



Common Mammalian Promoters

Ectoderm: Neural

| Name | Tissue | Cell Type | Length (bp) | Name | Tissue | Cell Type | Length (bp) |
|---------------|--|--|-------------|--------|---|---|-------------|
| Camk2a(long) | Forebrain | CA1 pyramidal cells of the hippocampus | 8023 | ProA1 | Retina | Cone photoreceptor | 2000 |
| Camk2a(short) | Brain | Pyramidal neurons | 1337 | hRHO | Retina | Rod photoreceptor | 839 |
| Th | Brain | Dopaminergic neurons | 3015 | hBEST1 | Retina | RPE | 623 |
| GFAP(long) | Brain | Astrocytes | 2178 | Hb9 | Spinal cord | Motor neurons | 4003 |
| GFAP(short) | Brain | Astrocytes | 681 | NSE | Nervous system | Various neurons | 1807 |
| Iba1 | Brain | Microglia | 1889 | Nes | Nervous system at embryonic stage | Neural stem/progenitor cells | 1566 |
| SYN1 | Brain | Mature neurons | 469 | Cnp | Nervous systems, testis, and thymus | Oligodendrocytes and Schwann cells | 3046 |
| Prnp | Brain, hippocampus, cerebellum, retina | Various CNS neurons | 8365 | Tuba1a | Nervous systems at embryonic and early postnatal stages | Developing neurons but not astrocytes or oligodendrocytes | 1121 |

Ectoderm: Surface

| Name | Tissue | Cell Type | Length (bp) |
|--------|-------------------------|--|-------------|
| K14 | Epidermis | Keratinocytes | 2268 |
| BK5 | Epidermis | Keratinocytes | 5200 |
| mTyr | Epidermis | Melanocytes and melanoma cells | 560 |
| Col2a1 | Cartilage | Chondrocytes | 1033 |
| Runx2 | Bone | Early osteoblasts | 2514 |
| CD11b | Bone marrow | Mature myeloid cell lines | 1795 |
| Col1a1 | Bone, tooth, and tendon | Osteoblasts and fibroblasts | 3632 |
| OC | Bone and cartilage | Osteoblasts, osteocytes and hypertrophic chondrocytes | 2141 |
| MMTV | Mammary gland | Ductal cells of the salivary gland, mammary epithelial cells | 1315 |
| Wap | Mammary gland | Alveolar epithelial cells of mammary tissue | 2444 |

Endoderm

| Name | Tissue | Cell Type | Length (bp) |
|-------|---|--|-------------|
| Nanog | Embryonic inner cell mass | Pluripotent stem cells | 1334 |
| NPHS2 | Kidney | Podocytes | 2589 |
| Afp | Liver | Hepatocytes | 2810 |
| Alb | Liver | Mature hepatocytes | 2336 |
| TBG | Liver | Hepatocytes | 460 |
| SPB | Lung | AT II cells and Clara cells | 635 |
| HIP | Pancreas | β cells | 1867 |
| Ins2 | Pancreas | Pancreatic β cells | 705 |
| Pdx1 | Embryonic developing pancreas and adult pancreatic islets | Pancreatic progenitor cells and pancreatic β cells | 2930 |
| CD144 | Lung, heart, ovary, spleen, and kidney glomeruli | Vascular endothelial cells | 1599 |

Mesoderm

| Name | Tissue | Cell Type | Length (bp) | Name | Tissue | Cell Type | Length (bp) |
|---------------------|---------------------------------|--|-------------|---------|---------------------|------------------------------|-------------|
| CD68(long) | Blood | Monocytes and macrophages | 3079 | Hcn4 | Embryonic heart | Cardiomyocytes | 2780 |
| CD68(short) | Blood | Monocytes and macrophages | 659 | aP2 | Fat | Adipocytes | 3708 |
| Tie1 | Blood vessel | Endothelial cells | 1142 | Adipoq | Fat | Adipocytes | 5411 |
| Cd144 | Blood vessels | Vascular endothelial cells | 2510 | Myog | Muscle | Myoblasts | 1139 |
| cTnT | Heart | Cardiomyocytes | 413 | ACTA1 | Muscle | Myoblasts | 2162 |
| α MHC(long) | Heart | Cardiomyocytes | 5464 | SM22a | Adult smooth muscle | Vascular smooth muscle cells | 2960 |
| α MHC(short) | Heart | Cardiomyocytes | 2833 | EnSM22a | Adult smooth muscle | Vascular smooth muscle cells | 594 |
| MHCK7 | Mouse skeletal and heart muscle | Differentiated postmitotic striated muscle cells | 771 | | | | |

Mammalian Ubiquitous Promoters

| Name | Application Notes | Length (bp) |
|--------------|---|-------------|
| CMV | <ul style="list-style-type: none">Strong promoter;May have variable strength in some cell types | 589 |
| CMV + intron | <ul style="list-style-type: none">Strong promoter;May have variable strength in some cell types;Presence of the beta-globin intron facilitates the nuclear export of mRNA by splicing and is predicted to enhance gene expression in eukaryotes | 1242 |
| EF1A | Strong promoter | 1179 |
| EFS | Medium-strength promoter | 232 |
| CAG | Strong promoter | 1733 |
| CBh | Strong promoter | 789 |
| CBA | Strong promoter | 850 |
| SFFV | <ul style="list-style-type: none">Strong promoter;Drives high levels of gene expression, particularly in cell types of the myeloid lineage | 500 |
| MSCV | <ul style="list-style-type: none">Medium-strength promoter;Drives gene expression in most murine or human ES cell lines and other mammalian cell lines | 515 |
| SV40 | Medium-strength promoter | 344 |
| mPGK | Medium-strength promoter | 511 |
| hPGK | Medium-strength promoter | 505 |
| UBC | Weak promoter | 1178 |

Miscellaneous

TRE

Tetracycline-responsive element promoter – Regulated by a class of transcription factors (e.g. tTA, rtTA and tTS) whose activities are dependent on tetracycline or its analogs (e.g. doxycycline).

TERT

Telomerase reverse transcriptase promoter – Tumor tissue specificity that targets immortalized and cancer cells

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