

Supporting Information for

LPS-aggregating proteins GBP1 and GBP2 are each sufficient to enhance caspase-4 activation both *in cellulo* and *in vitro*

Mary S. Dickinson,^{#,1} Miriam Kutsch,^{#,1} Linda Sistemich,² Dulcemaria Hernandez,¹ Anthony S. Piro,¹ David Needham,³ Cammie F. Lesser,^{4,5} Christian Herrmann,² Jörn Coers^{*,1,6}

[#]authors contributed equally

¹Department of Molecular Genetics and Microbiology, Duke University Medical Center, Durham, NC, USA

²Department of Physical Chemistry I, Ruhr-University Bochum, Bochum, Germany

³Department of Mechanical Engineering and Material Science, Duke University, Durham, North Carolina, 27708, USA

⁴Center for Bacterial Pathogenesis, Division of Infectious Diseases, Massachusetts General Hospital, Boston, Massachusetts, USA

⁵Department of Microbiology, Blavatnik Institute, Harvard Medical School, Boston, Massachusetts, USA

⁶Department of Immunology, Duke University Medical Center, Durham, NC, USA

* corresponding author: Jörn Coers

Email: jorn.coers@duke.edu

This PDF file includes:

- Detailed materials and methods
- Figures S1 to S10
- Legends for Movies S1 to S3
- Plasmid sequences
- SI References

Other supporting materials for this manuscript include the following:

- Movies S1 to S3

Detailed materials and methods

Cell lines and cell culture

HeLa and A549 cells (ATCC) were grown in DMEM (Gibco 11995-065) supplemented with 9% heat inactivated FBS (Omega Scientific) and non-essential amino acids (Gibco 11140-050). Cells were grown at 37°C in 5% CO₂. Cell lines were routinely tested for mycoplasma contamination. Cell lines were authenticated using GenePrint 10 (Promega) performed by the Duke University DNA Analysis Facility.

Knockout cells

For A549 GBP1^{KO}, GBP2^{KO} and GBP4^{KO} cells, single guide RNAs (sgRNAs) sequences to human GBPs were selected using the optimized CRISPR design site crispr.mit.edu. The GBP1 sgRNA sequence was CATTACACAGCCTATGGTGG and the GBP2 sgRNA sequence was CTAGTTCTGCTCGACTGA. For GBP4 the sgRNA sequences were ATTGTAGGGCTATACCGCACAGG and TATCTCATGAATCGTCTTGCAGG. sgRNAs were cloned into PX459 containing Puromycin resistance ((1); pSpCas9(BB)-2APuro (PX459) was a gift from Feng Zhang (Addgene plasmid #48139) or PX458 containing an eGFP cassette ((1); pSpCas9(BB)-2A-GFP (PX458) was a gift from Feng Zhang (Addgene plasmid #48138) following the Zhang lab, Addgene CRISPR Genome Engineering Toolbox (www.addgene.org/crispr/zhang/). A549 cells were transfected with PX459 or PX458 plasmids containing guide RNAs using FuGENE HD transfection reagent (Promega E2311) following manufacturers guidelines. 48 hours post transfection, PX459 transfected cells were put under Puromycin (Generon 1860-25) selection at 1-2 µg/ml for 48 hours and PX458 transfected cells were sorted one cell per well into a 48 well plate using a FACS Aria Fusion Cell Sorter.

A549 GBP3^{KO}, GBP5^{KO}, and HeLa GBP2^{KO}, GBP3^{KO}, GBP4^{KO}, and GBP5^{KO} cells were generated by the Duke Functional Genomics core as previously described (2). sgRNAs were designed using CHOPCHOP (3) and Cas-OFFinder (4), then cloned into PX459 V2 (Addgene #62988; (1)). For A549 GBP3^{KO} cells the sgRNA sequences were TCGATCTGCCCATTCACCGC and AGAACTCCGGATACAGAGT. For A549 GBP4^{KO} cells the sgRNA sequences were ATTGTAGGGCTATACCGCACAGG and TATCTCATGAATCGTCTTGCAGG. For A549 GBP5^{KO} cells the sgRNA sequences were GCTCATTAAGTTCTCGATG and GCAAAGTAACATCCTAGACA. For HeLa GBP2^{KO} cells the sgRNA sequences were AGAGCTGACAGATCGAATCA and TCGTCTACAGAATTGTTACC. For HeLa GBP3^{KO} cells the sgRNA sequence was CCTCATTGAGAACACTAATG. For HeLa GBP4^{KO} cells the sgRNA sequences were CGTCTTGCAGGAAAGCGCAA and ATTGTAGGGCTATACCGCAC. For HeLa GBP5^{KO} cells the sgRNA sequences were GCTCATTAAGTTCTCGATG and GCAAAGTAACATCCTAGACA. A549 cells were transfected with sgRNAs using Lipofectamine 3000 (ThermoFisher Scientific) according to manufacturer's instructions. 24 hours after transfection, cells were selected with 2 mg/mL puromycin (Sigma) for three days. Cells were diluted to isolate single cells, which were expanded to generate clonal cell lines. Knockouts were validated by western blot or sanger sequencing.

To generate CRISPR Cas-9 mediated knockout of *GBP1* in HeLa cells, we chose an sgRNA sequence targeting exon 2 that would minimize off-target editing of the closely related *GBP3* gene, CATTACACAGCCTATGGTGG. The sgRNA was ordered as modified synthetic sgRNA from Synthego and delivered to HeLa cells by electroporating 200,000 cells with 4 µg TrueCut Cas9 protein (ThermoFisher Scientific) complexed with 180 pmol *GBP1* sgRNA using a Neon system (ThermoFisher Scientific) with the following settings: 1005 V, 35 ms, 2 pulses. Following electroporation, cells were recovered in 6 well dishes for three days before harvesting to check KO efficiency. Cells were diluted to isolate single cells, then expanded to generate a clonal knockout line.

Bacterial strains

Shigella flexneri strain 2457T was used. *S. flexneri* Δ ipaH9.8, *S. flexneri* Δ ospC3, and *S. flexneri* Δ ipaH9.8 Δ ospC3 knockouts were made as previously described (5-7). *S. flexneri* was cultured on tryptic soy broth (TSB, Millipore Sigma) agar plates containing 0.01% Congo Red (Millipore Sigma), then grown in liquid culture in TSB. *Salmonella enterica* Typhimurium strain 14028s was used throughout. *S. Typhimurium* was cultured on lysogeny broth (LB), Miller formulation agar plates, or in liquid LB.

Infections

For *S. flexneri* infections, *S. flexneri* was streaked on an agar plate, then single colonies were picked and grown overnight at 37°C shaking, in 3 ml TSB. The next day 250 μ l overnight culture was diluted into 5 ml TSB and grown for approximately 1 hour 45 minutes, until OD600 was between 0.7 and 1. 1 ml bacterial culture was pelleted and resuspended in 1 ml infection media (phenol red free DMEM (Gibco 31053-028), supplemented with 5% FBS and non-essential amino acids). Bacteria was further diluted in infection media to have enough bacteria for a multiplicity of infection (MOI) of 5 in 100 μ l per well of 96 well plate, or 1 ml per well of 24 well plate. Media was aspirated from cells and diluted *S. flexneri* was added to each well. Plate was centrifuged for 10 min, 800 \times g, at room temperature. The end of the centrifugation was considered the start of infection, and plates were then put in 37°C incubator with 5% CO₂. After 30 minutes, cells in 96 well plate were washed once with 200 μ l warm HBSS. For microscopy, cells in 24 well plate were washed twice with 1ml warm HBSS. After washing, infection medium containing 50 μ g/ml gentamicin was added to wells to kill extracellular bacteria. For *S. Typhimurium* infections, single colonies were grown overnight at 37°C shaking, in 1.5 ml LB. Next day 45 μ l overnight culture was diluted into 1.5 ml LB and grown for 2 hours 40 minutes. Bacterial culture was pelleted and resuspended in infection media (described above for *S. flexneri* infections). Bacteria was further diluted in infection media to have enough bacteria for a multiplicity of infection (MOI) of 200 in 100 μ l per well of 96 well plate. Media was aspirated from cells and diluted *S. Typhimurium* was added to each well. Plate was centrifuged for 10 min, 800 \times g, at room temperature. The end of the centrifugation was considered the start of infection, and plates were then put in 37°C incubator with 5% CO₂. After 30 minutes, cells in 96 well plate were washed once with 200 μ l warm HBSS. After washing, infection medium containing 50 μ g/ml gentamicin was added to wells to kill extracellular bacteria.

Cell death assays, bacterial luminescence and IL-18 ELISA

Cells were plated in 96 well plate with white sides (Corning 3610). *S. flexneri* or *S. Typhimurium* infections were performed as described above, sytox green (Invitrogen) was added at the same time as gentamicin at a final concentration of 1.5-3 nM in 200 μ l per well of 96 well plate. For lysed control wells, 1% triton X-100 was added to media containing sytox green and gentamicin. Sytox green fluorescence and bacterial luminescence (*S. flexneri* only) was measured every 30 minutes starting at 1 hpi. Fluorescence and luminescence were measured using Enspire 2300 multilabel plate reader (Perkin Elmer). At 3 hpi, 100 μ l supernatant was removed from each well, 30 μ l was used for LDH assay and the rest was frozen at -80°C until running IL-18 ELISA.

LDH was measured by CytoTox-ONE homogenous membrane integrity assay (Promega). Briefly, 30 μ l supernatant was mixed with 30 μ l CytoTox-ONE reagent, incubated for 7 minutes at room temperature, then measured on Enspire 2300 plate reader. IL-18 was measured using IL-18 ELISA matched antibody pair (Thermo Fisher BMS267-2MST) following manufacturer's instructions.

Western blot

Cells were plated in a 12 well plate and primed with IFN γ overnight (if applicable). Next day, cells were washed twice with cold PBS, then lysed in 90 μ l RIPA buffer (Millipore Sigma) containing protease inhibitors (Millipore Sigma P8340) on ice for 30 minutes. Lysates were clarified through centrifugation at 20,000 \times g for 10 minutes at 4°C. Clarified lysate was mixed with Laemmli sample buffer (BioRad) containing beta-mercaptoethanol and boiled for 5 minutes. Samples were run on 4-20% mini-PROTEAN TGX Stain-free gel (BioRad) with all blue protein standards (BioRad) as a ladder. Running buffer contained 25 mM Tris base, 190 mM glycine, 0.1% SDS. Gel was transferred to PVDF using BioRad Trans-blot turbo. Following transfer, membrane was dried then incubated with primary antibody in Tris-buffered saline containing 0.1% tween 20 (TBST) and 5% non-fat milk. Blots were incubated in primary antibody either 1 hour at room temperature, or overnight at 4°C. Following primary antibody, blots were washed three times in TBST, then incubated with secondary antibody in 5% milk in TBST for 45-60 minutes. Blots were then washed five times in TBST then incubated with Clarity ECL substrate (BioRad) or SuperSignal West Femto ECL substrate (Thermo Fisher). Blots were imaged using an Azure 500 imaging system. Primary antibodies were used at the following concentrations: GBP1 (Abcam ab131255, 1:5000), GBP2 (Santa Cruz sc271568, 1:200), GBP4 (Proteintech 17746-1-AP, 1:10,000), GBP5 (Cell Signaling 67798, 1:5,000), GAPDH (Abcam ab9485, 1:10,000), mCherry (Abcam ab183628, 1:10,000), CASP4 (MBL M029-3, 1:1000), GSDMD (Sigma G7422, 1:1000). Secondary antibodies: goat anti-rabbit HRP (BioRad 1706515 or Invitrogen 65-6120, 1:5,000), anti-mouse HRP (Santa Cruz sc-525409, 1:5,000).

Immunofluorescence microscopy

Cells were plated on glass coverslips in 24 well plates and primed overnight with IFN γ . The next day cells were infected with *Shigella* at an MOI of 5. At the indicated time points after infection, media was aspirated from wells and cells were fixed in 4% paraformaldehyde in PBS for 15 minutes at room temperature. Cells were washed three times with PBS, then permeabilized with 0.1% triton X-100 in PBS for 15 minutes. Cells were blocked for 30 minutes in PBS containing 5% BSA and 2.2% glycine. Anti-GBP1 (Abcam ab131255, 1:150 dilution) was added in blocking buffer for 1 hour at room temperature. Cells were washed three times with PBS containing 0.05% triton X-100, then incubated with donkey anti-rabbit IgG Alexa Fluor 568 (Thermo Fisher A10042, 1:1000 dilution) and Hoechst 33258 (1 μ g/mL) for 45 minutes in blocking buffer. Cells were then washed three times with PBS containing 0.05% triton X-100 and mounted on glass slides. For experiments without any antibody staining, following fixation, cells were washed three times in PBS then incubated with 1 μ g/mL Hoechst for 20 minutes in PBS, washed twice with PBS and mounted on glass slides. Coverslips were mounted with mounting media containing 9 parts Mowiol solution (100 mM Tris-HCl, pH 8.5, 25% glycerol, 125 μ g/mL Mowiol 4-88) and 1 part PPD solution (0.1 mg/mL 1,4-Phenylenediamine dihydrochloride in water). Mounting media was allowed to harden overnight at room temperature. Images were acquired using a Zeiss Axio Observer Z1 microscope using Zeiss Plan-Apochromat 63 \times /1.4 oil objective, or a DeltaVision Elite Deconvolution microscope with UPLSAPO 100 \times /1.40 oil objective. Images were processed with DeltaVision software for deconvolution, or with Fiji.

Time-lapse microscopy of infected cells

700,000 A459 GBP1-KO pInducer-mCherry, -GBP1, or GBP1^{3R} cells were plated on glass bottom 10 mm microwell dishes and treated with 2 μ g/ml aTc and 100 U/ml IFN γ for 20-22 h to stimulate mCherry fusion protein expression. Cells were infected with GFP-expressing *S. flexneri* Δ ipaH9.8 Δ ospC3 as described above with the following alterations. After incubating cells at 37 °C and 5% CO₂ following centrifugation for 10 min at 700 \times g at room temperature, cells were washed three times with 2 ml HBSS. After washing,

2 ml infection media supplemented with 150 nM sytox blue (Invitrogen) was added to each dish to stain cells undergoing pyroptosis. Time-lapse images of infected cells were acquired every 3 min with a Zeiss 880 AiryScan Fast Inverted Confocal on AxioObserver Z1 microscope using a Zeiss Plan-Apochromat 63×/1.4 oil objective, with stage incubator set to 37°C and 5% CO₂ buffering. All images were processed with Fiji.

LPS electroporation

Electroporation was done using the Neon Transfection System (Thermo Fisher). Cells were plated in a 6 well plate and were either left untreated or were treated with 100 U/ml IFN γ overnight. The next day, cells were trypsinized, washed twice with PBS and the cell number was determined. Cells were pelleted and diluted in Neon buffer R to 5,000 cells/ μ l. *E. coli* O55:B5 LPS (Invivogen tlr-pb5lps) was diluted in Neon R buffer to 500 μ g/ml, 100 μ g/ml and 50 μ g/ml. Cell and LPS dilutions were gently mixed and 500,000 cells were electroporated with either 2.5 μ g, 0.5 μ g or 0.25 μ g LPS in a 100 μ l Neon pipette tip using electrolytic buffer E2 and 2 pulses of 1005 V for 35 ms. After electroporation prewarmed infection media supplemented with 3 μ g/ml propidium iodide was quickly added to cells and 50,000 cells were plated per well in black tissue culture treated 96-well plates in triplicates. Non-electroporated cells left untreated or treated with 1% triton served as live and dead controls. Fluorescence was measured using an Enspire 2300 multilabel plate reader (Perkin Elmer) at 1, 2, and 4 hours post electroporation. After measuring fluorescence, 100 μ l supernatant was removed from each well and was frozen at -80°C until running IL-18 ELISA. IL-18 was measured using IL-18 ELISA matched antibody pair (Thermo Fisher BMS267-2MST) following manufacturer's instructions.

LPS transfection

Transfection protocol was modified from Santos et al. (8) A549 cells were seeded in a 96 well plate, 2.5×10^4 cells per well. The next day, LPS transfection mixture was prepared- for each well 75 μ l optimem (31985-062), 1 μ l lipofectamine 2000 (Invitrogen), and either 1 μ g or 0.1 μ g *E. coli* O55:B5 LPS (Invivogen tlr-pb5lps). LPS and lipofectamine mixture was incubated for 20 minutes before adding to cells. During incubation, media in 96 well plate was aspirated and 75 μ l optimem containing 0.5 μ M sytox green (Invitrogen) was added to each well. Lysed control wells contained 75 μ l optimem, 0.5 μ M sytox green, and 1% triton X-100. 75 μ l lipofectamine and LPS mixture was added on top of media containing sytox green.

Plasmids

All GBP expression plasmids were in the lentiviral pInducer20 backbone (9) containing a C-terminal mCherry (GBP4) or N-terminal mCherry (all other constructs). Full plasmid sequences are provided as a supplemental file. For experiments using these plasmids, expression was induced by adding 1 μ g/ml anhydrotetracycline (Takara) overnight in cell culture media, or for titrations at concentration indicated in figure. When applicable, anhydrotetracycline was added at the same time as IFN γ .

For *S. flexneri* luminescence experiments, strains were transformed with ilux pGEX(-), which was a gift from Stefan Hell (Addgene plasmid #107879; <http://n2t.net/addgene:107879> ; RRID:Addgene_107879) *S. flexneri* was transformed with pGFPmut2 (10) for microscopy experiments.

For knockdown of CASP4, lentiviral vectors from the Mission shRNA collection (Sigma). Plasmids expressed shRNAs targeting GFP or CASP4 (shRNA TRCN0000003512) in the pLKO.1 backbone.

Lentivirus production and cell line complementation

293T cells were plated in a 6 well plate with 1×10^6 cells per well in 2ml. The next day cells were transfected using TransIT 293 transfection reagent (Mirus), following manufacturer's instructions. Each

well was transfected with 1 µg pInducer plasmid, 750 ng pSPAX2 (Addgene), 250 ng VSVG. At 24 hours post transfection, media was removed, and 3 ml fresh media added. Supernatant containing virus was collected at 48 and 72 hours post infection and filtered through 0.45 µm nylon filters (Corning). Virus was frozen at -80°C until use.

For transduction, A549 cells were trypsinized and resuspended in media containing 10 µg/mL polybrene (Millipore Sigma) to a concentration of 3.33×10^4 cells/ml. In 6 well plate, 250 µl lentivirus supernatant (described above) and 1.5 ml diluted cells were added to each well. Cells were incubated for 48-72 hours, then 2 mg/ml geneticin was added for approximately 10 days to select for cells containing the pInducer plasmid. Cells transduced with pLKO.1 shRNA plasmids were selected with 1 µg/ml puromycin for 5 days.

Expression, purification, and prenylation of recombinant protein

Recombinant GBP1, GBP5, and FTase were expressed and purified as described previously(11). N-terminally His₆-tagged GBP1 and GBP2 were expressed in *E. coli* strain BL21 CodonPlus (DE3) RIL from bacterial vector pQE-80L. N-terminally His₁₀-tagged GBP5 was expressed in *E. coli* strain Rosetta (DE3) pLysS from bacterial vector pQE-80L. N-terminal His₆-tagged farnesyltransferase (FTase) and geranylgeranyltransferase (GGTase) were expressed in *E. coli* strains Rosetta (DE3) pLysS and BL21 CodonPlus (DE3) RIL from pRSF-Duet1 vector. Bacteria were cultivated in terrific broth media (GBPs), or terrific broth media supplemented with 60 µM ZnCl₂ (FTase, GGTase) and grown at 37 °C and 90 rpm to an OD₆₀₀ of 0.4–0.8. After decreasing the temperature to 20 °C, protein expression was induced with 100 µM IPTG. For FTase and GGTase expression, an additional 0.5 mM ZnCl₂ was added to the culture. Bacteria were harvested after 16–18 h at 3000 x g for 15 min at 4°C (Sorvall LYNX 6000 centrifuge, F9-6x1000 LEX rotor, Thermo Fisher Scientific).

Buffer compositions for the purification of recombinant GBPs and FTase or GGTase differed in the use of 50 mM HEPES, pH 7.8 for FTase and GGTase instead of 50 mM Tris-HCl, pH 7.9 for GBPs. Harvested bacteria were resuspended in buffer A (50 mM Tris-HCl, pH 7.9, 500 mM NaCl, 5 mM MgCl₂) supplemented with 1 mM phenylmethylsulfonyl fluoride to inhibit proteases and sonicated on ice at 30% amplitude pulsing at 1 sec on/ 1 sec off for a total of 10 min (Ultrasonic homogenizer Sonoplus HD 2200, Bandelin) with the temperature of the resuspension kept below 8 °C. Cell debris was removed from lysate containing soluble protein by centrifugation at 35,000 x g and 4 °C for 45 min (Sorvall LYNX 6000 centrifuge, F21-8x50y rotor, Thermo Fisher Scientific). Proteins were further purified by immobilized metal affinity chromatography (IMAC) followed by size-exclusion chromatography (SEC). All chromatography columns were connected to ÄKTA Purifier or Prime systems (GE Healthcare Life Sciences). After loading of soluble proteins, the IMAC column (30 ml HisPur Cobalt Resin, 30 ml) was sequentially washed with 5-10 column volumes (CVs) buffer A and 3-4 CVs buffer B₁₀ (50 mM Tris-HCl, pH 7.9, 150 mM NaCl, 5 mM MgCl₂, 10 mM imidazole). His-tagged protein was eluted with 2 CVs buffer B₁₅₀ (50 mM Tris-HCl, pH 7.9, 150 mM NaCl, 5 mM MgCl₂, 150 mM imidazole). GBP containing fractions from IMAC were pooled and precipitated by slowly adding 3 M (NH₄)₂SO₄. (NH₄)₂SO₄ protein precipitates were dissolved in buffer C (50 mM Tris-HCl, pH 7.9, 150 mM NaCl, 5 mM MgCl₂) and loaded on a with buffer C equilibrated SEC column (Superdex 200 26/ 60, 320 ml) to remove (NH₄)₂SO₄ and aggregated protein from monomeric protein. FTase and GGTase containing fractions from IMAC were pooled, concentrated via ultra-filtration using Vivaspin 20 centrifugal columns (10 kDa cut-off, Sartorius), and loaded on the SEC column (Superdex 200 26/ 60, 320 ml) to isolate monomeric protein. Fractions containing monomeric GBPs, FTase, and GGTase were pooled, concentrated via ultra-filtration using 10 kDa cut-off Vivaspin 20 centrifugal columns, frozen in liquid nitrogen, and stored at -80°C.

GBP1 was farnesylated *in vitro* as described previously(12). Monomeric GBP1, GBP2, and GBP5 were incubated for 16 h at 4°C in glass vials with farnesyl pyrophosphate (FPP) or geranylgeranyl

pyrophosphate (GGPP) and FTase or GGTase in buffer D (50 mM Tris-HCl, pH 7.9, 5 mM MgCl₂, 150 mM NaCl, 10 μM ZnCl₂). For farnesylation, 60 μM GBP1 was supplemented with 150 μM FPP and 1.25 μM FTase in a total volume of 4 ml. For geranylgeranylation, 60 μM GBP2 or GBP5 were supplemented with 150 μM GGPP and 5 μM GGTase in a total volume of 4 ml. Reaction mixtures were supplemented with (NH₄)₂SO₄ (3 M stock solution) to a final concentration of 1.25 M and loaded on a hydrophobic interaction chromatography (HIC) column (Butyl FF 16/10, 20 ml), equilibrated with buffer E (50 mM Tris-HCl, pH 7.9, 5 mM MgCl₂, 1.2 M (NH₄)₂SO₄). For GBP1, after loading, the HIC column was sequentially washed with 2 CVs buffer E and with 2 CVs of buffer E with its initial (NH₄)₂SO₄ concentration decreased to 60%. Farnesylated GBP1 was separated from non-farnesylated GBP1 by decreasing the (NH₄)₂SO₄ concentration further in a continuous gradient over 3 CVs from 60% to 45% (NH₄)₂SO₄ (elution of farnesylated GBP1) followed by a continuous gradient over 3.75 CVs from 45% to 25% (NH₄)₂SO₄ (elution of non-farnesylated GBP1). For GBP2 and GBP5, after loading, the HIC column was sequentially washed with 2 CVs buffer E and with 2 CVs of buffer E with its initial (NH₄)₂SO₄ concentration decreased to 80%. Geranylgeranylated GBP2 and GBP5 were eluted from the HIC by decreasing the (NH₄)₂SO₄ concentration from 80% to 0% in a continuous gradient over 20 CVs. Fractions with prenylated GBPs were pooled, concentrated via ultra-filtration using 10 kDa cut-off Vivaspin 20 centrifugal columns and further purified by SEC to isolate monomeric protein. Following SEC, fractions with monomeric prenylated GBPs were pooled, concentrated via ultra-filtration, frozen in liquid nitrogen, and stored at -80°C. Concentrations of proteins were calculated according to Lambert–Beer law, using absorption at 280 nm in buffer F (6 M guanidine hydrochloride, 20 mM potassium phosphate, pH 6.5) and respective molar absorption coefficients (GBP1 43,240 M⁻¹cm⁻¹, GBP2 52,050 M⁻¹cm⁻¹, GBP5 46,005 M⁻¹cm⁻¹, FTase 158,235 M⁻¹cm⁻¹, GGTase 138,170 M⁻¹cm⁻¹).

Labeling of recombinant proteins with fluorescent dyes

After exchanging buffer C to buffer G (50 mM Tris-HCl, pH 7.4, 150 mM NaCl, and 5 mM MgCl₂), recombinant GBPs were incubated with Alexa Fluor 488 C₅ maleimide dye or Alexa Fluor 647 C₂ maleimide dye (Invitrogen) in a ratio of 1:1 or 1:2 on ice for 10–20 min. Labeling reactions were stopped by changing buffer G to buffer C supplemented with 2 mM DTT via ultra-filtration using 10 kDa cut-off Vivaspin Turbo 4 centrifugal columns. Concentrations of proteins and labeling efficiencies were calculated according to Lambert-Beer law, using absorptions at 280 nm, 491 nm, and 651 nm in buffer C, respective molar absorption coefficients (GBP1 45,840 M⁻¹cm⁻¹, GBP2 53,860 M⁻¹cm⁻¹, GBP5 45,380 M⁻¹cm⁻¹, Alexa Fluor 488 71,000 M⁻¹cm⁻¹, Alexa Fluor 647 268,000 M⁻¹cm⁻¹), and correction factors for fluorescent dyes (Alexa Fluor 488 0.11, Alexa-Fluor647 0.03). Labeling efficiencies for Alexa Fluor 488-labeled proteins ranged from 44% to 120%. Labeling efficiencies for Alexa Fluor 647-labeled proteins ranged from 13% to 49%.

Binding of protein to bacteria

S. flexneri expressing RFP was streaked on an agar plate, then single colonies were picked and grown overnight at 37 °C shaking, in 5 ml TSB. The next day 175 μl overnight culture was diluted into 5 ml TSB and grown for 1 hour 20 minutes. 2.5 ml bacterial culture was pelleted, washed with 1 ml PBS, and resuspended in 1 ml 4% formaldehyde in PBS, pH 7.4 for 20 min to fix. Formaldehyde-fixed bacteria were washed twice with PBS and resuspended in PBS supplemented with 0.03% NaN₃. Final concentrations for *in vitro* binding experiments were 10⁵-3 x 10⁶ bacteria/ml, 5 μM GBP, and 2 mM GTP. Bacteria were diluted in buffer C, supplemented with 50 μM BSA, and the dilution was applied to the cover slide of a glass bottom 10 mm microwell dish. Following centrifugation for 1 min at 3,000 x g bacteria were incubated for 5 min at 25 °C on the temperature-controlled microscope stage. Alexa Fluor-labeled GBPs were diluted in buffer C supplemented with 50 μM BSA, mixed with GTP, and the mixture was

added to bacteria at $t = 0$ min. The samples were gently mixed, and images were collected every 1.5 min. After recording time-lapse images for 60 min different field of views were imaged for quantification. Imaging was performed on a Zeiss 880 Airyscan Fast Inverted Confocal on Axio Observer Z1 microscopes using Zeiss Plan-Apochromat 63 \times / 1.4 oil objectives. All images were processed with Fiji.

LPS aggregation

Final concentrations for LPS aggregation microscopy experiments were 5 μ M recombinant GBP, 50 μ g/ml LPS, and 2 mM GTP. Alexa Fluor 568-labeled *E. coli* O55:B5 LPS (Invitrogen) was diluted in buffer C, supplemented with 50 μ M BSA, and the dilution was applied to the cover slide of a glass bottom 10 mm microwell dish. Following centrifugation for 1 min at 3,000 \times g bacteria were incubated for 5 min at 25 $^{\circ}$ C on the temperature-controlled microscope stage. GBPs were diluted in buffer C supplemented with 50 μ M BSA, mixed with GTP, and the mixture was added to LPS at $t = 0$ min. The samples were gently mixed, and after 20 min, different field of views were imaged for quantification. Imaging was performed on a Zeiss 880 Airyscan Fast Inverted Confocal on Axio Observer Z1 microscopes using Zeiss Plan-Apochromat 63 \times / 1.4 oil objectives. All images were processed with Fiji and LPS areas and numbers were quantified with the integrated analyze particle tool.

Dynamic light scattering

Dynamic light scattering (DLS) experiments of recombinant GBPs and LPS was performed with Delsa Max Pro instrument (Beckman Coulter). GBPs were diluted in buffer C or buffer C (apo) supplemented with 300 μ M AIF $_x$, 10 mM NaF, and 250 μ M GDP (GDP \cdot AIF $_x$) to a final concentration of 5 μ M in the presence or absence of 0.05 mg/ml *E. coli* O55:B5 LPS. Samples were incubated at room temperature (RT) for 1 hour prior starting DLS measurements in a temperature-controlled cuvette set to RT. The particle size was measured over three measurements, each consisting of ten runs. The number-weighted radius (R_n) of the particles was determined with the manufacturer's software. A series of controls were also measured to establish the underlying particle sizes of the filtered aqueous buffers and the protein solutions. These were buffer C, buffer C supplemented with GDP \cdot AIF $_x$, and 5 μ M bovine serum albumin (BSA) or 0.05 mg/ml LPS in the respective buffers.

Absorbance-based light scattering

Absorbance-based light scattering experiments were performed with a Specord200 UV/Vis spectrophotometer (Analytik Jena) as described previously(13). GBP1, GBP2, and GBP5 were diluted in buffer C supplemented with 50 μ M BSA to a final concentration of 5 μ M. Protein dilutions were incubated in a temperature-controlled cuvette at 25 $^{\circ}$ C for 5 min. GTP was added to protein dilutions at a final concentration of 2 mM to start GBP self-assembly. Polymerization of GBPs was followed as absorbance signal at 350 nm over time. To determine formation of mixed polymers, absorbance of 5 μ M GBP1 in the presence of 5 μ M GBP1, GBP2, or GBP5 following GTP addition was monitored (final GBP concentration 10 μ M, polymerization of 5 μ M GBP1 is shown as control).

Native polyacrylamide gel electrophoresis

Native GBP-LPS complexes were analyzed with native polyacrylamide gel electrophoresis (NPAGE). Recombinant GBP1, GBP2, GBP5, BSA (control), and *E. coli* O55:B5 LPS were diluted in buffer C or buffer C supplemented with 300 μ M AIF $_x$ and 10 mM NaF. Protein and LPS dilutions were mixed, and GDP was added to induce complex formation. Final concentrations were 5 μ M protein, 250 μ M GDP, 1 mg/ml, 0.1 mg/l, or 0.01 mg/ml LPS (Fig. 7B), and 2 mg/ml to 0.008 mg/ml (1:1 dilution, Fig. 7C and Fig. S6C). After incubation at RT for 30 min, samples were mixed 1:1 with 2 \times native sample buffer (BioRad) and loaded on a 4-20% precast protein gel (BioRad) for electrophoresis in Tris/Glycine running buffer

(BioRad) at 80 V for 15 min followed by 180 V for 1 h. After electrophoresis, gels were fixed overnight in 60% methanol and 10% acetic acid. The next day, gels were rehydrated in 3% acetic acid and successively stained using Pro-Q Emerald 300 Lipopolysaccharide Gel Stain Kit (Invitrogen) and Coomassie Brilliant Blue R-250. LPS staining and Coomassie staining were visualized with an Azure 500 Biosystem using excitation at 365 nm and emission at 595 nm or the UV320 Coomassie detection program (utilizing the orange tray), respectively. All gel images were processed with Fiji. Gel bands were analyzed with the built-in Fiji tool.

