

Signaling Pathway



Reporter



Plasmid



Vectors

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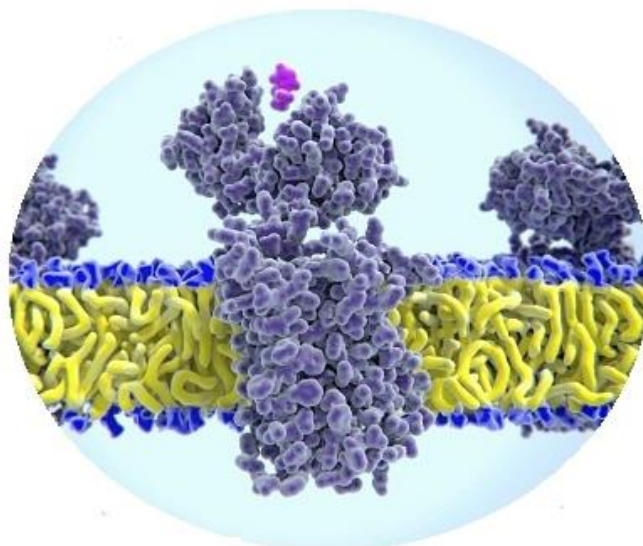
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Overview of Signaling Pathway

Background

What Are Signaling Pathways?

Signaling pathways are the process that cells receive, process, transmit extracellular signals and create intracellular responses. This process involves external stimuli, cell receptors, second messenger and effector proteins. Through signaling pathways, cells can respond to diverse stimuli such as Chemical molecules (ligands), mechanical forces, osmolarity, temperature, light etc. Proteins responsible for detecting stimuli are generally termed receptors which could be classified into two major classes, intracellular and extracellular receptors. These receptors include G Protein-Coupled Receptor (GPCRs), Enzyme-Linked Receptors, Integrins, Immune Receptors, Ligand-Gated Ion Channels, Nuclear Receptors etc. Upon stimulation, the receptor protein changes in some way, starts the process of signal transduction and results in specific cell responses.



Signaling Pathways & Diseases

Signaling pathways are important for a variety of normal cell functions including cell proliferation, death, differentiation, and metabolism and so on. A large number of diseases are caused by defects in signaling pathways, which include hypertension, heart disease, diabetes and many forms of mental illness etc. Many of pathogenic organisms and viruses can interfere with signaling events and cause defects of signaling pathways. Signaling pathways have become potential areas of drug discovery.

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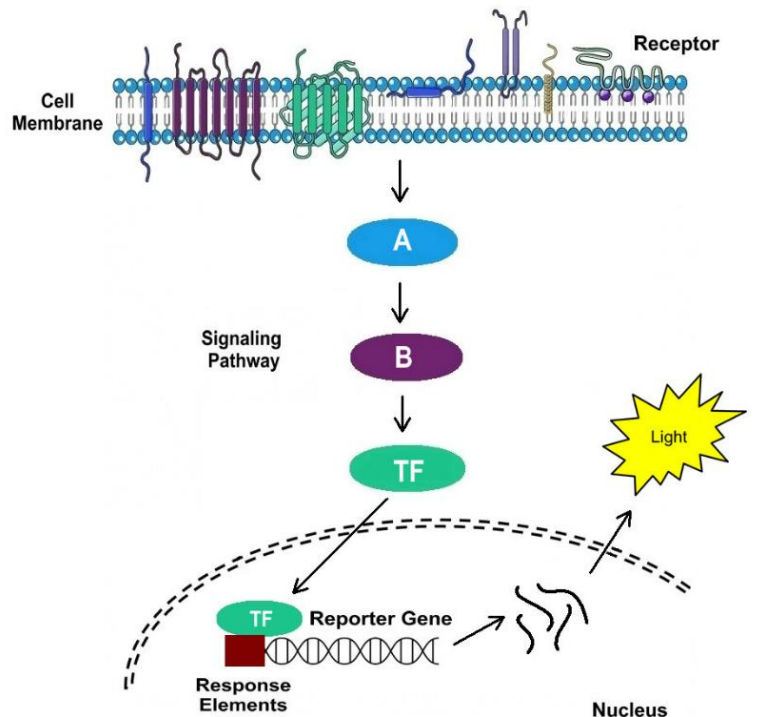
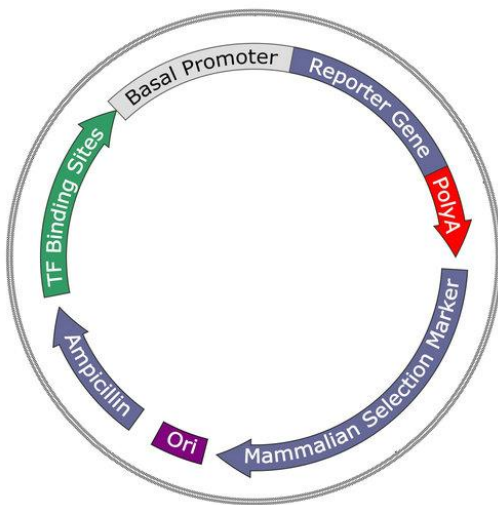
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How Does The Signaling Pathway Reporter System Work?

