Supplemental Data:

	Table 1. Primer Sequences
Name	Truncation Primer Sequences
ΔC-tail	GCA TGC CCG GGC CTA GCA AGG CAG GTG CTG GGC AAT GGC C
Δ385	CAT GCG GCC GCC TAG TGG GTA GAG CGG TAG CTG AGG G
Δ396	GCA TGC GGC CGC CTA GTC TGA GGA CTG GCT GCT CAA TGT GGA
Δ420	GCA TGC GGC CGC CTA TGT GTC TGT CCA GCC CAC TTC ACT CTC
	Cassette Mutagenesis Primer Sequences
Mel BlpI	GCT TCT CGG TGT ATC AGG CCA GCT CAG CCA CCC CTC CCT CAG C
Mel BlpI R	GCT GAG GGA GGG GTG GCT GAG CTG GCC TGA TAC ACC GAG AAG C
Mel XhoI	GCT GGA TCT CTG GAC GGA AGC CTC GAG AGT CCC TGG GTT CTG AGA GTG AAG TGG
Mel XhoI rev	CCA CTT CAC TCT CAG AAC CCA GGG ACT CTC GAG GCT TCC GTC AGA GAT CCA GC
M2 Like Insert	GCT CAG CCA CCC CTC CCT CGC CTA CCG CTC TAC CCA CCG CGC CAC ATT GAG CAGCCA GGC CTC AGA CCT CAG CTG GAT CTC TGG ACG GAA GCC TCG AG
All6	GCT CAG CCA CCC CTC CCT AGC CTA CCG CTC TAC CCA CCG CGC CGC CTT GGC CGC CCA GGC CGC CGA CCT CAG CTG GAT CTC TGG ACG GAA GCC TCG AG
Fill In forward	ATG CGC TCA GCC ACC CCT CCC TC
Fill in Rev	ATG CCT CGA GGC TTC CGT CC
	Single Site-directed Mutagenesis Primer Sequences
MusMelSer388toAlaF	CCG CTC TAC CCA CCG CGC CAC ATT GAG CAG CC
MusMelSer388toAlaR	GGC TGC TCA ATG TGG CGC GGT GGG TAG AGC GG
MusMelThr389toAlaF	CCG CTC TAC CCA CCG CTC CGC ATT GAG CAG CCA GTC C
MusMelThr389toAlaR	GGA CTG GCT GCT CAA TGC GGA GCG GTG GGT AGA GCG G
MusMelSer391toGlyF	CCC ACC GCT CCA CAT GGG CA GCC AGT CCT CAG ACC
MusMelSer391toGlyR	GGT CTG AGG ACT GGC TGC CCA ATG TGG AGC GGT GGG
MusMelSer392toGlyF	CCG CTC CAC ATT GAG CGG CCA GTC CTC AGA CC
MusMelSer392toGlyR	GGT CTG AGG ACT GGC CGC TCA ATG TGG AGC GG
MusMelSer394toAlaF	CCA CAT TGA GCA GCC AGG CCT CAG ACC TCA GCT GG
MusMelSer394toAlaR	CCA GCT GAG GTC TGA GGC CTG GCT GCT CAA TGT GG
MusMelSer395toAlaF	CCA CAT TGA GCA GCC AGT CCG CAG ACC TCA GCT GGA TCT CTG G
MusMelSer395toAlaR	CCA GAG ATC CAG CTG AGG TCT GCG GAC TGG CTG CTC AAT GTG G
	Double Site-directed Mutagenesis Primer Sequences
381 394 F	CCT CCC TCG GCT ACC GCT CTA CCC ACC GCT CCA CAT TGA GCA GCC AGG CCT CAG ACC TC
381 394 R	GAG GTC TGA GGC CTG GCT GCT CAA TGT GGA GCG GTG GGT AGA GCG GTA GCC GAG GGA GG
388 389 F	CGC TCT ACC CAC CGC GCC GCA TTG AGC AGC AGC AG TCC TCA GAC C
388 389 R	GGT CTG AGG ACT GGC TGC TCA ATG CGG CGC GGT GGG TAG AGC G
391 392 F	CGC TCT ACC CAC CGC TCC ACA TTG GGC GGC CAG TCC TCA GAC CTC AGC
391 392 R	GCT GAG GTC TGA GGA CTG GCC GCC CAA TGT GGA GCG GTG GGT AGA GCG
394 395 F	CCC ACC GCT CCA CAT TGA GCA GCC AGG CCG CAG ACC TCA GCT GGA TCT CTG GAC GG
394 395 R	CCG TCC AGA GAT CCA GCT GAG GTC TGC GGC CTG GCT GCT CAA TGT GGA GCG GTG GG

Table 1. Sequences of primers used to create carboxy tail truncations, insert

cassettes, and for site directed mutatgenesis.

