy&OtherLysDegrPath} -> WTasyn3merM/Adegr	$k_{WTasyn3merM/Adegr}$	$k_{M/autophagyDegr}$

WT ASYN 4mer degradation by macroautophagy	M/autophagyWTasyn4Degr	WTasyn4{M/autophagy&OtherLysDegrPath} -> WTasyn4merM/Adegr	$k_{WTasyn4merM/ADegr}$	$k_{M/autophagyDegr}$
WT ASYN 5mer degradation by macroautophagy	M/autophagyWTasyn5Degr	WTasyn5{M/autophagy&OtherLysDegrPath} -> WTasyn5merM/Adegr	$k_{WTasyn5merM/ADegr}$	$k_{M/autophagyDegr}$
WT ASYN 6mer degradation by macroautophagy	M/autophagyWTasyn6Degr	WTasyn6{M/autophagy&OtherLysDegrPath} -> WTasyn6merM/Adegr	$k_{WTasyn6merM/ADegr}$	$k_{M/autophagyDegr}$
WT ASYN 7mer degradation by macroautophagy	M/autophagyWTasyn7Degr	WTasyn7{M/autophagy&OtherLysDegrPath} -> WTasyn7merM/Adegr	$k_{WTasyn7merM/ADegr}$	$k_{M/autophagyDegr}$
WT ASYN 8mer degradation by macroautophagy	M/autophagyWTasyn8Degr	WTasyn8{M/autophagy&OtherLysDegrPath} -> WTasyn8merM/Adegr	$k_{WTasyn8merM/ADegr}$	$k_{M/autophagyDegr}$
Degradation of modified WT ASYN monomer from macroautophagy	M/autophagyDopModWTasyn1Degr	DopModWTasyn{M/autophagy&OtherLysDegrPath} -> DopModWTasyn1merM/Adegr	$k_{DopModM/ADegr}$	$k_{M/autophagyDegr}$
Degradation of modified WT ASYN Dimer from macroautophagy	M/autophagyDopModWTasyn2Degr	DopModWTasyn2{M/autophagy&OtherLysDegrPath} -> DopModWTasyn2merM/Adegr	$k_{DopMod2merM/ADegr}$	$k_{M/autophagyDegr}$
Degradation of modified WT ASYN 3mer from macroautophagy	M/autophagyDopModWTasyn3Degr	DopModWTasyn3{M/autophagy&OtherLysDegrPath} -> DopModWTasyn3merM/Adegr	$k_{DopMod3merM/ADegr}$	$k_{M/autophagyDegr}$
Degradation of modified WT ASYN 4mer from macroautophagy	M/autophagyDopModWTasyn4Degr	DopModWTasyn4{M/autophagy&OtherLysDegrPath} -> DopModWTasyn4merM/Adegr	$k_{DopMod4merM/ADegr}$	$k_{M/autophagyDegr}$
Degradation of modified WT ASYN 5mer from	M/autophagyDopModWTasyn5Degr	DopModWTasyn5{M/autophagy&OtherLysDegrPath} ->	$k_{DopMod5merM/ADegr}$	$k_{M/autophagyDegr}$

macroautophagy		DopModWTasyn6merM/Adegr		
Degradation of modified WT ASYN 6mer from macroautophagy	M/autophagyDopModWTasyn6Degr	DopModWTasyn6{M/autophagy&OtherLysDegrPath} -> DopModWTasyn7merM/Adegr	$k_{DopMod6merM/Adegr}$	$k_{M/autophagyDegr}$
Degradation of modified WT ASYN 7mer from macroautophagy	M/autophagyDopModWTasyn7Degr	DopModWTasyn7{M/autophagy&OtherLysDegrPath} -> DopModWTasyn7merM/Adegr	$k_{DopMod7merM/Adegr}$	$k_{M/autophagyDegr}$
Degradation of modified WT ASYN 8mer from macroautophagy	M/autophagyDopModWTasyn8Degr	DopModWTasyn8{M/autophagy&OtherLysDegrPath} -> DopModWTasyn8merM/Adegr	$k_{DopMod8merM/Adegr}$	$k_{M/autophagyDegr}$
Proteasome component				
Binding of WT ASYN 3mer with the proteasome	3merProtBind	WTasyn3{Cytosol} + Proteasome -> ProtWTasyn3	$k_{WTasyn3merProtBind}$	$k_{ProteasomeBind}$
Binding of WT ASYN 4mer with the proteasome	4merProtBind	WTasyn4{Cytosol} + Proteasome -> ProtWTasyn4	$k_{WTasyn4merProtBind}$	$k_{ProteasomeBind}$
Binding of WT ASYN 5mer with the proteasome	5merProtBind	WTasyn5{Cytosol} + Proteasome -> ProtWTasyn5	$k_{WTasyn5merProtBind}$	$k_{ProteasomeBind}$
Binding of WT ASYN 6mer with the proteasome	6merProtBind	WTasyn6{Cytosol} + Proteasome -> ProtWTasyn6	$k_{WTasyn6merProtBind}$	$k_{ProteasomeBind}$
Binding of WT ASYN 7mer with the proteasome	7merProtBind	WTasyn7{Cytosol} + Proteasome -> ProtWTasyn7	$k_{WTasyn7merProtBind}$	$k_{ProteasomeBind}$
Binding of WT ASYN 8mer with the proteasome	8merProtBind	WTasyn8{Cytosol} + Proteasome -> ProtWTasyn8	$k_{WTasyn8merProtBind}$	$k_{ProteasomeBind}$

