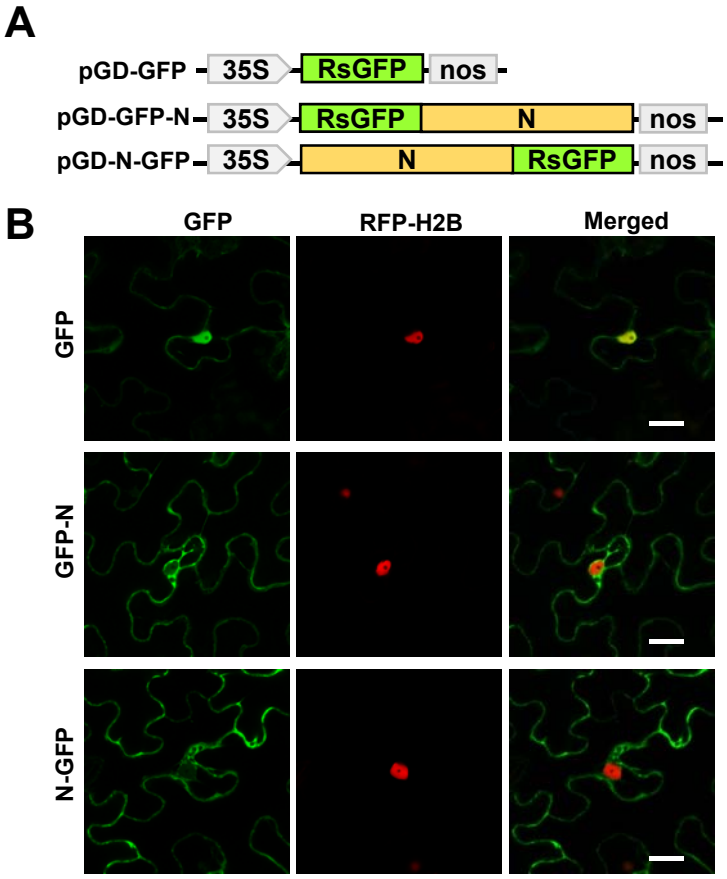
Table S1 Primers used in this study

Primer	Primer sequence	Purpose
BYS2-PGD F	CAGATCTCGA GCTCAAATGA GCTCATCCAA TGCTGC	PGDG-P
BYS2-PGD R	GTCGACTGCAGAATTCGATTAGAGATCTCCATAAGGATC	
BYS PGDG SalI F	AAGCTTCGAATTCTGCAGTCGACATGAGCTCATCCAATGCTGCAGT	PGDG-P1-55
BYS P165 PGDG SalI R	GGGCCCGCGGTACCGTCGACTTACTTTTCTTCTTCTTCCTGTTCTTCTAC	
BYS P43 PGDG SalI F	AAGCTTCGAATTCTGCAGTCGACGCGGAGAATGATGTAGAAGAACAGGAA	PGDG-P43-295
BYS PGDG SalI R	GGCCCGCGGTACCGTCGACTTAGAGATCTCCATAAGGATCATGACGGGA	
BYS P56 PGDG SalI F	AAGCTTCGAATTCTGCAGTCGACATGGTACCTACCATCAAGGGGGAGAG	PGDG-P56-295
BYS PGDG SalI R	GGCCCGCGGTACCGTCGACTTAGAGATCTCCATAAGGATCATGACGGGA	
BYS PGDG SalI F	AAGCTTCGAATTCTGCAGTCGACATGAGCTCATCCAATGCTGCAGT	PGDG-P1-207
BYS P207 PGDG SalI R	GGCCCGCGGTACCGTCGACATTTGTATTCTTCTCTTCTCCCTGGGCC	
BYS P208 PGDG SalI F	AGCTTCGAATTCTGCAGTCGACTCAGAGGATTATAATTATGACAAATTTCTATCTATGA	PGDG-P208-295
BYS PGDG SalI R	GGCCCGCGGTACCGTCGACTTAGAGATCTCCATAAGGATCATGACGGGA	
BYS L SPE I F	CCGGGGTCGACATTTAAATACTAGTATGGATCTTCTCGAAGATGATGT	pSuper-L-mCherry
BYS L SPE I R	CATGGTACCGGATCCACTAGTATAGGGAGTTGTAAATGATGCCC	
BYS P2 PGD salI F	TCAAGCTTCGAATTCTGCAGTCGACATGGTACCTACCATCAAGGG	PGD-P56-295
BYS P PGD SalI R	CGGGCCCGCGGTACCGTCGACTTAGAGATCTCCATAAGGAT	
ABD2 PGDR F	AGCTTCGAATTCTGCAGTCGACGAGATCGTTGAAGGATCTT	PGD-ECFP-ABD2
ABD2 PGDR R	GGCCCGCGGTACCGTCGACCTATTCGATGGATGCTTCC	
ECFP PGDBm SalI F	CTTCGAATTCTGCAGTCGACATGGTGAGCAAGGGCGA	PGD-ECFP-ABD2-EGFP
ABD2-ECFP-MYC Sal I R	GGGCCCGCGGTACCGTCGACTTCGATGGATGCTTCCTCTGAG	
NCMV N PGDG SalI F	CTTCGAATTCTGCAGTCGACATGGCAAATGAGCACAAGA	PGDG-NCMV-N
NCMV N PGDG SalI R	GGGCCCGCGGTACCGTCGACTTACATTCCGAACACTTCAT	
P(GIQVE121AAAAA) F	GTTGAACTTTTCCTCCTTGCAGCTGCAGCGGCGAGAAATACTTCAGTAGACAA	PGDG-PLC8M
P(GIQVE122AAAAA) R	TTGTCTACTGAAGTATTTCTCGCCGCTGCAGCTGcAAGGAGGAAAAGTTCAAC	
BYS P56 PGDG SalI F	AAGCTTCGAATTCTGCAGTCGACATGGTACCTACCATCAAGGGGGAGAG	PGDG-P2LC8M
BYS PGDG SalI R	GGCCCGCGGTACCGTCGACTTAGAGATCTCCATAAGGATCATGACGGGA	
BYS1-PGD F	CAGATCTCGA GCTCAAATGG CAAAAGAAGA TCATGG	PGD-N
BYS1-PGD R	GTCGACTGCAGAATTCGATTAGGAGAAGATCTGGTCAG	
BYS2-PGD F	CAGATCTCGA GCTCAAATGA GCTCATCCAA TGCTGC	PGD-P
BYS2-PGD R	GTCGACTGCAGAATTCGATTAGAGATCTCCATAAGGATC	
BYSMV L F	TTCCTCAGATCTCGAGCTCAATGGATCTTCTCGAAGATGATGTC	PGD-L
BYSMV L R	GGTACCGTCGACTGCAGAATTCGACGATAGGGAGTTGTAAATGATGC	
BYS1-F(Xho1)	CCGCTCGAGCTATGGCAAAAGAAGATCATGGA	PGDG-N
BYS1-R(Sal1)	ACGCGTCGACGGAGAAGATCTGGTCAGCATT	
BYS2-F(Xho1)	CCGCTCGAGCTATGAGCTCATCCAATGCTGCA	PGDG-P
BYS2-R(BamH1)	CGGGATCCGAGATCTCCATAGGGATCATG	
BYS1-F(Xho1)	CCGCTCGAGCTATGGCAAAAGAAGATCATGGA	PGDGm-N
BYS1-R(Sal1)	ACGCGTCGACGGAGAAGATCTGGTCAGCATT	
BYS2-F(Xho1)	CCGCTCGAGCTATGAGCTCATCCAATGCTGCA	PGDGm-P
BYS2-R(Sal11)	ACGCGTCGACGAGATCTCCATAGGGATCAT G	
BYS1-PGD F	CAGATCTCGA GCTCAAATGG CAAAAGAAGA TCATGG	PGD-ECFP-N