Caspase-4 activation

Caspase-4 activity was determined as described previously (14) with the following modifications. Recombinant GBP1, GBP1^{R48A}, GBP1^{3R}, and GBP2, were diluted in buffer H (50 mM Tris-HCl, pH 7.4, 150 mM NaCl, and 5 mM MgCl₂, 2 mM EDTA, 10 mM DTT) supplemented with *E. coli* O55:B5 LPS, and GTP (or buffer as control) was added to induce aggregate formation. After incubation at 37 °C for 30 min, reactions were mixed 1:1 with recombinant caspase-4 diluted in buffer H in a black 96 well plate with non-binding surface (Corning), and Z-VAD-AMC (Cayman Chemical) diluted in buffer H was added to each sample. Fluorescence was measured with an Enspire 2300 multilabel plate reader (Perkin Elmer) using excitation at 365 nm and emission at 450 nm. Final concentrations were 5 μM GBP, 0.05 mg/ml LPS, 1 mM GTP, 0.05 μM caspase-4, and 75 μM Z-VAD-AMC. N-terminal GST tagged, human full-length caspase-4 expressed in and purified from wheat germ (Novus Biologicals, H00000837-P01) was used to avoid LPS contamination. Fluorescence intensities were normalized to basal caspase-4 activities (Fig. 7D and E, Fig. S9D lower panel). Free AMC amounts upon Z-VAD-AMC cleavage were determined by correlating fluorescence intensities to fluorescence intensities measured for defined AMC concentrations in calibration experiments following established protocols (15) (Fig. S9D upper panel).

References

1. F. A. Ran *et al.*, Genome engineering using the CRISPR-Cas9 system. *Nat Protoc* **8**, 2281-2308 (2013).
2. A. K. Haldar *et al.*, Chlamydia trachomatis Is Resistant to Inclusion Ubiquitination and Associated Host Defense in Gamma Interferon-Primed Human Epithelial Cells. *mBio* **7** (2016).
3. K. Labun *et al.*, CHOPCHOP v3: expanding the CRISPR web toolbox beyond genome editing. *Nucleic Acids Res* **47**, W171-W174 (2019).
4. S. Bae, J. Park, J. S. Kim, Cas-OFFinder: a fast and versatile algorithm that searches for potential off-target sites of Cas9 RNA-guided endonucleases. *Bioinformatics* **30**, 1473-1475 (2014).
5. A. S. Piro *et al.*, Detection of Cytosolic Shigella flexneri via a C-Terminal Triple-Arginine Motif of GBP1 Inhibits Actin-Based Motility. *mBio* **8** (2017).
6. X. Mou, S. Souter, J. Du, A. Z. Reeves, C. F. Lesser, Synthetic bottom-up approach reveals the complex interplay of Shigella effectors in regulation of epithelial cell death. *Proc Natl Acad Sci U S A* **115**, 6452-6457 (2018).
7. M. Kutsch *et al.*, Direct binding of polymeric GBP1 to LPS disrupts bacterial cell envelope functions. *EMBO J* **39**, e104926 (2020).
8. J. C. Santos *et al.*, Human GBP1 binds LPS to initiate assembly of a caspase-4 activating platform on cytosolic bacteria. *Nat Commun* **11**, 3276 (2020).

9. K. L. Meerbrey *et al.*, The pINDUCER lentiviral toolkit for inducible RNA interference in vitro and in vivo. *Proc Natl Acad Sci U S A* **108**, 3665-3670 (2011).
10. B. P. Cormack, R. H. Valdivia, S. Falkow, FACS-optimized mutants of the green fluorescent protein (GFP). *Gene* **173**, 33-38 (1996).
11. S. Ince, M. Kutsch, S. Shydlovskiy, C. Herrmann, The human guanylate-binding proteins hGBP-1 and hGBP-5 cycle between monomers and dimers only. *FEBS J* **284**, 2284-2301 (2017).
12. L. Sistemich *et al.*, The Molecular Mechanism of Polymer Formation of Farnesylated Human Guanylate-binding Protein 1. *J Mol Biol* **432**, 2164-2185 (2020).
13. S. Shydlovskiy *et al.*, Nucleotide-dependent farnesyl switch orchestrates polymerization and membrane binding of human guanylate-binding protein 1. *Proc Natl Acad Sci U S A* **114**, E5559-E5568 (2017).
14. J. Shi *et al.*, Inflammatory caspases are innate immune receptors for intracellular LPS. *Nature* **514**, 187-192 (2014).
15. D. Boucher, C. Duclos, J. B. Denault, General in vitro caspase assay procedures. *Methods Mol Biol* **1133**, 3-39 (2014).

Supplementary Figures

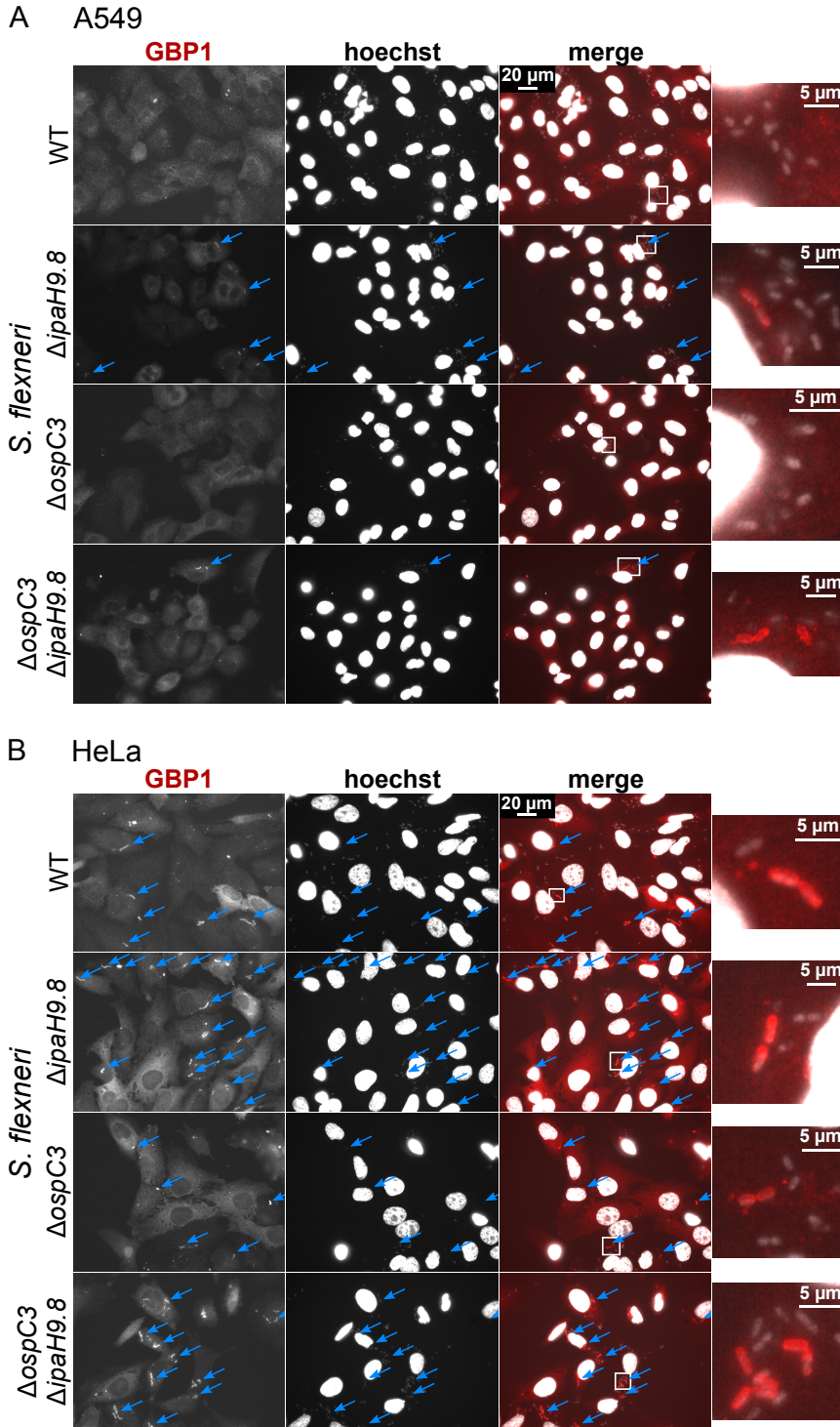


Figure S1. A549 cells have less frequent GBP1 binding to *S. flexneri*, compared to HeLa cells. A549 (A) and HeLa (B) cells were infected with the indicated strains, fixed at 1.5 hours post infection and immunostained for GBP1. Bacteria were visualized with DNA stain Hoechst. *S. flexneri* with GBP1 surrounding >50% of the bacterial surface were counted as GBP1 positive. Blue arrows indicate clusters of *S. flexneri* that are coated with GBP1. Images were taken at 63 \times magnification and are representative of three independent experiments.

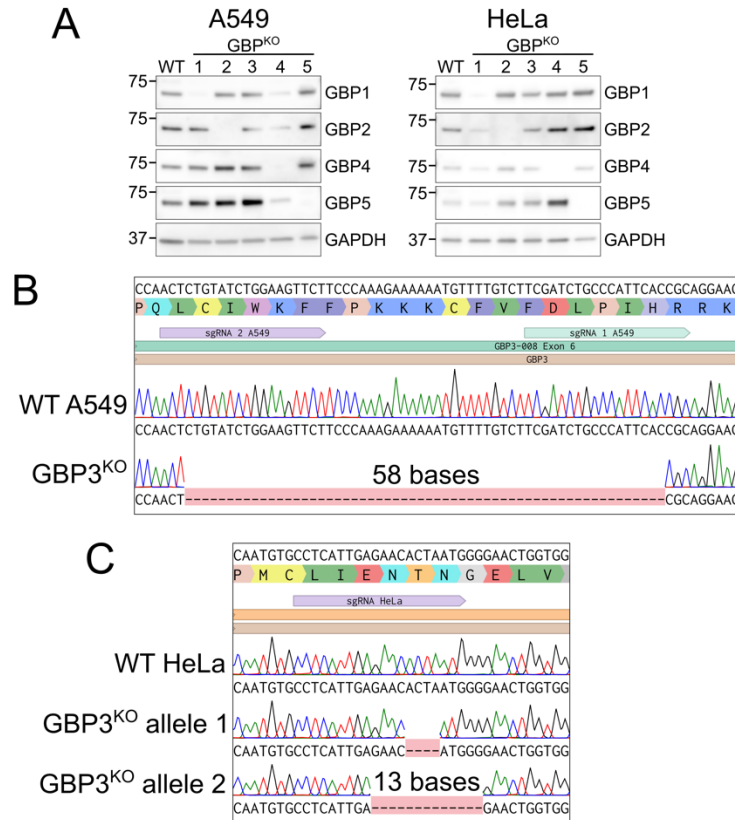


Figure S2. GBP1-5 were individually knocked out in A549 and HeLa cells. A549 and HeLa wildtype or CRISPR knockout clones were plated and primed with 100 U/ml IFN γ overnight. Cells were then lysed and GBP or GAPDH expression was analyzed by western blot. (B) Genomic DNA was extracted from wildtype and GBP3^{KO} A549 cells, PCR was used to amplify the edited region of the GBP3 gene, then PCR product was sequenced using sanger sequencing. Alignments were made using Benchling. (C) Genomic DNA was extracted from wildtype and GBP3^{KO} HeLa cells, PCR was used to amplify the edited region of the GBP3 gene, then PCR cloning was used to separate different alleles. Colony PCR and sanger sequencing were used to determine the sequence of each allele. Alignments were made using Benchling.

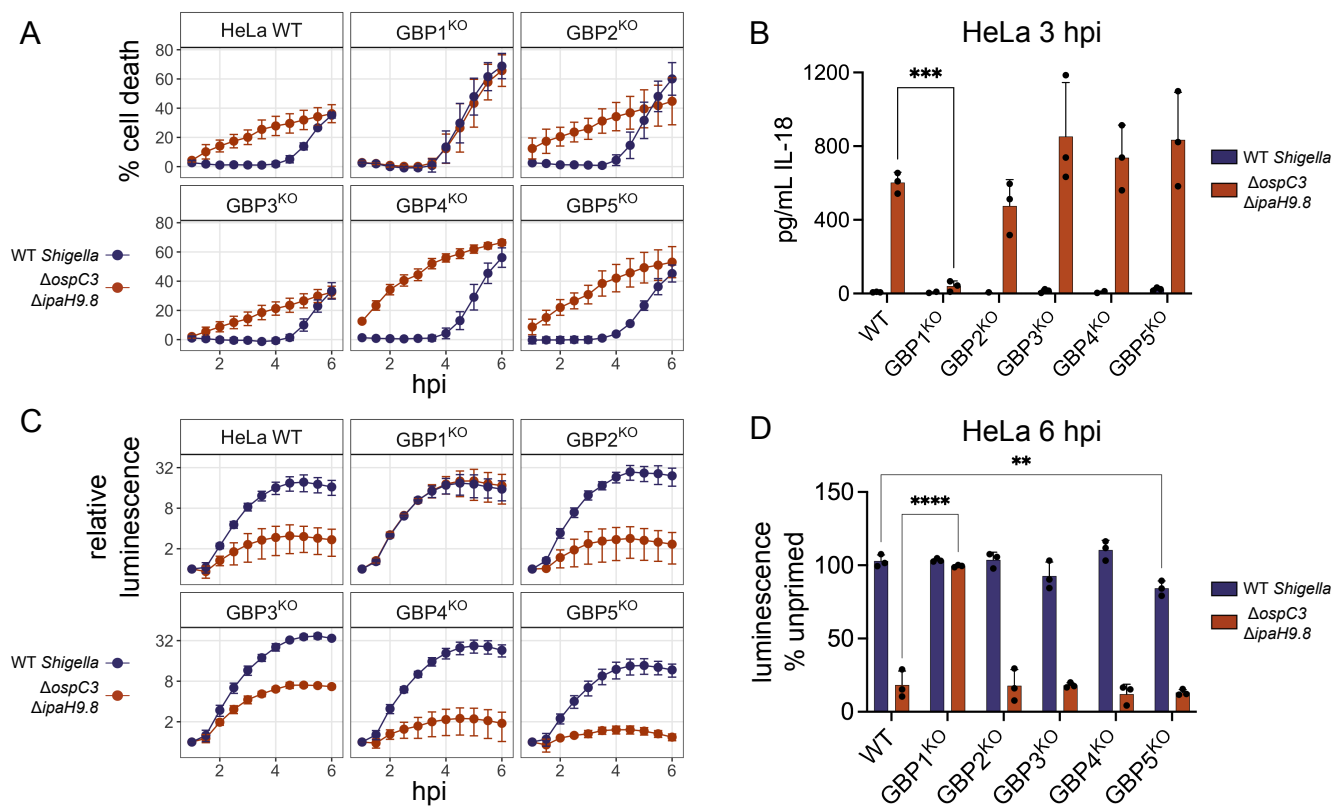


Fig. S3. HeLa cells require endogenous GBP1 for pyroptosis and restriction of *S. flexneri* growth. HeLa cells were primed overnight with 100 U/mL IFN γ , then infected with wild-type *S. flexneri* or *S. flexneri* $\Delta ipaH9.8 \Delta ospC3$ expressing a bioluminescent reporter plasmid. Cell death was measured using sytox green (A). Supernatant was taken at 3 hpi to measure IL-18 secretion (B). Bacterial growth was monitored by luminescence (C). Luminescence measurements from the 6 h timepoint were used to calculate the growth of each strain in primed cells relative to unprimed cells (D). Data are averages from three independent experiments and are represented by mean \pm SD. Two-way ANOVA with Dunnett's multiple comparisons test was used; for each bacterial strain, values for each knockout cell line were compared to the wild-type cells. All statistically significant comparisons are shown. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$.

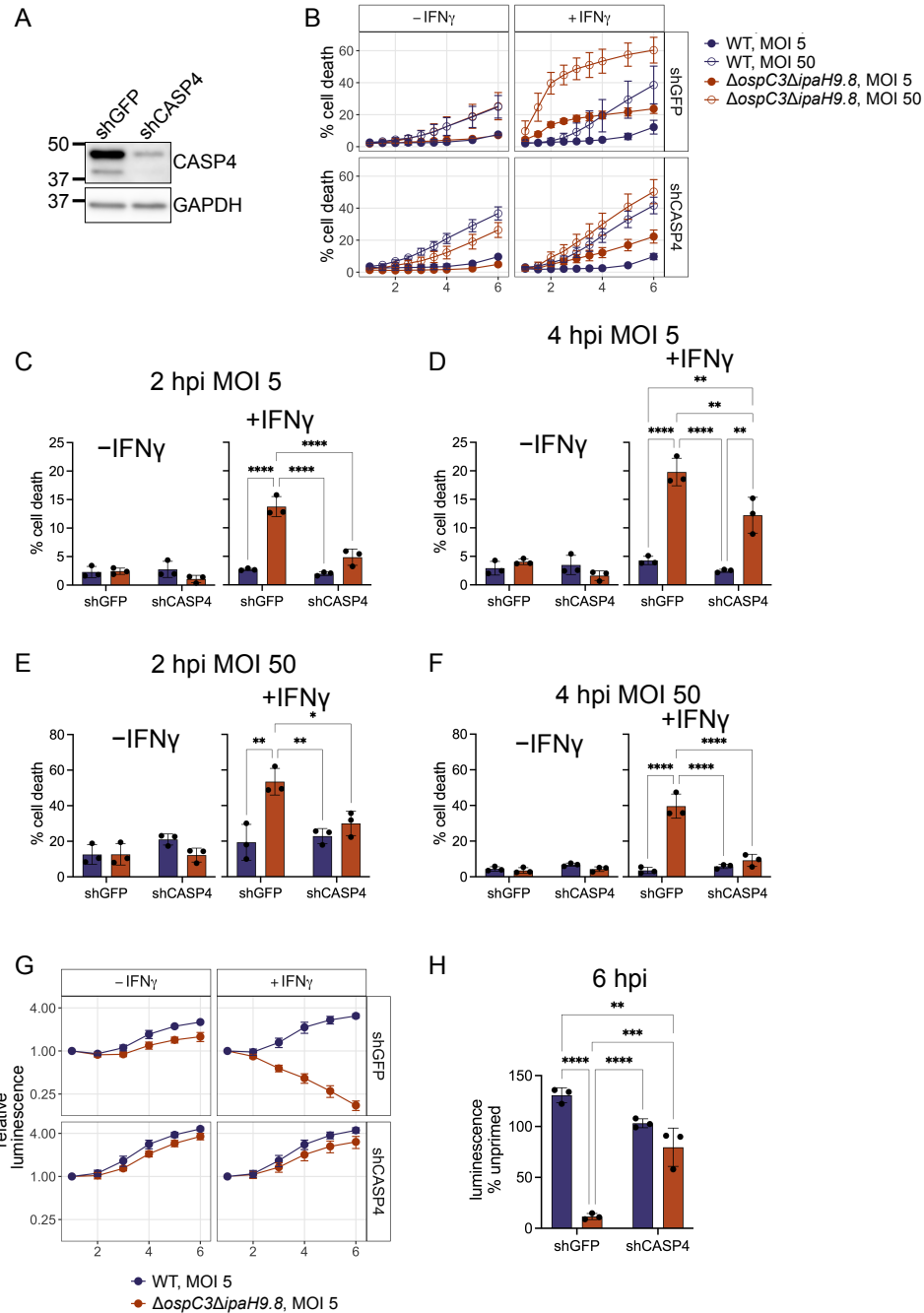


Figure S4. *S. flexneri* $\Delta ospC3\Delta ipaH9.8$ -induced pyroptosis requires CASP4. A549 cells were transduced with lentiviral vectors expressing a control shRNA targeting GFP or an shRNA targeting caspase-4. (A) Western blot was used to determine knockdown efficiency. (B) Cells were infected with indicated strains of *S. flexneri* at a multiplicity of infection (MOI) of 5 or 50, and cell death was measured over time using sytox green. Percent cell death at 2 hpi (C and E) or 4 hpi (D and F) was used for statistical analysis. Luminescence was used to measure bacterial growth over time (G). *S. flexneri* replication in IFN γ primed cells divided by luminescence signal in unprimed cells at 6 hours post infection (H). Data in graphs show averages of three independent experiment and error bars show standard deviation. In C, D, E, F, H statistical significance was determined using two-way ANOVA with Tukey's multiple comparisons test. All significant comparisons are shown, * = $P < 0.05$, ** = $P < 0.01$, *** = $P < 0.001$, **** = $P < 0.0001$.

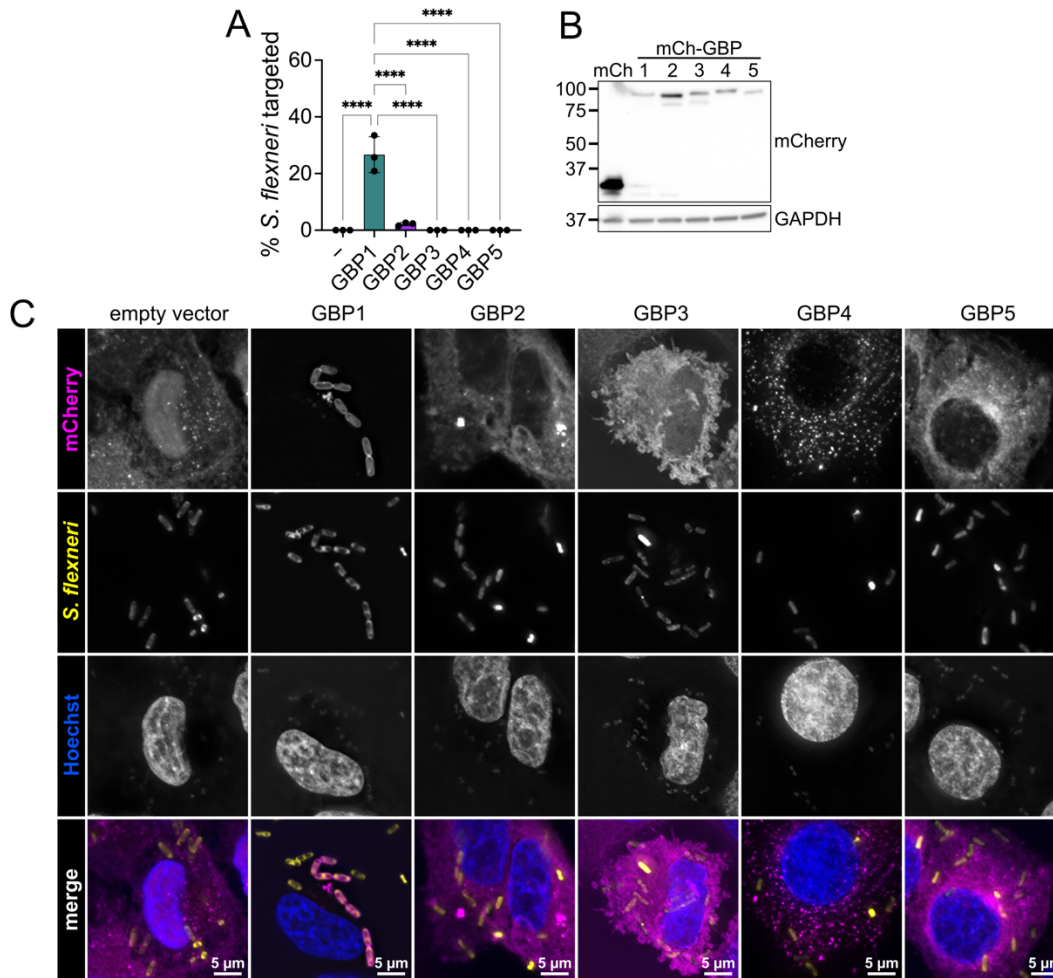


Figure S5. GBP1, but not GBP2-5, can bind bacteria in cells. (A) A549 GBP1^{KO} cells overexpressing mCherry or mCherry-GBPs were primed with 100 U/ml IFN γ overnight, then infected with *S. flexneri* $\Delta ipaH9.8$ expressing GFP. Cells were fixed at 2 hpi, images were taken at 63x by widefield microscopy, then total number of *S. flexneri* as well as mCherry positive *S. flexneri* were counted using ImageJ. *S. flexneri* with mCherry signal around at least 50% of the bacterial membrane were counted as targeted. (B) Expression levels of each mCherry constructs were tested using western blot. (C) A549 GBP1^{KO} cells overexpressing mCherry or mCherry-GBPs were primed with 100 U/ml IFN γ overnight, then infected with *S. flexneri* $\Delta ipaH9.8$ expressing GFP. Cells were fixed at 2 hpi and images were taken at 100x magnification by widefield microscopy. Images were deconvolved and z-projections are shown. (A) Graph shows averages from three independent experiments and is represented by mean \pm SD. One-way ANOVA with Tukey's multiple comparisons test was used. All significant comparisons are shown. **** = $P < 0.0001$. (B and C) Images are representative of three independent experiments.

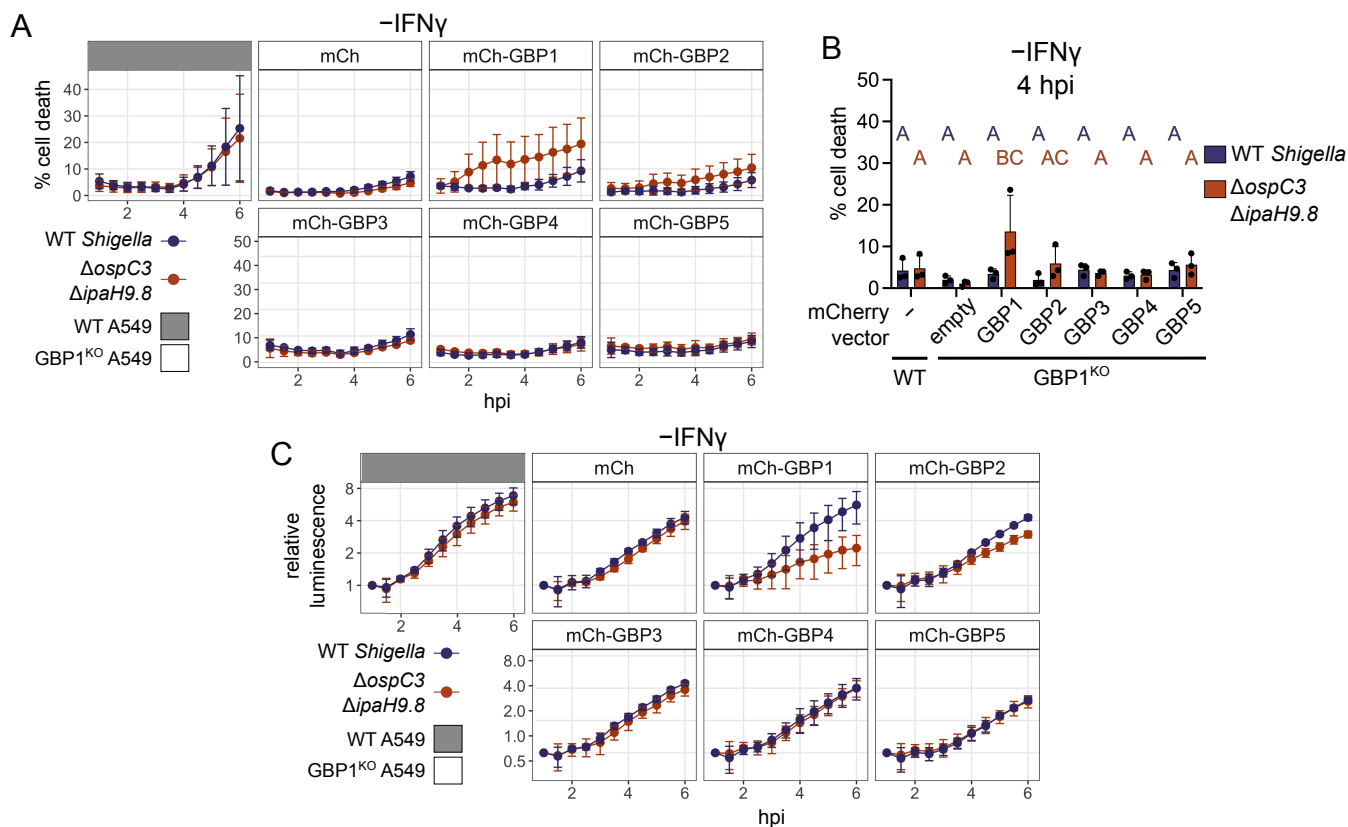


Fig. S6. Overexpression of GBP1 or GBP2 in unprimed cells has little effect on pyroptosis and bacterial restriction. A549 cells were stably transduced to express mCherry or mCherry-GBPs. Cells were then infected with bioluminescent *S. flexneri* and cell death was measured over time using sytox green fluorescence in unprimed cells (A). The sytox green signal at 4 h was used to determine statistical significance (B). Bacterial luminescence was measured over time (C). Data are averages from three independent experiments and are represented by mean \pm SD. Two-way ANOVA with Tukey's multiple comparisons test was used. Statistical comparisons are shown by letters, with bars sharing no matching letters being significantly different. Purple letters correspond to statistical comparisons for wild-type *S. flexneri*, and orange letters correspond to *S. flexneri* $\Delta ipaH9.8 \Delta ospC3$.

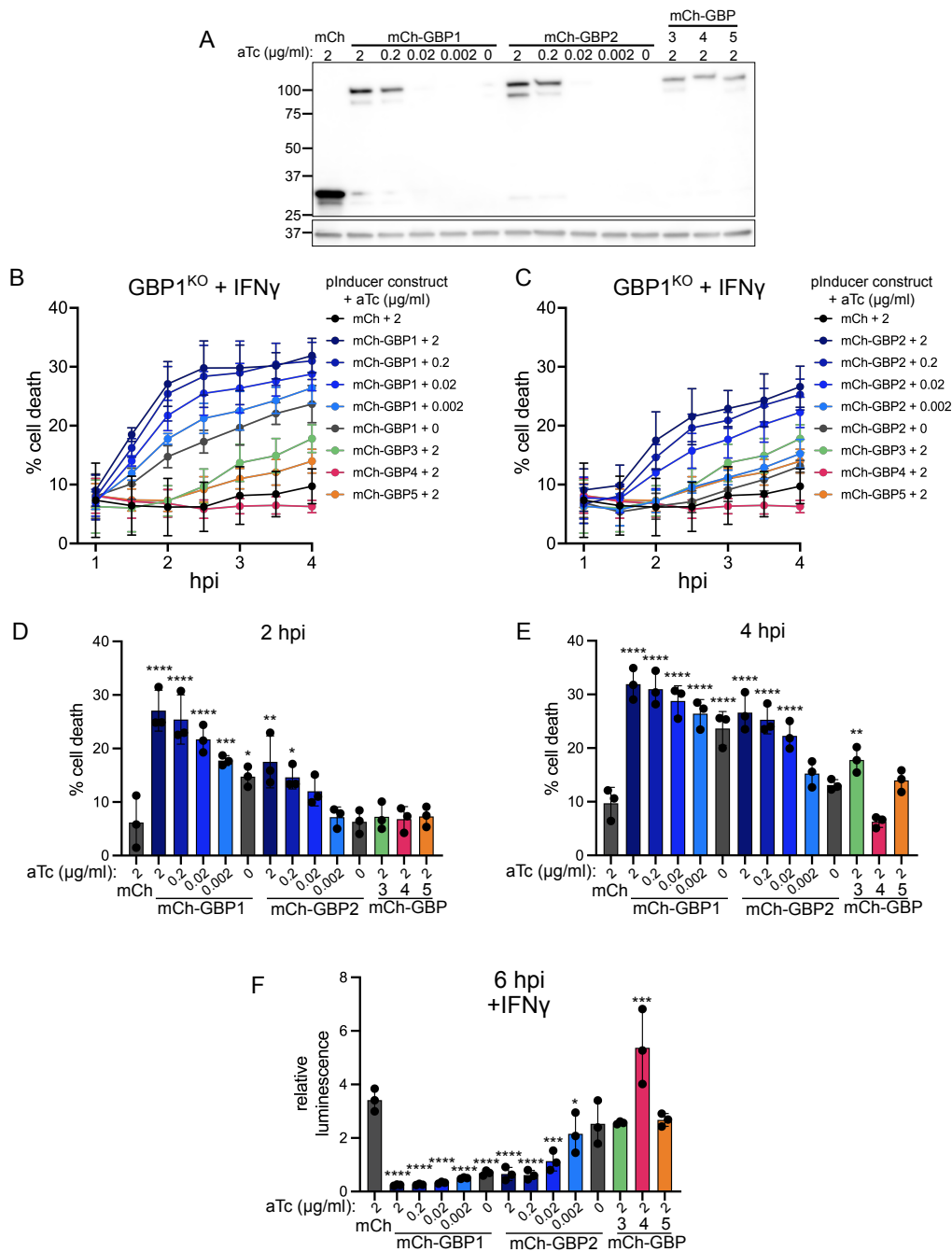


Figure S7. GBP1 and GBP2 promote pyroptosis even with low levels of expression. A549 GBP1^{KO} cells were transduced with plInducer-mCherry constructs and anhydrotetracycline (aTc) was used to induce mCherry-GBP expression. Expression of mCherry-GBP1 and mCherry-GBP2 was titrated using different concentrations of aTc. mCherry control vector, mCherry-GBP3, mCherry-GBP4, and mCherry-GBP5 were expressed at maximal levels. Western blot using an antibody against mCherry was used to assess expression levels (A). These cells were infected with *S. flexneri* $\Delta ospC3\Delta ipaH9.8$ and sytox green fluorescence was used to determine cell death promoted by each construct. Cell death data showing GBP1 titration (A) and GBP2 titration (B) is from same experiments, split into two graphs to make it easier to read. Data for mCherry, mCherry-GBP3, mCherry-GBP4, and mCherry-GBP5 is identical in both graphs. 2 hpi and 4 hpi from B and C were used to compare cell death levels between cells expressing different constructs (D and E). Luminescence was used to measure bacterial growth over time, and luminescence at 6 hpi relative to 1 hpi was used to assess growth differences in the presence of indicated constructs (F). Data in graphs contains mean \pm SD from three independent experiments. Significance in D, E, F was determined using one-way ANOVA with Dunnett's multiple comparisons test, comparing to mCherry. * = $P < 0.05$, ** = $P < 0.01$, *** = $P < 0.001$, **** = $P < 0.0001$.

