Supplementary information:

Primer name	Sequence	Usage
SY094	ACCAGGTTCGTTCACTCATGGAAAATAGCG	Cloning of C-terminal Cre
SY095	GCGGCCGCCTAATCGCCATCTTCCAGCAGGCGCACCAT	Cloning of C-terminal Cre
SY096	GATATCGCCGCCACCATGCCCAAGAAGAAGAGGAAGGTG	Cloning of PhyB
SY097	GCATGCAACAGCTCCCAAACACTTC	Cloning of PhyB
SY118	CCGGAATTCATGCCCAAGAAGAAGAGGAAG	Subclone of PIF6CreN fragment
SY119	GCTCTCGAGTCAGTTCAGCTTGCACCAGG	Subclone of PIF6CreN fragment

Table S1. Primers

Addgene #	Name	Application
131780	pCS2+ PIF6CreN	For *in vitro* transcription of PIF6APBCreN
131781	pCS2+ PhyBΔCreC	For *in vitro* transcription of PhyBΔCreC

Table S2. Plasmids

Sequences

230 bp fragment

AGCCGGAGTCAGCCATGGGAAACTGCGGAAATGGATGCGATTCACTCGCTCCAGCT
TATTCTGAGAGACTCTTTTAAAGAATCTGGTGGTTCTGCCGGTGGCTCCGGTTCTGGC
TCCAGCGGTGGCAGCTCTGGTGCGTCCGGCACGGGTACTGCGGGTGGCACTGGCAG
CGGTTCCGGTACTGGCTCTGGCAACCGGAAATGGTTTCCCGCAGAACCTGAAGATGT
TCG

PhyBΔCreC

ATGCCCAAGAAGAAGAGGAAGGTGGTTTCCGGAGTCGGGGGTAGTGGCGGTGGCCGTGGCGGTGGCCGTG
GCGGAGAAGAAGAACCGTCGTCAAGTCACACTCCTAATAACCGAAGAGGAGGAGAACAAGCTCAATCGTC
GGGAACGAAATCTCTCAGACCAAGAAGCAACACTGAATCAATGAGCAAAGCAATTCAACAGTACACCGTC
GACGCAAGACTCCACGCCGTTTTCGAACAATCCGGCGAATCAGGGAAATCATTCGACTACTCACAATCAC
TCAAAACGACGACGTACGGTTCCTCTGTACCTGAGCAACAGATCACAGCTTATCTCTCTCGAATCCAGCG
AGGTGGTTACATTCAGCCTTTCGGATGTATGATCGCCGTCGATGAATCCAGTTTCCGGATCATCGGTTAC
AGTGAAAACGCCAGAGAAATGTTAGGGATTATGCCTCAATCTGTTCCTACTCTTGAGAAACCTGAGATTC
TAGCTATGGGAACTGATGTGAGATCTTTGTTCACTTCTTCGAGCTCGATTCTACTCGAGCGTGCTTTCGT
TGCTCGAGAGATTACCTTGTTAAATCCGGTTTGGATCCATTCCAAGAATACTGGTAAACCGTTTTACGCC
ATTCTTCATAGGATTGATGTTGGTGTTGTTATTGATTTAGAGCCAGCTAGAACTGAAGATCCTGCGCTTT
CTATTGCTGGTGCTGTTCAATCGCAGAAACTCGCGGTTCGTGCGATTTCTCAGTTACAGGCTCTTCCTGG
TGGAGATATTAAGCTTTTGTGTGACACTGTCGTGGAAAGTGTGAGGGACTTGACTGGTTATGATCGTGTT
ATGGTTTATAAGTTTCATGAAGATGAGCATGGAGAAGTTGTAGCTGAGAGTAAACGAGATGATTTAGAGC
CTTATATTGGACTGCATTATCCTGCTACTGATATTCCTCAAGCGTCAAGGTTCTTGTTTAAGCAGAACCG
TGTCCGAATGATAGTAGATTGCAATGCCACACCTGTTCTTGTGGTCCAGGACGATAGGCTAACTCAGTCT
ATGTGCTTGGTTGGTTCTACTCTTAGGGCTCCTCATGGTTGTCACTCTCAGTATATGGCTAACATGGGAT
CTATTGCGTCTTTAGCAATGGCGGTTATAATCAATGGAAATGAAGATGATGGGAGCAATGTAGCTAGTGG
AAGAAGCTCGATGAGGCTTTGGGGTTTGGTTGTTTGCCATCACACTTCTTCTCGCTGCATACCGTTTCCG
CTAAGGTATGCTTGTGAGTTTTTGATGCAGGCTTTCGGTTTACAGTTAAACATGGAATTGCAGTTAGCTT
TGCAAATGTCAGAGAAACGCGTTTTGAGAACGCAGACACTGTTATGTGATATGCTTCTGCGTGACTCGCC
TGCTGGAATTGTTACACAGAGTCCCAGTATCATGGACTTAGTGAAATGTGACGGTGCAGCATTTCTTTAC
CACGGGAAGTATTACCCGTTGGGTGTTGCTCCTAGTGAAGTTCAGATAAAAGATGTTGTGGAGTGGTTGC
TTGCGAATCATGCGGATTCAACCGGATTAAGCACTGATAGTTTAGGCGATGCGGGGTATCCCGGTGCAGC
TGCGTTAGGGGATGCTGTGTGCGGTATGGCAGTTGCATATATCACAAAAAGAGACTTTCTTTTTTGGTTT
CGATCTCACACTGCGAAAGAAATCAAATGGGGAGGCGCTAAGCATCATCCGGAGGATAAAGATGATGGGC
AACGAATGCATCCTCGTTCGTCCTTTCAGGCTTTTCTTGAAGTTGTTAAGAGCCGGAGTCAGCCATGGGA
AACTGCGGAAATGGATGCGATTCACTCGCTCCAGCTTATTCTGAGAGACTCTTTTAAAGAATCTGGTGGT
TCTGCCGGTGGCTCCGGTTCTGGCTCCAGCGGTGGCAGCTCTGGTGCGTCCGGCACGGGTACTGCGGGTG
GCACTGGCAGCGGTTCCGGTACTGGCTCTGGCAACCGGAAATGGTTTCCCGCAGAACCTGAAGATGTTCG