C

D
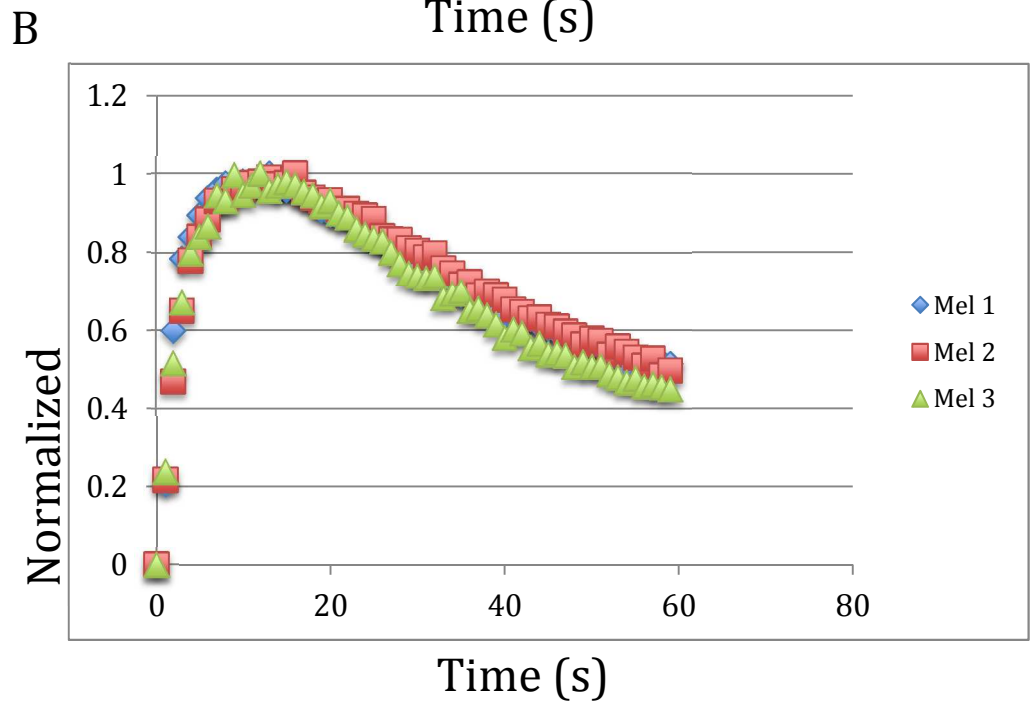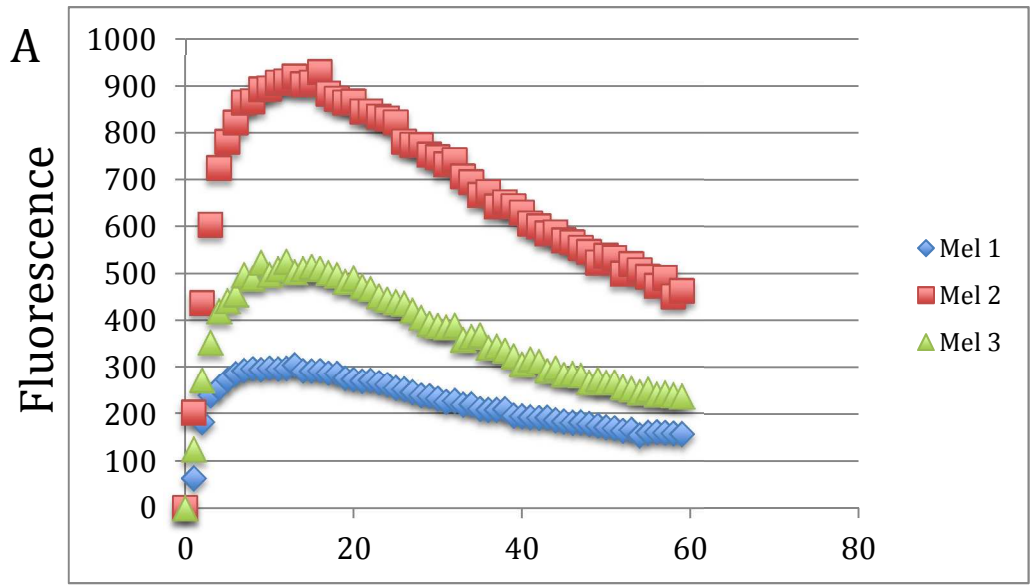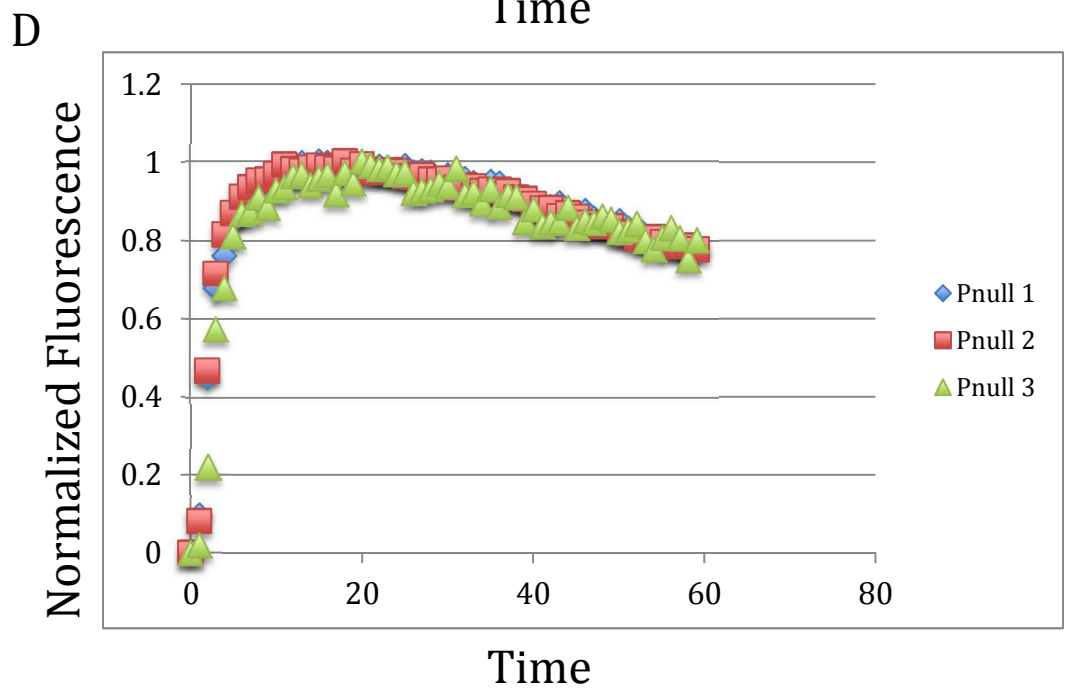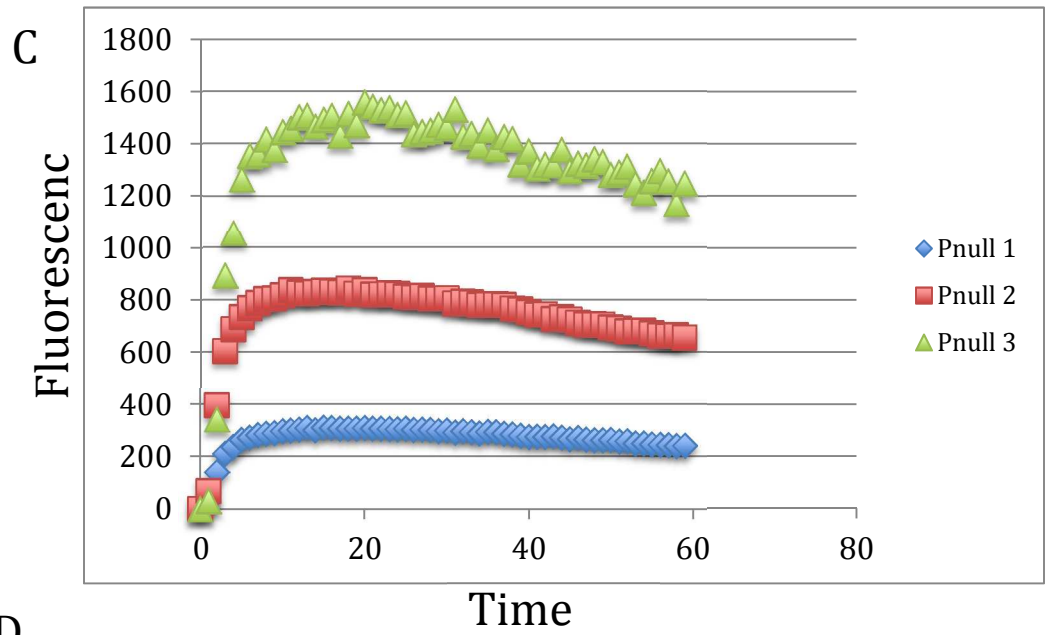
Supplemental Figure 1. Calcium imaging of Wild type melanopsin and the Phosphonull melanopsin mutant as a function of amount of protein expressed. Varied amounts of plasmid DNA was used to transfect and assay wild type moue melanopsin (A and B) and the melanopsin mouse mutant lacking all phosphorylatable amino acids in the carboxy tail (phosphonull) ((C and D). In A and C the actual measured fluorescence is plotted as a function of time in B and D the data has been normalized. The deactivation kinetics in the normalized data is identical and not a function of melanopsin expression.