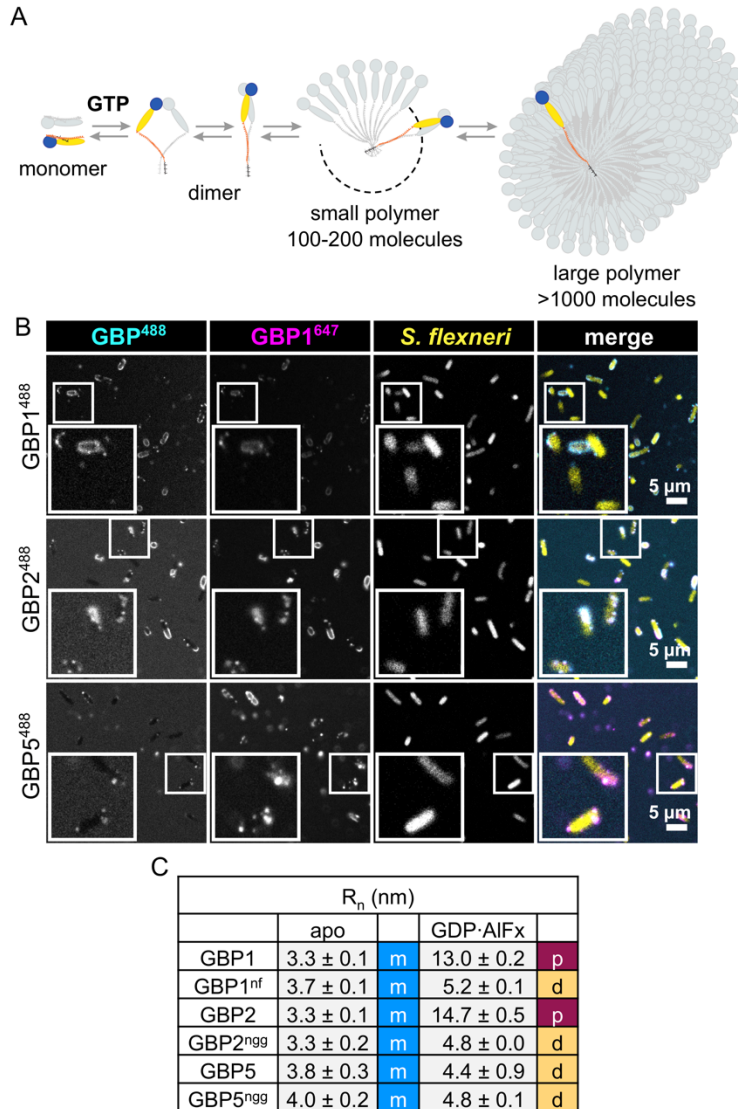


Figure S8. Mixed GBP1-GBP2 and GBP1-GBP5 polymers attach to the bacterial surface. (A) Mechanism of GBP1 polymerization. GBP1 exit its closed monomeric state, in which the farnesyl moiety is buried inside a hydrophobic pocket, and forms dimers in a GTP hydrolysis-dependent manner. GBP1 dimers can assemble into small polymers consisting of 100-200 molecules and continue their growth to form large polymers holding over 1000 molecules. (B) Confocal microscopy time frames of recombinant Alexa Fluor 488-labeled GBP1, GBP2, or GBP5 mixed with Alexa-647-labeled GBP1 supplemented with GTP at 5 min after addition to formaldehyde-fixed RFP-expressing *S. flexneri*. (C) Number-weighted mean radius (R_n) of nucleotide-free (apo) or GDP·AIF_x-bound nonisoprenylated (non-farnesylated = nf, non-geranylgeranylated = ngg) and isoprenylated GBPs determined in DLS experiments (values for data shown in Fig. 4G). monomer – m; dimer – d; polymer – p. (B) Representative images of three independent experiments. (C) Mean \pm SD from three independent experiments.

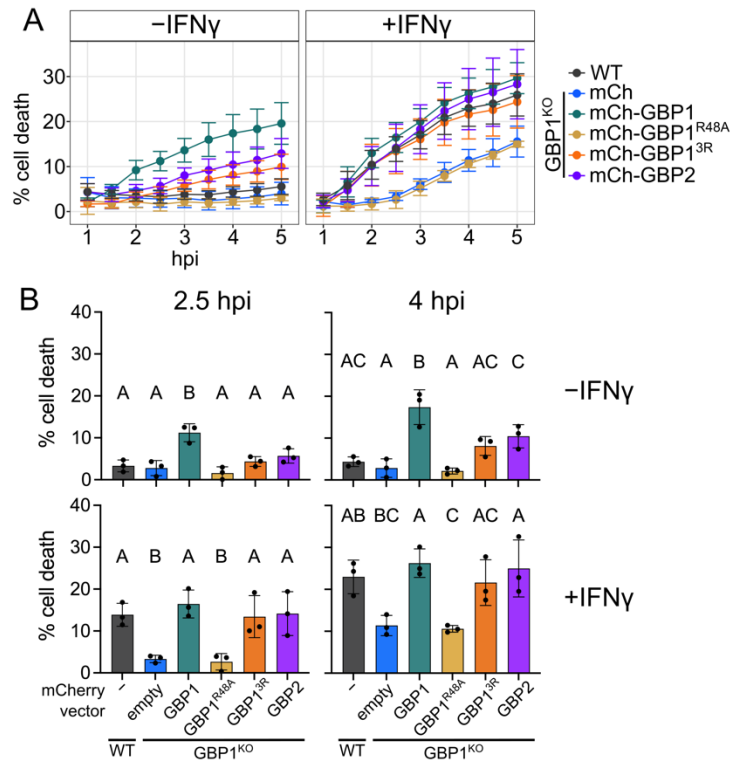


Figure S9. GBP1, GBP1^{3R}, and GBP2 can rescue pyroptosis in GBP1^{KO} cells during *S. Typhimurium* infection. Wildtype A549 or GBP1^{KO} A549 cells overexpressing mCherry or mCherry-GBPs were plated and cells were unprimed or primed with 100 U/ml IFN γ overnight, then infected with *S. Typhimurium*. Cell death was monitored over time using sytox green fluorescence (A). For statistical analysis, the sytox green signal at 2.5 hours and 4 hours post infection was used (B). All graphs show averages from three independent experiments and are represented by mean \pm SD. (B) One-way ANOVA with Tukey's multiple comparisons test was used. Statistical comparisons are shown by letters, with bars sharing no matching letters being significantly different. * = P < 0.05, ** = P < 0.01, *** = P < 0.001, **** = P < 0.0001.

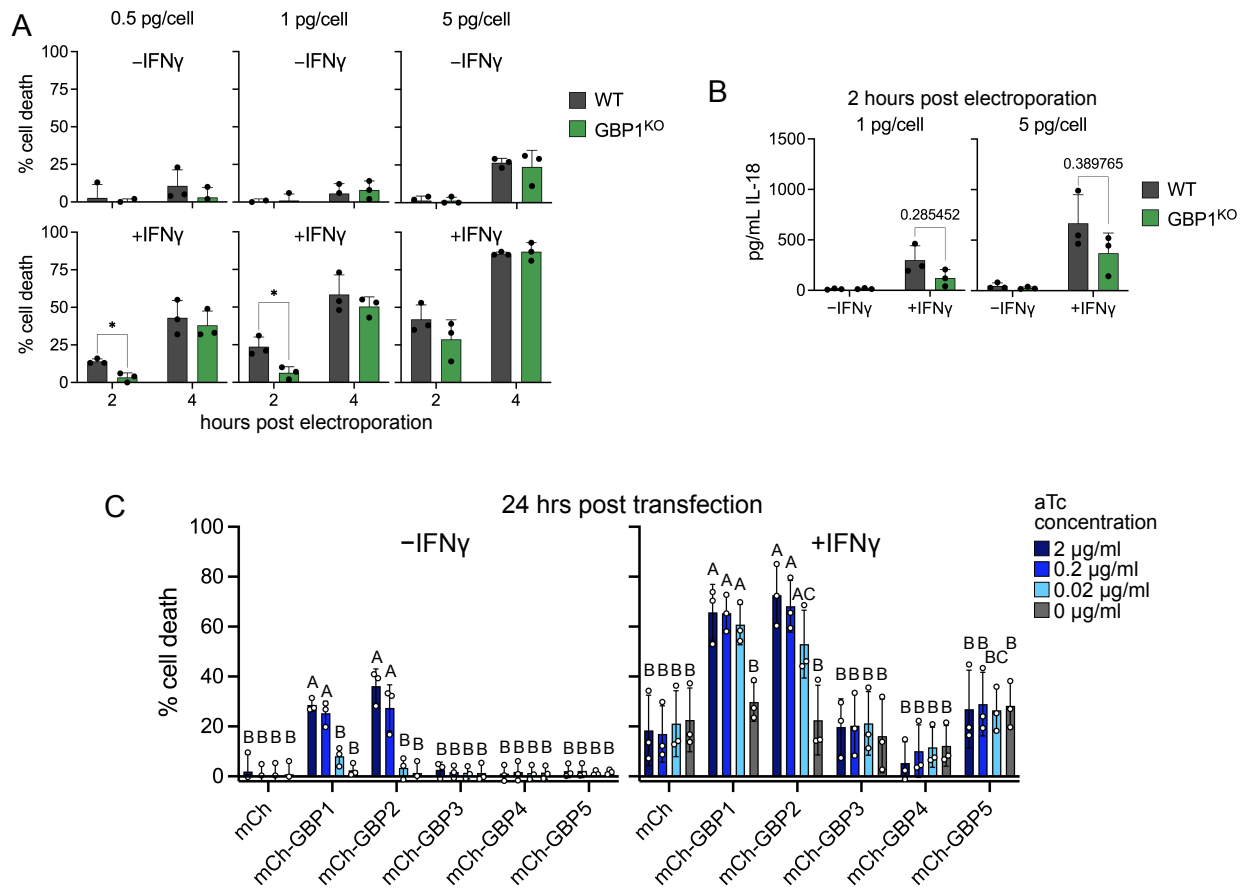


Figure S10. GBP1 is not required for pyroptosis in response to electroported LPS.

(A, B) Wildtype and GBP1^{KO} A549 cells unprimed or primed with 100 U/ml IFN γ overnight were electroported with 0.5 pg/cell, 1 pg/cell, or 5 pg/cell *E. coli* O55:B5 LPS. Cell death was measured using sytox green fluorescence at 2 and 4 hours post electroportation (A). (B) IL-18 secretion was measured in supernatants taken at 2 hours post electroportation. (C) GBP1^{KO} A549 cells were transduced with tet-inducible expression vectors and expression of each construct was titrated with different concentrations of anhydrotetracycline (aTc). Cells were unprimed or primed with 100 U/ml IFN γ overnight, then transfected with 1 μ g *E. coli* O55:B5 LPS per well. Cell death was measured using sytox green fluorescence at 24 hours post transfection. All graphs show averages from three independent experiments and are represented by mean \pm SD. (A and B) Statistical significance was determined using multiple unpaired T tests with Welch correction, with multiple comparisons corrected with Holm-Šidák method. All significant comparisons are shown. * = P < 0.05. Exact P values are shown in (B) for IFN γ primed cells. (C) Statistical significance was determined using two-way ANOVA Tukey's multiple comparisons test. Significance is represented by letters, with bars sharing no matching letters being significantly different.

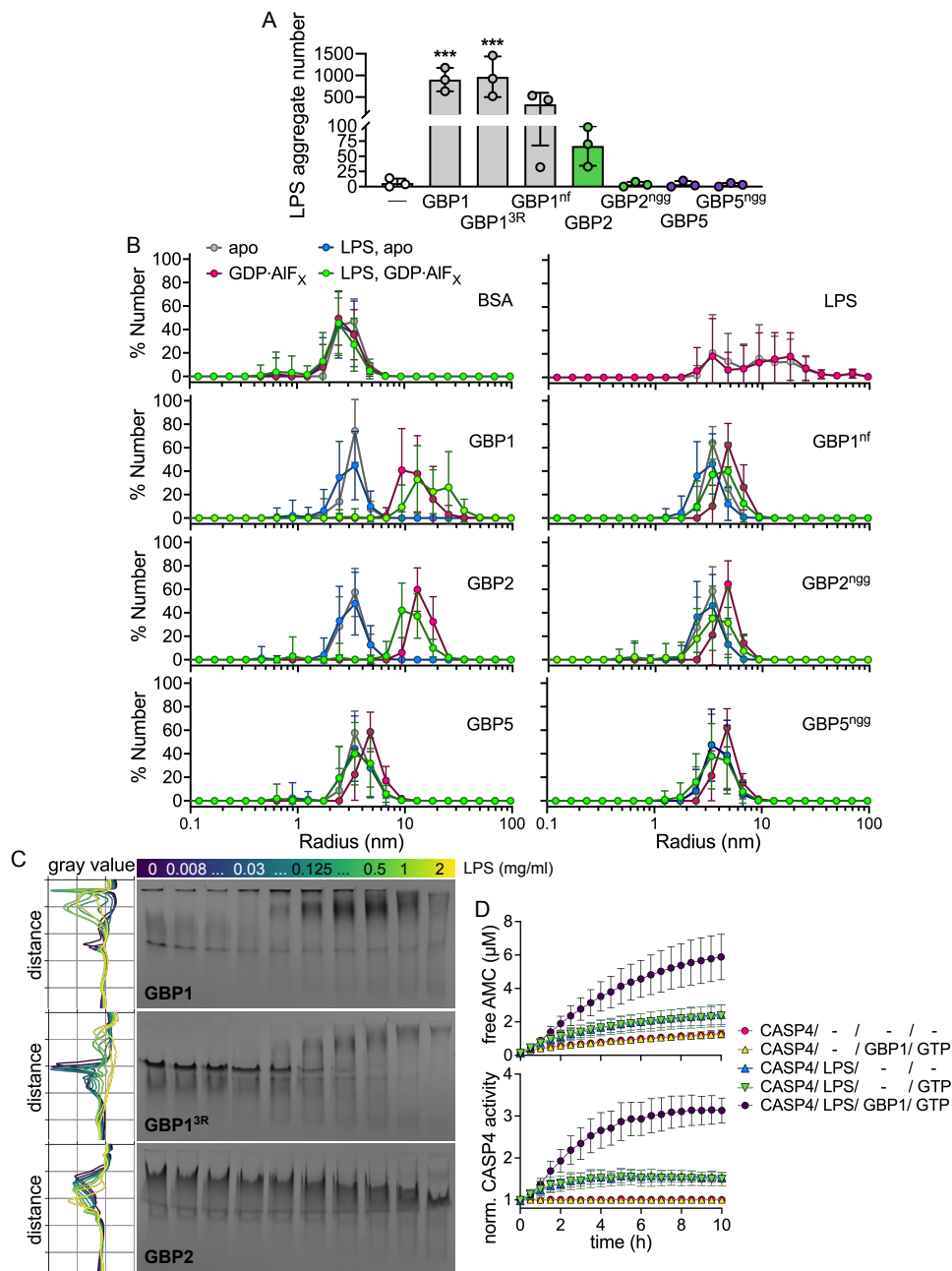


Figure S11. GBP2 binds directly to LPS and polymerizing GBPs promote caspase-4 activation. (A) Recombinant isoprenylated and nonisoprenylated GBPs were supplemented with GTP and added to Alexa Fluor 568-labeled *E. coli* O55:B5 LPS. LPS particles were analyzed from different fields of views taken after 20 min with Fiji, and the number of LPS aggregates was plotted. (B) Number-weighted mean radius (R_n) of nucleotide-free (apo) or GDP·AIF_x-bound nonisoprenylated (non-farnesylated - nf, non-geranylgeranylated - ngg) and isoprenylated GBPs in the presence and absence of LPS were determined in DLS experiments. (C) NPAGE of GBP1, GBP1^{3R}, and GBP2 titrated with LPS (final concentrations 2 mg/ml to 0.008 mg/ml) supplemented with GDP·AIF_x. Grey values for each gel lane were plotted with Fiji (GBP1 gel from Fig. 7C). (D) Following mixing of recombinant proteins with *E. coli* O55:B5 LPS in the absence or presence of GTP, protein-LPS complexes were added to recombinant caspase-4, and caspase-4 activity was determined by monitoring release of free 7-Amino-4-methylcoumarin (AMC) upon cleavage of fluorogenic caspase substrate Z-VAD-AMC over time. Fluorescence intensities were either correlated with fluorescence intensities measured for defined AMC concentrations to determine free AMC concentrations upon Z-VAD-AMC cleavage (upper panel), or normalized to basal caspase-4 activities (lower panel). Caspase-4 – CASP4. All graphs show averages from three independent experiments and are represented by mean ± SD. (A) One-way ANOVA with Dunnett's multiple comparisons test comparing to control (no GBP addition) was used. All significant comparisons are shown. *** = P < 0.001. (C) Representative NPAGEs from three independent experiments are shown.

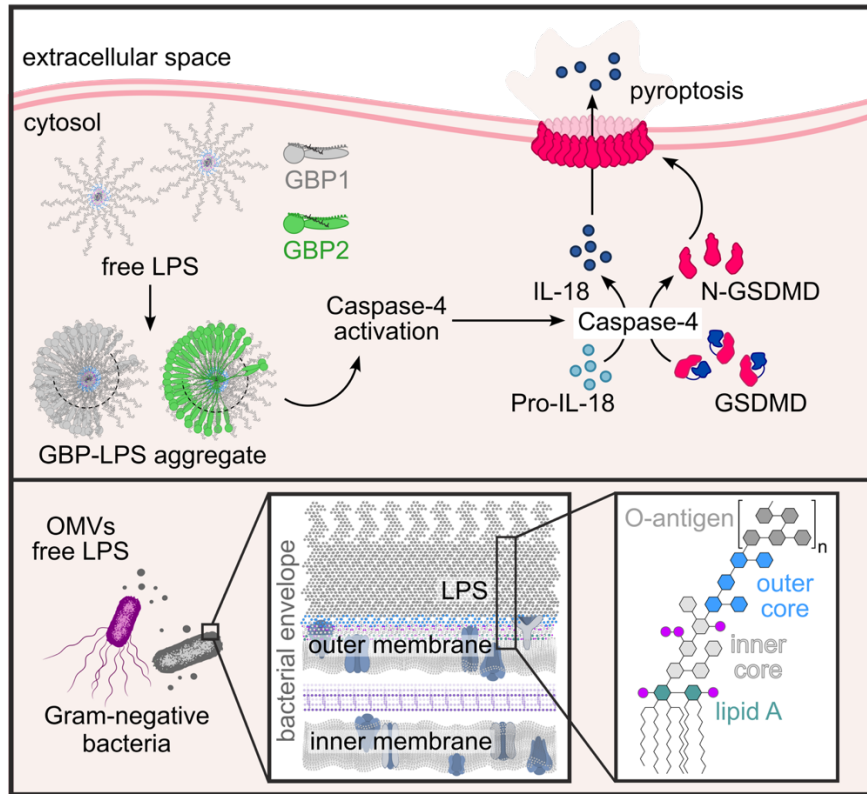


Figure S12. LPS surfactants GBP1 and GBP2 activate the non-canonical inflammasome in the cytosol without binding to the bacterial surface. Polymerizing GBP1 and GBP2 aggregate free LPS in the host cell cytosol. GBP1-LPS and GBP2-LPS complexes both enhance caspase-4 activation resulting in IL-18 release and GSDMD-induced pyroptotic cell death, ultimately depleting cytosolic Gram-negative bacteria of their replicative niche.

Movie S1 (separate file). GBP2 and GBP5 fail to encapsulate bacteria on their own. Recombinant Alexa Fluor 488-labeled GBP1, GBP2, or GBP5 were supplemented with GTP and added to formaldehyde-fixed RFP-expressing *S. flexneri*.

Movie S2 (separate file). Both GBP2 and GBP5 associate with bacteria GBP1-dependently but only GBP2 incorporates in the microcapsule. Recombinant Alexa Fluor 488-labeled GBP1, GBP2, or GBP5 mixed with Alexa-647-labeled GBP1 were supplemented with GTP and added to formaldehyde-fixed RFP-expressing *S. flexneri*.

Movie S3 (separate file). Pyroptosis of *S. flexneri* does not require GBP1 binding to bacteria. GBP1^{KO} cells primed with 100 U/ml IFN γ overnight expressing mCherry (control), mCherry-GBP1, or mCherry-GBP1^{3R} (magenta) infected with GFP-expressing *S. flexneri* Δ ospC3 Δ ipaH9.8 (yellow). Dying cells are shown in blue (sytox blue).

Plasmid sequences shown below for GBP overexpression constructs. mCherry shown in red, GBPs in blue, point mutations in green.

>pInducer-mCherry

```
gcacctttgaaatgtaactcatttgggtcaatatgtaatttcagtgtagactagtaattgtccgctaattctggccgttttggctttttgtagacgaagcttggtacc
gagctcggatctccaccccgtagcctcagctcgaattcaccatgtctagactggacaagagcaaaagtcataaacggagctctggaattactcaatgggtgc
ggatcgaaggcctgacgacaaggaactcgtcaaaagctgggagtgagcagcctaccctgtactggcacgtgaagaacaagcgggcccctgctcgatgc
cctgccaatcgagatgctggacaggcatcatacccactctgccccctggaaggcagtgatggcaagacttctgcggaacaacgccaagtcataccgctgt
gctctcctctcacatcgcgacggggctaaagtgcacatcctggcaccggccaacagagaaacagtagcaaaacccctggaaaatcagctcgcgttctctgtcagc
aaggcttctccctggagaacgcactgtacgctctgcccggctggggcactttacactgggctgctgattggaggaacaggagcatcaagtagcaaaagagga
aagagagacacctaccaccgattctatgccccacttctgagacaagcaattgagctgttgcaccggcagggagccgaacctgccttcttctggcctggaact
aatcatatgtggcctggagaacagctaaagtgcgaaagcggcggggcggaccgacgccctgacgattttagcttagacatgctcccagccgatgccctgac
gactttgaccttgatagctgctgctgacgctcttgcgattttgaccttgacatgctccccgggtaactaagtaaggatccggggccgactagaggaattccgc
ccctccccccccccccctaacgttactggccgaagcggcttgaataaggcgggtgctgttctctatgttatttccaccatattgcccgtctttggcaatgtg
agggcccgaaacctggccctgcttctgacgagcattcctaggggtcttccccctctgccaaggaatgcaaggctgttgaatgctgtaaggaagcagttc
ctctggaagcttctgaagacaacaacgctgtgtagcacccttgcaggcagcggaaacccccacctggcgacaggtgctctgcgccaaaagccacgtg
ataagatacacctgcaaaggcggcacaaccccgtagccagctgtgagttgagatgttggaagagtaaatggctctcctcaagcgtattcaacaagggg
ctgaaggatgccagaaggtagccattgtatgggatctgatctggggcctcggtagcactgtttacatggttttagctgaggttaaaaaacgcttaggcccc
cgaaccacggggcagctgggtttcttgaaaaacacgatgataagcttaccggctccaccatgattgaacaagatggattgacgcaggttctccggccgctggg
tgagagggctattcggctatgactgggcacaacagacaatcgctgctctgatgccggctgttccggctgtagcgcagggggcggccggttctttgtcaagac
cgacctgtccgggtccctgaatgaactgcaagacgagcagcggctatcgtggctgcccacgacggcggttcttgcgagctgtgctcgacgttgcactg
aagcgggaaggactggctgctattggcggaagtgcggggcaggatctcctgcatctcaccttgcctcctgcccagaaagtatccatcatggctgatgcaatg
cggcggctgcatagcctgacccgctacctgccattcagaccaccaagcgaacatcgcacgagcagcagcactcggatggaagccgggtctgtcgatc
aggtatgctggacgaagagatcaggggctcgcgccagccgaactgttgcaccaggctcaaggcagatgcccagcggcgaggatctcgtctgacccat
ggcgatgctgcttccgaatatcaggtgaaaaatggcggcttctggattcatgactgtggccggctgggtgtggcggaccgctacaggacatagcgttg
ctaccctgataattgctgaagagctggcggcgaatgggctgaccgctcctcgtgctttacggatcgcggctcccagattcgcagcgcacgcttctatcgccttct
tgacgagttctctgatgtacaagtaagcggcggcgcactctagatcataatcagccataccacattttagaggttttactgtttaaaaaacctcccacacctcc
ccctgaacctgaaacataaaatgaatgcaattgttgttttagtccctcccaattcgatacaagcttatcgcgatagatcctaataacaccttgattacaaaattg
tgaagattgactggtattcttaactatgttgcctttacgctatgtggatacgtgctttaatgctttagatcatgctattgctcccgatggcttcttctcctcctgtg
ataaatcctggttctgtctctttagaggatgttggccggtgtcaggcaactggtggtgctgactgttggctgacgcaacccccactggttggggcagctg
caccacctgacgctccttccggacttcccttccccctcctattgccacgggaactcactcggcctgctgcccgtgctgcccgtgctgacaggggctcggctgtt
gggactgacaattccgtggtgttgcgggaaatcatcgtccttcttggctgctcgcctgttggccacctggattctgcccgggacgtccttctgctacgtccttcc
ggcctcaatccagcggaccttccctcccgccgctgctcgggctcgcggccttcccgcttctcgcctcagacgagtgatcctcctttgggccc
ctccccgctgagatccttaagaccaatgacttacaaggcagctgtagatcttagccacttttaaaagaaaaggggggactggaagggtaattcactccca
acgaagacaagatctgcttttctgtactgggtctctctggttagaccagatctgagcctgggagctctctggtaactagggaaaccactgcttaagcctcaata
aagcttgcctgagtgctcaagtagtgtgtcccgctgtgtgtgactctggttaactagagatccctcagacccttttagtcagtggtgaaaatctctagcagtagta
gttcatgctatctattatcagatattataactgcaaagaaatgaatatcagagagtgagaggccgggttaattaaggaaagggctagatcattctgaagcga
aaggccctcgtgatacgcctattttataggttaatgcatgataataatggttcttagacgctcaggtggcactttcgggaaatgtgcccggaaacccctattgtttat
tttctaaatacattcaaatatgatccgctcatgagacaataacccctgataaatgctcaataatattgaaaaggaagagatgagattcaacatttccgtgctgc
ccttattcccttttggcgcattttgccttctgttttgcaccagaaacgctggtaagtaaaagatgctgaagatcagttgggtgacagagtggttaccatcga
actggatctcaacagcggtaagatccttagagatttcccccgaagaacgcttccaatgatgagcacttttaagttctgctatgtggcgggtattatcccgtgtg
acgcccggcaagagcaactcggctcgcgcatacactattctcagaatgacttgggtgagtagtaccagtcacagaaaagcatctacggatggcatgacagt
aagagaattatgacgtgctgcataacctagtgataacactcggccaacttacttctgacaacgatcggaggaccgaaggagctaaccgctttttgacaca
acatgggggatcatgtaactcgccttgatcgttgggaaccggagctgaatgaagccatacaaacgacgagcgtgacaccacgatccctgtagcaatggca
caacgcttgcgcaaacattatactggcgaactacttactctagcttcccggcaacaattaatagactggatggaggcggataaagttgaggaccacttctgctc
cggccttccggctggctggttattgctgataaatctggagccggtgagcgtgggtctcgcgggtatcattgcagcactggggccagatggaagccctcccgtatc
gtagttatctacacgagcggggagtcaggcaactatggatgaacgaaatagacagatcgcgtgagataggctcctcactgattaaagcattgtaactgtagacca
agtttactcatatatacttttagattgatttaaaactcatttttaatttaaaaggatctaggtgaagatccttttgataatctatgacaaaatcccctaactgagtttctg
ttccactgagcgtcagaccctgagaaaagatcaaaaggatcttctgagatcctttttctgctgctgcaaacaaaaaaaccaccgctaccagc
gggtgttgttccggatcaagagctaccaactcttttccgaaggtaactggctcagcagagcgcagataccaataactgttctctagtgtagccgtagttaggc
caccactcaagaactctgtagcaccgctacatacctcgtctgtaactcctgttaccagtggtgctgcccagtgggataagtcgtgcttaccgggttgactca
agacgatagttaccggataaggcgcagcggctcgggctgaacggggggtcgtgcacacagcccagcttggagcgaacgacctacaccgaactgagatacc
tacagcgtgagctatgaaaagcgcacgcttcccgaagggagaaaggcggacaggtatccggtaagcggcagggtcggaaacaggagagcgcacag
ggagaaacccaggggaaacgcctggtattctttagctctgctgggttccaccctcagctgactgagcgtcgtattttgtgatcctgcagggggcggagcctatg
gaaaaacgcggcaacgcggccttttaccggttctggtccttggccttctcactatgttcttctgctgctatcccctgattctgtgataaccgtattaccgct
ttgagtgagctgataccgctcgcgcagcgaacgacgagcgcgagtgagcagtgagcaggaagcggaaagagcggcaataacgcaaacccgctctcc
ccgcgcttggccgattcattaatgcagcaagctcatggctgactaaattttttattatgcagaggccgagccgctcggcctctgagctattccagaagtagt
aggaggctttttggaggcctaggcttttcaaaaagctccccgtggcagcagaggttcccgactggaaagcgggcagtgagcgaacgcaatattatgtgag
tagtctactcattaggcaccaccaggctttacactttatgcttccggctcgtatgtgttggaaattgtgagcggataacaatttcacacaggaaacagctatgacatg
```