CGATTATCTTCTATATCTTCAGGCGCGCGGTCTGGCAGTAAAAACTATCCAGCAACATTTGGGCCAGCTA
AACATGCTTCATCGTCGGTCCGGGCTGCCACGACCAAGTGACAGCAATGCTGTTTCACTGGTTATGCGGC
GGATCCGAAAAGAAAACGTTGATGCCGGTGAACGTGCAAAACAGGCTCTAGCGTTCGAACGCACTGATTT
CGACCAGGTTCGTTCACTCATGGAAAATAGCGATCGCTGCCAGGATATACGTAATCTGGCATTTCTGGGG
ATTGCTTATAACACCCTGTTACGTATAGCCGAAATTGCCAGGATCAGGGTTAAAGATATCTCACGTACTG
ACGGTGGGAGAATGTTAATCCATATTGGCAGAACGAAAACGCTGGTTAGCACCGCAGGTGTAGAGAAGGC
ACTTAGCCTGGGGGTAACTAAACTGGTCGAGCGATGGATTTCCGTCTCTGGTGTAGCTGATGATCCGAAT
AACTACCTGTTTTGCCGGGTCAGAAAAAATGGTGTTGCCGCGCCATCTGCCACCAGCCAGCTATCAACTC
GCGCCCTGGAAGGGATTTTTGAAGCAACTCATCGATTGATTTACGGCGCTAAGGATGACTCTGGTCAGAG
ATACCTGGCCTGGTCTGGACACAGTGCCCGTGTCGGAGCCGCGCGAGATATGGCCCGCGCTGGAGTTTCA
ATACCGGAGATCATGCAAGCTGGTGGCTGGACCAATGTAAATATTGTCATGAACTATATCCGTAACCTGG
ATAGTGAAACAGGGGCAATGGTGCGCCTGCTGGAAGATGGCGATTAG

NLS

PhyBΔ (1-621 a.a.)

GSAT linker (36 a.a.)

CreC (60 – 343 a.a.)

PIF6CreN

ATGCCCAAGAAGAAGAGGAAGGTGATGTTCTTACCAACCGATTATTGTTGCAGGTTAAGCGATCAAGAGT
ATATGGAGCTTGTGTTTGAGAATGGCCAGATTCTTGCAAAGGGCCAAAGATCCAACGTTTCTCTGCATAA
TCAACGTACCAAATCGATCATGGATTTGTATGAGGCAGAGTATAACGAGGATTTCATGAAGAGTATCATC
CATGGTGGTGGTGGTGCCATCACAAATCTCGGGGACACGCAGGTTGTTCCACAAAGTCATGTTGCTGCTG
CCCATGAAACAAACATGTTGGAAAGCAATAAACATGTTGACGGTGGTTCTGCCGGTGGCTCCGGTTCTGG
CTCCAGCGGTGGCAGCTCTGGTGCGTCCGGCACGGGTACTGCGGGTGGCACTGGCAGCGGTTCCGGTACT
GGCTCTGGCCTGACTGTGCACCAAAACCTGCCTGCCCTCCCTGTGGATGCCACCTCTGATGAAGTCAGGA
AGAACCTGATGGACATGTTCAGGGACAGGCAGGCCTTCTCTGAACACACCTGGAAGATGCTCCTGTCTGT
GTGCAGATCCTGGGCTGCCTGGTGCAAGCTGAACTGA