Principle

The Signaling Pathway Reporter Plasmid Vectors contain multiple tandem repeats of specific binding sites, a minimal promoter upstream of a reporter gene (e.g., GFP, luciferase).



When ligands bind to receptors and trigger specific signaling pathways, activated transcription factors translocate into cell nucleus, recognize corresponding response elements and regulates downstream reporter gene expression which could be easily detected.

Applications

- Transcription Regulation
- Compound Screening
 - GPCR Signaling
- Cell Stress Signaling (CSS)
- Nuclear Receptor Signaling (NRS)
- Immune Receptor Signaling (IRS)
- Kinase Receptor Signaling (KRS)

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provides a panel of plasmid vectors that are designed to investigate signaling pathways. Our vectors express luciferase or other reporter genes under the control of promoters containing response elements (binding sites) for a variety of transcription factors or nuclear receptors, such as NF- κ B, NFAT, E2F, ELK1, p53, cMyc, AP1, TCF-LEF, CREB, STAT1/3/4/5/6 etc. Our vectors are ideal tools for monitoring the activities of various signaling pathways by simply detecting the reporter gene expression induced by different stimuli.

Highlights

1. Containing multiple tandem repeats of response elements to increase the response sensitivity: typically 4 - 12 repeats,

2. Flexible options for the vector backbone allowing different delivery methods: non-viral, lentiviral, retroviral, AAV, adenoviral-based vectors,

3. Various types of reporter systems including fluorescent reporter genes, luciferase reporter genes, SEAP etc.

4. Validation by sequencing to make sure 100% sequence accuracy,

5. Custom construction services to provide fit-for-project vectors.

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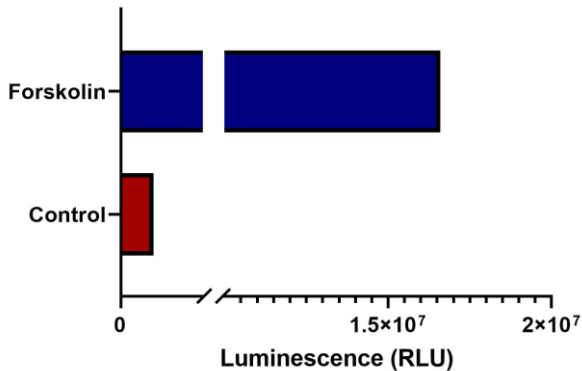
pCRE-Luciferase Plasmid Performance


Figure 1. 24h post transfection of pCRE-Luciferase plasmid into HEK293 cells, luciferase expression was induced by 100 μ M forskolin. Results will vary depending on the cell line and the transfection protocol used.

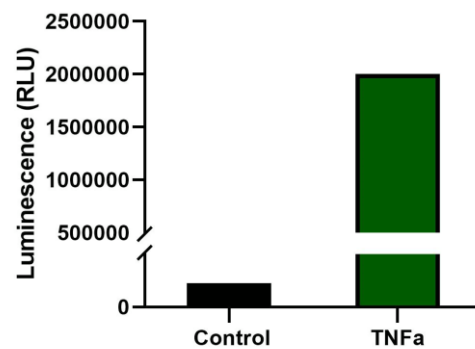
pNF κ B/RE-Luciferase plasmid Performance


Figure 2. 24h post transfection of pNF κ B/RE-Luciferase plasmid into HEK293 cells, luciferase expression was induced by 20 ng/mL of TNF α . Results will vary depending on the cell line and the transfection protocol used.