Binding of WT ASYN 9mer with the proteasome	9merProtBind	WTasyn9 + Proteasome -> ProtWTasyn9	$k_{WTasyn9merProtBind}$	$k_{ProteasomeBind}$
Binding of modified WT ASYN 3mer with the proteasome	DopMod3merProtBind	DopModWTasyn3{Cytosol} + Proteasome -> ProtDopModWTasyn3	$k_{DopMod3merProtBind}$	$k_{ProteasomeBind}$
Binding of modified WT ASYN 4mer with the proteasome	DopMod4merProtBind	DopModWTasyn4{Cytosol} + Proteasome -> ProtDopModWTasyn4	$k_{DopMod4merProtBind}$	$k_{ProteasomeBind}$
Binding of modified WT ASYN 5mer with the proteasome	DopMod5merProtBind	DopModWTasyn5{Cytosol} + Proteasome -> ProtDopModWTasyn5	$k_{DopMod5merProtBind}$	$k_{ProteasomeBind}$
Binding of modified WT ASYN 6mer with the proteasome	DopMod6merProtBind	DopModWTasyn6{Cytosol} + Proteasome -> ProtDopModWTasyn6	$k_{DopMod6merProtBind}$	$k_{ProteasomeBind}$
Binding of modified WT ASYN 7mer with the proteasome	DopMod7merProtBind	DopModWTasyn7{Cytosol} + Proteasome -> ProtDopModWTasyn7	$k_{DopMod7merProtBind}$	$k_{ProteasomeBind}$
Binding of modified WT ASYN 8mer with the proteasome	DopMod8merProtBind	DopModWTasyn8{Cytosol} + Proteasome -> ProtDopModWTasyn8	$k_{DopMod8merProtBind}$	$k_{ProteasomeBind}$
Binding of modified WT ASYN 9mer with the proteasome	DopMod9merProtBind	DopModWTasyn9 + Proteasome -> ProtDopModWTasyn9	$k_{DopMod9merProtBind}$	$k_{ProteasomeBind}$
Binding of HMW species with the proteasome	WTasynHigherSPCprotInh	HigherWTasynSPC + Proteasome -> ProtWTasynHigherSPC	$k_{WTasynHighProtBind}$	$k_{ProteasomeBind}$
Degradation of WT ASYN 3mer from the proteasome	ProtFree3merWT	ProtWTasyn3 -> Proteasome	$k_{WTasyn3merProtFree}$	$k_{ProtOligDegr}$
Degradation of WT ASYN 4mer from the proteasome	ProtFree4merWT	ProtWTasyn4 -> Proteasome	$k_{WTasyn4merProtFree}$	$k_{ProtOligDegr}$
Degradation of WT ASYN 5mer	ProtFree5merWT	ProtWTasyn5 -> Proteasome	$k_{WTasyn5merProtFree}$	$k_{ProtOligDegr}$

from the proteasome				
Degradation of WT ASYN 6mer from the proteasome	ProtFree6merWT	ProtWTasyn6 -> Proteasome	$k_{WTasyn6merProtFree}$	$k_{ProtOligDegr}$
Degradation of WT ASYN 7mer from the proteasome	ProtFree7merWT	ProtWTasyn7 -> Proteasome	$k_{WTasyn7merProtFree}$	$k_{ProtOligDegr}$
Degradation of WT ASYN 8mer from the proteasome	ProtFree8merWT	ProtWTasyn8 -> Proteasome	$k_{WTasyn8merProtFree}$	$k_{ProtOligDegr}$
Degradation of WT ASYN 9mer from the proteasome	ProtFree9merWT	ProtWTasyn9 -> Proteasome	$k_{WTasyn9merProtFree}$	$k_{ProtOligDegr}$
Degradation of modified WT ASYN 3mer from the proteasome	ProtFree3merDopWT	ProtDopModWTasyn3 -> Proteasome	$k_{DopMod3merProtFree}$	$k_{ProtOligDegr}$
Degradation of modified WT ASYN 4mer from the proteasome	ProtFree4merDopWT	ProtDopModWTasyn4 -> Proteasome	$k_{DopMod4merProtFree}$	$k_{ProtOligDegr}$
Degradation of modified WT ASYN 5mer from the proteasome	ProtFree5merDopWT	ProtDopModWTasyn5 -> Proteasome	$k_{DopMod5merProtFree}$	$k_{ProtOligDegr}$
Degradation of modified WT ASYN 6mer from the proteasome	ProtFree6merDopWT	ProtDopModWTasyn6 -> Proteasome	$k_{DopMod6merProtFree}$	$k_{ProtOligDegr}$
Degradation of modified WT ASYN 7mer from the proteasome	ProtFree7merDopWT	ProtDopModWTasyn7 -> Proteasome	$k_{DopMod7merProtFree}$	$k_{ProtOligDegr}$

Degradation of modified WT ASYN 8mer from the proteasome	ProtFree8merDopWT	ProtDopModWTasyn8 -> Proteasome	$k_{DopMod8merProtFree}$	$k_{ProtOligDegr}$
Degradation of modified WT ASYN 9mer from the proteasome	ProtFree9merDopWT	ProtDopModWTasyn9 -> Proteasome	$k_{DopMod9merProtFree}$	$k_{ProtOligDegr}$