NLS

PIF6APB (1 – 100 a.a.)

GSAT linker (36 a.a.)

CreN (19 – 59 a.a.)

PhyBΔCreC-P2A-PIF6CreN

ATGCCCAAGAAGAAGAGGAAGGTGGTTTCCGGAGTCGGGGGTAGTGGCGGTGGCCGTGGCGGTGGCCGTG
GCGGAGAAGAAGAACCGTCGTCAAGTCACACTCCTAATAACCGAAGAGGAGGAGAACAAGCTCAATCGTC
GGGAACGAAATCTCTCAGACCAAGAAGCAACACTGAATCAATGAGCAAAGCAATTCAACAGTACACCGTC
GACGCAAGACTCCACGCCGTTTTCGAACAATCCGGCGAATCAGGGAAATCATTCGACTACTCACAATCAC
TCAAAACGACGACGTACGGTTCCTCTGTACCTGAGCAACAGATCACAGCTTATCTCTCTCGAATCCAGCG
AGGTGGTTACATTCAGCCTTTCGGATGTATGATCGCCGTCGATGAATCCAGTTTCCGGATCATCGGTTAC
AGTGAAAACGCCAGAGAAATGTTAGGGATTATGCCTCAATCTGTTCCTACTCTTGAGAAACCTGAGATTC
TAGCTATGGGAACTGATGTGAGATCTTTGTTCACTTCTTCGAGCTCGATTCTACTCGAGCGTGCTTTCGT
TGCTCGAGAGATTACCTTGTTAAATCCGGTTTGGATCCATTCCAAGAATACTGGTAAACCGTTTTACGCC
ATTCTTCATAGGATTGATGTTGGTGTTGTTATTGATTTAGAGCCAGCTAGAACTGAAGATCCTGCGCTTT
CTATTGCTGGTGCTGTTCAATCGCAGAAACTCGCGGTTCGTGCGATTTCTCAGTTACAGGCTCTTCCTGG
TGGAGATATTAAGCTTTTGTGTGACACTGTCGTGGAAAGTGTGAGGGACTTGACTGGTTATGATCGTGTT
ATGGTTTATAAGTTTCATGAAGATGAGCATGGAGAAGTTGTAGCTGAGAGTAAACGAGATGATTTAGAGC
CTTATATTGGACTGCATTATCCTGCTACTGATATTCCTCAAGCGTCAAGGTTCTTGTTTAAGCAGAACCG
TGTCCGAATGATAGTAGATTGCAATGCCACACCTGTTCTTGTGGTCCAGGACGATAGGCTAACTCAGTCT
ATGTGCTTGGTTGGTTCTACTCTTAGGGCTCCTCATGGTTGTCACTCTCAGTATATGGCTAACATGGGAT
CTATTGCGTCTTTAGCAATGGCGGTTATAATCAATGGAAATGAAGATGATGGGAGCAATGTAGCTAGTGG
AAGAAGCTCGATGAGGCTTTGGGGTTTGGTTGTTTGCCATCACACTTCTTCTCGCTGCATACCGTTTCCG
CTAAGGTATGCTTGTGAGTTTTTGATGCAGGCTTTCGGTTTACAGTTAAACATGGAATTGCAGTTAGCTT
TGCAAATGTCAGAGAAACGCGTTTTGAGAACGCAGACACTGTTATGTGATATGCTTCTGCGTGACTCGCC
TGCTGGAATTGTTACACAGAGTCCCAGTATCATGGACTTAGTGAAATGTGACGGTGCAGCATTTCTTTAC
CACGGGAAGTATTACCCGTTGGGTGTTGCTCCTAGTGAAGTTCAGATAAAAGATGTTGTGGAGTGGTTGC
TTGCGAATCATGCGGATTCAACCGGATTAAGCACTGATAGTTTAGGCGATGCGGGGTATCCCGGTGCAGC
TGCGTTAGGGGATGCTGTGTGCGGTATGGCAGTTGCATATATCACAAAAAGAGACTTTCTTTTTTGGTTT
CGATCTCACACTGCGAAAGAAATCAAATGGGGAGGCGCTAAGCATCATCCGGAGGATAAAGATGATGGGC
AACGAATGCATCCTCGTTCGTCCTTTCAGGCTTTTCTTGAAGTTGTTAAGAGCCGGAGTCAGCCATGGGA
AACTGCGGAAATGGATGCGATTCACTCGCTCCAGCTTATTCTGAGAGACTCTTTTAAAGAATCTGGTGGT
TCTGCCGGTGGCTCCGGTTCTGGCTCCAGCGGTGGCAGCTCTGGTGCGTCCGGCACGGGTACTGCGGGTG
GCACTGGCAGCGGTTCCGGTACTGGCTCTGGCAACCGGAAATGGTTTCCCGCAGAACCTGAAGATGTTCG
CGATTATCTTCTATATCTTCAGGCGCGCGGTCTGGCAGTAAAAACTATCCAGCAACATTTGGGCCAGCTA
AACATGCTTCATCGTCGGTCCGGGCTGCCACGACCAAGTGACAGCAATGCTGTTTCACTGGTTATGCGGC
GGATCCGAAAAGAAAACGTTGATGCCGGTGAACGTGCAAAACAGGCTCTAGCGTTCGAACGCACTGATTT
CGACCAGGTTCGTTCACTCATGGAAAATAGCGATCGCTGCCAGGATATACGTAATCTGGCATTTCTGGGG
ATTGCTTATAACACCCTGTTACGTATAGCCGAAATTGCCAGGATCAGGGTTAAAGATATCTCACGTACTG
ACGGTGGGAGAATGTTAATCCATATTGGCAGAACGAAAACGCTGGTTAGCACCGCAGGTGTAGAGAAGGC