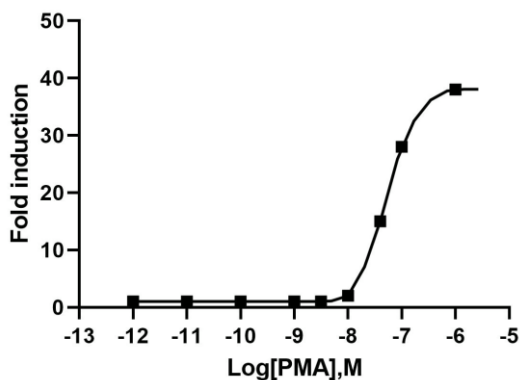
pAP1/RE-Luciferase Plasmid Performance


Figure 3. 24h post transfection of pAP1/RE-Luciferase plasmid into HEK293 cells, luciferase expression was induced by different concentrations of PMA. Results will vary depending on the cell line and the transfection protocol used.

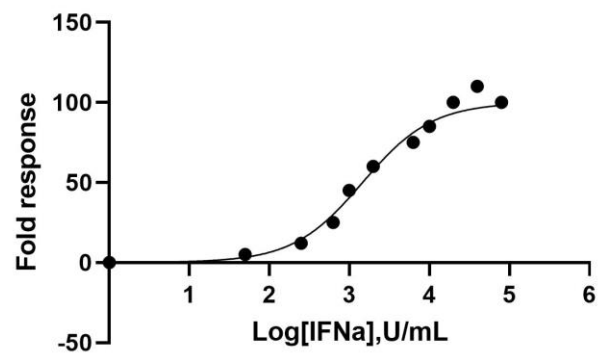
pISRE-Luciferase plasmid Performance


Figure 4. 24h post transfection of pISRE-Luciferase plasmid into U2OS cells, luciferase expression was induced by different concentration of IFN α . Results will vary depending on the cell line and the transfection protocol used.

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Please browse below of our product list and contact us at admin@rgbiootech.com for price and detailed product information. If you could not find the vector of interest, please contact us for custom design and construction services.

Item Name	Item No.	Description
pSP1/RE-Reporter Plasmid	PSP001	Specificity protein 1 Response Element (Sp1/RE)
pYY1/RE-Reporter Plasmid	PSP002	Yin Yang 1 Response Element (YY1/RE)
pMYC/RE-Reporter Plasmid	PSP003	Myc Response Element (MYC/RE)
pNFY/RE-Reporter Plasmid	PSP004	Nuclear transcription factor Y Response Element (NFY/RE)
pAP1/RE-Reporter Plasmid	PSP005	Activator protein 1 Response Element (AP1/RE)
pMAZ/RE-Reporter Plasmid	PSP006	Myc-associated zinc finger protein Response Element (MAZ/RE)
pCRE-Reporter Plasmid	PSP007	cAMP response element (CRE)
pMYOD/RE-Reporter Plasmid	PSP008	Myoblast determination protein 1 Response Element (MYOD/RE)
pELK1/RE-Reporter Plasmid	PSP009	ETS transcription factor ELK1 Response Element (ELK1/RE)
pNRF1/RE-Reporter Plasmid	PSP010	Nuclear respiratory factor 1 Response Element (NRF1/RE)
pGABP/RE-Reporter Plasmid	PSP011	GA-binding protein Response Element (GABP/RE)
pSTAT1/RE-Reporter Plasmid	PSP012	Signal transducer and activator of transcription 1 Response Element (STAT1/RE)
pAP4/RE-Reporter Plasmid	PSP013	AP-4 Response Element (AP4/RE)
pSRY/RE-Reporter Plasmid	PSP014	Sex-determining region Y Response Element (SRY/RE)
pTBP/RE-Reporter Plasmid	PSP015	TATA-binding protein Response Element (TBP/RE)
pFOXO1/RE-Reporter Plasmid	PSP016	Forkhead box O1 Response Element (FOXO1/RE)
pGTF2I/RE-Reporter Plasmid	PSP017	General transcription factor II-I Response Element (GTF2I/RE)
pETV4/RE-Reporter Plasmid	PSP018	ETS translocation variant 4 Response Element (ETV4/RE)
pSREBF1/RE-Reporter Plasmid	PSP019	Sterol regulatory element binding transcription factor 1 Response Element (SREBF1/RE)