attacgaattcacaataaagcatttttctactgcattctagttgtggttgcctcaaacatcaatgatcttatcatgtctggatcaactggataactcaagtaacc
aaaatcatcccaactcccacccataccctattaccactgccaattacctgtggttcttactctaaacctgattcctctgaatttttcattttaagaaattgt
atttgttaaatatgtactacaaactagtagttggaagggttaattcactcccaagaagacaagatatcctgatctgtgattaccacacacaaggctactccc
tgattagcagaactacacaccagggccaggggtcagatatccactgaccttggatggtctacaagctagtaccagttgagccagataaggtagaagaggc
caataaaggagagaacaccagcttgttacacctgtgagcctgcatgggatggatgacccggagagagaagtgttagagtgagggttgcagccgcttagc
atftcatcagtgcccgagagctgcatccggagtacttcaagaactctgatatcgagcttgcactacaagggacttccgctggggacttccagggagggcgtg
cctgggaggactgggagtgccgagccctcagatcctgcatataagcagctgcttttgcctgtactgggtctctctggttagaccagatctgagcctgggagct
ctctggctaactagggaaaccactgcttaagcctcaataaagcttgctttagtgctcaagtagtgctgcccgtctgtgtgactctggtaactagatcctc
agacccttttagtcagtggtgaaaatctctagcagtgccgcccgaacagggacttgaagcgaagggaaccagaggagctctctcgacgcaggactcgg
ctgtgtaagcgcgcacggcaagaggcagggggcggcgactggtgagtacgcaaaaaattttagctagcggaggctagaaggagagagatgggtgagag
agcgtcagtagtaagcgggggagaattagatcgcgatgggaaaaaattcggttaaggccaggggaaagaaaaatataaataaaacatagtagtggc
aagcagggagctagaacgattcgcagttaatcctggcctgttagaaacatcagaaggctgtagacaaactgggacagctacaacctccctcagacagg
atcagaagaactagatcattataatacagtagcaacctctattgtgtcatcaaaggatagagataaaagacaccaaggaagctttagacaagatagag
gaagagcaaaaacaaagtaagaccaccgcacagcaagcggccggcgtgatctcagacctggaggaggagatagagggacaattggagaagtga
ttataaataataaagtagtaaaaattgaaccattaggtagcaccaccaaggcaagagaagagtggtgcagagagaaaaagagcagtggaatag
gagcttggcttctgggtcttgggagcagcaggaagcactatgggcccagcgtcaatgacgctgacggtacaggccagacaattattgtctgtatagtgacg
agcagaacaatttctgagggctattgagggcgaacagcatctgttgaactcagctggtgggatcaagcagctccaggcaagaatcctggctgtggaag
atacctaaaggatcaacagctcctgggattggggtgctctggaaaactcatttgcaccactgctgtgcttggatgctagtggagtaataaatctctggaac
agatttgaatcacacgacctggatggagtgggacagagaaataacaattacacaagcttaatacctccttaattgaagaatcgaaaaaccagcaagaaa
agaatgaacaagaattattggaattagataaattgggcaagtttgggaattggttaacataacaaattggctgtggtatataaaatattcataatgatagtaggag
gcttggtaggttaagaatagttttgctgtactttctatagtaatagagtaggacgggatattcaccattatcgttcagaccacctccaaccccgaggggacc
cgacaggcccgaaggaatagaagaagaaggtggagagagagacagagacagatccattcgattagtgaaacggatctcgacggatcgccgaattcaca
atggcagtagtattccacaattttaaagaaaaaggggattgggggtacagtgacggggaagaatagtagacataatagcaacagacatacaactaa
agaattacaaaaacaaattacaaaaattcaaaatttccgggttattacagggacagcagagatccagtttggactaggatcctttaccactccctatcagtgatag
agaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtt
taccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgata
gagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtcggtaccgggctgaggtaggcgtgacgggtgggagggc
tataaagcagagctggttagtaaccgtcagatcgctggagagccatccacgctgttttagacctcagatagaagacaccgggaccgatccagctccgagg
ccccgaactagtcagtggtggaattctgcagatcaACAAGTTTGTACAAAAAAGCAGGCTgccaccatggtgagcaagggcgaggag
gataacatggccatcaaggagttcagcttcaaggtgcacatggagggctcctgtaaccggccagagttcgagatcgagggcgagggcgagggcgagggcgg
ccccacagggccaccagaccgccaagctgaaggtgaccaaggggtggccctgcccctgctgctgggacatcctgtcccctcagttcatgtacggctcaag
gcctacgtgaagcaccggcagatccccgactacttgaagctgcttccccgagggctcaagtgaggagcgtgatgaactcgaggacggcggtg
gtgaccgtgaccagggactcctcctgcaggacggcgagttcatctacaaggtgaagctgctgagggcaccactccctccgacggccccgtaatgcagaag
aagaccatgggctgggagggcctcctcgagcggatgtacccgaggacggcgccctgaaggcgagatcaagcagaggtgaagctgaaggacggcgg
ccactacgacgctgaggtcaagaccactacaaggccaagaagcccgtgagctgcccggcgctacaacgtcaacatcaagttggacatcacctcccac
aacgaggactacaccatcgtggaacagtagcaacgcgcccagggccgcaactccaccggcgcatggacgagctgtacaagtcgggactcAGATCTC
GAGCTCAAGCTTCGAATTCTGCAGTCGACGGTACCGCGGGCCCGGGATCCATCGGATCTAGAtaaGACCCAG
CTTTCCTGTACAAAGTggttataccagcacagtgccggcgcctcagctagagggcccgggtcgaataaccatacagcgtcccagactacgct
tagtaatgattaataaactagaaattctaccgggtaggggagggcgttttccaaggcagctggtgagtaaccacccaagatctggcctccgcccgggtttgg
cgctcccggggcgccccctcctcacggcgagcgtccacgctcagacgaagggcgagcagcgtcctgatccttccgcccggagcgtcaggacagc
ggcccgtgctcataagactcggccttagaaccacagatcagcagaaggacattttagcagggacttgggtgactctagggcactggtttcttccagagag
cggaacaggcgaggaagtagtcccttctcggcgattctcggagggatcctcgtggggcgtgacgcccgatattatataaggacgcgcccgggtgtggc
acagctagtccgtcagccgggatttgggtcgggtctgtttgtggatcgctgtatcgtcacttggtagtagcgggctgctgggctggccggggcttctggt
ccgcccggcgtcgtgggacggaagcgtgtggagagaccgcaagggctgtagtctgggtccgagcaaggttccctgaactgggggttgggggga
gcgagcaaaatggcggctgtcccagcttgaatggaagacgctgtgaggcggcgtgtgaggtcgttgaacaaggtgggggcatggtggcgca
gaaccaaggtcctgaggccttcgtaatcgggaaagcttattcgggtgagatgggctggggcaccatctggggaccctgacgtgaagttgtcactgactg
gagaactcggtttgcgtctgttgcggggcgagttatggcgggtcgggtggcagtgacccgtaccttgggagcgcgcgcccctgctgtctgtcgtgacgtca
cccgttctgttgctataatgacgggtggggccacctgccggtaggtgtgcggtaggcttttccgctcagggacgcaggggtcgggctagggtaggctcct
gaatcgacaggcgggacctcgtgaggggagggataagtgaggcgtcagtttctgtgctggtttatgtacatcttctaagtagctgaagctccggtttga
actatgcgctcggggtggcgagtggtttgtgaagtttttag

>pInducer-mCherry-GBP1

cgagtgggtacatcgaactgatctcaacagcggtaagatccttgagagtttgcggcgaagaacggtttccaatgatgacactttaaagttctgctatgtggc
gctgtattatcccgtgtgacgcgggcaagagcaactcggctcgcgcatacacttctcagaatgacttgggtgactactaccagtcacagaaaagcatctt
acggatggcatgacagtaagagaattatgacgtgctgcataacctagtgataaactcggccaacttactctgacaacgatcggaggaccgaaggag
ctaaccgctttttgcacaacatgggggatcatgtaactcgccttgatcgttggaaaccggagctgaatgaagccatacacaacgacgagcgtgacaccagat
gcctgtagcaatggcaacaacggttgcgcaaaactattaactggcgaactcttactctagcttccggcaacaataatagactggatggagcgggataaagttgc
aggaccacttctgcgctcggccctcgggtggttattgctgataaactggagccggtgagcgtgggtctcgcggtatcattgacgactggggccagat
ggtaagccctcccgtatcgtattatctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgtgagataggtcctcactgattaagc

attgtaactgtcagaccaagttactcatatatactttagattgattaaaacttcatttttaattaaaaggatctaggtgaagatccttttgataatctcatgaccaa
atccctaacgtgagtttctgaccctgagcgtcagaccccgtagaaaagatcaaaggatcttctgagatcctttttctgctgtaatctgctgcttgaacaaa
aaaaccaccgctaccagcgggtgttggccggatcaagagctaccaactctttccgaaggtaactggcttcagcagagcgcagataccaaactgttcttc
tagttagccgtagtttagccaccactcaagaactctgtagcaccgctacatacctcgtctgtaatcctgttaccagtggtgctgcccagtgccgataagtcg
tgtctaccgggttgactcaagacgatagttaccggataaggcgcagcggctgggtgacgggggttcgtgacacagcccagcttgagcgaacgcag
tacaccgaactgagatacctacagcgtgagctatgagaaagcggcaccgctcccgaagggagaaagggcggacaggtatccggtaagcggcagggctcga
acaggagagcgcacgagggagctccaggggaaacgcctggtatctttagtctgctgctgggttcgccacctctgactgagcgtgattttgtgctgct
agggggcgagcctatgaaaaacgccagcaacgcggcctttacggttcctggcctttgctgctttgctcacatgttcttctgctgattcccctgattctg
ggataaccgtattaccgctttgagtgagctgataccgctcggcagccgaacgaccgagcgcagcagagtcagtgagcgggaagcgggaagagcggcca
atagcgaaccgctctccccgcgcttgccgattcattaatgacgaagctcatggctgactaattttttattatgacagaggccgaggccgctcggcctctg
agctattccagaagtagtgaggaggccttttggaggcctaggcctttgcaaaaagctccccggtggcagcaggtttcccagctggaagcgggagtgagc
caacgcaattaatgtgagttagctcactcattaggcaccaccaggcctttacactttatgctccggctcgtatgtgtggaattgtgagcggataacaattcacaca
ggaaacagctatgacatgattacgaattcacaaataaagcatttttctcgtcattctagttgtggtttgcaaaactcaatgtatcttcatgctggtatcaact
ggataactcaagtaacaaaatcatccaaactcccaccataccttaccactgccaattacctgtggttcttactctaaacctgtgattcctctgaatta
ttttcttttaagaattgtattgttaaatatgtactacaacttagttagttggaaggcctaattcactccaaagaagacaagataccttcatctgtggtatcca
cacacaaggctactccctgattagcagaactacacaccaggccagggtcagatatcactgacctttggatggtgctacaagctagtagaccagtgagccag
ataaggtagaagaggccaataaaggagagaacaccagctgttacacctgtgagcctgcatgggatggatgcccggagagagaagtgtagagtgagg
gtttgacagccgctagcattcatcagctggccgagagctgcatccggagcttcaagaactgctgatatcgagctgctacaagggacttccgctggggac
ttccaggaggcgtggcctggcgggactgggagtgggagccctcagatcctgcatataagcagctgttttgcctgtactgggtctctggttagaccag
atctgagcctgggagctctcggtaactagggaaaccactgcttaagcctcaataaagctgcttgagtgctcaagtagtgctgcccgtctgtgtgactctg
gtaactagagatcctcagacccttttagtctggtgaaaatcttagcagtggtggcggcccgaacagggactgaaagcgaaggggaaaccagaggagctct
cgacgcaggactcggctgtgaagcgcacggcaagaggcgagggcgggcagctggtagtacgcaaaaaatttgactagcggagggtagaaggag
agagatgggtgcgagagcgtcagtttaagcgggggagaattagatcgcgatgggaaaaattcggtaaggccaggggggaaagaaaaataaattaa
aacatatagtatgggcaagcaggagctagaacgattcgcagttatcctggcctgttagaaacatcagaaggcttagacaaactgggacagctacaac
catccctcagacaggatcagaagaacttagatcattataataacagtagcaaccctctattgtgtgcatcaaggatagagataaaagacaccaaggaagct
ttagacaagatagaggaagagcaaaacaaaagtaagaccaccgcacagcaagcggccggcctgctcagacctggaggaggagatagagggac
aattggagaagtgaaatataaataaagtagtaaaaattgaaccattaggagtagcaccaccaaggcaagagaagagtggtgcagagagaaaaaa
gagcagtgggaaataggagcttcttctgggtcttgggagcagcaggaagcactatgggcgcagcgtcaatgacgctgacggtaacggccagacaattatg
tctgtatagtgacgacagaacaatttctgagggctattgagggcaacagcactgttgaactcagctggtgggcatcaagcagctccagtggaagaat
cctggctgtgaaagatacctaaaggatcaacagctcctgggatttggggtgctctggaactcatttgcaccactgtgctgcttggacttggacttggatg
ataaatctctggaacagatttgaatcacacgacctggagtgaggagaaatcaactacagaagcttaatacactccttaattgaagaatcgcaa
aaccagcaagaaaagatgaacaagaatttggaaatagataaattgggcaagtttggaaattggttaacataacaaattggctgtggtatataaaatttcat
aatgatagtaggagcctggtaggttgaagaatagtttctgctacttctatagtagaataagtagtaggcagggatattcaccattatcgttccagaccacctccaa
ccccgaggggaccgacaggccgaaggaatagaagaagaaggtggagagagagacagagacagatcattcagattagtaacggatctcagcggat
cgccgaattcacaatggcagttatccacaattttaaagaaaagggggattgggggtacagtgacggggaagaatagtagacataatagcaaca
gacatacaactaaagaattacaaaaacaaattacaaaaattcaaaatttctgggttattacagggacagcagagatccagtttgactaggtatcctttaccct
ccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaa
agtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccac
tccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagctcggtagccgggtcaggttagcgtgt
acgggtgggagcctatataagcagagctcgttagtgaaaccgctagatcgctggagcgcctaccacgctgtttgacctcatagaagacaccgggaccga
tccagcctccgcccgaactagctcagtggtggaattctgcagatatcaACAAGTTTGTACAAAAAAGCAGGCTgccaccatgggtgag
caagggcgaggaggataacatggccatcatcaaggagttcatgcgttcaaggtgcacatggagggtcctgtaacggccacaggttcgagatcaggggc
gagggcgagggccgcccactcagagggcaccagaccgccaagctgaaggtgaccaaggggtggcccctgccctcgcctgggacatcctgtcccctcagtt
catgtacggctccaaggctacgtgaagcaccgcccagatccccgactactgaagctgcttcccggagggttcaagtgaggagcgcgtgatgaactcg
aggacggcggcgtggtgaccgtgaccaggactcctcctgcaggacggcgagttcatctacaaggtgaagctgcgcccacccaactcccctcggagcgc
cccgtaatgcagaagaagaccatgggctgggaggcctcctccgagcggatgaccccaggagcggcgcctgaagggcgagatcaagcagaggctgaa
gctgaaggacggcggcactacgacgctgaggtcaagaccacctacaaggccaagaagcccgtgcagctgcccggcgtacaacgtcaacatcaagtt
ggacatcactcccacaacgaggactacaccatcgtggaacagtagcaacgcgcggagggccgcccactccaccggcggcatggacgagctgtaagtc
cggactcAGATCTATGGCATCAGAGATCCACATGACAGGCCAATGTGCCTCATTGAGAACACTAATGGGCGAC
TGATGGCGAATCCAGAAGCTCTGAAGATCCTTTCTGCCATTACACAGCCTATGGTGGTGGTGCAATTGTGG
GCCTCTACCCACAGGCCAAATCCTACCTGATGAACAAGTGTGCTGGAAGAAAAAGGGCTTCTCTGGCT
CCACGGTGCAGTCTCACACTAAAGGAATCTGGATGTGGTGTGTGCCCCACCCAAAGAAGCCAGGCCACATC
CTAGTTCTGCTGGACACCGAGGGTCTGGGAGATGTAGAGAAGGGTGACAACCAGAATGACTCCTGGATCTT
CGCCCTGGCCGTCCTCCTGAGCAGCACCTTCGTGTACAATAGCATAGGAACCATCAACCAGCAGGCTATGG
ACCAACTGTAATGTGACAGAGCTGACACATAGAATCCGATCAAAATCCTCACCTGATGAGAATGAGAATGA
GGTTGAGGATTCAGCTGACTTTGTGAGCTTCTTCCCAGACTTTGTGTGGACTGAGAGATTTCTCCCTGGA
CTTGGAAAGCAGATGGACAACCCTCACACCAGATGAGTACCTGACATACTCCCTGAAGCTGAAGAAAGGTAC
CAGTCAAAAAGATGAAACTTTTAACTGCCAGACTCTGTATCCGGAAATTTCTCCAAAGAAAAAATGCTTT
GTCTTTGATCGGCCCGTTACCCGCAGGAAGCTTGCCAGCTCGAGAACTACAAGATGAAGAGCTGGACCC

CGAATTTGTGCAACAAGTAGCAGACTTCTGTTCTACATCTTTAGTAATTCCAAAACACTAAAACCTTTTCAGGAG
GCATCCAGGTCAACGGGCCTCGTCTAGAGAGCCTGGTGCTGACCTACGTCAATGCCATCAGCAGTGGGGAT
CTGCCGTGCATGGAGAACGCAGTCCTGGCCTTGGCCAGATAGAGAACTCAGCTGCAGTGCAAAAAGGCTAT
TGCCCACTATGAACAGCAGATGGGCCAGAAGGTGCAGCTGCCACAGAAAGCCTCCAGGAGCTGCTGGACC
TGCACAGGGACAGTGAGAGAGAGGCCATTGAAGTCTTCATCAGGAGTTCTTCAAAGATGTGGACCATCTAT
TCAAAGGAGTTAGCGGCCAGCTAGAAAAAAGCGGGATGACTTTTGTAAACAGAATCAGGAAGCATCAT
CAGATCGTTGCTCAGGTTTACTTCAGGTCATTTTAGTCTCTAGAAGAAGAAGTGAAGGCGGGAATTTATTC
GAAACCAGGGGGCTATCGTCTCTTTGTTTTCAGAAGCTACAAGACCTGAAGAAAAAGTACTATGAGGAACCGAG
GAAGGGGATACAGGCTGAAGAGATTCTGCAGACATACTTGAATCCAAGGAGTCTATGACTGATGCAATTCT
CCAGACAGACCAGACTCTCACAGAAAAAGAAAAGGAGATTGAAGTGAACGTGTGAAAGCTGAGTCTGCACA
GGCTTCAGCAAAAATGTTGCAGGAAATGCAAAGAAAAGTGAAGTGAACAGATGATGAAACAGAAAGGAGAGGAGTTA
TCAGGAACACTTGAACAACACTGACTGAGAAGATGGAGAACGACAGGGTCCAGTTGCTGAAAGAGCAAGAGA
GGACCCTCGCTCTTAACTTCAGGAACAGGAGCAACTACTAAAAGAGGGATTTCAAAAAGAAAAGCAGAATAAT
GAAAAATGAGATACAGGATCTCCAGACGAAAATGAGACgacgaaagcatgtaccataagctaaGACCCAGCTTTCTTG
TACAAAGtggtgatatccagcacagtgggcgccgctcagtgtagagggcccggttgaataccatacagcgtccagactacgcttagtaatgatta
atataactagaaattctaccgggtaggggagggcgctttcccaaggcagctcggagtaaccaccaagatctggcctccgcccgggctttggcgctcccgc
ggcgccccctcctcacggcgagcgtgccacgtcagacgaagggcgagcagcgtcctgatcctccgcccggagcgtcaggacagcggcccgtgc
tcataagactcggccttagaacccagatcagcagaaggacatttaggacgggacttgggtgactctagggcactggtttctccagagagcggaaacggc
gaggaaaagtagtccctcctcggcgattctcggagggatctccgtggggcggtgaacgccgatgattatataaggacgcgcccgggtgaggacagctagtcc
gtcgcagcccgggattgggtcgcggttctgtttgtggtatcgctgtgatcgtcacttgggtgagtagcgggctgctgggctggccgggcttctgctggcggcc
gctcgggtgggacggaagcgtgtggagagacgccaagggcgttagtctgggtccgagcaaggttgcctgaactgggggtggggggagcgcagcaaa
atggcggctgttcccagcttgaatggaagacgcttctgagggcgggctgtgaggtcgttgaacaaggtggggggcatggtggcggaagaaccaagg
ctttaggccttcgctaatacgggaaagcttattcgggtgagatgggctggggcaccatctggggaccctgacgtgaagttgtactgactggagaactcgggt
tgtcgtctgttggggggcggcagttatggcgggtccgttggcagtgacccgtaccttgggagcgcgcgccctcgtcgtgacgtcacccttctgttgg
cttataatgcaggggtggggccacctcgggtaggtgtgcggtaggcttttcccgctgcaggacgcaggggtcgggctagggtaggctctcgaatcgacagg
cgccggacctcgtgaggggagggataagtgagggcgtcagtttcttggcggtttatgtacctatcttctaagtagctgaagctccggtttgaaactatgcgctc
gggtggcagtggttttgaagtttttagccaccttgaatgtaatacttgggtcaatataatgtaattttagttagactagaaattgcccgtaaattctggcgt
tttggctttttagtagcaagcttggtagcagctcggatctccaccccgtagcgtcgaattcaccatgctagactggacaagagcaaatgata
aacggagctctggaattactcaatggtgtcgtatcgaaggcctgacgacaaggaactcgtcacaagctgggaggtgagcagctaccctgactgagcag
tgaagaacaagcgggcccctgctcagtgccctgcaatcgagatcgtgacagggcactatacccaactctgccccctggaagggcagctatggcaagacttct
gcggaacaacggcaagctacaccgctgtcctcctcaccatcgcaggggctaaagtgcatctcggcaccgccaacagagaaacagtagcaaaacc
tggaaaatcagctcgcgttctgtgtcagcaaggcttccctggagaacgcactgtacgcctgtcgcggctgggcccactttactggtgctgtattggagga
acaggagcatcaagtagcaaaagaggaaagagagacacctaccaccgattctatgccccactctgagacaagcaattgagctgttgcaccggcagggga
gcccgaacctgccttcttggcctggaactaatcatatgtggcctggagaacagctaaagtgcgaaagcggcgggcccagccagcgccttgcagatttga
cttagacatgctcccagccgatgccctgacgactttgacctgatatgctgctcgtgacgctctgacgattttgacctgacatgctccccgggtaactaagtaag
gatccgcccggcactagaggaattccgcccctccccccccccccctaacgttactggcgaagccgcttgaataaggccgggtgctgcttctatattgt
atlttccaccatattgccgttttggcaatgtgagggcccggaaacctggcctgtcttctgacgagcattcctaggggtcttccccctcgcctaaaggaatgcaa
ggctgttgaatgctggaaggaagcagttcctctggaagcttctgaagacaacaacgtctgtagcagcccttgcaggcagcgaacccccacctggcga
caggtgctctcggccaaaagccacgtgtataagataacctgcaaaaggcggcacaaccccagtgccacgttggatgatttggaaagagtgcaa
atggctctcctcaagcgtattcaacaaggggctgaaggatgccagaaggtacccattgtatgggatctgatctggggcctcgggtgacatgctttacatggtt
agtcgaggttaaaaaacgtctaggcccccgaaaccacggggacgtggttttcttgaaaaacacgatgataagctaccggtccaccatgattgaacaagat
ggattgcacgcaggttctccggcggctgggtggagaggctattcggctatgactgggcacaacagacaatcggctgctcgtatgccgcccgttccggctgca
gcgagggggcggccggcttcttctgcaagaccgacctgcccgtgcccgaatgaactgcaagacgagcagcggcgtatcgtgctggccacgacgggc
gttccctgcccagctgtgctgacgttgcactgaagcgggaaggactggctgctattgggcaagtgccggggcaggatctcctgctatctcacttgcctcgtc
cgagaaagatccatcatggtgtagcaatgcggcggctgcatacgttgcctgacccgctaccctgcccattcgaccaccaagcgaacatcgcatcgagcagc
acgtactcggatggaagccggcttctgcatcaggatgatctggacgaagagcatcaggggctcgcgcccagccgaactgttccagggtcaaggcagcat
gcccagcggcagggatcctcgtgacccatggcgtgcttgcgcaatcatggtggaaaatggccgcttttctggattcatcagactgtggccggctgggt
gtggcggaccgctacaggacatagcgttggctacccgtgatattgctgaagagcttggcggcgaatgggctgaccgcttctcgtctttacggatcgcgctc
cgattcgcagcgcagccttctatcgccttctgacgagttctctgatgtacaagtaaagcggccgactctagatcataatcagccataaccattttagag
gttttacttgccttaaaaaacctcccacacctccccgaacctgaaacataaaatgaatgcaattgttgttttagtccctccaattcgatcaagcttatcgcgat
agatcctaatacaacctggtattcaaaaatttgaagattgactggattcttaactatgttgccttttacgctatggatacgtgcttaaatgctttgatcatgc
tattgctcccgtatggcttcttctcctctgtataaactcgtgtgtcctttagaggagttgtggcccgttgcaggcaacgtggcgtggtgtgactgtgttgg
ctgacgcaacccccactggttgggcaattgccaccacctgtcagatccttccgggacttccgcttccccctccctattgccagggcgaactcatcgcgcccgtc
cttgcggcgggagctcctctcactcgtccctcggccctcaatccagcggaccttctcggcggcctcgtcggcggcctcctcggcgtctcctcggcgtctc
ccctcagacgagctcggatccttggggcggcctccccgctgagatcctttaaagaccaactacaaggcagctgtagatcttagccactttttaaagaaa
aggggggactggaagggtaattcactcccaacgaagacaagatctgcttttctgactgggtctctggttagaccagatctgagcctgggagctcctggc
taactagggaaacctgcttaagcctcaataaagcttgccttagtctcaagtagtgtgcccgtctgtgtgactctgtaactagagatccctcagacc
tttagtcagtggtgaaaatcttagcagtagtagtctatcttattcagtagttataactgcaaaagaaatgaatatcagagagtgagaggcccgggttaatt

aaggaaagggctagatcattctgaagacgaaagggcctcgtgatacgcctatTTTTataggttaatgtcatgataataatggttcttagacgtcaggtggcactttt
cggggaaatgtgCGCGgaacccctatTTTtatttttctaaatacatcaaatatgtatccgctcatgagacaataaccctgataaatgttcaataatattgaaaa
ggaagagtatgattcaacattccgtgCGccctattccctTTTTgCGGCattttgctcctgTTTTgctcaccgaaacgctggtgaaagtaaaagatgctga
agatcagttgggtgca

>plInducer-mCherry-GBP2

ggtgcacgagtggttacatcgaactggatctcaacagcggtaagatccttgagagtttgcCCCGaagaacgTTTTcaatgatgagcactTTaaagtctgct
atgtggcCGgtattatccCGTgtgacgCCGGcaagagcaactCGgtCGCCcatacactattctcagaatgacttggtgagctcaccagtcacagaaaa
gcatctacggatggcatgacagtaagagaattatgcagtgctGCCataaccatgagtgataaacactcggccaacttactctgacaacgatcggaggaccga
aggagctaaccgctTTTTgcacaacatgggggatcatgtaactcgccttgatcgttgggaaccggagctgaatgaagccataccaaacgacgagcgtgacac
cacgatgctgtagcaatggcaacaacgTTgcgcaactattaactggcgaacttactctagcttccCGcaacaattaatagactggatggaggcggata
aagttgcaggaccactctgCGctCGccctccgctggttatttgcgataaatctggagccggtgagcgtgggtctcCGgtatcattgcagcactgggg
ccagatggaagccctccCGtatcgtattctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgtgagataggtcctcactgat
taagcattggaactgtcagaccaagttactcatatactttagattgattaaaactcatttttaaaaggatctagggaagatcctTTTTgataatctcatgac
caaaatcccttaacgtagtttcttccactgagcgtcagaccccgtagaaaagatcaaaggatcttctgagatcctTTTTctgCGcgaatctgctgctgcaaa
caaaaaaccaccgctaccagcgggtggttTTgCCGGatcaagagctaccaactTTTTcgaaggttaactggctcagcagagcgcagataccaaact
gttctctagtgtagccgtagttagccaccactcaagaactctgtagaccCGctacatacctCGctctgtaactcctgttaccagtggtgctgCCagtgccgat
aagcgtgcttaccgggttgactcaagacgatagttaccggataagggcgcagcggcgggctgaacggggggtcgtgCACacagcccagcttgagcga
acgactacaccgaactgagatacctacagcgtgagctatgaaagcGCCacgctccCGaagggagaaaggCGgacaggtatccGGtaagCGgCagg
gtCGgaacaggagagcgcacgaggggactccaggggaaacgCctggtatctttagtctgCGggttCGccactctgacttgagcgtcattttgtgatg
ctcgtcaggggggCGgagcctatggaaaaacGCCagcaacCGcctTTTTacggtcctgCCctttgctgCGcctttgctcactgcttcttctgCGttatccCGt
attctgtgataaccgattaccgctttagtgagctgataccgctCGCCgacCGgaacgaccgagcgcagcagtgactgagcgggaagCGgaagag
CGccaatacGcaaacCGcctcCCCGcCGgttggccgatcattaatgcagcaagctcatggctgactaatttttattatgcagaggccgaggCGcctCG
gcctctgagctattccagaagtagtgaggagcTTTTggaggcctaggcctttgcaaaaagctccCGtgGCacgacaggttccCGactggaaagCGggcag
tgagCGcaacGcaattaatgtgagttagctcactcattaggcaccCGccttactttatgctcCGgctcgtatgttGTggaattgtgagcggataacaatttc
acacaggaaacagctatgacatgattcgaattcacaataaagcatttttactgactcattctagttggttGTcCAAactcaatgtatctatcatgctggt
caactggataactcaagctaaccaaaatcatccaaactcccaccataccttaccactgccaattactgtggttacttactctaaacctgtgattcctct
gaatttttcaTTaaagaattgtattgttaaatagtactacaacttagtagttgaagggtaattcactcccaagaagacaagatcctgtatctggtgat
ctaccacacaaggtacttccctgattagcagaactacacaccagggccaggggtcagatccactgaccttggatggtgctacaagctagtagaccagttg
agccagataaggtagaagggcaataaaggagagaacaccagcctgtttacccctgtgagcctgcatggatggatgaccCGgagagagaaggtgtaga
gtggaggttgacagCCcctagcattcaacgctgCCCGcagagctgcatccggagctcaagaactgctgatatcgagctgctacaagggacttccgct
ggggacttccagggaggcgtgCCtgggCGgactgggagtgCGagccctcagatcctgcatataagcagctgctTTTTgCctgactgggtctctcgtgta
gaccagatctgagcctgggagcctctgGtaactagggaaaccactgGtaagcctcaataaagcttgccttgagtgctcaagtagtGTgCCcctgctgtgtg
gactctgtaactagagatccctcagacccttttagtcagtggtgaaatctctagcagtgCGCCCGaacagggactgaaagCGaaagggaaaccagagg
agctctcgcacgagcaggactcggctgctgaagcgcgcacggaagaggCGaggggCGgactggtgagtagcCCaaaaattttagctagcggaggctag
aaggagagagatgggtgCGagagcgtcagttaaagCGggggaattagatcCGgatgggaaaaattCGgttaaggccagggggaaagaaaaaatat
aaattaaaacatagtagtggaagcagggagctagaacgattcgcagttaatcctggcctgttagaaacatcagaaggctgtagacaaactgggacag
ctacaacctccctcagacaggatcagaagaacttagatcattatataacagtagcaaccctctattgtgcatcaaaggatagagataaaagacaccaa
ggaagcttagacaagataggaagagcaaaacaaagtaagaccaccgacagcaagCGCCCGcctgatctcagacctggaggaggagat
gagggacaattggagaagtgaaatataaaatagaagtagtaaaattgaaccattaggagtagcaccaccaaggcaagagaagagtggtgacagaga
gaaaaagagcagtggaataggagcttGTccttgggtcctgggagcagcaggaagcactatgggCGcagcgtcaatgacgctgacggtacaggccaga
caattattgctggtatagtcagcagcagaacaattgtgagggctattgaggcgaacagcatcgttGcaactcacagctgtgggcatcaagcagctccag
gcaagaatcctggctgTgaaagatacctaaaggatcaacagctcctgggatttggggtgctctgGaaaactattgaccactgctgTccttgaatgcta
gttgagtaataatcttGgaacagattggaatcacacgacctggatggagtgggacagagaaattaacaattacacaagcttaatacactccttaattgaag
aatCGaaaaccagcaagaaagaatgaacaagaattattggaattagataaatggcaagtttGgaattggttaacatacaaaattggctgTggtataata
aattattcataatgatagtaggagccttggtaggttaagaatagttttgctgacttctatagtgaaatagagtaggagggatattcaccattatcgtttagaccca
cctcccaacccCGaggggaccCGacaggccCGaaggaatagaagaagaaggtggagagagagacagagacagatccattcgttagtgaacggatctc
gacggtatCGCCgaattcaaaatggcagttatcccaaatTTaaagaaaaagggggattgggggtacagtgcaggggaaagaatagtagacataat
agcaacagacatacaaaataaagaattcaaaaaaattcaaaaaattcgggttattacagggacagcagagatccagtttgactaggtatc
ctttaccactccctatcagtgatagaaaaagtgaaagtcgagttaccactccctatcagtgatagagaaaaagtgaaagtcgagttaccactccctatcagtgat
agagaaaaagtgaaagtcgagttaccactccctatcagtgatagagaaaaagtgaaagtcgagttaccactccctatcagtgatagagaaaaagtgaaagtcga
gtttaccactccctatcagtgatagagaaaaagtgaaagtcgagttaccactccctatcagtgatagagaaaaagtgaaagtcgagctcggtagccgggtcaggg
taggCGtgatccggtgggagcctataagcagagctggttagtgaaagcagctgagcctgagagccatccacgctgtttgacctccatagaagacacc
gggactgacagcctCGCCCGcctgtagtggatgctggtggaattctgcatatacaACAAGTTTGTACAAAAAAGCAGGCTgcacc
atggtgagcaaggCGagggagataaactggccatcaagggattcgcctcaaggtgcaacatggagggtcctgtaacggccacgagttcagat
cgagggCGagggCGagggccctacgagggcaccagaccCGcaagctgaaggtgaccaaggggtggccctgCcttCGcctgggacatcctgtc
ccctcagttcatgacggctcaaggcctacgtgaagcaccCGcgcacatccCGactcttgaagctgctcctccCGagggctcaagtgaggCGcgtga
tgaactCGaggaCGgCGgctggtgacctgaccaggaactcctcctgCaggacCGgagttcatctacaaggtgaagctgCGcgcaccaactccctc
CGacgGCCCGtaatcgagaagaagaccatgggctgggaggcctcctCGagcggatgacccCGagcggCGcctgaagggCGagatcaagcaga