ACTTAGCCTGGGGGTAACTAAACTGGTCGAGCGATGGATTTCCGTCTCTGGTGTAGCTGATGATCCGAAT
AACTACCTGTTTTGCCGGGTCAGAAAAAATGGTGTTGCCGCGCCATCTGCCACCAGCCAGCTATCAACTC
GCGCCCTGGAAGGGATTTTTGAAGCAACTCATCGATTGATTTACGGCGCTAAGGATGACTCTGGTCAGAG
ATACCTGGCCTGGTCTGGACACAGTGCCCGTGTCGGAGCCGCGCGAGATATGGCCCGCGCTGGAGTTTCA
ATACCGGAGATCATGCAAGCTGGTGGCTGGACCAATGTAAATATTGTCATGAACTATATCCGTAACCTGG
ATAGTGAAACAGGGGCAATGGTGCGCCTGCTGGAAGATGGCGATGGAAGCGGAGCTACTAACTTCAGCCT
GCTGAAGCAGGCTGGAGACGTGGAGGAGAACCCTGGACCTATGCCCAAGAAGAAGAGGAAGGTGATGTTC
TTACCAACCGATTATTGTTGCAGGTTAAGCGATCAAGAGTATATGGAGCTTGTGTTTGAGAATGGCCAGA
TTCTTGCAAAGGGCCAAAGATCCAACGTTTCTCTGCATAATCAACGTACCAAATCGATCATGGATTTGTA
TGAGGCAGAGTATAACGAGGATTTCATGAAGAGTATCATCCATGGTGGTGGTGGTGCCATCACAAATCTC
GGGGACACGCAGGTTGTTCCACAAAGTCATGTTGCTGCTGCCCATGAAACAAACATGTTGGAAAGCAATA
AACATGTTGACGGTGGTTCTGCCGGTGGCTCCGGTTCTGGCTCCAGCGGTGGCAGCTCTGGTGCGTCCGG
CACGGGTACTGCGGGTGGCACTGGCAGCGGTTCCGGTACTGGCTCTGGCCTGACTGTGCACCAAAACCTG
CCTGCCCTCCCTGTGGATGCCACCTCTGATGAAGTCAGGAAGAACCTGATGGACATGTTCAGGGACAGGC
AGGCCTTCTCTGAACACACCTGGAAGATGCTCCTGTCTGTGTGCAGATCCTGGGCTGCCTGGTGCAAGCT
GAACTGA

PhyBΔCreC (60-343 a.a.)

GSG-P2A (Kim et al., 2011)

PIF6APBCreN