Item Name	Item No.	Description
pNFκB/RE-Reporter Plasmid	PSP020	Nuclear factor kappa-light-chain-enhancer of activated B cells Response Element (NF-κB/RE)
pATF6/RE-Reporter Plasmid	PSP021	Activating transcription factor 6 Response Element (ATF6/RE)
pNFIL3/RE-Reporter Plasmid	PSP022	Nuclear factor, interleukin 3 regulated Response Element (NFIL3/RE)
pSRF/RE-Reporter Plasmid	PSP023	Serum response factor Response Element (SRF/RE)
pMEF2/RE-Reporter Plasmid	PSP024	Myocyte enhancer factor 2A Response Element (MEF2/RE)
pPOU3F2/RE-Reporter Plasmid	PSP025	POU class 3 homeobox 2 Response Element (POU3F2/RE)
pELF1/RE-Reporter Plasmid	PSP026	E74 like ETS transcription factor 1 Response Element (ELF1/RE)
pBACH2/RE-Reporter Plasmid	PSP027	BTB domain and CNC homolog 2 Response Element (BACH2/RE)
pMEIS1/RE-Reporter Plasmid	PSP028	Meis homeobox 1 Response Element (MEIS1/RE)
pE2F/RE-Reporter Plasmid	PSP029	E2F Response Element (E2F/RE)
pETS1/RE-Reporter Plasmid	PSP030	ETS proto-oncogene 1, transcription factor Response Element (ETS1/RE)
pRFX1/RE-Reporter Plasmid	PSP031	Regulatory Factor X1 Response Element (RFX1/RE)
pRORA/RE-Reporter Plasmid	PSP032	RAR related orphan receptor A Response Element (RORA/RE)
pSPI1/RE-Reporter Plasmid	PSP033	Spi-1 proto-oncogene Response Element (SPI1/RE)
pEGR1/RE-Reporter Plasmid	PSP034	Early growth response 1 Response Element (EGR1/RE)
pEGR2/RE-Reporter Plasmid	PSP035	RE1 silencing transcription factor Response Element (REST/RE)
pNFE2/RE-Reporter Plasmid	PSP036	Nuclear factor, erythroid 2 Response Element (NFE2/RE)
pLEF1/RE-Reporter Plasmid	PSP037	Lymphoid enhancer binding factor 1 Response Element (LEF1/RE)
pHNF3/RE-Reporter Plasmid	PSP038	Hepatocyte nuclear factor 3 Response Element (HNF3/RE)
pZBTB18/RE-Reporter Plasmid	PSP039	Zinc finger and BTB domain containing 18 Response Element (ZBTB18/RE)
pTEAD1/RE-Reporter Plasmid	PSP040	TEA domain transcription factor 1 Response Element (TEAD1/RE)
pNKX2-5/RE-Reporter Plasmid	PSP041	NK2 homeobox 5 Response Element (NKX2-5/RE)
pVSX2/RE-Reporter Plasmid	PSP042	Visual system homeobox 2 Response Element (VSX2/RE)
pTCF4/RE-Reporter Plasmid	PSP043	Transcription factor 4 Response Element (TCF4/RE)
pSTAT5/RE-Reporter Plasmid	PSP044	Signal transducer and activator of transcription 5A Response Element (STAT5/RE)
pNKX6-2/RE-Reporter Plasmid	PSP045	NK6 homeobox 2 Response Element (NKX6-2/RE)
pATF1/RE-Reporter Plasmid	PSP046	Activating transcription factor 1 Response Element (ATF1/RE)
pPOU1F1/RE-Reporter Plasmid	PSP047	POU class 1 homeobox 1 Response Element (POU1F1/RE)