ggctgaagctgaaggacggcgccactacgacgctgaggtcaagaccacctacaaggccaagaagcccgtgacgctgccggcgccctacaacgtcaac
atcaagttggacatcacctcccacaacgaggactacaccatcgtggaacagtagcaacgcgcccaggggccactccaccggcgccatggacgagctgt
acaagtcgggactcAGATCTATGGCTCCAGAGATCAACTTCCGGGCCCAATGAGCCTCATTGATAAACACTAAAG
GCAGCTGGTGGTGAATCCAGAAGCTGAAGATCCTATCTGCAATTACGCAGCCTGTGGTGGTGGTGGCGA
TTGTGGCCCTCTATCGCACAGGCAAATCCTACCTGATGAACAAGCTGGCTGGGAAGAAAAACGGCTTCTCTC
TAGGCTCCACAGTGAAGTCTCACACCAAGGGAATCTGGATGTGGTGTGTGCCTCATCCCAAGAAGCCAGAAC
ACACCCTAGTTCTGCTCGACACTGAGGGCCTGGGAGATATAGAGAAGGGTGACAATGAGAATGACTCCTGG
ATCTTTGCCTTGGCCATCCTCCTGAGCAGCACCTTCGTGTACAATAGCATGGGAACCATCAACCAGCAGGCC
ATGGACCAACTTCACTATGTGACAGAGCTGACAGATCGAATCAAGGCAAACCTCCTCACCTGGTAACAATTCTG
TAGACGACTCAGCTGACTTTTGTGAGCTTTTTTCCAGCATTGTGTGGACTCTCAGAGATTTACCCTGGAAC
GGAAGTAGATGGAGAACCATCACTGCTGATGACTACTTGGAGCTTTTCGCTAAAGCTAAGAAAAGGTACTGA
TAAGAAAAGTAAAAGCTTTAATGATCCTCGGTTGTGCATCCGAAAGTTCTTCCCAAGAGGAAGTGCTTCGTC
TTCGATTGGCCCGCTCCTAAGAAGTACCTTGTACCTAGAGCAGCTAAAGGAGGAAGAGCTGAACCCTGAT
TTCATAGAACAAGTTGCAGAATTTTGTCTACATCCTCAGCCATTCCAATGTCAAGACTCTTTCAGGTGGCAT
TCCAGTCAATGGGCCTCGTCTAGAGAGCCTGGTGTGACCTACGTCAATGCCATCAGCAGTGGGGATCTAC
CCTGCATGGAGAACGCAGTCTGGCCTTGGCCAGATAGAGAACTCAGCCGCAGTGGAAAAGGCTATTGCC
CACTATGAACAGCAGATGGGCCAGAAGGTGCAGCTGCCACGGAAACCCTCCAGGAGCTGCTGGACCTGCA
CAGGGACAGTGAGAGAGAGGCCATTGAAGTCTTCATGAAGAACTCTTTCAGGATGTGGACCAATGTTCCA
GAGGAAATTAGGGGCCAGTTGGAAGCAAGGCGAGATGACTTTTGTAAAGCAGAATTCCAAGCATCATCAGA
TTGTTGCATGGCTTTACTTCAGGATATATTTGGCCCTTTAGAAGAAGATGTCAAGCAGGGAACATTTTCTAAAC
CAGGAGGTTACCGTCTCTTACTCAGAAGCTGCAGGAGCTGAAGAATAAGTACTACCAGGTGCCAAGGAAGG
GGATACAGGCCAAAGAGGTGCTGAAAAAATATTTGGAGTCCAAGGAGGATGTGGCTGATGCACTTCTACAGA
CTGATCAGTCACTCTCAGAAAAGGAAAAAGCGATTGAAGTGAACGTATAAAGGCTGAATCTGCAGAAGCTG
CAAAGAAAATGTTGGAGGAAATACAAAAGAAGAATGAGGAGATGATGGAACAGAAAGAGAAGAGTTATCAGG
AACATGTGAAACAATTGACTGAGAAGATGGAGAGGGACAGGGCCAGTTAATGGCAGAGCAAGAGAAGACC
CTCGCTCTTAAACTTCAGGAACAGGAACGCCTTCTCAAGGAGGGATTTCGAGAATGAGAGCAAGAGACTTCAA
AAACATATATGGGATATCCAGATGAGAAGCAAATCATTGGAGCCAATATGTAACATACTCTAAGACCCAGCTT
TCTTGTACAAAGTgggtgatccagcacagtgccgcccgcctgagctagagggcccgcggttgaataaccatacagcgtccagactacgcttagt
aatgattaataaactagaaattctaccgggtaggggagggcgttttccaaggcagctgagtagtaaccaccaagatcggctccgcgcccgggtttggcgc
ctcccgcggcgccccctctcagggcagcgtcgcacgtcagcagaagggcgcagcagcgtcctgatcctccggcagcgtcaggacagcggc
ccgctgctcataagactcggccttagaacccccagatcagcagaagggacatttaggacgggactgggtgactctaggccactgggtttcttccagagagcgg
aacagggcaggaaaagtagtcccttctcggcgattctcgggagggatcctcgtggggcggtaacgcccgatgattatataaggacgcgcccgggtgtggcaca
gctagtccgctcgcagccgggatttgggtcgggttctgtttgtggatcgctgtagctgactggtagtagcgggctgctgggtcggcggggcttctggtggccg
ccgggcccgtcgggtgggacggaagcgtgtggagagaccgccaagggtctgtagtctgggtccgcgagcaagggtgcctgaactgggggttggggggagcg
cagcaaaatggcggctgttcccagcttgaatggaagacgcttctgagggcgggtctgaggtcgttgaacaagggtggggggcagtggtggcggaagaa
cccaaggctttaggccttgcctaagcgggaaagcttattcgggtgagatgggctggggcaccatctggggaccctgacgtgaagttgtactgactgag
aactcgggttctgctgttggcggggcggcagttatggcgggtgcccgttggcagtgaccctgacctttgggagcgcgcccctgctgctgctgacgtcacc
gttctgttggcttataatcaggggtggggccacctcgggtaggtgtcgggtaggcttctcctcgcagggacgcagggttgggctagggttaggtctcctgaa
tcgacagggcgggacctctggtgaggggagggataagtgagggcgtcagtttcttggcgggtttagtacctatctttaaagtagctgaagctccgggttgaact
atgctcgggggttggcagtggttttgaagtttttaggcacctttgaaatgtaatcattgggtcaaatgtaatttcagtgtagtagtaaatgctccgctaaa
ttctggccgttttggctttttgtagacgaagcttggtaccgagctcggatctccacccctgaccggtcctgagcgaattcccatgtctagactggacaagagc
aaagtcataaacggagctctggaattactcaatggtgtcggatcgaaggcctgacgacaaggaaactcgtcaaaagctgggagttgagcagcctaccctgt
actggcacgtgaagaacaagcgggcccctgctcgtgcccctgcaatcgcagatgctggacaggcatatacccaactctgccccctggaaggcagtgatggc
aagacttctgcggaacaacgccaagtcataccgctgtgctcctctcacatcgcgacggggctaaagtgcactctcggcaccgcccacaagagaaacagta
cgaaaccctggaaaatcagctcgcgttctgtcagcaaggcttctcccgggagaacgcactgtacgctctgctcggcctggggcactttacactgggtcgcgta
ttggaggaaacaggagcatcaagtagcaaaaaggaaagagagacacctaccaccgattctatgccccacttctgagacaagcaattgagctgttcgaccg
gcagggagcccgaacctgccttcttctcggcctggaactaatcatatgtggcctgggaaacagctaaagtgcaaaagcggcgggccgaccgacgcccttga
cgatttgacttagacatgctcccagccgatgcccctgacgacttgacctgatgctgctgctgacgctctgacgattttgacctgacatgctcccgggtaac
taagtaaggatccgcccgcactagaggaattccgcccctctccccccccccccctaacgttactggccgaagcggccttgaataaggcgggtgtgctgtt
tctatgttatttccaccatattgcccgttttggcaatgtgagggcccggaaacctggcctgcttcttgcagagcattcctaggggtcttcccctctcgccaaag
gaatgcaaggctgtggaatgctggaaggaagcagttccttgaagacttctgaagacaacaacgtctgtagcagcccttgcaggcagcgggaacccccca
cctggcagcaggtgctctgcccgaagcagctgataagatacactgcaaaaggcggcacaaccccagtgccacgttgtgagttgagttgagttgtgaa
agagtcaaatggctctcctcaagcgtattcaacaaggggctgaaggatcccagaaggtaccctattgtatgggatctgatctggggcctcgggtgacatgctt
acatgttttagctgaggttaaaaaaacgctagggcccccgaaaccagggagctgtgttttcttggaaaaaacacagatgataagcttaccgggtccacctgtag
aacaagatggattgcagcaggttctccggcgttgggtagaggtctattcggctatgactgggcaacaacagacaatcggctgctgatgcccggctgttc
cggctgctcagcgcagggcggcccgttcttttgcgaagaccgacctgcccgtcggctgaatgaactgcaagacgaggcagcggctatcgtggctggcca
cgacgggcttcttgcagctgtgctcgcagttgtcactgaagcgggaagggactggctgctattgggcaagtgccggggcaggatctcctgtcatctacc
ttgctcctgagaaagatcatcatggtgatgcaatgcccggctgatacctgctgacccctgaccattcgaccaccaagcgaacatcgcacg
agcgagcacgtactcggatggaagcgggtctgtgatcaggatgatctggacgaagagcatcaggggtcgcgcccagccaactgttccagggctcaag

gcgagcatgcccagcggcgaggatctcgtcgtgacccatggcgcgctgctgccaatatcatggtggaatggccgctttctggattcatcgactgtggc
ggctgggtggtggcggaccgctatcaggacatagcgtggctaccggtgatattgctgaagagctggcggcgaatgggctgaccgcttctcgtgctttacggtat
cgccgctcccgattcgcagcgcacgcttctatcgcttcttgacgagttctctgatgtacaagtaaaagcggcgcgactctagatcataatcagccataccaca
ttttagaggttttactgtcttaaaaaaacctcccacacctcccctgaaacctgaaacataaaatgaatgcaattgtgtgtttagctccctccaattcgatataagct
tatcgcgatagatcctaatacactctggattacaaaattgtgaaagattgactggtattcttaactatgttctctttacgctatgtggatagcgtgcttaatgccttt
glatcatgctattgctcccgtatggcttctctctctgtataaaactggttgcctctttatgaggagttgtggccggtgtcaggcaacgctggcgtggtgtgc
actgtgttctgctgacgcaaccctcctggttggcctatgcccaccctgtcagctccttccgggacttctgcttcccccctcctattgcccacggcgaactcatcg
ccgctgcttgcgctgctggacaggggctcgtgttggcactgacaattccgtggtgttgcgggaaatcatcgtccttcttggctgctcgcctgtgttgc
cacctggattctgcgcccagccttctgctacgtccttccggccctcaatccagcggaccttctcccgcggcctgctcgcggctcgcgcttctccgctt
cgcttgcctcagacgagctcgatccttggcggcctcccgcctgagatccttaagaccaatgacttaacaggcagctgtagatcttagccacttttaa
aagaaaagggggactggaagggctaattcactcccacgaagacaagatcgtcttttgcctgtactgggtctctctggttagaccagatctgagcctgggagc
tctctggtaactaggaaccactgcttaagcctcaataaagcttgccttgagtctcaagtagtgtgtcccgtctgtgtgactctgtaactagagatccct
cagacccttttagctcagtggtgaaatctctagcagtagtctatgtcatcttattatctagttataactgcaaagaaatgaatcagagagtgagaggccc
gggtaattaagaaagggctagatcattctgaagcgaagggcctcgtgatacgcctattttataggttaatgcatgataataatggttcttagacgtcaggt
ggcactttcggggaatgtgcggaaccctattgttttctaaatacattcaaatatgatccgctcatgagacaataaccctgataaatgctcaataat
tgaaaaggaagagtagtattcaacattccgtgctccctattcccttttgcggcatttgccttctgttttgcctaccagaaacgctggtgaaagtaaa
gatgctgaagatcagttg

>plInducer-mCherry-GBP3

tgaagatcagttgggtgcacgagtggttacatcgaactggtatcaacagcggtaagatccttgagagtttgcgccgaagaacgtttccaatgatgagcact
tttaaagtctgctatgtggcgggtattatcccgtgtgacgccgggaagagcaactcggctgcgcgcatacactattctcagaatgacttgggtgagtagctacca
gtcacagaaaagcatctacggatggcatgacagtaagagaattatgacgtgctgcataaccatgagtgataaacactgcccgaacttactctgacaacgat
cggaggaccgaaggagcctaaccgctttttgcacaacatgggggatcatgtaactcgccttgatcgttgggaaccggagctgaatgaagccataccaaacgac
gagcgtgacaccacgatgctgtagcaatggcaacaacgttgcgcaactatctaggcgaactacttactctagcttcccggcaacaataatagactggat
ggagggcgataaagttgcaggaccacttctcgcctcggcctcgggctggctggttattgctgataaatctggagccggtgagcgtgggtctcgcggtatcattg
cagcactggggccagatggtgaagcctcccgtatcgtatctacacgacgggagtcaggcaactatggatgaacgaaatagacagatcgtgagatag
gtgctcactgattaagcattgtaactgtcagaccaagttactcatataactttagattgatttaaaactcatttttaattaaaaggatctaggtgaagatccttttg
ataatctatgacaaaatcccttaacgtgagtttcttccactgagcgtcagacccttagaaaagatcaaaggatcttctgagatcctttttctgctgcaaac
tgctctgcaaacaaaaccacccgctaccagcgggtgttggcttggcggatcaagagctaccaactctttccgaaggtactgcttaccagagcagcgcag
ataccaataactgttcttagttagccttagttagccaccactcaagaactctgtagcaccgctacatacctcgtctgtaactcttaccagatggctgctg
ccagttggcagataagctcgtcttaccgggttggactcaagacgataaccgataaaggcgcagcggctgagggtgcaacgggggtcgtgacacagccca
gcttggagcgaacgactacaccgaactgagatacctacagcgtgagctatgagaagcgcaccgcttcccgaaggagaaaggcggacaggtatccggt
aagcggcagggtcggaaacaggagagcgcacgagggagctccaggggaaacgctggtatcttatagtcctgctcgggttccgaccctgacttggagcgt
cgattttgtgatgctcgtcagggggcggagcctatgaaaaacgccaagcaacgcggccttttacggttccctggccttttgccttctgctacatgttcttct
gcttaccctgattctgtgataaccgtattaccgctttagtgagctgataaccgctcgcgcagccgaacgaccgagcgcagcaggtcagtgagcggagga
agcggaaagagcggccaatacgaacaccgcttccccgcgcttggcggattcattaatgcagcaagctcatgctgactaattttttatattatgcagaggccg
aggccgctcggcctctgactattcagaagtagtgaggaggctttttggaggcctaggctttgcaaaaagctcccgtggcagcagcaggttcccgactgg
aaagcggcagtgagcgaacgcaatattgtgagttagctcacttaggcaccccaggcttactcttctcggctcgtatgtgtggaattgtgagc
ggataacaatttcacacaggaaacagctatgacatgattacgaattcacaataaagcatttttactgacttctagttgtgttgcctaaactcatcaatgatct
tatcatgtctggataactgataactcaagctaaccaaaatcatccaaactcccacccataccttaccactgccaattacctgtggttcttactctaaa
cctgtgattcctcgaattatttctttaaagaaattgtattgttaaatgtactacaaacttagtagttggaagggtaattcactcccacaagaagacaagatac
cttcatctgtggtatccacacacaaggctacttccctgattagcagaactacaccaggggcaggggtcagatccactgaccttggatggtgctacaag
ctagtagcagttgagccagataaggtagaagaggccaataaaggagagaacaccagctgttacaccctgtgagcctgcatgggatgtagaccggagag
agaagtgttagagtgagggttgacagccgctagcattcatcagtgccgagagctgcatccggagtagtcaagaactgctgatacagacttgcataca
gggacttccgctgggacttccaggggagcgtggcctgggaggactgggagtgccgagccctcagatcctgcatataagcagctgcttttgcctgactg
ggtctctggttagaccagatctgagcctgggagctctctggtaactagggaaaccactgcttaagcctcaataaagcttgccttgagtgctcaagtagtgtg
cccgtctgtgtgactctgtaactagagatccctcagacccttttagctagtggtgaaaaatctctagcagtgccgcccgaacagggacttgaagcgaagg
gaaaccagaggagctctcgcagcaggactcggcttgcgaagcgcacggcaagaggcgaagggcggcgcgactggtgagtagcggcaaaaatttgcact
agcggaggctagaaggagagatgggtgcgagagcgtcagtttaagcgggggagaattagatcgcgatgggaaaaaattcgggttaaggccaggggga
aagaaaaataaataaataatagatagtggaagcagggagctagaacgattcgcagttatcctggcctgttagaaacatcagaaggctgtagacaa
atactggacagctacaaccatccctcagacaggatcagaagaacttagatcattataataacagtagcaaccctctattgtgtcatcaaggatagagata
aaagacaccaaggaagcttagacaagatagaggaagagcaaaaacaaagtaagaccaccgcacagcaagcggccgctgactcagacctgga
ggagagatagaggacaattggagaagtgaaatataataaagtagtaaaaattgaaccatagtagtagcaccaccaagcgaagagaagagag
cgtgcagagagaaaaaagagcagtgggaaataggacttggcttgggagcagcaggaagcactatgggagcagctgacagctgacgctgacggt
acagccagacaattattgtctgtatagtcagcagcagaacaatttgcgtgagggctattgagggcgaacagcactgttgcaactcacagctcgtggc
agcagctcaaggcaagaatcctggctgtgaaagatacctaaggatcaaacgctcctggggttgggtgctctggaaaactcattgcaccactgctgtg
cttggaaatgtagttgagtaataaatcctggaacagatttgaatcacacgacctggatggagtgggacagagaaattaacaattacacaagcttaatacact
ccttaattgaagaatcgaaaaccagcaagaaaagaatgaacaagaattattggaattagataaatgggcaagtttgggaattggttaacatacaaaattg
ctgtgtatataaaattattcataatgatagtagggccttggtaggttaagaatggttctgacttctatagtagaagtagtaggagggatattaccattat

cgtttcagaccacctccaaccccgaggggacccgacagggcccgaaggaatagaagaagaaggtggagagagagacagagacagatccattcgatta
gtgaacggatctcgacggtatcgccaattcacaatggcagttatccacaattttaaaagaaaggggggattgggggtacagtgacaggggaaagaa
tagtagacataatagcaacagacatacaaaactaaagaattacaaaaacaaattacaaaaattcgggtttattacagggacagcagagatccagtt
tggactaggatcctttaccactccctatcagtgatagagaaaagtgaaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccact
ccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaa
agtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaa
cccgggtcgaggttaggcgtgtacgggtgggagccctatataagcagagctggtttagtgaaaccgtcagatcgctggagacgccatccacgctgtttgacctcc
atagaagacaccgggaccgatccagcctccgcgccccaactagtcagtggtggaattctgcagatatcaACAAGTTTGTACAAAAAGC
AGGCTgccaccatggtgagcaagggcgaggagataacatggccatcatcaaggagttcatgcttcaagggtcacatggagggtccctgtaacggcc
acgagttcgagatcgagggcgagggcgagggcgcccctacgagggcaccagaccgccaagctgaagggtaccaaggggtggccccctgcccctcgct
gggacatcctgtcccctcagttcatgtacggctccaaggcctacgtgaagcaccggccgacatccccgactacttgaagctgcttccccgagggctcaagt
gggagcgcgtgatgaactcgaggacggcggcgtggtgaccgtgaccaggactcctcctcgaggacggcgagttcatctacaaggtgaagctgcggcc
accaactccccccgacggccccgtaatgcagaagaagaccatgggctgggagggcctcctcgagcggatgtacccccgagacggcgccctgaagggcg
agatcaagcagagggctgaagctgaaggacggcggcactacgacgctgaggtcaagaccactacaaggccaagaagccgctgcagctgcccggcgc
tacaacgtcaacatcaagttggacatcacctcccacaacgaggactacaccatcgtggaacagtagcaacgcggcggagggccgactccaccggcggca
tggacgagctgtacaagtcggactcAGATCTATGGCTCCAGAGATCCACATGACAGGCCAATGTGCCTCATTGAGAAC
ACTAATGGGGAAGTGGTGGCGAATCCAGAAGCTCTGAAAATCCTGTCTGCCATTACACAGCCTGTGGTGGT
GTGGCAATTGTGGCCTCTACCGCACAGGAAAATCCTACCTGATGAACAAGCTAGCTGGGAAGAATAAGGG
CTTCTCTCTGGGCTCCACAGTGAATCTCACACCAAAGGAATCTGGATGTGGTGTGTGCCTCACCCCAAAA
GCCAGAACACACCTTAGTCTGCTTGACACTGAGGGCCTGGGAGATGTAAAGAAGGGTGACAACCAGAATG
ACTCCTGGATCTTACCCTGGCCGTCTCCTGAGCAGCACTCTCGTGTACAATAGCATGGGAACCATCAACC
AGCAGGCTATGGACCAACTGTACTATGTGACAGAGCTGACACATCGAATCCGATCAAAATCCTCACCTGATG
AGAATGAGAATGAGGATTCAGCTGACTTTGTGAGCTTCTTCCCAGATTTTGTGTGGACACTGAGAGATTTCTC
CCTGGACTTGAAGCAGATGGACAACCCCTCACACCAGATGAGTACCTGGAGTATTCCCTGAAGCTAACGCA
AGGTACCAGTCAAAAAGATAAAAAATTTAATCTGCCCGACTCTGTATCCGGAAGTTCTTCCAAAGAAAAA
TGTTTTGTCTTCGATCTGCCATTACCCGCAGGAAGCTTGCCAGCTTGAGAACTACAAGATGAAGAGCTG
GACCTGAATTTGTGCAACAAGTAGCAGACTTCTGTTCTACATCTTAGCAATCCAAAACAAAACTCTTTC
AGGAGGCTCAAGGTCAATGGCCCTCGTCTAGAGAGCCTAGTGTGACTATATCAATGCTATCAGCAGAGG
GGATCTGCCCTGCATGGAGAACGCAGTCTGGCCTTGCCCGATAGAGAACTCAGCCGCAGTGCAAAAGG
CTATTGCCCACTATGACCAGCAGATGGGCCAGAAGGTGCAGCTGCCCGCAGAAACCCTCAGGAGCTGCTG
GACCTGCACAGGGTTAGTGAGAGGGAGGCCACTGAAGTCTATATGAAGAACTCTTCAAGGATGTGGACCAT
CTGTTTCAAAAGAAATTAGCGGCCAGCTAGACAAAAAGCGGGATGACTTTTGTAAACAGAATCAAGAAGCAT
CATCAGATCGTTGCTCAGCTTTACTTCAGGTCATTTTCAGTCTCTAGAAGAAGAAGTGAAGGCGGGAATTTA
TTCGAAACCAGGGGGCTATTGTCTCTTTATTGAGAAGCTACAAGACCTGGAGAAAAAGTACTATGAGGAACCA
AGGAAGGGGATACAGGCTGAAGAGATTCTGCAGACATACTTGAATCCAAGGAGTCTGTGACCGATGCAATT
CTACAGACAGACCAGATTCTCACAGAAAAGGAAAAGGAGATTGAAGTGAATGTGTAAGGCTGAATCTGCA
CAGGCTTCAGCAAAAATGGTGGAGGAAATGCAATAAAGTATCAGCAGATGATGGAAGAGAAAGAGAAGAGT
TATCAAGAACATGTGAAACAATTGACTGAGAAGATGGAGAGGGAGAGGGCCAGTTGCTGGAAGAGCAAGA
GAAGACCCTCACTAGTAACTTCAGGAACAGGCCCGAGTACTAAAGGAGAGATGCCAAGGTGAAAGTACCCA
ACTTCAAATGAGATACAAAAGCTACAGAAGACCCTGaaaaaaaaaCCAAGAGATATATGTCGCATAAGCTAAA
GATCtaaGACCCAGCTTTCTGTACAAAGtggttgatccagcacagtgccggcgcgctcagcttagagggcccgcggttcgaataccata
cgacgtcccagactacgcttagtaataaactagaaattctaccggtaggggagggcgctttccaaggcagcttgagtaaccaccaagatctg
gcctccgcgcccgggtttggcgcctcccgcggcgccccctcctacggcgagcgtgccacgtcagacgaagggcgagcagcgtcctgatcctccgc
ccggacgctcaggacagcggcccgtgctcataagactcggccttagaaccaccagatcagcagaaggacatttaggacgggacttgggtgacttagggc
actggtttcttccagagagcgggaacaggcgaggaaaagttagtcccttctcgcgatctcgggagggatcctctggggcggtgaacgccgatgattataa
ggacgcgcccgggtgtgacacagctagtccgtcgcagcgggatttgggtcgcggttctgtttggatcgctgtgatcgtacttggtagtagcgggctgctg
gctggcccgggcttctggtggccgcccggcgcctcgtgggacggaagcgtgtggagagaccgccaagggctgtagtctgggtccgcgagcaaggttgcct
gaactgggggttgggggagcgcagcaaatggcggctgtcccagcttgaatggaagacgcttgtgagggcggtgtaggtcgtgaaacaaggtggg
gggcatggtgggggcaagaaccaaggtctgagccctcgtaatgcgggaaagccttattcgggtgagatgggtcggggaccatctggggaccctgac
gtgaagttgtactgactggagaactcggttgtcgtctgttcggggggcagttatggcgggtcgggtgggacgtgcaccctgacttgggagcgcgccc
ctcgtcgtgctgacgtcaccgttctgttgcctataatgcaggtggggccactcgggttaggtgtcggtaggcttttccgtcgcaggacgcagggctc
ggcctaggttaggtcctcgaatcgacagggcggaccctcgtgtaggggagggataagtgaggcgtcagtttcttggctgggtttatgtacctatcttctaag
tagctgaagtcgggtttgaactatgcgctcggggttggcagtggtgtttgtgaagtttttaggcacctttgaaatgtaactatttgggtcaaatgtaatctcagtt
agactagtaaatgtccgtaaatctggccttttggccttttttagacgaagccttggtagcagctcggatcctccaccggctaccggctcagtcgaattcac
catgtctgactgagcaagagcaaaagcataaaacggagctcgtgaactactcaatggtgtcggatcgaagggcctgacgacaaggaactcgcataaagct
gggagttgagcactaccctgactgacgtgaagaacaagggccctgctcgtatccctccaatcgagatgctggaacggatcataccactctcgc
ccccggaagcgcagtcagcaagacttctcgggaacaacgccaagtcataaccgctgtgctcctcctcacatcgcgaggggctaaagtcagctcggcac
ccgccaacagagaaacagtacgaaaccctggaaaatcagctcgcgttctcgtgtcagcaaggtcttccctggagaacgcactgtacgctctgtccgctg
ggccactttactggctcgtattggaggaacaggagcatcaagtagcaaaagaggaaagagagacacctaccaccgattctatgccccacttctgaga

caagcaattgagctgtcgaccggcagggagccgaacctgccttctttcggcctggaactaatcatatgtggcctggagaacagctaaagtgcgaaagcg
gcggggcagaccgacgcccttgacgattttgacttagacatgctcccagccgatgcccttgacgactttgacctgatatgctgctgctgacgctcttgacgattttg
accttgacatgctccccgggtaactaagtaagatccgcggcgcactagaggaattccgcccctctcccccccccccccaactgactggccgaagccgct
tggataaagccgggtgctgctttgctatattttccaccatattgcccgtctttggcaatgtgagggcccgaaacctggccctgtctcttgacgagcattccta
gggtctttcccctcgccaaaggaatgcaaggctgtttgaatgctgtaaggagcagttcctctggaagcttctgaagacaacaacagctgtgagcaccct
ttcagggcagcggaaacccccacctggcgacaggtgctctgcccgaaaagccagtgataacacctgcaaaagggcgcacaacccccagtgccac
gttgtagttggatagttgtgaaagagtcacaattggctcctcaagcgtattcaacaagggcgtgaaggatgccagaaggtacccccattgatgggatctgac
tggggcctcgggtcacatgctttacatgttttagtcgaggttaaaaaaacgtctaggccccgaaccacggggacgtggtttcttggaaaaacacagatgata
agcttaccgggtccaccatgattgaacaagatggattgcacgcaggttctccggccgcttgggtggagaggtattcggctatgactgggcacaacagacaatcg
gctgctctgatgcccgggttccggctgtcagcgcaggggcgcccgggtctttttgcaagaccgacctgtccgggtccctgaatgaactgcaagacgagggcag
cgccgctatcgtggctggccacgacggcggttcttgcgcagctgtgctgcagctgtgactgaagcgggaaggactggctgctattggcgcaagtgccggg
gcaggatctcctgtcatctcacctgctcctgcccagaaagatccatcatggctgatgcaatgcggcggctgcatacgttgatccggctacctgcccattcgacc
accaagcgaaacatcgatcgagcgcagcagctactcggatggaagccggcttctgctgacaggtatgctggacgaagagcagcaggggctcgcgccagc
cgaactgttcgcccaggtcaaggcgcagcagctcccagcggcgaggatcctgctgacccatggcgatgctgctgcccgaataatcaggtggaatggccg
tttctggattcatgactgtggccggctgggtgtggcggaccgctatcaggacatagcgttggctaccctgataattgtaagagcttggcggcgaatgggctg
accgcttctcgtgctttacggatcgccgctcccgattcgcagcgcacgcttctatgccttctgacgagttcttctgatgataaagcggccgactct
agatcataatcagccataccacattttagaggtttactgtcttaaaaaacctcccacacctcccctgaacctgaaacataaaatgaatgcaattgtgtttta
gtccctccaattcgatacaagcttaccgcatagatcctaataacctctggattacaaaattgtgaagattgactggtattcctaactatgttctctttacgct
atgtggatacgtgctttaaagcctttgatcatgctattgctcccgtatgctttcattttctcctctgtataaaatcctggtgctgctctttatgaggagttgtgcccgt
gtcaggcaacgtggcgtgggtgctgactgtttgctgacgcaacccccactgggtggggcattgccaccacctgctcagctccttccgggaccttccgcttcccctc
ctattgccacggcggaaactatcgccgctgcttgcggctgctggacaggggctcggctgttggcactgacaattccgtggtgtgtcggggaaatcatcgt
ccttcttggctgctcgcctgtgttggccacctggattctgcgcgggacgtccttctgctacgtccctcggccctcaatccagcggaccttctcccgcggcctgctg
cggcctcgcggccttccgctcttcgcttccgcccagacgagtcggatcctccttggcggcctcccgcctgagatcctttaaagaccaatgacttacaag
gcagctgtagatcttagccacttttaaaagaaaaggggggactggaaggctaatcactcccaacgaagacaagatcgtcttttctgtactgggtctctctg
gttagaccagatctgagcctgggactctctggtaactagggaaacctgcttaagcctcaataaagcttgcctgagtgctcaagtagtgtgtcccgtctgt
gtgtgactctgtaactagatccctcagacccttttagctaggtggaatctctagcagtagtagttcatgtcatcttattcagattataactgcaagaa
atgaataatgagagtgagagggccgggtaataaaggaaagggctagatcattctgaagcgaagggcctcgtgatacgcctattttataggttaatgcat
gataataatggttcttagacgtcaggtggcactttcggggaaatgtgcggaaccctattgttttctaaatacattcaaatatgatccgctcatgagaca
ataacctgataaatgcttcaataatattgaaaaggaagatagattcaacattccgtgctcgccttattcccttttggcggcatttgcctcctgttttctca
cccgaaacgctggtgaaagtaaaagatgc

