**Supplementary Document 2. The DNA and protein sequences involved in the construction of fluorescent proteins for the Red Light/Green Light vectors.**

***A. Amino Acid Sequences for Tra D. melanogaster* variant A (NM\_079390.3) with NLS sequence in white font and highlighted by purple background**

MKMDADSSGTQHRDSRGSRSRSRREREYHGRSSERDSRKKEHKIPYFADEVREQDRLRRLRQRAHQSTRRTRSRSRSQSSIRESRHRRHRQRSRSRNRNRSRSSERKRRQHSRSRSSERRRRQRSPHRYNPPPKIINYYVQVPPQDFYGMSGMQQSFGYQ RLPRPPPFPPAPYRYRQRPPFIGVPRFGYRNAGRPPY

***B. EGFP-NLS from pS3aG vector***

MVSKGEELFTGVVPILVELDGDVNGHKFSVSGEGEGDATYGKLTLKFICTTGKLPVPWPTLVTTLTYGVQCFSRYPDHMKQHDFFKSAMPEGYVQERTIFFKDDGNYKTRAEVKFEGDTLVNRIELKGIDFKEDGNILGHKLEYNYNSHNVYIMADKQKNGIKVNFKIRHNIEDGSVQLADHYQQNTPIGDGPVLLPDNHYLSTQSALSKDPNEKRDHMVLLEFVTAAGITLGMDELYKSRHRRHRQRSRSRNRSRSRSSERKRRQRSRSRSSERRR-

***C. DsRed.T4-NLS from Barolo et al. 2004***

MASSEDVIKEFMRFKVRMEGSVNGHEFEIEGEGEGRPYEGTQTAKLKVTKGGPLPFAWDILSPQFQYGSKVYVKHPADIPDYKKLSFPEGFKWERVMNFEDGGVVTVTQDSSLQDGCFIYKVKFIGVNFPSDGPVMQKKTMGWEPSTERLYPRDGVLKGEIHKALKLKDGGHYLVEFKSIYMAKKPVQLPGYYYVDSKLDITSHNEDYTIVEQYERAEGRHHLFLYKSRHRRHRQRSRSRNRSRSRSSERKRRQRSRSRSSERRRYLYSGRPRL-

***D. mCherry-NLS***

MVSKGEEDNMAIIKEFMRFKVHMEGSVNGHEFEIEGEGEGRPYEGTQTAKLKVTKGGPLPFAWDILSPQFMYGSKAYVKHPADIPDYLKLSFPEGFKWERVMNFEDGGVVTVTQDSSLQDGEFIYKVKLRGTNFPSDGPVMQKKTMGWEASSERMYPEDGALKGEIKQRLKLKDGGHYDAEVKTTYKAKKPVQLPGAYNVNIKLDITSHNEDYTIVEQYERAEGRHSTGGMDELYKSGNLYKSRHRRHRQRSRSRNRSRSRSSERKRRQRSRSRSSERRR-

***E. E2-Crimson-NLS***

MDSTENVIKPFMRFKVHMEGSVNGHEFEIEGVGEGKPYEGTQTAKLQVTKGGPLPFAWDILSPQFFYGSKAYIKHPADIPDYLKQSFPEGFKWERVMNFEDGGVVTVTQDSSLQDGTLIYHVKFIGVNFPSDGPVMQKKTLGWEPSTERNYPRDGVLKGENHMALKLKGGGHYLCEFKSIYMAKKPVKLPGYHYVDYKLDITSHNEDYTVVEQYERAEARHHLFQLYKSRHRRHRQRSRSRNRSRSRSSERKRRQRSRSRSSERRR-

***F. mCerulean-NLS***

MVSKGEELFTGVVPILVELDGDVNGHKFSVSGEGEGDATYGKLTLKFICTTGKLPVPWPTLVTTLTWGVQCFARYPDHMKQHDFFKSAMPEGYVQERTIFFKDDGNYKTRAEVKFEGDTLVNRIELKGIDFKEDGNILGHKLEYNAISDNVYITADKQKNGIKANFKIRHNIEDGSVQLADHYQQNTPIGDGPVLLPDNHYLSTQSKLSKDPNEKRDHMVLLEFVTAAGITLGMDELYKSRHRRHRQRSRSRNRSRSRSSERKRRQRSRSRSSERRR-