BYS1-PGD R	GTCGACTGCAGAATTCGATTAGGAGAAGATCTGGTCAG	
BYS PGDG SalI F	AAGCTTCGAATTCTGCAGTCGACATGAGCTCATCCAATGCTGCAGT	PGDR-P
BYS PGDG SalI R	GGCCCGCGGTACCGTCGACTTAGAGATCTCCATAAGGATCATGACGGGA	
BYS2-PGD F	CAGATCTCGA GCTCAAATGA GCTCATCCAA TGCTGC	PGD-ECFP-P
BYS2-PGD R	GTCGACTGCAGAATTCGATTAGAGATCTCCATAAGGATC	
MR-PUM-F	TTGATAGTTTTTTGAATAGATGTCATCTTTCTGGAAACGTCAAA	MR(+) PUM
MR-PUM-R	GGTAAAGGAGAAGAACTTTTC	
BYS25U-R	ATTGACCAAGATTTGAAATTCGAAC	MR(+) ECFP
MR1-F	CCATAGTATAAATAATAAAAACCAT	
miniECFP-F	GTGAGCAAGGGCGAGGAGCTG	
miniECFP-R	TTATTTATACTATGGTTACTTGTACAGCTCGTCCATGCC	
p19-F	CCTTATCTGGGAACTACTCACACAT	pGD-VSRs
p19-R	GCGCGCTATATTTTGTTTTCT	
Hcpro-F	AAACAAAATATAGCGCGCCTCACACATTATTATGGAGAA	
Hcpro-R	CGCGCGATAATTTATCCTAGTTT	
γb-F	TAGGATAAATTATCGCGCGCGAATTCGAGCTCCACCGCG	
γb-R	GTTTAATTCCCGATCTAGTAACATAGATGACAC	
V-F	TACTAGATCGGGAATTAAACTATCAGTG	
V-R	AGTTCCCAGATAAGGGAATTAGGGTTC	
NCMV N F（**Hind3**）	CCCAAGCTTCGATGGCAAATGAGCACAAGAG	PGDG-NCMV-N/
NCMV N R（**Sal1**）	ACGCGTCGACCATTCCGAACACTTCATCCGC	PGDGm-NCMV-N
NCMV P F（**Hind3**）	CCCAAGCTTCGATGGATAAGAAAGCAAGTGG	PGDG-NCMV-P/
NCMV P R（**Sal1**）	ACGCGTCGACAAAGTCGGCATACGGGTCCTTC	PGDGm-NCMV-P
QC BYS P56G-A F	AAGAAGAAGAAAAGATAGTACCTACCATCAAGGGGG	PGD-PM56I
QC BYS P56G-A R	TTGATGGTAGGTACTATCTTTTCTTCTTCTTCCTGC	