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pISRE-Reporter Plasmid	PSP048	Interferon-stimulated Response Element (ISRE)
pSIE-Reporter Plasmid	PSP049	Sis-inducible element (SIE)
pSBE-Reporter Plasmid	PSP050	Smad binding element (SBE)
pARE-Reporter Plasmid	PSP051	Antioxidant Response Element (ARE)
p53/RE-Reporter Plasmid	PSP052	p53 Response Element (p53 RE)
pMRE-Reporter Plasmid	PSP053	Metal Response Element (MRE)
pHSE-Reporter Plasmid	PSP054	Heat shock Response Element (HSE)
pHRE-Reporter Plasmid	PSP055	Hypoxia Response Element (HRE)
pXRE-Reporter Plasmid	PSP056	Xenobiotic Response Element (XRE)
pNFAT/RE-Reporter Plasmid	PSP057	Nuclear factor of activated T-cells Response Element (NFAT/RE)
pSRE-Reporter Plasmid	PSP058	Serum Response Element (SRE)
pTCF-LEF/RE-Reporter Plasmid	PSP059	T cell Factor/Lymphoid Enhancer Factor Response Element (TCF-LEF/RE)
pVDR/RE-Reporter Plasmid	PSP060	Vitamin D Receptor Response Element (VDRE)
pSTAT3/RE-Reporter Plasmid	PSP061	Signal Transducer and Activator of Transcription 3 Response Element (STAT3/RE)
pSTAT4/RE-Reporter Plasmid	PSP062	Signal Transducer and Activator of Transcription 4 Response Element (STAT4/RE)
pSTAT6/RE-Reporter Plasmid	PSP063	Signal Transducer and Activator of Transcription 6 Response Element (STAT6/RE)
pSox2/RE-Reporter Plasmid	PSP064	SRY (sex determining region Y)-box 2 Response Element (Sox2/RE)
pRAR/RE-Reporter Plasmid	PSP065	Retinoic acid Response Element (RARE)
pRBP-JK/RE-Reporter Plasmid	PSP066	RBP-JK Response Element (RBP-JK/RE)
pPR/RE-Reporter Plasmid	PSP067	Progesterone Receptor Response Element (PRE)
pPPAR γ /RE-Reporter Plasmid	PSP068	PPAR γ Response Element (PPRE)
pNanog/RE-Reporter Plasmid	PSP069	Nanog homeobox Response Element (Nanog/RE)
pLXR/RE-Reporter Plasmid	PSP070	Liver X Receptor Response Element (LXR/RE)
pKLF4/RE-Reporter Plasmid	PSP071	Kruppel like factor 4 Response Element (KLF4/RE)
pIRF1/RE-Reporter Plasmid	PSP072	Interferon Regulatory Factor 1 Response Element (IRF1/RE)
pHIF1/RE-Reporter Plasmid	PSP073	Hypoxia-inducible Factor 1 Response Element (HIF1/RE)
pHNF1/RE-Reporter Plasmid	PSP074	Hepatocyte Nuclear Factor 1 Response Element (HNF1/RE)
pHNF4/RE-Reporter Plasmid	PSP075	Hepatocyte Nuclear Factor 4 Response Element (HNF4/RE)

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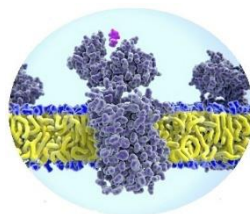
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Item Name	Item No.	Description
pGRE-Reporter Plasmid	PSP077	Glucocorticoid receptor Response Element (GRE)
pRXR/RE-Reporter Plasmid	PSP078	Retinoid X receptor (RXR) Response Element (RXR/RE)
pGLI3/RE-Reporter Plasmid	PSP079	GLI family zinc finger 3 Response Element (GLI3/RE)
pGAS/RE-Reporter Plasmid	PSP080	Gamma-activated sequence Response Element (GAS/RE)
pAR/RE-Reporter Plasmid	PSP081	Androgen Receptor Response Element (AR/RE)
pAhR/RE-Reporter Plasmid	PSP082	Aryl hydrocarbon receptor Response Element (AhR/RE)
pPax6/RE-Reporter Plasmid	PSP083	Paired box 6 Response Element (Pax6/RE)
pER/RE-Reporter Plasmid	PSP084	Estrogen Receptor Response Element (ER/RE)
pOct4/RE-Reporter Plasmid	PSP085	Oct4 Receptor Response Element (Oct4/RE)
pMR/RE-Reporter Plasmid	PSP086	Mineralocorticoid receptor Response Element (MR/RE)
pFXR/RE-Reporter Plasmid	PSP087	Farnesoid X receptor Response Element (FXR/RE)
pGAL4/RE-Reporter Plasmid	PSP088	GAL4 Response Element (GAL4/RE)
pRb/RE-Reporter Plasmid	PSP089	Retinoblastoma protein Response Element (Rb/RE)
pNRSF/RE-Reporter Plasmid	PSP093	Neuron-Restrictive Silencer Factor Response Element (NRSF/RE)
pGATA/RE-Reporter Plasmid	PSP094	Globin Transcription Factor Response Element (GATA/RE)
pc-Jun/RE-Reporter Plasmid	PSP095	c-Jun Response Element (c-Jun/RE)
pBMP/RE-Reporter Plasmid	PSP096	Bone Morphogenetic Protein Response Element (BMP/RE)
pAARE-Reporter Plasmid	PSP097	Amino Acid Response Element (AARE)
pERSE-Reporter Plasmid	PSP098	ER Stress Response Element (ERSE)
pAREB6/RE-Reporter Plasmid	PSP099	AREB6/ZEB1 Response Element (AREB6/RE)
pGCNF/RE-Reporter Plasmid	PSP100	GCNF (germ cell nuclear factor) / NR6A1 Response Element (GCNF/RE)
pC-REL/RE-Reporter Plasmid	PSP101	C-REL Response Element (C-REL/RE)



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