>plInducer-GBP4-mCherry

tgaagggtaattcactcccaagaagacaagatatccttgatctggtatctaccacacacaaggctactccttgattagcagaactacacaccagggcca
ggggtcagatatccactgaccttggatggtgctacaagctagtaccagttgagccagataaggtagaagggccaataaaggagagaacaccagctgttac
acctgtgagcctgcatgggatggatgacccggagagagaaggttagagtgagggttgacagccgctagcatttcatcagctggcccggagagctgcatcc
ggagacttcaagaactgctgatctgagctgtctacaagggacttccgctggggacttccagggaggcgtggcctggcgggactggggagtgccgagcc
ctcagatcctgcatataagcagctgcttttgcctgactgggtctctctggttagaccagatctgagcctgggagctctctggtaactagggaaacctgcttaag
cctcaataaagcttgcctgagtgctcaagtagtgtgtcccgtctgtgtgactctggaactagagatccctcagacccttttagctagtggaatctctag
cagtgccgcccgaacagggactgaaagcgaagggaaaccagaggctctctgcagcaggactcggctgctgaagcgcgcacggcaagaggcga
ggggcggcagctggtagtacgcaaaaattttagctagcggaggctagaaggagagatgggtgagagagcgtcagtttaagcgggggagaattaga
tcgcatgggaaaaaattcggttaaggccaggggaaagaaaaataaataaaacataatagatgggcaagcagggagctagaacgattcgcagttaa
tctggtgctgtagaacatcagaaggctgtagacaaactgggacagctacaaccatccctcagacaggatcagaagaacttagatcattataataacag
tagcaacctctattgtgcatcaaggatagagataaaagacaccaaggaagctttagacaagatagaggaagagcaaaaacaaagtaagaccaccg
acagcaagcggccgctgctcagacctggaggaggatagatgagggaactggagaagtaattataataataaagtagtaaaaaattgaacca
ttaggtagtaccaccaaggaagagaagatggtgctgagagagaaaaagagcagtggaataggagcttgttcttgggttctgggagcagcagg
aagcactatgggcgacgctcaatgacgctgacggtacaggccagacaattattgtctgtatagtgacgagcagacaattgtgagggctattgaggcg
caacagcatctgtcaactcacagctcgggcatcaacgagctccaggcaagaatcctggctgtgaaagatacctaaaggatcaacagctcctgggattt
ggggtgctctggaaaactcatttgcaccactgctgtccttggatgctagttggagtaataaatctctggaacagatttgaatcacacgacctggatggagtg
gacagagaaattaacaattacacaagcttaatacactcctaattgaagaatcgcaaaaccagcaagaaagaatgaacaagaattattggaattagataaat
gggcaagttgtggaattggttaacataacaaattggctgtggtatataaaattattcataatgatagtagggcttggtaggttaagaatagttttgctgacttct
atagtgaaatagattagcagggatattcaccattatccttgcagaccacctcccaaccccgaggggacccgacagggcccgaaggaatagaagaag
tgagagagagacagagacagatccattcgattagtaacggatctgcagcgtatcgcgaattcacaatggcagttatccacaattttaaaagaaaag
ggggattgggggtacagtgacagggaaagaatagtagacataatgcaacagacatacaaaactaaagaattacaaaacaaattcaaa
atttccgggttattacagggacagagatccagttggactaggtcttaccactcctatcagtgatagagaaaagtgaaagtcgagtttaccactcctatcagtgatagagaaaagtg
aagtcgagtttaccactcctatcagtgatagagaaaagtgaaagtcgagtttaccactcctatcagtgatagagaaaagtgaaagtcgagtttaccactcct
atcagtgatagagaaaagtgaaagtcgagctcggatccgggtcgaggtaggcgtgtacggtgggagcctatataagcagagctcgtttagtgaaacgca
gatcgcctggagacgcatccacgctgtttgacctcatagaagacaccgggaccgatccagcctccgcccgaactagtcaggtgtgtggaattctgc
agatatcaACAAGTTTGTACAAAAAGCAGGCTgccaccATGGGTGAGAGA ACTCTTACAGCTGCAGTGCCACAC

CAGGTTATCCAGAATCTGAATCCATCATGATGGCCCCATTTGTCTAGTGGAAAACCAGGAAGAGCAGCTGA
CAGTGAATTCAAAGGCATTAGAGATTCTTGACAAGATTTCTCAGCCCCTGGTGGTGGTGGCCATTGTAGGGC
TATACCGCACAGGAAAATCCTATCTCATGAATCGTCTTGACAGGAAAGCGCAATGGCTTCCCTCTGGGCTCCA
CGGTGCAGTCTGAAACTAAGGGCATCTGGATGTGGTGTGTGCCACCTCTCTAAGCCAAACCACACCCTG
GTCCTTCTGGACACCGAGGGCCTGGGCGATGTAGAAAAGAGTAACCCTAAGAATGACTCGTGGATCTTTGCC
CTGGCTGTGCTTCTAAGCAGCAGCTTTGTCTATAACAGCGTGAGCACCATCAACCACCAGGCCCTGGAGCAG
CTGCACTATGTGACTGAGCTAGCAGAGCTAATCAGGGCAAATCCTGCCCCAGACCTGATGAAGCTGAGGA
CTCCAGCGAGTTTGCAGTCTTTCCAGACTTTATTTGGACTGTTTCGGGATTTTACCCTGGAGCTAAAGTTA
GATGGAAAACCCATCACAGAAGATGAGTACCTGGAGAATGCCTTGAAGCTGATTCCAGGCAAGAATCCCAA
ATTCAAATTCAAACATGCCTAGAGAGTGTATCAGGCATTTCTTCCGAAAACGGAAGTGCTTTGTCTTTGACC
GGCCTACAAATGACAAGCAATATTTAAATCATATGGACGAAGTGCCAGAAGAAAATCTGGAAAGGCATTTCT
TATGCAATCAGACAACCTTCTGTTCTTATATCTTCAACCATGCAAAGACCAAGACCCTGAGAGAGGGAATCATT
GTCACTGGAAAGCGGCTGGGGACTCTGGTGGTACTTATGTAGATGCCATCAACAGTGGAGCAGTACCTTG
TCTGGAGAATGCAGTGACAGCACTGGCCAGCTTGAGAACCAGCGGCTGTGCAGAGGGCAGCCGACCAC
TATAGCCAGCAGATGGCCAGCAACTGAGGCTCCCCACAGACACGCTCCAGGAGCTGCTGGACGTGCATGC
AGCCTGTGAGAGGGAAGCCATTGCAGTCTTTCATGGAGCACTCCTTCAAGGATGAAAACCATGAATCCAGAA
GAAGCTTGTGGACACCATAGAGAAAAAGAAGGGAGACTTTGTGCTGCAGAATGAAGAGGCATCTGCCAAATA
TTGCCAGGCTGAGCTTAAGCGGCTTTCAGAGCACCTGACAGAAAAGCATTGAGAGGAATTTTCTCTGTTCCCT
GGAGGACACAATCTACTTAGAAGAAAAGAAACAGGTTGAGTGGGACTATAAGCTAGTGCCAGAAAAGGA
GTTAAGGCAAACGAGGTCCCTCCAGAACTTCTGCAGTACAGGTGGTTGTAGAGGAATCCATCCTGCAGTCA
GACAAAGCCCTCACTGCTGGAGAGAAGGCCATAGCAGCGGAGCGGGCCATGAAGGAAGCAGCTGAGAAGG
AACAGGAGCTGCTAAGAGAAAAACAGAAGGAGCAGCAGCAATGATGGAGGCTCAAGAGAGAAGCTTCCAG
GAATACATGGCCCAAATGGAGAAGAAGTTGGAGGAGGAAAGGGAAAACCTTCTCAGAGAGCATGAAAGGCT
GCTAAAACACAAGCTGAAGGTACAAGAAGAATGCTTAAGGAAGAATTTCAAAGAAAATCTGAGCAGTTAAAT
AAAGAGATTAATCAACTGAAAGAAAAAATTGAAAGCACTAAAAATGAACAGTTAAGGCTCTTAAAGATCCTTGA
CATGGCTAGCAACATAATGATTGCTACTCTACCTGGGCTTCCAAGCTACTTGGAGTAGGGACAAAATATCTT
GGCTCACGTATTAGATCTatggtagcaaggcgaggaggataacatggccatcatcaaggagttcatgcttcaaggtagcacatggagggt
ccgtgaacggccacgagttcgagatcgagggcgagggcgagggcgcccctacgagggcaccagaccgcaagctgaaggtagcaagggtggcc
cctgccccttcgctggacatctgcccctcagttcatgtacggctccaaggctcagtaagcaccgcccagacatcccgcactgtgaagctgctcccc
gagggctcaagtagggagcgcgtgatgaacttcgaggacggcgggctgtgaccgtgaccagggactcctcctcgaggcggcagttcatctacaagggtg
aagctgacggcaccactcccctccgacggccccgtaatgcagaagaagaccatgggctgggagggcctcctccgagcggatgtaccccgaggacggcg
ccctgaaggcgagatcaagcagaggctgaagctgaaggacggcgccactacgacgctgaggtcaagaccactacaaggccaagaagcccgtgca
gctgcccggcgctacaacgtcaacatcaagttggacatcacctcccacaacgaggactacaccatcgtggaacagtacgaacgcgcccagggcgccac
tccaccggcgcatggacgagctgtacaagAGATCTtaaGACCCAGCTTTCTTGTACAAAGtggtgatattccagcacagtgccggccgct
cgagctagagggcccgggttgaataaccatacagacgtccagactacgcttagtaatgalttaactagaatctaccgggtaggggagggcgttttc
ccaaggcagctcggagtaaccacccaagatctggcctccgcccgggttttggcgctcccggggcgccccctcctacggcgagcgtgcccacgtcag
acgaaggcgagcagcagcgtcctgatcctccgcccggacgctcaggacagcggcccgtgctcataagactcggccttagaaccccagatcagcagaag
gacatcttaggacgggacttgggtgactctagggcactggttttctccagagagcggaaacaggcgaggaaaagtagtcccttctcggcgatctcggaggga
tctccgtggggcggtgaacgcccagatgattatataaggacgcccgggtgtggcacagctagttccgtcgcagcgggatttgggtcgggttctgttttgatcg
ctgtgatcgtcacttggtagtagcgggctgctgggctggccgggcttctgtggccgcccggcctcgtgggacggaagcgtgtggagagaccgccaag
ggctgtagctgggtccgagcaaggttgcctgaactgggggttgggggagcgcagaaaatggcggtgttcccagcttgaatggaagacgcttgtg
aggcgggctgtgaggtcgttgaacaaggtgggggcatggtggcggaagaaccaaggtctgaggcctcgttaatgcgggaaagctctattcgggtg
agatgggctggggaccatctggggaccctgacgtgaagttgtcactgactggagaactcggttgtcgtctgttgcggggcgagcagttatggcggtgcccgtg
ggcagtgacccgtaccttgggagcgcgcgccctcgtcgtgctgacgtcacccttctgttggctataatgcagggtggggccacctgcccgttaggtgtgcg
gtaggcttttccctcgcaggacgcaggggtcgggctagggttagctcctgaatcgacaggcgccggacctcgtgtgaggggaggataagtgaggcgt
cagtttcttggctggtttatgtacctatcttcaagtagctgaagctccggtttgaactatgcgtcggggttggcgagtggttttgaagtttttaggcacctttga
aatgtaatcattgggcaatatglaatttcagtgtagactagtaaatgtccgtaaaatctggccgttttggctttttgttagacgaagcttgtagaccgagctcggat
ctccaccctgacccgtcctgcagtcgaattcacatgtctagactggacaagagcaaaagtcataaacggagctctggaattactcaatggtgtcggatcga
ggcctgacgacaaggaaactcgtcaaaagctgggagttgagcagcctaccctgtactggcagctgaagaacaagcgggcccctgctcagatgccctgccaat
cgagatgctggacaggcatataccactctgccccctggaaggcgagtcagtgcaagacttctgcggaacaacgccaagtcataccgctgtgctcctcctc
acatcgcgacggggctaaagtcatctcggcaccgcccacagagaacagtagcaaaacctggaataacagctcgcgttctgtgtagcaaggcttctc
cctggagaacgcactgtacgtctgtccgctggggcactttacactgggtcgtattggaggaacaggagcatcaagtagcaaaaagaggaaagagaga
cacctaccaccgattctatgccccactctgagacaagcaattgagctgttcgaccggcagggagccgaacctgcctcctttcggcctggaactaatcatatgt
ggcctggagaacagctaaagtcgaagcggcgggccgaccgacgccccttagcagatttgacttagacatgctcccagcctgcccctgacgactttgacc
ttgatgctgctgacgctcgtgacgtattgaccttgacatgctcccgggtaactaagtaagatccgagggcgcactagaggaattccgcccctcccc
ccccccccctaacgttactggccgaagcgcgttgaataaggccggtgtgctgttctatattttccacctattgcccgttttggcaatgtgaggggccg
gaaacctggccctgtcttctgacgagcattcttaggggtctttcccctcgcgcaaggaatcaaggctgttgaatgctgtaaggaagcagttcctctggaag
cttctgaaagacaacaacgtctgtagcacccttgcaggcagcggaaacccccacctggcgacaggtgctcctcgcggcctcggcctgacgactttgacc
cacctgcaaaaggcgccacaaccccagtgccacgttgtgagttggatagttgtgaaagagtcgctcctcaagcgtattcaacaagggtgtaggga

tgcccagaaggtacccattgatgggatctgatctggggcctcgggtgcacatgctttacatgtgttagtgcaggttaaaaaacgtctagggccccccgaaccac
ggggacgtggtttctttgaaaaacacgatgataagcttaccgggtccacatgatgaacaagatggattgcacgcaggtctccggccgctgggtggagagg
ctattcggctatgactgggcacaacagacaatcggtgctctgatgccgctgttccggctgacagcagggggcccggtctttttgcaagaccgacctgt
ccggtgccctgaatgaactgcaagacgaggcagcgcggctatcgtggctggccacgacgggcgttcttgcgagctgtctgcagctgtcactgaagcggg
aagggactggctgctattgggcgaagtgccggggcaggatctcctgtcatctcacctgtcctcggagaaagtatccatcaggtgatgcaatgcggcggct
gcatagcttgatccggctacctgcccattcgaccaccaagcgaacatcgcactgcagcagcagcagctcggatggaagccggcttctgctgatcaggatgat
ctggacgaagagcatcaggggctcgcgccagccgaactgttcgccaaggtcaaggcagcagcatgcccgacggcgaggtatcctgctcgtgacctatgctg
cctgcttgccgaatatcatgggtaaaatggccgctttctggattcatcactggtggccggctgggtggtggcgaccgatcaggacatagcgtggctaccgt
gatattgctgaagagctggcggcgaatgggctgaccgcttctcgtgctttacggatcgcgcctcccgattcgcagcgcacgcttctatcgcctcttgacgag
ttcttctgatgtacaagtaaagcggcggcactctagatcataatcagccataccacattgtagaggtttactgcttataaaaaacctcccacacctccccctgaa
cctgaaacataaaatgaatgcaattgttgttttagtccctcccaattcgatatacaagcttatcgcgatagatcctaatacaacctctggattacaaaattgtgaaag
attgactggattcttaactatgttctcctttacgctatgtggatacgtgctttaatcctttgtatcatgctattgcttccgctatggctttcttctcctctgataaat
cctggttgcctctttatgaggagtgtggcccgttgcaggcaacgtggcgtggtgtgactggttgcagcgaacccccactggtggggcattgccaccac
ctgtcagctcctttccgggacttctccttccccctcctattgccacggcggaaactcatcgcgcctgcttcccgtctgacaggggctcggctgtggggc
tgacaattcgtgggtgtcgggaaatcatcgtccttcttggctgctcgcctgtggttgcacactggattcgcggggacgctcctctgctacgctcctcggccct
caatccagcggaccttcttcccgccgctgctcggcctctcgcgcttctcgccttgcctcagacgagtcggatcctcctttgggcccgcctcccc
gcctgagatccttaagaccaatgacttacaaggcagctgtagatcttagccacttttaaaagaaaaggggggactggaagggttaattcactcccaacgaag
acaagatcgtcttttgcctgactgggtctctggttagaccagatctgagcctgggagctctcggtaactagggaaaccactgcttaagcctcaataaagcttg
cctgagtgctcaagtagtgtgcccgtctgtgtgactcgtgtaactagagatccctcagacccttttagtcagtgtggaanaatctctagcagtagtagtcatgt
catctattattcagttataacttgcaagaatgaatatacagagagtgagaggccccgggtaataaggaagggctagatcattctgaagacgaaggggc
ctcgtgatacgcctattttataggtaatgtcatgataataatggtttcttagacgtcagggtggcactttccgggaaatgtgcgccaacccccctattgtttatctaa
atacattcaaatatgtatccgctcatgagacaataaccctgataaatgctcaataatattgaaaaaggaagatagtagtattcaacattccgctgcacctattc
cctttttcgggcattttgccttctgcttctcaccagaaacgctggtgaaagtaaaagatgctgaagatcagttgggtgcacagagtggttaccatcgaactgga
tctcaacagcggtaagatccttgagagtttccggcgaagaacgtttccaatgatgagcactttaaagtctgctatgtggcgggtattatcccggttgacgcc
gggcaagagcaactcggctcgcgcatacactattctcagaatgactggttgtagtctcaccagtcacagaaaagcatcttacggatggcatgacagtaagag
aattatgcagtgctccataaccatgagtgataaactgcggcaacttctgacaacgatcggaggaccgaaggagtaaccgctttttgcacaacatgg
gggatcatgtaactgcctgatcgttgggaaccggagctgaatgaagccatacacaacgcagcagcgtgacaccacgatcctgtagcaatggcaacaacgt
tgcgcaactattaactggcgaactacttacttagcttccggcaacaataatagactggatggaggcggataaagtgcaggaccacttctgcgctcggccc
ttccggctggctggtttatgctgataaactgtagccgggtgagcgtgggtctcgcggtatcattgcagcactggggccagatggaagccctccgctatcagta
tctacacgacgggagtcaggcaactatgtagaacgaatagacagatagctgtagataggctcctcactgattaagcattggaatgctcagaccaagttac
tcatatatacttagattgattaaactcatttttaatttaaaaggatcagggtgaagatccttttgataatctatgacaaaatcccttaacgtgagtttctgctcact
gagcgtcagaccctgagaaaagatcaaaggatcttctgagatccttttctgctgtaatctgctgcttgcacaacaaaaaacaccgcctaccagcgggtgt
ttgtttccggatcaagagctaccaactcttttccgaaggtaactgctcagcagagcgcagatacacaactgcttcttagttagccgtagttagccacca
cttcaagaactctgtagcaccgcctacatacctcgcctgtaactcctgttaccagtggtgctgctccagtgccgataagctgcttaccgggttgactcaagac
gatagttaccggataaggcgcagcggctcgggctgaacggggggtcgtgcacacagcccagcttgagcgaacgacctacaccgaactgagatacctaca
gctgagctatgagaaagcgcacgcttcccgaagggagaaaggcggacaggtatccggttaagcggcagggtcggaaacaggagagcgcacgagggag
cttccaggggaaacgctggtatctttatagctcctgctcgggttccgacctgactgagcgtcgattttgtgatgctcgcagggggcggagcctatggaaa
aacgcccagcaacgcggccttttaccggttctggccttttctgctcctttgtcacatgttcttctcgttaccctgattctgtgataaccgattaccgctttgag
tgagctgataccgctcgcgcagccgaacgaccgagcgcagcagctcagtgagcaggaagcggaaagcgcaccaatacgcacaaccgcttccccgc
gcttggccgattcattaatgcagcaagctcatggctgactaattttttatgacagaggccgagggccctcggcctgagctattccagaagtagtgagga
ggctttttggaggcctaggcttttcaaaaagctccccgtggcagcagaggttcccactggaaagcgggcagtgagcgaacgcaataatgtgagtagct
cactcattaggcaccacggcttactttatgcttccggctcgtatgtgtggaattgtgagcggataacaatttcacacaggaacacgctatgacatgattac
gaattcacaataaagcatttttactgcaatctagtgtgtgttccaaactcatcaatgtatcttatcagctgagatcaactggataactcaagcaaccaaaat
catcccaaacctcccaccatcaccctattaccctgccaattacctgtggttcttacttaaacctgtgattcctcgaattattttcatttaagaaattgtattgtt
aaatgatgactacaacttagtagt

>plInducer-mCherry-GBP5

tggaagggtaattcactcccaagaagacaagatccttgatctgtggatctaccacacacaaggctacttccctgatttagcagaactacacaccagggcca
ggggtcagatataccactgaccttggatggtgctacaagctagtagaccgttagccagataaggtagaagaggccaataaaggagagaacaccagctgttac
accctgtgagcctgcatggatggatgacccggagagagaaggttagagtgagggttgacagccgctagcatttcatcagctggcccggagagctgcatcc
ggagacttcaagaactgctgatcagcgttctacaagggacttccgctggggacttccagggagcgtggcctgggcccggactggggagtgccgagcc
ctcagatcctgcataaagcagctgcttttgcctgactgggtctctggttagaccagatctgagcctgggagctcctggttaactagggaaaccactgcttaag
cctcaataaagcttgcctgagtgctcaagtagtgtgcccgtctgtgtgactcgtgtaactagagatccctcagacccttttagtcagctgtggaanaatctcag
cagtgcccccgaacagggactgaaagcgaagggaacacagaggagctagcagcagcagcagctcggctgtgtaagcgcacagcggcaagagggcga
ggggggcagctggtgtagtgcgcaaaaattttagctagcggaggtagaaggtagagatgggtgagagcgtcagattaaagcgggggagaattaga
tcgcatgggaaaaaattcggttaagccaggggggaagaaaaataataaaacatatagtatgggcaagcaggagctagaacgattcgcagttaa
tctggtgctgtagaacatcagaaggctgtagacaaactgggacagctacaaccatccctcagacaggatcagaagaacttagatcattataatacag
tagcaaccctctattgtgtcatcaaggatagagataaaagacaccaagggaagcttttagacaagatagaggaagagcaaaaacaaagtaagaccaccg
acagcaagcggccgcccgtgatctcagacctggaggaggagataggggacaattggagaagtgaattataataataaagtagtaaaaattgaacca

ttaggagtagcaccaccaaggcaagagaagagtggcagagagaaaaagagcagtggggaataggagcttggctctgggtcttgggagcagcagg
aagcactatggcgcgacgtcaatgacgctgacggtacaggccagacaattatgtctggtatagtgacgacgagacaatttctgtagggctattgaggcg
caacagcatctgttgaactcacagtctggggcatcaagcagctccaggcaagaatctggctgtgaaagatacctaaaggatcaacagctcctggggattt
ggggtgctctggaaaactcatttgcaccactgctgtgcttggaaatgctagttggagtaataaatctctggaacagatttgaatcacacgacctggatggagtg
gacagagaaattaacaattacacaagcttaatacactccttaattgaagaatcgcaaaacagcaagaaaagaatgaacaagaattattggaattagataaatt
gggcaagtttggaaattggttaacatacaaaattggctgtggtatataaaaattattcataatgatagtaggagcttggtaggttaagaatatttctgctacttct
atagtgaatagagttaggcaggatattcaccattatcgcttcagaccacccctcccaaccccgaggggaccggacagggcccgaaggaaatagaagaagaagg
tggagagagacagagacagatccattcgttagtgaaacggtatctgacggtatcgccgaattcacaatggcagttatccacaattttaaagaaaag
ggggattgggggtacagtcaggggaaagaatagtagacataatgcaacagacatacaaaactaaagaattacaaaaaatacaaaaattcaaaa
atlttcgggttattacagggacagcagagatccagtttggactaggatcctttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctat
cagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtga
aagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccct
atcagtgatagagaaaagtgaagtcgagtcggtaccgggtcgaggtaggcgtgtacggtgggagcctatataagcagagctcgtttagtgaaccgtca
gatcgctggagacgcatccacgctgtttgacctccatagaagacaccgggaccgatccagcctccgcccgaactagtcaggtgtggggaattctgc
agatatcaACAAGTTTGTACAAAAAAGCAGGCTgccaccatggtagcaagggcgaggataacatggccatcatcaaggagttcatgc
gcttcaaggtgcacatggagggtccgtgaacggccacgagttcgagatcgagggcgagggcgagggcgcccctacgagggcaccagaccgccaag
ctgaaggtgaccaaggggtggcccctgcccctcgctgggacatcctgtcccctcagttcatgtacggctcaaggcctacgtgaagcaccggcgcacatccc
cgactacttgaagctgtccttccccgagggctcaagtgaggcgcgtgatgaactcgaggacggcggcgtggtagccgtgaccagggactcctcctgcag
gacggcgagttcatctacaaggtgaagctgcgcccaccaactcccctccgacggcccgtaatgcagaagaagaccatgggctgggagggcctcctccga
gcggtgtaccggagggcggcctgaagggcgagatcaagcagaggtgaagctgaaggacggcggccactacgacgctgaggtcaagaccact
acaaggccaagaagcccgtcagctcccggcgctacaacgtcaacatcaagttggacatcacctcccacaacgaggactacaccatcgtggaacagta
cgaacggcggcggaggggcggcactccacggcggcagtgacagctgtacaagtccggactcAGATCTCGAGGGATGGCTTTAGAGATC
CACATGTCAGACCCCATGTGCCTCATCGAGAACTTTAATGAGCAGCTGAAGGTTAATCAGGAAGCTTTGGAG
ATCCTGTCTGCCATTACGCAACCTGTAGTTGTGGTAGCGATTGTGGCCTCTATCGCACTGGCAAATCCTAC
CTGATGAACAAGCTGGCTGGGAAGAACAAGGGCTTCTCTGTTGCATCTACGGTGCAGTCTCACACCAAGGG
AATTTGGATATGGTGTGTGCCTCATCCCAACTGGCCAAATCACACATTAGTTCTGCTTGACACCGAGGGCCT
GGGAGATGTAGAGAAGGCTGACAACAAGAATGATATCCAGATCTTTGCACTGGCACTTTACTGAGCAGCCT
CTTTGTGTACAATACTGTGAACAAAATTGATCAGGGTGTCTATCGACCTACTGCACAATGTGACAGAAGTGCAG
GACTGTCTCAAGGCAAGAACTCACCCGACCTTGACAGGGTTGAAGATCCTGCTGACTCTGCGAGCTTCTTC
CCAGACTTAGTGTGGACTCTGAGAGATTTCTGCTTAGGCCTGGAAATAGATGGGCAACTTGTACACCAGAT
GAATACCTGGAGAATTCCTAAGGCCAAAGCAAGGTAGTGATCAAAGAGTTCAAATTTCAATTTGCCCGTC
TGTGTATACAGAAGTTCTTTCCAAAAAGAAATGCTTTATCTTTGACTTACCTGCTCACCAAAAAAGCTTGCC
CAACTTGAAACACTGCCTGATGATGAGCTAGAGCCTGAATTTGTGCAACAAGTGACAGAATTCTGTTCTTACA
TCTTTAGCCATTCTATGACCAAGACTCTCCAGGTGGCATCATGGTCAATGGATCTCGTCTAAAGAACCTGGT
GCTGACCTATGTCAATGCCATCAGCAGTGGGGATCTGCCTTGCATAGAGAATGCAGTCTGGCCTTGGCTCA
GAGAGAGAACTCAGCTGCAGTGCAAAAGGCCATTGCCACTATGACCAGCAAATGGGCCAGAAAGTGCAGC
TGCCCATGGAACCCCTCCAGGAGCTGCTGGACCTGCACAGGACCAGTGAGAGGGAGGCCATTGAAGTCTTC
ATGAAAACTCTTTCAAGGATGTAGACCAAAGTTTCCAGAAAGAATTGGAGACTCTACTAGATGCAAAACAGA
ATGACATTTGTAACGGAACCTGGAAGCATCCTCGGATTATTGCTCGGCTTTACTTAAGGATATTTTTGTCC
TCTAGAAGAAGCAGTGAAGCAGGGAATTTATTCTAAGCCAGGAGGCCATAATCTCTTATTAGAAAACAGAA
GAACTGAAGGCAAAGTACTATCGGGAGCCTCGGAAAGGAATACAGGCTGAAGAAGTTCTGCAGAAATATTTA
AAGTCCAAGGAGTCTGTGAGTCATGCAATATTACAGACTGACCAGGCTCTCACAGAGACGgaaaaaagaagaaa
gAGGCACAAGTGAAAGCAGAAGCTGAAAAGGCTGAAGCGCAAAGGTTGGCGGCGATTCAAAGGCAGAACGA
GCAAATGATGCAGGAGAGGGAGAGACTCCATCAGGAACAAGTGAGACAAATGGAGATAGCCAAACAAAATT
GGCTGGCAGAGCAACAGAAAATGCAGGAACAACAGATGCAGGAACAGGCTGCACAGCTCAGCACAAACATTC
CAAGCTCAAAATAGAAGCCTTCTCAGTGAGCTCCAGCACGCCAGAGGACTGTTAATAACGATGATCCATGT
GTTTTACTCtaaGACCCAGCTTTCTTGTAACAAGtggttgataccagcagagtgccggcctcagagtgtagggcccggctcgaat
accatacagcgtcccagactacgcttagtaataaataagaaattctaccgggtaggggagggcgttttccaaggcagctcggagtaaccaccc
aagatctggcctccgcccgggtttggcgctcccggggcgccccctcctcacggcgagcgtgccacgtcagacgaagggcgagcagcgtcctgat
ccttccgcccggacgctcaggacagcggcccgtgctcataagactcggccttagaaccccagatcagcagaaggacattttaggacgggacttgggtgact
ctagggcactggtttcttccagagagcggaaacagggcagggaaaagtagtccctctcggcgattctcggagggatcctcgtgggagcgtgaacggcagta
ttataaggacgcccgggtgtggcacagctagttccgtcgcagccgggatttgggtcgcggttctgtttgtgagctgctgtatcacttggtagtagcggg
ctgctgggctggccgggttctgtggccggggcgcctcgggtgggacggaagcgtgtggagagaccgcaagggtctagctgggtccgaggaag
ttgcctgaaactgggttggggggagcgcagcaaaatggcggctgttccgagtcggaagcagcgttgagggcgttgagggctgtgaggtcgttgaacaa
ggtgggggagctgtggggcggcaagaaccaaggcttgaggccttcgtaaatcgggaaagctcttattcgggtgagatgggctgggaccatctgggga
ccctgacgtgaagttgtcactgactggagaactcgggttctgctgttgcggggcgagcttatggcgggtccgttgggacgtgacccgtacccttgggagcg
cgccgctcgtcgtgctgacgtcaccggttctgttggctataatgcaggggtggggccacctcgggtagggtgctgaggttctcctcgtcgcagagcag
ggttccggcctagggtaggtctcctgaatcagacaggcggcggacctcgtgtgaggggagggataagtgaggcgtcagtttcttggcgggtttatgtacctatctt
cttaagtagctgaagctccgggtttgaactatgcgctcggggttggcagtggttttgaagtttttaggcacctttgaaatgtaatcatttgggtcaatatgtaattt