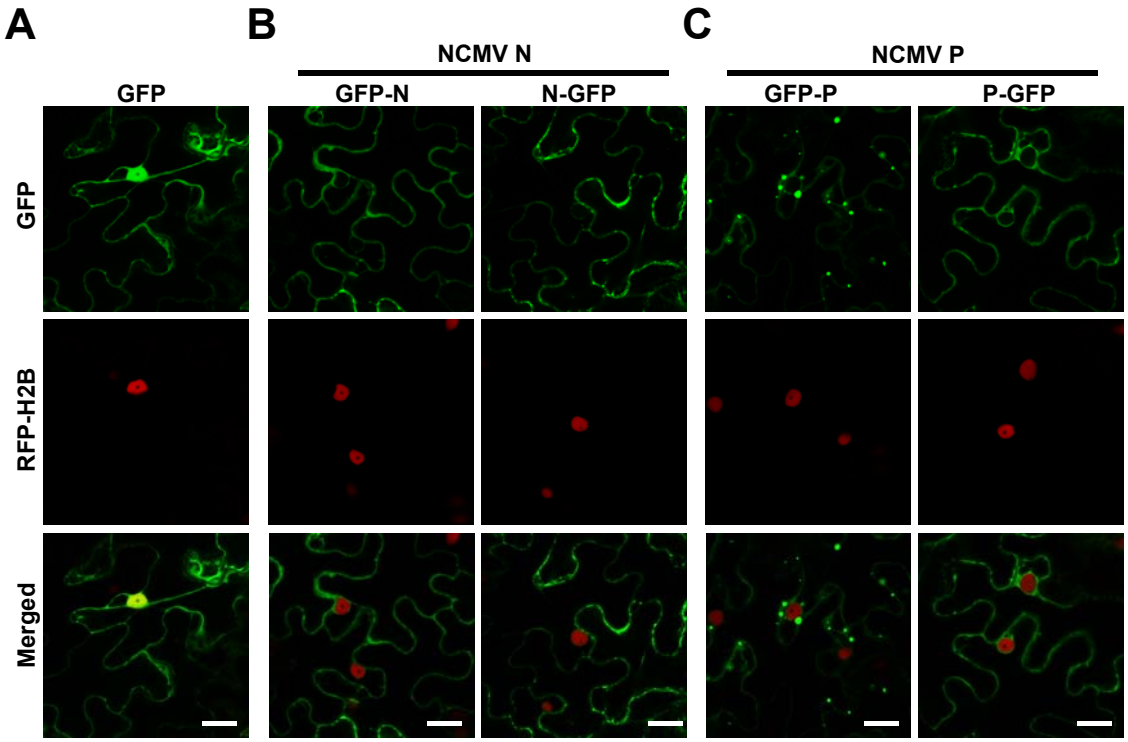
Note: F, forward; R, reverse

Supplementary Figure 1



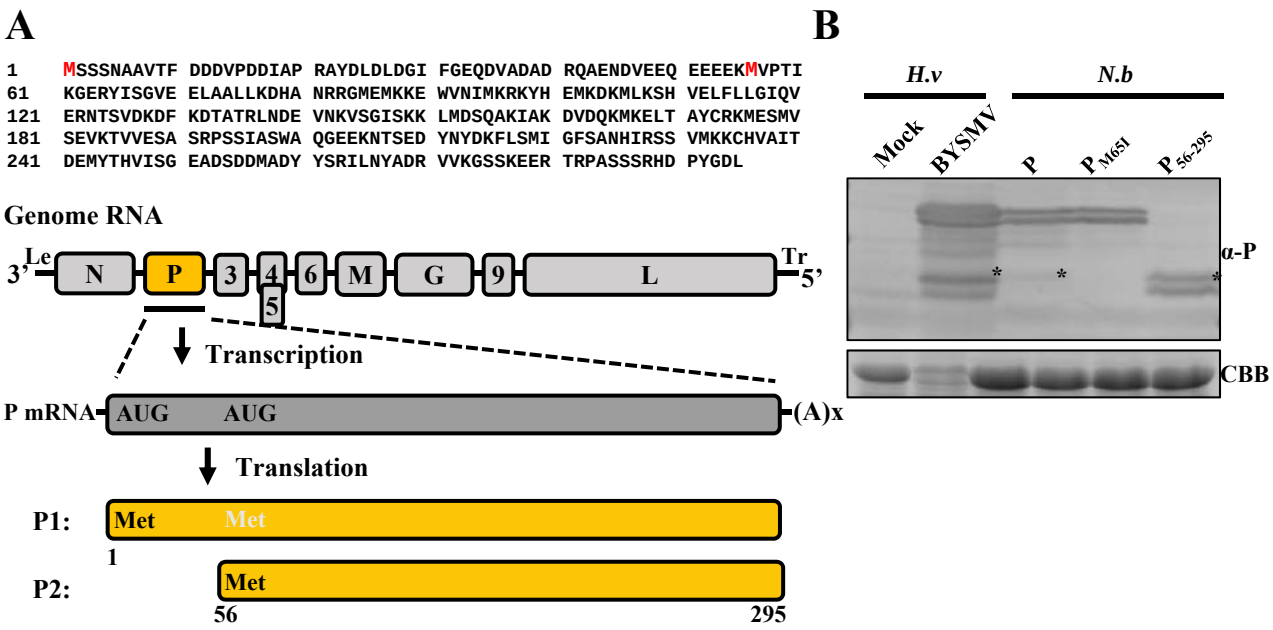
Supplementary Figure 1. Confocal micrographs showing the subcellular localization of the BYSMV N protein. (A) Schematic diagram of pGD vectors for expression of free GFP, GFP-N or N-GFP. (B) Subcellular distribution of free GFP, GFP-N, and N-GFP in the epidermal cells of agroinfiltrated leaves of transgenic *N. benthamiana* with histone 2B (RFP-H2B) at 2 dpi. Bar = 20 μm.