cagtgttagactagtaaatgtccgctaattctggcgttttggctttttgtagacgaagcttggtaccgagctcggtatccaccccgtagcggctctgcagctg
aatcaccatgtctagactggacaagagcaagtcataaacggagctctggaattactcaatgggtgcggtatcgaaggcctgacgacaaggaactcgtca
aaagctgggagttgagcagcctaccctgtactggcagctgaagaacaagcggccctgctcgatgccctgcaatcgagatgctggacagggatcataccca
cttctgccccctggaaggcagctatggcaagactttctcggaacaacgccaagtcataaccgctgtctcctctcacatcgagcggggctaaagtgcact
cggcaccgcccacaagagaaacagtcagaaaccctggaatacagctcgcgttctgtcagcaaggcttccctggagacgcactgtacgctctgtcc
gccgtggccactttacactgggctcgtattggggaacaggagcatcaagtagcaaaagaggaagagacacactaccgattctatgccccact
ctgagacaagcaattgagctgtcaccggcagggagccgaacctgccttcttccggcctggaactaatcatatgtggcctggagaacagctaaagtgcga
aagcggcgggcccagcaccgacctgacgattttgacttagacatgctcccagccgatgcccttgacgactttgaccttgatgctgctgctgacgctctgacg
atfttgacctgacatgctccccggtaactaagtaaggatccgcccggcactagaggaattccgcccctctcccccccccccccaactgactgcccgaag
ccgcttggataaaggccggtgtcgtttgtctatattttccaccatattgccgttcttggcaatgtgagggcccggaaacctggccctgtctctgacgagcat
tcttaggggtcttccccctcgcgaaggatgcaaggctgttgaatgctggaaggaagcagttcctctggaagcttctgaaacaaacagctctgtagcg
acccttgcagcagcggaaacccccacctggcagcaggtgctctcgcggcaaaagccacgtgataagatacacctgcaaggcggcacaacccccagt
gccacgtgtgagttggatagttgtggaagagtcfaatgctctcctcaagcgtattcaacaaggggctgaaggatgccagaaggtacccattgtatgggat
ctgatctggggcctcgtgacatgctttacatgttttagctgaggttaaaaaacgtctaggcccccgaccacgggagctggtttcttgaaaaacacg
atgataagctaccggtccaccatgattgaacaagatggattgcacgaggttctccggcctggtgggagaggtattcggctatgactgggcacaacaga
caatcggctgctctgatcccggttccggctgacgagcagggcgcccgttctttgcaagaccgacctgctgggtgccctgaatgaactgcaagagc
aggcagcggctatcgtggctggccacgagcggcgcttctcgcagctgtgctgcagctgtcactgaagcgggaagggactggctgctattggcgaagt
gcccgggagcagctcctgtcatctaccctgctcctgcccagaaagatccatcatgctgatgcaatgcggcggctgcatacgtgatccggctaccctgccc
ttcgaccaccaagcgaacatcgcatcgagcagcagctactcggatggaagccggtctgtcagatcaggatgatctggacgaagagcatcaggggctcgc
gccagccgaactgttccagcaggtcaaggcagcatgcccgacggcgaggtatctcgtgacccatggcgtgctgctgcccgaatatcatggtgaaat
ggcgccttctggattcatgactgtggcggctgggtgtggcgaccgctatcaggacatagcgtggctaccctgatattgctgaagagcttggcggcgaat
gggtgaccgcttctcgtgctttacggtatcggcctcccgattcgcagcagcatgccttctatgccttctgacgagttctctgatgtacaagtaagcggccg
gactctagatcataatcagccataccacattgtagaggtttactgtcttaaaaaacctcccacacctccccctgaacctgaaacataaaatgaatgcaattgtg
ttgttagtccctcccaatcgatacaagcttatcgcgatagatcctaatacactctggattacaaaattgtgaaagattgactggattcttaactatgtctcttt
acgctatgtggatacgtcttfaatgctttgatcatgctattgctcccgtatggcttctatttctcctctgtataaatcctgggtgctgctctttatgaggagttgtg
cccgtgtcaggaacgtggcgtggtgtgactgtgttgcagcgaacccccactggttgggacattgccaccacctgacgctcttccgggactttcgtcttcc
cctcctattgccaggggaactcatcgccgctcctgcccgtgctggacaggggctcggctgttgggactgacaattcctgggtgtgctggggaaatc
atcgtccttctggctgctcctgtgttgcacactggattctgcgcccagcgtccttctgctacgctcctcggccctaatccagcggacctcctcccggcct
gctcgggctcgcggccttccgcttccgcttccgcttccgctcagacgagctggatcctccttggcgcctcccgcctcctgagatcctttaaagaccaatgactac
aaggcagctgtagatcttagccacttttaaaagaaaagggggactggaagggtaattcactcccaacgaagacaagatgctctttgtctgtactggctct
ctggttagaccagatcagcctggagctctctgctaactagggaaccactgctaagcctcaataaagcttgcctgagtgctcaagtgtgtgtgcccgtc
tgtgtgtgactctgtaactagatccctcagacccttttagtcagtggtgaaatctctagcagtagtagtcatgtcatctattattcagattttataacttgcaag
aatgaatatcagagagtgagaggcccgggttaattaaggaaagggctagatcattctgaaagacgaaggccctcgtgatacgcctattttataggttaatgtc
atgataataatggttcttagacgctagggtggcacttttccgggaaatgtgcgcggaaccctattgttttttaataacattcaaatatgatccgctcatgagac
aataacctgataaatgctcaataatattgaaaaaggaagatgatgattcaacattccgctgcccctattcccttttgcggcattttgcctcctgttttgcctc
accagaaaacgctggtgaaagtaaaagatgctgaagatcagttgggtgacagagtggtttacatgcaactggatcctcaacagcggtaagatcctgagagttt
cgccccgaagaacgtttccaatgatgagcacttttaagttctgctatgtggcgggtattatcccggttgacgcccgggcaagagcaactcggctcgcgcatac
actattctcagaatgacttgggtgagtaactaccagtcacagaaaagcatctacggatggatgacagtaagagaattatgagtgctgccataaccatgagtg
ataacactcggccaactacttctgacaacgatcggaggaccgaaggagctaaccgctttttgacaacatgggggatcatgtaactcgccttgatgcttggg
aaccggagctgaatgaagccataccaaacgacgagcgtgacaccacgatcctgtagcaatggcaacaacgttgcgcaaaactattaactggcgaactactt
actctagctcccggcaacaattaatagactggatggaggcggataaagttgcaggaccacttctgcgctcggccctccggctggctggtttattgctgataaatc
tggagccggtgagcgtgggtctcgcggtatcattgcagcactggggccagatggaagccctcccgtatcgtagtatctacacgagcggggagtcaggcaacta
tggatgaacgaaatagacagatcgcgtgagataggtgcctcactgattaagcattgtaactgacagcaagttactcatatatactttagattgattaaaactc
atfttaattaaaaggatctagggaagatccttttgataatctcatgacaaaatcccttaacgtgagtttctgctcactgagcgtcagaccccgtagaaaagatc
aaaggatcttctgagatccttttctcgcgtaatctgctgcttgcacaacaaaaaacaccgctaccagcgggtggttgttggcgatcaagagctaccaact
cttttccgaaggtaactggctcagcagagcgcagataccaaatactgttctctagttagccgttagtgccaccactcaagaactctgtagcaccgctac
atacctcgtctgtaactcctgttaccagtggtgctgcccagtgccgataagtcgtgcttaccgggttggactcaagacgatagttaccggataaggcgcagcgg
tcgggctgaacggggggtcgtgcacacagcccagcttgagcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaaagcgcaccgct
tcccgaagggagaaaggcggacaggtatccgtaagcggcagggctcgaacaggagagcgcagagggagctccaggggaaacgctggtatcttta
tagtctgtcgggttccacactgactgagcgtgattttgtatgctcgtcagggggcggagcctatggaaaaacgccagcaacgcggccttttaccggt
cctggccttttgcgcttctcacaatgcttctcctcgtatcccctgattctgtgataaccgtattaccgcttggagtgactgataccgctcgcgcagccga
acgaccgagcgcagcagtcagtgagcaggaagcgggaagagcgcaccaatacgaacccgctcctcccgcggttggccgattcattaatgagcaag
ctcatggtgactaatttttattatgacagagccgagggcctcggcctgagctattccagaagttagtgaggagccttttggaggccttaggcttttgcaaa
aagctcccgtggcagcagaggttcccagctggaagcggcagtgagcgcacagcaatattgtgagttagctcactattaggcaacccccagccttactact
ttatgctcccgtcgtatggtgtggaattgtgagcggataacaaattcacacaggaacagctatgacatgattacgaattcacaaaataaagcatttttactg
cattctagttgtggttgcacaaactcatcaatgtatctatctgtgtaactggataacagctaaccaaaatcatcccaactcccaccataccctat
taccactgccaattactgtggttcttactctaaacctgtatcctctgaatttttcaaaagaaattgtattgttaaatatgtactacaaacttagtagt

>plInducer-mCherry-GBP1-R48A

cgagtgggttacatcgaactggatcacaacagcggaagatccttgagagtttgcggcgaagaacgtttccaatgatgagcactttaaagttctgctatgtggc
gcggtattatcccgtgtgacgcccggcaagagcaactcggcgcgcacatactattctcagaatgacttgggtgagctaccagtcacagaaaagcatctt
acggatggcatgacagtaagagaattatgacgtgctgccataacctgagtgataacactcggccaacttactctgacaacgatcggaggaccgaaggag
ctaaccgctttttgcacaacatgggggatcatgtaactcgcctgatcgttgggaaccggagctgaatgaagccataccaaacgacgagcgtgacaccacgat
gctgtagcaatggcaacaacgttgcgcaaaactaactggcgaacttactctagcttccggcacaataatagactggatggaggcggataaagttgc
aggaccactctgcgctcggcctccggctggctggttattgctgataaaactcggagcgggtgagcgtgggtctcgcggtatcattgacgactggggccagat
ggtaagccctcccgtatcgtatctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgcctgagataggtgacctactgattaagc
attgtaactgtcagaccaagttactcataataactttagattgattaaaactcatttttaattaaaaggatctaggtgaagatccttttgataatctcatgaccaa
atccctaacgtgagtttctgaccctgagcgcagaccccgtagaaaagatcaaaggatctcttgagatcctttttctgcgctgaatctgctgctgcaaa
aaaaccaccgctaccagcgggtgttggcgggatcaagagctaccaactcctttccgaaggtaactggctcagcagagcgcagataccaaactgttctt
tagtgtagccgtagttaggccaccactcaagaactctgtagcaccgctacatacctcgtctgtaactcctgttaccagtggtgctgcccagtgccgataagtcg
tgtctaccgggttgactcaagacgatagttaccggataaggcgcagcggctcgggctgaacggggggtcgtgacacagcccagctggagcgaacgacc
tacaccgaactgagatacctacagcgtgagctatgagaaagcgcacgcttccgaaggagaaaggcggacaggtatccggtaagcggcagggctgga
acaggagagcgcacgagggagctccaggggaaacgcctggtatctttatagctcgtgctgggttccgacactctgactgagcgtgattttgtgatgctcgc
agggggcggagcctatgaaaaacgccagcaacgcgcttttaccggttctggccttttctgacatgttcttctcgttaccctgattctgt
ggataaccgtattaccgctttagtgagctgataccgctcggcagccgaacgaccgagcgcagcagctcagtgagcgggaagcgggaagagcgcgcca
atagcaaacccgctcctcccgcgcttggcggattcattatgacgaagctcatggtgactaattttttatattatgacagggcggaggccgctcggcctctg
agctattccagaagtagtgaggaggcttttggaggcctaggctttgcaaaaagctcccgtggcagcagaggttcccgactggaaagcgggagtgagc
caacgcaatattgtgagttagctcactcaataggcaccaccaggctttacactttatgctccggctcgtatgtgtggaattgtgagcggataacaatttcacaca
ggaaacagctatgacatgattacgaatttcaaaaataaagcatttttctcagctatttagttgtggttgcacaaactcaatgatacttcatgctggtcaact
ggataactcaagtaacaaaatcatccaaactcccaccataccttaccactgccaattaccctgtggttcttactctaaactgtgattcctctgaatta
tttcttttaagaaattgtattgttaaatatgtactcaaaacttagttagttggaaggcctaatcactccaaagaagacaagataccttgatctgtggatctacca
cacacaaggctactccctgattagcagaactacacaccaggccagggtcagatatacactgaccttggatggtgctacaagctagtagaccgtgagccag
ataaggtagaagaggccaataaaggagagaacaccagctgttacaccctgtgagcctgcatgggatggatgacccggagagagaaggttagagtgagg
gtttgacagccgctagcattcatcagctggcccagagcgtcaccggagcttcaagaactgctgatacagcgtgctacaagggacttccgctggggac
ttccaggaggcgtggcctggcgggactggggagtgccgagccctcagatcctgcatataagcagctgcttttgctgtactgggtctctcgtgtagaccag
atctgagcctggagctctcgttaactagggaaaccactgcttaagcctcaataaagcttgccttgagtgctcaagtagtgtgcccgtctgtgtgactctg
gtaactagagatccctcagaccctttatgctagtggtgaaaatctctagcagtgccgcccgaacagggactgaaagcgaagggaaaccagaggagctctc
cagcgcaggactcggcttctgaagcgcacggcaagaggcaggggagggcggcagctggtgagtagcgcacaaaattttgactagcggaggctagaaggag
agagatgggtgagagcgtcagtaattaagcggggagaattagatcgcgtggaaaaaactcggtaaggggaaagaaataataaataa
aacatatagtatggcgaagcagggactagaacgattcgcagttatcctggcctgttagaacaacatcagaaggctgtagacaaaactctgggacagctcaac
catccctcagacaggatcagaagaacttagatcattataatcacagtagcaaccctctattgtgtgcatcaaaggatagagataaaagacaccaaggaagct
ttagacaagatagaggaagagcaaaaacaaagtaagaccaccgcacagcaagcggccggcgcgctgatctcagacctggaggaggagatagaggac
aattggagaagtgaaatataataaataaagtagtaaaaattgaaccattaggagtagcaccaccaaggcaagagaagagtggtgagagagaaaaa
gagcagtggaataggagcttcttctgggttcttgggagcagcaggaagcactatggcgcagcgtcaatgacgctgacggctacaggccagacaattattg
tctggtatagtcagcagcagaacaattgctgagggtattgaggcgaacagcatctgttgaactcacagctcggggatcaagcagctccaggcaagaat
cctggctgtggaagatacctaaggatcaacagctcctgggattggggtgctctggaaaactcattgaccactgctgtgcttggatgctagttggagta
ataaatctctggaacagatttgaatcacacgacctggatggagtgggacagagaaattaacaattacacaagcttaatacactccttaattgaagaatcgcaa
aaccagcaagaaaagaatgaacaagaattattggaattagataaattgggcaagtttgggaattggttaacataacaaattggctgtggtatataaaattatcat
aatgatagtaggagctggttaggttaagaatagttttgctgacttctatagtgatagagtaggacgggatattcaccattatcgttccagaccacctccaa
ccccgaggggaccgacaggccgaaggaatagaagaagaaggtggagagagacagagacagatccattcagattgtaacggatctcgcagcgtat
cgccgaattcacaatggcagttatccacaattttaaagaaaaggggggattgggggtacagtgacggggaagaatagtagacataatagcaaca
gacatacaaaactaaagaattacaaaaacaaattacaaaaattcaaaatttccgggttattacagggacagcagagatccagtttgactaggtatccttaccact
ccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaa
agtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagttaccac
tccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagctcggatcccgggtcaggttaggctgt
acggtgggaggcctatataagcagagctcgttagtgaaaccgctcagatcgcctggagacgcatccacgctgtttgacctccatagaagacaccgggaccga
tccagcctccgcccggccgaactagctcagtggtggaattctgcagatatacaACAAGTTGTACAAAAAAGCAGGCTgccaccatgggtgag
caagggcagggaggataacatggccatcatcaaggagttcatgcgctcaaggtgcacatggagggtccgtgaacggccacgagttcagatcgagggc
gagggcaggggcccctacgagggcaccagaccgcaagctgaaggtgaccaaggggtggccccctgcccctgcgctgggacatcctgtcccctcagtt
catgtacggctcaagggctacgtgaagcaccggcgcacatcccgactactgaagctgcttcccaggggttcaagtgaggcgcgctgatgaacttcg
aggacggcggcgtggtgacgtgacccaggactcctcctcagcagcggcaggttcatctacaaggtgaagctgcgcccgaaccaactcccctccgacggc
cccgtatgcagaagaagactgggctgggaggtcctcctccgagcggatgtaccccagggcggcgcctgaagggcagatcaagcagaggtgaa
gctgaagcagcggcaccactacgctcaggtcaagaccactcaagggccaagggccgctgacgtgcccggcgcctacaacgtcaacatcaagtt
ggacatcacctcccacaacagggactacaccatcgtggaaacagtagcaacggcgaagggcggccactccaccggcggcagtgagcagctgtaacgct
cggactcAGATCTATGGCATCAGAGATCCACATGACAGGCCAATGTGCCTCATTGAGAACACTAATGGGCGAC
TGATGGCGAATCCAGAAGCTCTGAAGATCCTTTCTGCCATTACACAGCCTATGGTGGTGGTGGCAATTGTGG
GCCTCTACGCACAGGCAAATCCTACCTGATGAACAAGCTGGCTGGAAAGAAAAAGGGCTTCTCTCTGGGCT
CCACGGTGCAGTCTCACACTAAAGGAATCTGGATGTGGTGTGTGCCACACCAAGAAGCCAGGCCACATC

CTAGTTCTGCTGGACACCGAGGGTCTGGGAGATGTAGAGAAGGGTGACAACCAGAATGACTCCTGGATCTT
CGCCCTGGCCGTCTCCTGAGCAGCACCTTCGTGTACAATAGCATAGGAACCATCAACCAGCAGGCTATGG
ACCAACTGTACTATGTGACAGAGCTGACACATAGAATCCGATCAAATCCTCACCTGATGAGAATGAGAATGA
GGTTGAGGATTCAGCTGACTTTGTGAGCTTCTTCCCAGACTTTGTGTGGACACTGAGAGATTTCTCCCTGGA
CTTGGAAGCAGATGGACAACCCCTCACACCAGATGAGTACCTGACATACTCCCTGAAGCTGAAGAAAGGTAC
CAGTCAAAAAGATGAACTTTTTAACCTGCCAGACTCTGTATCCGAAATTCTTCCCAAAGAAAAAATGCTTT
GTCTTTGATCGGCCGTTACCAGCAGGAAGCTTGCCAGCTCGAGAACTACAAGATGAAGAGCTGGACCC
CGAATTTGTGCAACAAGTAGCAGACTTCTGTTCTACATCTTTAGTAATCCAAAACCTAAAACCTTTTCAGGAG
GCATCCAGGTCAACGGGCTCGTCTAGAGAGCCTGGTGTGACCTACGTCAATGCCATCAGCAGTGGGGAT
CTGCCGTGCATGGAGAACGCAGTCTGGCCTTGCCAGATAGAGAACTCAGCTGCAGTGCAAAAGGCTAT
TGCCACTATGAACAGCAGATGGGCCAGAAGGTGCAGCTGCCACAGAAAGCCTCCAGGAGCTGCTGGACC
TGCACAGGGACAGTGAAGAGAGGCCATTGAAGTCTTTCATCAGGAGTTCCTTCAAAGATGTGGACCATCTAT
TTCAAAGGAGTTAGCGGCCAGCTAGAAAAAAGCGGGATGACTTTTGTAAACAGAATCAGGAAGCATCAT
CAGATCGTTGCTCAGGTTTACTTCAGGTCAATTTTCAGTCTCTAGAAGAAGAAGTGAAGGCGGGAATTTATTC
GAAACCAGGGGGCTATCGTCTCTTTGTTGAGAAGCTACAAGACCTGAAGAAAAAGTACTATGAGGAACCGAG
GAAGGGGATACAGGCTGAAGAGATTCTGCAGACATACTTGAATCCAAGGAGTCTATGACTGATGCAATTCT
CCAGACAGACCAGACTCTCACAGAAAAAGAAAAGGAGATTGAAGTGAACGTGTGAAAGCTGAGTCTGCACA
GGCTTCAGCAAAAATGTTGCAGGAAATGCAAAGAAAGAATGAGCAGATGATGGAACAGAAGGAGAGGAGTTA
TCAGGAACACTTGAACAACCTGACTGAGAAGATGGAGAACGACAGGGTCCAGTTGCTGAAAGAGCAAGAGA
GGACCTCGCTCTTAACTTCAGGAACAGGAGCAACTACTAAAAGAGGGATTTCAAAAAGAAAGCAGAATAAT
GAAAAATGAGATACAGGATCTCCAGACGAAAATGAGACgacgaaaggcatgtaccataagctaaGACCCAGCTTTCTTG
TACAAAGtggtgatatccagcacagtggcgccgctcagctctagagggcccgggttgaataccatacagctcccagactacgcttagtaatgatta
attaaactagaaattctaccggtaggggagggcgttttcccaaggcagctctggagtaaccacccaagatctggcctccgcgccgggtttggcgctcccgc
ggcgccccctcctcacggcgagcgtgccacgtcagacgaagggcgagcgagcgtcctgatcctccgcccggagcctcaggacagcggcccgcctgc
tcataagactcggccttagaaccccagatcagcagaaggacatttaggacgggacttgggtgactctagggcactggtttcttccagagagcggaaacaggg
gaggaaaagttagcttctcggcgttctcgggagggatctccgtggggcgtgaacgccgatgattatataaggacgcgcccgggtggtggcacagctagtcc
gtcgcagccgggatttgggtcgcggcttctgttggatcgtgtgatcgtcacttggtagtagcgggctgctgggctggcggggcttctggtggcggccggcc
gctcgggtgggacggaagcgtgtggagagaccgccaagggctgtagctgggtccgagcaaggttgcctgaactgggggtggggggagcgcagcaaa
atggcggctgttcccagcttgaatggaagacgcttgtgaggcgggctgtgaggtcgttgaacaaggtgggggcatggtggcgcaagaaccaaggt
cttagggcctcgttaatcgggaaagctcttattcgggtgagatgggctggggcaccatctgggaccctgacgtgaagttgtcactgactggagaactcgggt
tgtcgtctgtcggggcgccagttatggcggtgcccgtggcagtgaccctgaccttgggagcgcgcccctcgtgctgctgacgtcaccgctctgtg
ctataatgacgggtggggccacctgcccgttaggtgtgcggtaggcttttccctgcgcaggacgcaggggtcggcctagggttagctctcctaagtcgacagg
cgccggacctctggtgaggggaggataagtgaggcgtcagtttcttggcggtttatgtacctatcttctaagtagctgaagctccggtttgaactatgcgctg
gggtggcgagtggttttgaagtttttagccacctttgaaatgtaatacttgggtcaatgtaattttagtgtagactagtaaattgcccgttaaattctggcgt
tttggctttttgtagacgaagcttggtagcagctcggatctccaccctgaccggtcctgacgtcgaattcaccatgcttagactggacaagagcaaaagtcata
aacggagctctggaattactcaatggtgtcggatcgaaggcctgacgacaaggaaactcgtcctcaaaagctgggagttgagcagcctaccctgactggcacg
tgaagaacaagcgggcccctgctgatccctgccaatcgagatgctggacaggtatcataccactctgccccctggaaggcagctatggcaagactttct
gcggaacaacgcaagtcataccgctgtgctctcctctcacatcgcgacgggctaaagtcatctcggcaccgcccacagagaaacagctacgaaacc
tggaaaatcagctcggcttctgtgacgaaggcttctcctggagaacgcactgtacgctctgcccgggtgggacccttactggtgctgtattggagga
acaggagcatcaagtagcaaaagaggaagagagacacactaccacgattctatgccccacttctgagacaagcaattgagctgtgacccggcagggga
gccgaacctgcttcttctggcctggaactaatcatatgtggcctggagaacagctaaagtgcgaagcggcgggccgaccgacgccctgacgatttga
cttagacatgctcccagccgatgccctgacgactttagcttgcctgctgacgctcttgcgattttagcttgcacatgctccccgggtaactaagtaag
gatccgcgccgactagaggaattccgcccctccccccccccccctaacgttactggccgaagccgcttgaataaggccgggtgtgcttctatgatgt
atttccacatattgcccgttttggcaatgtgagggcccggaaacctggccctgcttctgacgagcattcctaggggtcttccccctcgcctcaaaaggaatgcaa
ggtctgtgaatgctgtaaggaagcagttcctctggaagcttctgaagacaacaacgtctgtagcagacccttgcaggcagcggaaacccccacctggcga
caggtgctctcggccaaaagccacgtgtataagataccctgaaaggcggcacaaccccagtgccacgttgtgagttggatagttgtgaaagagtgtaa
atggctctcctaagcgtattcaacaaggggctgaaggatgccagaaggtaccccattgtatgggatctgatctggggcctcgggtgacatgctttacatgtgtt
agtcgaggttaaaaaacgtctaggccccccgaaccacggggacgtggttttcttgaaaaaacagatgataagcttaccggtccacatgattgaacaagat
ggattgacgcaggttctcggccgcttgggtggagaggctattcggctatgactgggcacaacagacaatcggctgctgatgcccgggttccggctgtca
gcgagggggcggccggcttcttgaagaccgacctgcccgtgcccgaatgaactgcaagacgagcagcggctatcgtggtggccacgacgggc
gttcttgcgagctgtgctgcagctgtcactgaagcgggaaggactggtctattggcgaaagtcggggcaggtatcctctgcatctcacctgtcctgc
cgagaaagtatccatcaggtgatgcaatcggcggtgcatacctgatccggctacctgccattcgaccaccaagcgaacatcgatcgagcagc
acgtactcggatggaagccggtctgtcagatcaggatgatctggacgaagagatcaggggctcgcgcccagccgaactgtcggcaggctcaaggcagcag
gcccgagcggcaggtatcgtcgtgacccatggcagctgctgctgcaaatctggtgaaatggccgctttctgattcctgactgctgtggtggcggctgggt
tggcgagaccgctatcaggacatagcgttggctaccctgatttgcgaagacttggcgccgaatggcgtgaccgcttctcgttctttagctatcggctcgcgctc
ccgattcgcagcgcacgcttctatcgcctcttgcagagttctctgtatgtaagtaaagcggcggcactctagatcataatcagccataccacattgtagag
gtttactgctttaaaccctcccacacctcccctgaacctgaaacataaaatgaatgcaattgttgtttagtccctcccaattcgatataagcttatcggat
agatcctaataacacctggtatcaaaaattgtgaaagattgactggtattcttaactatgttctctttacgctatgtggatacgtgctttaatgctttagatcgc
tattgctcccgtatggcttcttctcctctgtataaatcctgggtgctgctctttagaggagttgtggccggtgtcaggcaacgtggcgtggtgtgactgtgtt

ctgacgcaacccccactggtggggcattgccaccacctgtcagctccttccgggactttcgcttccccctccctattgccacggcggaactcatcgccgctgc
ctgcccgcgtgacaggggctcggctggtgggactgacaattccggtggtgctcgggaaatcatgctccttctggctgctcgcctggtgacacctgga
ttctgcgcgagcgtccttctgctacgtccttccggccctcaatccagcggacctccttcccgcgctgctcggcctctgccccttccgcttctgctcctg
ccctcagacgagtcggtatccttctggccgctccccgctgagatcctttaaagaccaatgacttacaaggcagctgtagatcttagccactttttaaagaaa
aggggggactggaaggctaaactcctcaacgaagacaagatctgcttctgctgactgggtctctggttagaccagatctgagcctgggagctctctggc
taactagggaaacccactgctaaagcctcaataaagcttgccttgaagcttcaagtagtgtgctcctgctgcaagaaatgaatatcagagagtgagaggcccggttaatt
tttagtcagtgaggaaatctctagcagtagttagctatcttattcagtagtattataacttgcacaaagaaatgaatatcagagagtgagaggcccggttaatt
aaggaaaggctagatcattctgaagacgaaaggcctcgtgatacgcctattttataggtaattgcatgataataatggttcttagacgtcagggtggcactttt
cgggaaatgtgcggaacccctattgttttttctaaatacattcaaatatgtatccgctcatgagacaataaccctgataaatgctcaataatattgaaaaa
ggaagagtatgagattcaacattccgctgcccctattccctttttgcggaatttgccttctgcttttctcaccagaaacgctggtgaaagtaaaagatgctga
agatcagttgggtgca

>plInducer-mCherry-GBP1-3R

cgagtggttaccatgaactggtatcaacagcggtaagatcctgagagtttgcggcgaagaacggtttccaatgatgagcactttaaagttctgctatgtggc
gctgtattatcccgtgtgacgcccggcaagagcaactcggctcgcacatacactattctcagaatgacttgggtgagtagtaccagtcacagaaaagcatctt
acggatggcatgacagtaagagaattatgacgtgctccataaccatgagtgataacactcggccaacttactctgacaacgatcggaggaccgaaggag
ctaaccgctttttgcacaacatgggggatcatgtaactcgccttgccttgccttgggaaccggagctgaatgaagccatacacaacgacgagcgtgacaccacgat
gcctgtagcaatggcaacaacggttgcgcaactattaactggcgaactacttactctagcttccggcacaataatagactggatggaggcggataaagttgc
aggaccacttctgctcggccctcggctggtggttattgctgataaactggagccggtgagcgtgggtctcgcggtatcattgcagcactggggccagat
ggttaagccctccgctatcgtatctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgcgtgagatagggtcctcactgattaaagc
attgtaactgtcagaccaagttactcatataactttagattgatttaaaactcatttttaattaaaaggatctaggtaagatccttttgataatctcatgacaaa
atcccttaacgtgagtttcttccactgagcgtcagaccccgtagaaaagatcaaaggatctctgagatcctttttctgcgctaatctgctgcttcaaaacaa
aaaaccaccgctaccagcgggtgttggctcgggatcaagagctaccaactctttccgaaggtaactggctcagcagagcgcagatacacaactgcttctt
tagttagccgtgtagttagccaccactcaagaactctgtagaccgctacatacctcgtctgtaactcctgttaccagtggtgctgcccagtgccgataagtcg
tgtctaccgggttgactcaagacgatagttaccggataaggcgcagcggctcgggtgaacggggggtctgctgacacagcccagctggagcgaacgacc
tacaccgaactgagatacctacagcgtgagctatgagaaagcgcacgctcccgaaggagaaaggcggacaggtatccggtaagcggcagggctgga
acaggagagcgcacgaggagctccaggggaaacgctggtatctttagctctgctggttccgcaactctgactgagcgtcagattttgtgagctcgtc
agggggcggagcctatgaaaaacgcgcaacgcgcttttaccggttctggccttttctgctcactgttcttctgctgattccccctgattctgt
ggataaccgtattaccgctttagtgagctgataccgctcgcgcagccgaacgaccgagcgcagcagtgagcagagcgaagcgaagcgaagcgcacca
atcagcaaacggcctcctcccgcttggcggcattcattagcagaagctcagcagcagcagcagcagcagcagcagcagcagcagcagcagcagcagcagc
agctattccagaagtagtgaggagccttttggaggcctaggcttttgcacaaagcctcccggtgcaacgacaggtttcccgactggaagcgggagcgtgagc
caacgcaataatgtgagtttagctcactcattaggcaccaccaggctttacactttatgcttccggctcgtatgtgtggaattgtgagcggataacaatttcacaca
ggaaacagctatgacatgattacgaatttcacaaataaagcatttttctcactgatttctagttgtggttctcacaactcatcaatgtatcttcatgctggatcaact
ggataactcaagctaaccaaaatcatcccaactcccaccataaccctattaccactgccaattaccctgtggttcttactctaaacctgtgattcctctgaatta
tttcttttaagaaattgtattgttaaatatgtactacaaacttagttagtggaggcctaattcactccaaagaagacaagatattctgctggtgattacca
cacacaaggctactccctgattagcagaactacacaccaggccagggtcagatattcactgaccttggatggtgctacaagctagtagtaccagttgagccag
ataaggtagaagaggccaataaaggagagaacaccagctgttacaccctgtgagcctgcatgggatggatgaccgggagagagaaggttagagtgagg
gtttgacagccgctagcattcatcagtgcccgagagctgcatccggagtagtcaagaactgctgatatcagcgtgctacaagggacttccgctggggac
ttccaggaggcgtgctggcgggactggggagtgccgagccctcagatcctgcatataagcagctgcttttgcctgactgggtctctggttagaccag
atctgagcctgggagctctctggttaactaggaaccactgcttaagcctcaataaagcttgcctttagtgctcaagtagtgtgctcccgtctgtgtgactctg
gtaactagagatccctcagacccttttagctagtgtaaatacttagcagtgccgcccgaacagggactgaaagcgaagggaaaccagaggagctctct
cgacgcaggactcggcttctgaagcgcacggcaagaggcagggcggcagctggtgagtagccaaaaattttagctagcggaggctagaaggag
agagatgggtgagagcgtcagtaataagcggggagaattagatcgcgatgggaaaaaattcggtaaggccagggggaagaaaaataataaataa
aacatatagtatgggcaagcaggagctagaacgattcgcagtaattcctggcctgttagaaacatcagaaggctgtagacaaactgggacagctacaac
catccctcagacaggatcagaagaacttagatcattataataacagtagcaaccctctattgtgtgcatcaaggatagagataaaagacaccaaggaagct
ttagacaagatagaggaagagcaaaacaaaagtaagaccaccgcacagcaagcggccggcggctgatctcagacctggaggaggagatagagggac
aattggagaagtgaaatataataaagtagtaaaatgaaccattaggagtagcaccaccaaggcaagagaagagtggtgagagagaaaaa
gagcagtggaataggagcttcttctgggttctgggagcagcaggaagcactatgggcgagcgtcaatgacgctgacggtagcaggccagacaattattg
tctggtatagtcagcagcagaacaatttctgagggctattgaggcgaacagcatctgttgaactcagactcggggcatcaagcagctccaggcaagaat
cctggctgtgaaagatacctaaggatcaacagctcctgggatttgggtgctctggaaaactcattgcaccactgctgtgccttggatgctagttggagta
ataaatctctggaacagatttgaatcacacgacctggatggagtgagcagagaaattaacaattacacaagcttaatacactccttaattgaagaatcga
aaccagcaagaaaagaatgaacaagaattattggaattagataaattggcgaagtttgggaattggttaacataacaattggctgtggtatataaaatattcat
aatgtagtaggagcctggttaggttaagaatagttttgctgacttctatagtagtaagagtaggacgggatattcaccattatcgttccagaccacccca
ccccgagggaccagcagggcccgaaggaatagaagaagggtggagagagacagacagatccattcagattagtagcagcagctcgcagcgtat
cccgaattcacaattggcagtagtattcacaattttaaagaaaaagggggttgggggttacagtgacggggaagaaatagtagacataatagcaaca
gacatacaactaaagattacaaaaacaaattcaaaaaattcaaaatttccgggtttattacaggggacagcagagatccagtttggactaggatcctttaccct
ccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaa
agtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagttaccac
tccctatcagtgatagagaaaagtgaagtcgagttaccactccctatcagtgatagagaaaagtgaagtcgagctcggtaaccgggtcagggtaggctgt

acggtgggaggcctatataagcagagctcgttagtgaaccgtcagatcgctggagagccatccacgctgtttgacctccatagaagacccgggaccga
tcacgctccgcgcccccgaactagctcagtggtggaattctgcagatatcaACAAGTTTGTACAAAAAAGCAGGCTgccaccatggtgag
caagggcgaggaggataacatggccatcatcaaggagttcatgcgttcaaggtgcacatggagggtcctggaacggccacgagttcgagatcgagggc
gagggcgagggccgcccctacgagggcaccagaccgcaagctgaaggtgaccaagggggcccccctgacctcgctgggacatcctgtcccctcagtt
catgtacggctcaagggcctacgtgaagcaccggccgacatccccgactactgagctgtccttccccgagggctcaagtgggagcgctgtgacttcg
aggacggcggtggtgaccgtgaccaggtcctcctgcaggacggcgagttcatctacaaggtgaagctgacggcgcccaacttcccctcgacggc
cccgtaatgcagaagaagaccatggctgggagggcctcctccgagcggatgtaccccgagggcgcctgaagggcgagatcaagcagaggtgaa
gctgaaggacggcgccactacgacgtgaggtcaagaccacctaagggcaagaagcccgtgacgtgcccggcgctacaacgtcaacatcaagtt
ggacatcacctcccacaacgaggactacaccatcgtggaacagtaacgcgcggagggcgccactccaccggcggtgagcagctgtacaagtc
cggactcAGATCTATGGCATCAGAGATCCACATGACAGGCCAATGTGCCTCATTGAGAACACTAATGGGCGAC
TGATGGCGAATCCAGAAGCTCTGAAGATCCTTTCTGCCATTACACAGCCTATGGTGGTGGTGGCAATTGTGG
GCCTCTACCGCACAGGCAAATCCTACCTGATGAACAAGCTGGCTGAAAGAAAAAGGGCTTCTCTCTGGGCT
CCACGGTGCAGTCTCACACTAAAGGAATCTGGATGTGGTGTGTGCCACACCAAGAAGCCAGGCCACATC
CTAGTTCTGCTGGACACCGAGGGTCTGGGAGATGTAGAGAAGGGTGACAACCAGAATGACTCCTGGATCTT
CGCCCTGGCCGTCTCCTGAGCAGCACCTTCGTGTACAATAGCATAGGAACCATCAACCAGCAGGCTATGG
ACCAACTGTACTATGTGACAGAGCTGACACATAGAATCCGATCAAATCCTCACCTGATGAGAATGAGAATGA
GGTTGAGGATTCAGCTGACTTTGTGAGCTTCTCCAGACTTTGTGTGGACACTGAGAGATTTCTCCCTGGA
CTTGAAGCAGATGGACAACCCCTCACACCAGATGAGTACCTGACATACTCCCTGAAGCTGAAGAAAGGTAC
CAGTCAAAAAGATGAAACTTTTAACTGCCCAGACTCTGTATCCGAAATTCTTCCCAAAGAAAAAATGCTTT
GTCTTTGATCGGCCCGTTCACCGCAGGAAGCTTGCCCAGCTCGAGAAACTACAAGATGAAGAGCTGGACCC
CGAATTTGTGCAACAAGTAGCAGACTTCTGTTCTACATCTTTAGTAATCCAAAATAAACTCTTTTCAAGGAG
GCATCCAGGTCAACGGGCCTCGTCTAGAGAGCCTGGTGTGACCTACGTCAATGCCATCAGCAGTGGGGAT
CTGCCGTGCATGGAGAACGCAGTCTGGCCTTGCCCGAGATAGAGAACTCAGCTGCAGTGCAAAAGGCTAT
TGCCCACTATGAACAGCAGATGGGCCAGAAGGTGCAGCTGCCACAGAAAGCCTCCAGGAGCTGCTGGACC
TGCACAGGGACAGTGAAGAGAGAGGCCATTGAAGTCTTCATCAGGAGTTCCTTCAAAGATGTGGACCATCTAT
TTCAAAGGAGTTAGCGGCCAGCTAGAAAAAAGCGGGATGACTTTTGTAAACAGAATCAGGAAGCATCAT
CAGATCGTTGCTCAGTCTTACTTCAGTCAATTTTCACTCTAGAAAGAAGTGAAGCGGGGAATTTATTC
GAAACCAGGGGGCTATCGTCTCTTTGTTGCAAGCTACAAGACTGAAGAAAAAGTACTATGAGGAACCCAG
GAAGGGGATACAGGCTGAAGAGATTCTGCAGACATACTTGAATCCAAGGAGTCTATGACTGATGCAATTCT
CCAGACAGACCAGACTCTCACAGAAAAAGAAAAGGAGATTGAAGTGGAACGTGTGAAAGCTGAGTCTGCACA
GGCTTCAAGCAAAAATGTTGCAGGAAATGCAAAGAAAGAATGAGCAGATGATGGAACAGAAGGAGAGGAGTTA
TCAGGAACACTTGAACAACACTGACTGAGAAGATGGAGAACGACAGGGTCCAGTTGCTGAAAGAGCAAGAGA
GGACCCCTCGCTCTTAACTTCAGGAACAGGAGCAACTACTAAAAGAGGGATTTCAAAGAAAGCAGAATAAT
GAAAAATGAGATACAGGATCTCCAGACGAAAATGGCAGCaGCaagggcatgtaccataagctaaGACCCAGCTTTCTT
GTACAAAGtggtgatattccagcacagtgccggcgctcagctctagagggcccgggtcgaataccatacagcgtccagactacgcttagtaatgat
taattaaactagaaattctaccgggtaggggagggcgcttttccaaggcagctctggagtaaccacccaagatctggcctccgcccggggtttggcgctcccg
cgggcccctcctcacggcgagcgtgccacgtcagacgaagggcgagcagcgtcctgatcctccgcccggagcgtcaggacagcggcccgtg
ctcataagactcggccttagaaccacagatcagcagaaggacatttaggacgggacttgggtgactctagggcactggtttcttccagagagcggaaacagg
cgagaaaagtagtccctctcggcgattctcgggagggatcctcggggcggtgaacgcccgatgattatataaggacgcgcccgggtgtggcacagctagttc
cgtcgcagccgggatttgggtcgcggttcttgggtgatcgtgactgctgagtagcgggtgctgggctggccggggcttctggtccgcccgggc
cgctcgggtgggacggaagcgtgtggagagaccgcaagggctgtagctgggtccgagcaaggttgcctgaactgggggtggggggagcgcagcaa
aatggcggctgtcccagcttgaatggaagacgcttggaggcggctgtgaggtcgtgaaacaaggtgggggcatggtggcggaagaaccaag
gtcttgaggcctcgctaagcgggaaagcttattcgggtgagatgggctggggcaccatctggggaccctgacgtgaagttgtcactgactggagaactcg
gttgtcgtctgttggggggcggcagttatggcgggtgccgttggcagtgacccgtaccttgggagcgcgcccctcgtcgtgctgacgtcaccggttctgtt
ggctataatgcagggtggggccacctgcccgttaggtgtgcccgttaggcttttctccgtcgcaggacgcagggttcgggcctagggtagctcctcgaatcgaca
ggcgccggacctctggtgaggggagggataagtgaggcgtcagtttcttggctgggtttatgtacctatcttctaagtagctgaagctccgggtttgaaactatgcgt
cggggttggcagtggttttgaagtttttaggcacctttgaaatgtaatcatttgggtcaatatgtaattttagttagactagtaaatgtccgctaaattctggc
cgttttggcttttttagacgaagcttggtaccgagctcggatctccacccgtaaccggtcctgcagctgaattcaccatgtctagactggacaagagcaaagtc
ataaacggagctctggaattactcaatggtgtcggatcgaaggcctgacgacaaggaaactcgtcaaaaagctgggagttgagcagcctaccctgtactggc
acgtgaagaacaagcgggcccctgctcagatgccctgccaatcgagatgctggacaggtcataaccactctgccccctggaaggcgagtcagtggaagact
ttctcggaaacaacgcaagtcataaccgctgtgctcctctcacatcgcgacgggctaaagtcatctcggcaccgcccacagagaaacagtagcaaa
ccctgaaaatcagctcggcttctgtgacgaaggtctcctcggagaacgcactgtacgctctgtccgcccgtggccactttactggtgctgattgga
ggaacaggagcatcaagtagcaaaagaggaaagagagacacctaccaccagaaactatgccccactctgagacaagcaattgagctgttcgaccggcag
ggagccgaactgctcctttcggcctggaactaatcatatgtggcctggagaacagctgaaagcgaagcggcgccagcagcgccttgcagattt
tacttagacatgctccagccgatgcccctgacgactttgacctgtatgctgctgacgtctgtgacgattttgacctgacatgctccccgggttaactaag
aaggatccgcccgcactagaggaattccgccccctccccccccccccctaacgttactggccgaagccgcttgaataaggccggtgtgcttctata
tgtattttccaccatattgcccgttttggcaatgtgagggcccggaaacctggccctgtcttctgacgagcattcttaggggtcttccccctcgcgcaaaaggaatg
caaggtctgtgaatgtcgtgaaggaagcagttccttggagcttctgaaagcaaaacaacgtctgtagcgacccttgcaggcagcggaaacccccacctgg
cgacaggtgctctgcccgaaaagccacgtgtataagataccctgcaaggcggcacaacccccagtgccacgttgtgagttggatagttgtgaaagagt

caaatggctctcctcaagcgtattcaacaaggggctgaaggatgccagaaggtacccattgtatgggatctgatctggggcctcggcgcacatgctttacatgt
gtttagtgcagggttaaaaaaacgcttaggccccccgaaccacggggacgtggttttctttgaaaaacacgatgataagcttaccgggtccaccatgattgaacaa
gatggattgcacgcaggttcccgccgctgggtggagaggctattcggctatgactgggcacaacagacaatcggtctctgatgccgctgttccggctg
tcagcgcagggcgccgggttctttgtcaagaccgacctgtccggctgaatgaactgcaagacgagcagcggctatcgtgctggccacgacgg
gcttccctgcgcagctgtctgcagctgactgaagcgggaagggactggctgctattggcggaagtgcggggcaggatctctgtcatctcaccttgcct
gccgagaagtatccatcatggctgatgcaatgcggcggctgcatacgcctgacccgctaccattcgaccaccaagcgaacctgcacatcgacgagcga
gcacgtactcggatggaagccggtctgtgatcaggatgatctggacgaagagcatcaggggctcgcgccagccgaactgttcgccaggctcaagcgag
catgccccgagcggagatctcgtcgtgacccatggcgtatgctgctgctgccaatatcatggtgaaaaatggccgcttttctggattcatcactgtgcccggctg
gggtggcggaccgctatcaggacatagcgttggctaccctgtatattgtgaagagctggcggcgaatgggctgaccgcttctcgtgctttaccggtatcgcc
ctcccgaatgcagcgcacgtctctatcgccttctgacgagttctctgtatgtacaagtaaagcggccgactctagatcataatcagccataccacattgta
gaggttttactgtcttaaaaaacctcccacacctcccctgaacctgaacataaaaatgaatgcaattgttgttttagtccctcccaattcgatataagcttatcg
cgatagatcctaatacaacctctggattacaaaattgtgaagattgactggattcttaactatgttgccttttaccgctatgtggatacgtgctttaaagccttggatc
atgctattgctcccgatggctttctctcctgtataaatcctggtgctgctctttatgaggagttgtggccgtgtcaggcaactggtgctgtgactgt
gtttgctgacgaacccccactggttggggcattgccaccacctgctcagctcttccgggacttctgcttccccctccctattgccacggcggaactcatgcgcg
ctgcttggccgctgctggacaggggctcggctgtgggactgacaattcgggtgtgctgggaaatcatgctcttctggctgctgcctgtgttgcacc
tgattctgcggggacgtccttctgctacgtccttccgcccataacagcggacctcctcccggcctgctgcccggctctgcccgtcttccgcttccg
ttcgcctcagacgagctggatctcccttggccgctccccgctgagatccttaagaccaatgacttacaaggcagctgtagatcttagccacttttaaaag
aaaaggggggactggaagggctaattcactcccaagacaagatctgcttttctgtactgggtctctctggttagaccagatctgagcctgggagctctct
ggctaactagggaaaccactgcttaagcctaataaagcttgcctgagtgctcaagtagtgtgcccgtctgtgtgactctggaactagagatccctcaga
cccttttagtcagtggtgaaaatctctagcagtagtagtcatgtatctattcagatattataacttgcaagaaatgaatacagagagtgagagggcccggtt
aattaaggaaagggtagatcattctgaagcgaagggcctcgtgatacgcctattttatagggtaatgtcatgataataatggttcttagacgtcaggtgga
cttttcggggaaatgtgcgcggaaccctattgtttattttcctaatacattcaaatatgtatccgctcatgagacaataaccctgataaatgctcaataatattgaa
aaaggaagagtagatgattcaacatttccgtgctgccttattcccttttgcggcatttgccttctgttttgcaccaccagaacgctggtgaaagtaaagatg
ctgaagatcagttgggtgca

>pInducer-mCherry-GBP1-C589A

cgagtgggttacatcgaactggatcacaacagcggaagatccttgagagtttgcgcccaagaacggtttccaatgatgagcactttaaagtctgctatgtggc
gcggtattatcccgtgtgacgcgggcaagagcaactcggctcgcacatacactattctcagaatgactgttgtagtaccagctcacagaaaagcatctt
acggatggatgacagtaagagaattatgcatgctgcccataacctgagtgataacactcggccaacttactctgacaacgatcggagggaccgaagag
ctaaccgctttttgcacaacatgggggactgtaactcgcctgtatcgttgggaactcggagctgaatgaagccaatacacaacgacgagcgtgacaccacgat
gcctgtagcaatggcaacaacggttgcgcaaaactattaactggcaactacttactctgactcctccggcaacaataatagactggatggagcgggataaagtgc
aggaccactctgcgctcggccctcgggctggctggttattgtctgataaatctggagccggtgagcgtgggtctcgcggtatcattgcagcactggggccagat
ggtaagccctcccgtatcgtatctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgcgtgagatagggtccctcactgattaagc
attgtaactgtcagaccaagtttactcataatactttagattgattaaaactcatttttaaaaggatctaggtaagatccttttgataatctcatgacaaa
atcccctaactgtagttttcgttccactgagcgtcagaccccgtagaaaagatcaaggatcttctgagatcctttttctgcgcgtaactctgctgcttcaaa
aaaaccaccgctaccagcgggtggtttgttgcggatcaagagctaccaactcttttccgaaggtaactgctcagcagagcgcagatacacaactgcttct
tagttagcctgtagttaggccaccactcaagaactctgtagcaccgcctacatacctcgtctgtaaatcctgttaccagtggtgctgctccagtgccgataagtcg
tgtctaccgggttgactcaagacgatagttaccggataagggcgcagcgtcgggtgaaacggggggtctgtgacacagcccagctggagcgaacgacc
tacaccgaactgagatacctacagcgtgagctatgagaagcgcacgctcccgaaggagaaagggcggacaggtatccggtgaagcggcagggctcga
acaggagagcgcacgagggagctccaggggaaacgctggtatctttatagctcctgctcgggttccgacctgactgagcgtcgattttgtgatgctcgtc
agggggcggagcctatgaaaaacgccaagcagcggccttttaccggtcctgctgcttttgccttttgcacatgtcttctcgttatcccctgattctgt
ggataaccgtattaccgctttagtgagctgataccgctcggcagccgaacgaccgagcgcagcagtcagtgagcgggaagcgggaagagcgcacca
atagcacaaccgctcctcccgcgctgtggcgattcattatgcaagcctatgctgactaattttttatattatgagagccgaggccgctcggcctctg
agctattccagaagttagtgaggaggctttttggaggcctaggctttgcaaaaagctcccgtggcagcagcaggtttcccactggaagcgggagtgagc
caacgcaataatgtgagttagctcactcattaggcaccaccaggctttacactttatgcttccggtcgtatgtgtggaattgtgagcgggataacaattcaca
ggaaacagctatgacatgattacgaattcacaataaagcatttttctactgattctagttgtggtttgccaactcatcaatgtatctatcatgctggatcaact
ggataactcaagctaaccaaaatcatcccacactcccaccataccctattaccactgccaattaccctgtggttcttactctaaacctgtgattcctctgaatta
ttttattttaaagaaattgtattgtaaatatgtactacaaacttagttagttggaagggtcaattcactcccagaagacaagataccttctgatctggtgatctacca
cacacaaggctactccctgattagcagaactacacaccaggccaggggtcagatatacactgacctttggatggtgctacaagctagtagcagttgagccag
ataaggtagaagaggcaataaaggagagaacaccagctgttacacctgtgagcctgcatgggatggatgacccggagagagaagtgttagagtgag
gtttgacagccgctagcattcatcagtgcccgagagctgacccggacttcaagaactgctgatatcagcctgctacaagggacttccgctggggac
ttccagggagcgtgctggtggcgggactggggagtgccgagccctcagatcctgcatataagcagctgcttttgcctgtactgggtctctcgtttagaccag
atctgagcctgggactctctggttaactaggaacccactgtaagcctaataaagcctgagctgagtgctcaagtagtgtgcccgtctgttgtgactctg
gtactgagatcctcagacccttttagctagtggtgaaaactctgagctggtggcggcgaacagggactggaagcgaagggaaaccagagggactctct
gacgcagcagactcggctgtcgaagcgcgacggcgaagagcggagggcggcagctggtgagtagcgaacaaattttagctagcggagctagaaggag
agagatgggtgcgagagcgtcagtttaagcgggggagaattagatcgcgatgggaaaaaattcggttaaggccaggggggaaagaaaaataaattaa
aacatatagtatgggcaagcagggagctagaacgattcgcagttatcctggcctgttagaaacatcagaaggctgtagacaaactgggacagctacaac
catcccctcagacaggtacagaagaacttagatcattatataatacagtagcaaccctctattgtgtgcatcaaggatagagataaaagacaccaaggaagct
ttagacaagatagaggaagagcaaaacaaaagtaagaccaccgcacagcaagcggccggcctgatctcagacctggaggaggagataggggac

aattggagaagtgaattatataaataaagtagtaaaaattgaaccattaggagtagcaccaccaaggcaagagaagagtggtgcagagagaaaaa
gagcagtggggaataggagctttgttcttgggttcttgggagcagcaggaagcactatgggcgcagcgtcaatgacgctgacggtagcagccagacaattattg
tctggtatagtgacagcagacaatttctgtagggctattgagcgcacacagcatctgttgaactcacagctcggggcatcaagcagctccaggcaagaat
cctggctgtgaaagatacctaaggatcaacagctcctgggatttgggtgtcttggaaactcatttgcaccactgtctgaccttgaatgctagttggagta
ataaatctctggaacagatttgaatcacacgacctggatggagtgaggacagaaaattaacaattacacaagcttaatacactccttaattgaagaatcgcaa
aacagcaagaaaaagaatgaacaagaattattggaattagataaatgggcaagtttggtaattggtttaacatacaaaattgctgtggtatataaaattatcat
aatgatagtaggagcctgtgtaggttaagaatagtttctgtacttctatagtagaattagtagtaggagggatattaccattatcgtttcagaccacccctccaa
ccccgaggggacccgacagggcccgaaggaatagaagaagaaggtggagagagacagagacagatccattcagattgaaacggatctcgacggat
cgccgaattcacaatggcagttatccacaattttaaagaaaaagggggattgggggtacagtgacgggaaagaatagtagacataatagcaaca
gacatacaactaaagaattacaaaaacaaattacaaaaattcaaaatttctgggtttattacagggacagcagagatccagtttggactaggatcctttaccact
ccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaa
agtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagtttaccac
tccctatcagtgatagagaaaagtgaagtcgagtttaccactccctatcagtgatagagaaaagtgaagtcgagctcggtaccgggctgaggttaggctgt
acgggtgggagggcctatataagcagagctcgttagtgaaaccgctagatcgctggagacgcatccacgctgtttgacctcctagaagacaccgggaccga
tccagcctccgcccgaactagtcagtggtggaattctgcagatatcaACAAGTTTGTACAAAAAAGCAGGCTgccaccatggtgag
caagggcgaggaggataacatggccatcatcaaggagttcatgcgctcaaggtgcacatggagggctccgtgaacggccacgagttcgagatcgagggc
gagggcgagggccgcccctacgagggcaccagaccgccaagctgaaggtgaccaaggggtggccccctgccctcgcctgggacatcctgtcccctcagtt
catgtacggctcaagggctacgtgaagcaccgcccgcacatccccgactactgaagctgtcctccccgagggctcaagtgaggagcgcgtgatgaactcg
aggacggcggcgtggtgaccgtgaccaggactcctccctgcaggacggcaggttcatctacaaggtgaagctgcgcggcaccactcccctccgacggc
cccgtatgcaagaagaacatgggctgggagggcctcccgagcggatgacccgaggacggcgcctgaagggcgagatcaagcagagggctgaa
gtgaaggacggcggcactacgacgctgaggtcaagaccactacaaggccaagaagcccgtagctgccggcgctacaacgtcaacatcaagtt
ggacatcacctcccacaacgaggactacaccatcgtggaacagtagcaacgcgcccagggcgccactccaccggcggtatggacgagctgtacaagtc
cggactcAGATCTATGGCATCAGAGATCCACATGACAGGCCAATGTGCCTCATTGAGAACACTAATGGGCGAC
TGATGGCGAATCCAGAAGCTCTGAAGATCCTTTCTGCCATTACACAGCCTATGGTGGTGGTGGCAATTGTGG
GCCTCTACCGCACAGGCAAACTCTACCTGATGAACAAGCTGGCTGGAAGAAAAAGGGCTTCTCTCTGGGCT
CCACGGTGCAGTCTCACACTAAAGGAATCTGGATGTGGTGTGTGCCACCCCAAGAAGCCAGGCCACATC
CTAGTTCTGCTGGACACCGAGGGTCTGGGAGATGTAGAGAAGGGGTGACAACCAGAATGACTCCTGGATCTT
CGCCCTGGCCGTCTCTGAGCAGCACCCTCTGTGTACAATAGCATAGGAACCATCAACCAGCAGGCTATGG
ACCAACTGTACTATGTGACAGAGCTGACACATAGAATCCGATCAAATCCTCACCTGATGAGAATGAGAATGA
GTTGAGGATTCAGCTGACTTTGTGAGCTTCTTCCCAGACTTTGTGTGGACACTGAGAGATTTCTCCCTGGA
CTTGAAGCAGATGGACAACCCCTCACACCAGATGAGTACCTGACATACTCCCTGAAGCTGAAGAAAGGTAC
CAGTCAAAAAGATGAAACTTTTAACTGCCCAGACTCTGTATCCGGAATTTCTTCCAAAGAAAAAATGCTTT
GTCTTTGATCGGCCCGTTACCCGCAGGAAGCTTGGCCAGCTCGAGAACTACAAGATGAAGAGCTGGACCC
CGAATTTGTGCAACAAGTAGCAGACTTCTGTTCTACATCTTTAGTAATCCAAAACATAAACTCTTTTCCAGGAG
GCATCCAGGTCAACGGGCTCTGCTAGAGAGCCTGGTGTGCTGACCTACGTCAATGCCATCAGCAGTGGGGAT
CTGCCGTGCATGGAGAACGCAGTCTGGCCTTGGCCAGATAGAGAACTCAGCTGCAGTGCAAAAGGCTAT
TGCCCACTATGAACAGCAGATGGGCCAGAAGGTGCAGCTGCCACAGAAAGCCTCCAGGAGCTGCTGGACC
TGCACAGGGACAGTGAAGAGAGAGGCCATTGAAGTCTTTCATCAGGAGTTCTTCAAAGATGTGGACCATCTAT
TTCAAAAGGAGTTAGCGGCCAGCTAGAAAAAAGCGGGATGACTTTTGTAAACAGAATCAGGAAGCATCAT
CAGATCGTTGCTCAGGTTTACTTACGTTTCTTCTAGTCTCTAGAAGAAGAAGTGAAGGCGGGAATTTATTC
GAAACCAGGGGGCTATCGTCTCTTTGTTTCAAGACTACAAGACCTGAAGAAAAAGTACTATGAGGAACCGAG
GAAGGGGATACAGGCTGAAGAGATTCTGCAGACATACTTGAATCCAAGGAGTCTATGACTGATGCAATTCT
CCAGACAGACCAGACTCTCACAGAAAAAGAAAAGGAGATTGAAGTGAACGTGTGAAAGCTGAGTCTGCACA
GGCTTACGCAAAAATGTTGCAGGAAATGCAAAGAAAAGAATGAGCAGATGATGGAACAGAAGGAGAGGAGTTA
TCAGGAACACTTGAACAACACTGACTGAGAAGATGGAGAACGACAGGGTCCAGTTGCTGAAAGAGCAAGAGA
GGACCCTCGCTCTTAACTTACAGGAACAGGAGCAACTACTAAAAGAGGGATTTCAAAAAGAAAGCAGAATAAT
GAAAAATGAGATACAGGATCTCCAGACGAAAATGAGACgacgaaaggcaGctaccataagctaaGACCCAGCTTTCTT
GTACAAAGtggtgataccagcagagtgccggcgcctcagcttagagggcccgggtcgaataccatacagcgtccagactacgcttagtaatgat
taattaaactagaaattctaccggtaggggagggcgttttccaaggcagctctggagtaaccacccaagatctggcctccgcccgggttttggcctcccg
cgggcgccccctcctcacggcagcgtgccacgtcagacgaagggcgacgagcgtcctgatcctccgcccggacgctcaggacagcggcccgcgtg
ctcataagactcggccttagaaccagatcagcagaaggacattttaggacgggacttgggtgactctagggcactggttttcttccagagagcggaacagg
cgaggaaaagtagtcccttctcggcagttctcgggagggatcctcgtggggcgtgaacgcccgatgattatataaggacgcccgggtgtggcacagctagttc
cgtcgcagccgggatttgggtcgcggttcttgggtgatcgtgtagctgtagtggtagtagcagggctgctgggtgcccggggcttctggtggcggcgggc
cgctcgggtggcagcgaagcgtgtggagagaccgccaagggctgtagtctgggtccgagcaaggttgccctgaactgggggtgggggggagcgcagca
aatgcccgtgttcccagcttgaatggaagacgcttggagcggctgtgaggtcgttgaacaaggttggggggcagttggggggcgaagaaccaag
gtcttgaggccttcgctaagcgggaaagcttattcgggtgagatgggctggggcaccatctggggaccctgacgtgaaagttgtcactgactggagaactcg
gtttgcgtctgttgcggggcgagttatggcgtgcccgttggcagtgacccgtaccttgggagcgcgcccctcgtcgtgctgacgtcaccctgtctgtt
ggctataatgcaggggtggggccacctgcccgttaggtgtgcccgttaggcttttccctcgcagggacgcaggggtcgggctagggtaggctcctcgaatcgaca
ggcggccggacctctgtgaggggagggataagtgaggcgtcagtttcttggcgggtttatgtacctatcttcaagtagctgaagctccgggtttgaactatgcgt

cggggtggcgagtgtttgtgaagtttttaggcacctttgaaatgtaatcattgggtcaatatgtaatttcagtgttagactagtaaattgtccgctaaattctggc
cgttttggcctttttgtagacgaagcttggtagcagctcggatctccaccccgtagccgtcctgcagtcgaattcaccatgtctagactggacaagagcaaagtc
ataaacggagctctggaattactcaatgggtcggatcgaagcctgacgacaaggaaactcgcctcaaaagctgggagttagcagcctaccctgtactggc
acgtgaagaacaagcgggcccctgctcgatgccctgccaatcgagatgctggacagggcatcataccactctgccccctggaaggcgagtcatggcaagact
ttctgcggaacaacgccaagtcataccgctgtgctctcctctcacatcgcgacgggctaaagtgcctcggcaccgcccacagagaacagttacgaaa
ccctggaaaatcagctcgcgttctctgtcagcaaggcttccctggagaacgcaactgacgctctgccccctgagacaagcaattgagctgtcagccggcag
ggaacaggaacctgccttctttcgccctggaactaatcatatgtggcctggagaacagctaaagtgcgaaagcggcgggcccagccgacgcccctgacgatt
tgacttagacatgctcccagccgatgcccctgacgactttgacctgatatgctgctgctgacgctctgacgattttgacctgacatgctccccgggtaactaagt
aaggatccgcggccgactagaggaattccgcccctctccccccccccccctaacgttactggccgaagccgcttgaataaggccggtgtgctttgtctata
tgtattttccaccatattgccgtctttggcaatgtgaggccgggaaacctggccctgtcttctgacgagcattcctaggggtcttcccctctcgccaaaggaatg
caaggtctgtgaatgtcgtgaaggaagcagttcctctggaagcttctgaagacaacaacgctgtgtagcacccttgcaggcagcggaaacccccacctgg
cgacaggtgctctgcccgaagccacgtgtataagatacacctgcaaaggcggcacaaccccagtgccacgttgtgagttggatagttgtgaaagagt
caatggctctcctcaagcgtattcaacaaggggctgaaggatgccagaaggtaccccattgatgggatctgatctgggcccctgggtcacatgctttacatgt
gtttagtcgaggttaaaaaaacgttagccccccgaaccacggggacgtggtttcctttgaaaaacacgatgataagcttaccggtccaccatgattgaacia
gatggattgcacgaggttccggccgctgggtggagaggctattcggctatgactggcacaacagacaatcggtctctgatccgcccgttccggctg
tcagcgcagggcgcccgttcttttgaagaccgacctgtccggtccctgaatgaactgcaagacgaggcagcggctatcgtggctggccacgacgg
gcttctctgagcagctgtctcagcgttgcactgaagcgggaaggactggctgtattggcgaagtgcggggcaggatctcctgtcatctcacctgtcctc
gcccagaaagtatccatcatggctgatgcaatgcggcggctgcatacgttgcctgacctgcccattcgaccaccaagcgaacatcgcatcgagcga
gcacgtactcggatggaagccggtctgtcgtacaggtgatctggacgaagagcatcaggggctcgcgcccagccgaactgttcccagggtcaaggcgag
catgcccagcggcgaggatctcgtcgtgaccatggcgatgctgcttgcgcaatatcatggtggaaaatggccgcttttctggattcatcagactgtggccggctg
gggtggcggaccgctatcaggacatagcgttggctaccctgtatattgtgaagagcttggcggcgaatgggctgaccgcttctcgtgctttacggtatcgccg
ctcccattcgcagcgcacgcttctatcgccttctgacgagttcttctgatgtacaagtaaagcggccgagctctagatcataatcagccataaccacattgta
gaggtttactgtcttaaaaaacctcccacacctccccctgaacctgaaacataaaatgaatgcaattgttgttttagtccctcccattcgatatcaagcttatcg
cgatagatcctaatcaacctctggattacaaaattgtgaaagattgactggattcttaactatggtctcctttacgctatgtggatacagctgcttfaatgctttgtatc
atgctattgctcccgtatggcttctctcctctgtataaatcctggtgctgtcttctatgaggagttgtggcccgtgtcaggcaacgtggcgtggtgtgactgt
gtttgctgacgcaacccccactggttggggcattgccaccacctgtcagctccttccgggacttctgcttccccctccctattgccacggcgggaactcatcgccgc
ctgcttcccgtgctgacaggggctcggctgttgggactgacaattccgtggtgttgcgggaaatcatgcttcttctggctgctcgcctgtgttgcacc
tggattctgcgaggacgtccttctgctacgtccctcggccctcaatccagcggaccttcccgccgctgctgcccgtctgcccgtcttccgcttccgcttccg
ttcgcctcagacgagtcggatcctccttgggcccctccccgctgagatcctttaaagaccaatgacttacaaggcagctgtagatcttagccacttttaaaag
aaaaggggggactggaaggcctaattcactcccacgaagacaagatctgcttttgccttactgggtctctctggttagaccagatctgagcctgggagctctc
ggctaactagggaaaccactgcttaagcctcaataaagcttgccttgagtgcttcaagtagtgtgcccgtctgtgtgactctggaactagagatccctcaga
cccttttagtcagtgtggaaaatctctagcagtagttagtcatcttattcagatattataactgcaaagaaatgaatatcagagagtgagaggcccgggtt
aattaaggaaagggctagatcattctgaagacgaaaggcctcgtgatacgcctattttatagggtaatgtcatgataataatggttcttagacgtcaggtggca
ctttcggggaaatgtgcgcggaaccctattgtttattttctaaatacattcaaatatgtatccgctcatgagacaataaccctgataaatgcttcaataatattgaa
aaaggaagagtagtagtattcaacatttccgtgtcgccttattccctttttgcggcattttgccttctgttttctcaccacagaaacgctggtgaaagtaaaagatg
ctgaagatcagttgggtgca