Supplementary Figure 2



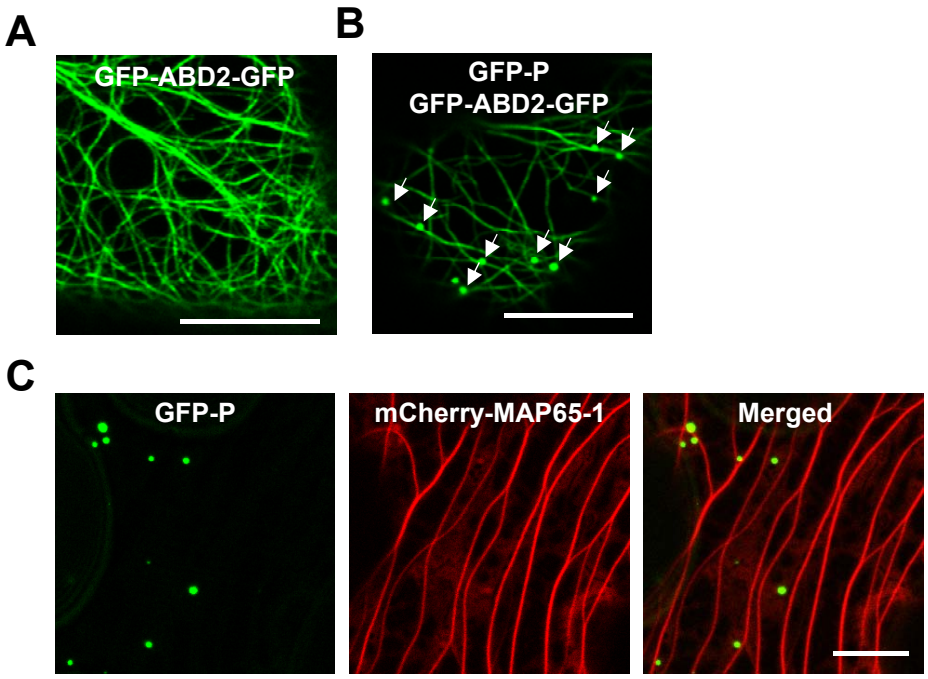
Supplementary Figure 2. Subcellular localization of the NCMV N and P proteins in the epidermal cells of agroinfiltrated *N. benthamiana* leaves. Fluorescence images of the infiltrated leaves expressing free GFP, GFP-N, N-GFP, GFP-P, and P-GFP were observed under confocal laser scanning microscopy at 2 dpi. Bars = 20 μm.

Supplementary Figure 3



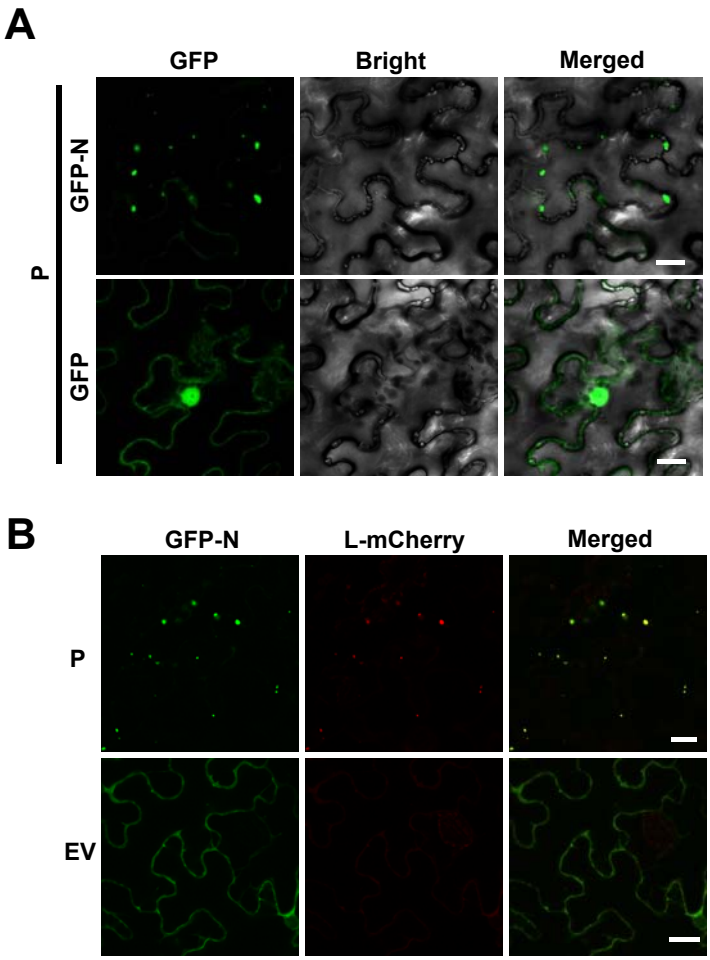
Supplementary Figure 3. Detection of BYSMV P_{56-295} in *Hordeum vulgare* (H.v) infected with BYSMV or agroinfiltrated *N. benthamiana*. (A) Diagram of the expression patterns of BYSMV P protein isoforms by ribosomal leaky scanning. (B) Immunoblot analysis using P specific antibodies showed P56-295 were expressed in *Hordeum vulgare* (H.v) infected with BYSMV or agroinfiltrated *N. benthamiana*.

Supplementary Figure 4



Supplementary Figure 4. Subcellular localization of the GFP-P inclusion bodies with actin filaments and microtubule in the epidermal cells of agroinfiltrated *N. benthamiana* leaves. (A) Actin filaments labeled by GFP-ABD2-GFP. (B) Co-expression of BYSMV GFP-P with GFP-ABD2-GFP. Arrows denote sites of GFP-P inclusion bodies. (C) Co-expression of GFP-P with mCherry-MAP65-1-labeled microtubule. Bars = 20 μm.

Supplementary Figure 5



Supplementary Figure 5. GFP-N and L-mCherry could form inclusion bodies with BYSMV P protein. (A) GFP-N or GFP were co-expressed with BYSMV P via agroinfiltration in *N.benthamiana* plants, and fluorescence images were observed at 2 dpi. Bar = 20 μm. (B) GFP-N and L-mCherry were co-expressed with BYSMV P or empty vector via agroinfiltration. Fluorescence images were taken at 2 dpi. Bar = 20 μm.