

1 **Table S1:** List of genes with established functional annotation related to the regulation of cell
 2 proliferation.

Gene symbol	Gene name	Functional annotation
AREG	Amphiregulin	Autocrine growth factor and a mitogen for a broad range of target cells including astrocytes, Schwann cells and fibroblasts, epithelial cells, and functions in mammary gland, oocyte and bone tissue development.
BTC	Betacellulin	Potent mitogen for retinal pigment epithelial cells and vascular smooth muscle cells and promotes pancreatic cell proliferation and insulin secretion, as well as retinal vascular permeability.
EPGN	Epithelial Mitogen	Epidermal growth factor family member with a role in cell survival, proliferation and migration and promoting the growth of epithelial cells.
FGF5	Fibroblast Growth Factor 5	FGF family member with mitogenic and cell survival activities, involved in a variety of biological processes, including embryonic development, cell growth, morphogenesis, tissue repair, tumor growth and invasion. Plays an important role in the regulation of cell proliferation and cell differentiation and is required for normal regulation of the hair growth cycle.
GDF9	Growth Differentiation Factor 9	Functions as a regulator of ovarian folliculogenesis. Promotes primordial follicle development and stimulates granulosa cell proliferation.
HDGF	Hepatoma derived growth factor	Member of the hepatoma-derived growth factor family with mitogenic activity for fibroblasts. High levels of expression of this gene enhance the growth of many tumors.
NODAL	Nodal Growth Differentiation Factor	Required for maintenance of human embryonic stem cell pluripotency and mesoderm formation and axial patterning during embryonic development. May play a role in human placental development.
PDGFD	Platelet Derived Growth Factor D	Growth factor that plays an essential role in the regulation of embryonic development, cell proliferation, cell migration, survival and chemotaxis. Potent mitogen for cells of mesenchymal origin.
TGFB2	Transforming Growth Factor Beta 2	TGF-beta 2 has suppressive effects on interleukin-2 dependent T-cell growth.
FGF17	Fibroblast Growth Factor 17	Plays an important role in the regulation of embryonic development and acts as a signaling molecule in the induction and patterning of the embryonic brain. Required for normal brain development.
FGF2	Fibroblast Growth Factor 2	FGF family member with an important role in the regulation of cell survival, cell division, angiogenesis, cell differentiation and cell migration. Functions as potent mitogen in vitro.
FGF6	Fibroblast Growth Factor 6	Plays an important role in the regulation of cell proliferation, cell differentiation, angiogenesis and myogenesis, and is required for normal muscle regeneration.
FGF7	Fibroblast Growth Factor 7	FGF family member and plays a key role in the regulation of embryonic development, cell proliferation and cell differentiation. Growth factor whose mitogenic activity is predominantly exhibited in keratinocytes and epithelial cells but not in fibroblasts and endothelial cells.
HGF	Hepatocyte Growth Factor	Potent mitogen for mature parenchymal hepatocyte cells, seems to be a hepatotrophic factor, and regulates cell growth, cell motility and morphogenesis in numerous cell and tissue types. This protein also plays a role in angiogenesis, tumorigenesis, and tissue regeneration.
IGF1	Insulin Like Growth Factor 1	The protein encoded by this gene is structurally and functionally related to insulin but has a much higher growth-promoting activity and is involved in mediating growth and development.
PDGFA	Platelet Derived Growth Factor Subunit A	Growth factor that plays an essential role in the regulation of embryonic development, cell proliferation, cell migration, survival and chemotaxis. Potent mitogen for cells of mesenchymal origin. Required for normal lung alveolar septum formation during embryogenesis, normal development of the gastrointestinal tract, normal development of Leydig cells and spermatogenesis, normal oligodendrocyte development, and normal myelination in the spinal cord and cerebellum.
PGF	Placental Growth Factor	Growth factor active in angiogenesis and endothelial cell growth, stimulating their proliferation and migration. Also promotes cell tumor growth.
FGF18	Fibroblast Growth Factor 18	Plays an important role in the regulation of cell proliferation, cell differentiation and cell migration. Required for normal ossification and bone development. Stimulates hepatic and intestinal proliferation.
FIGF	Vascular Endothelial Growth Factor D	Growth factor active in angiogenesis, lymphangiogenesis and endothelial cell growth, stimulating their proliferation and migration and also has effects on the permeability of blood vessels.
TGFA	Transforming Growth Factor Alpha	A mitogenic polypeptide that is able to bind to the EGF receptor/EGFR and act synergistically with TGF beta to promote cell proliferation, differentiation and development.
FGF10	Fibroblast Growth Factor 10	Plays an important role in the regulation of embryonic development, cell proliferation and cell differentiation. Exhibits mitogenic activity for keratinizing epidermal cells, but essentially no activity for fibroblasts, which is similar to the biological activity of FGF7.
FGF19	Fibroblast Growth Factor 19	A high affinity, heparin dependent ligand for FGFR4 and is involved in brain development. Stimulates glucose uptake in adipocytes.
FGF21	Fibroblast Growth Factor 21	Secreted endocrine factor that functions as a major metabolic regulator. The encoded protein stimulates the uptake of glucose in a adipose tissue.
NGF	Nerve Growth Factor	Has nerve growth stimulating activity and is involved in the regulation of growth and the differentiation of sympathetic and certain sensory neurons.

PDGFB	Platelet Derived Growth Factor Subunit B	Growth factor that plays an essential role in the regulation of embryonic development, cell proliferation, cell migration, survival and chemotaxis. Potent mitogen for cells of mesenchymal origin. Required for normal proliferation and recruitment of pericytes and vascular smooth muscle cells in the central nervous system, skin, lung, heart and placenta and for normal blood vessel development, and for normal development of kidney glomeruli.
PDGFC	Platelet Derived Growth Factor C	Potent mitogen and chemoattractant for cells of mesenchymal origin. Required for normal skeleton formation during embryonic development, especially for normal development of the craniofacial skeleton and for normal development of the palate. Required for normal skin morphogenesis during embryonic development. Plays an important role in wound healing, angiogenesis and blood vessel development.
EFEMP1	EGF Containing Fibulin Extracellular Matrix Protein 1	Regulates glial cell migration, differentiation and the ability of glial cells to support neuronal neurite outgrowth in the olfactory epithelium. Upregulated in malignant gliomas and may play a role in the aggressive nature of these tumors.
FGF13	Fibroblast Growth Factor 13	FGF family member with mitogenic and cell survival activities, and plays a crucial role in neuron polarization and migration in the cerebral cortex and the hippocampus.
IGF2	Insulin Like Growth Factor 2	Possesses growth-promoting activity. Major fetal growth hormone in mammals and plays a key role in regulating fetoplacental development.
WNT3	Wnt Family Member 3	Implicated in human breast, rectal, lung, and gastric cancers and in several developmental processes, including regulation of cell fate and patterning during embryogenesis, particularly in the developing neural tube.
CTGF	Connective Tissue Growth Factor	Major connective tissue mitogen secreted by vascular endothelial cells. Plays a key role in the proliferation and differentiation of chondrocytes, cell adhesion in many cell types including fibroblasts, myofibroblasts, endothelial and epithelial cells.
CYR61	Cysteine Rich Angiogenic Inducer 61	Promotes the adhesion of endothelial cells and plays a role in cell proliferation, differentiation, angiogenesis, apoptosis, and extracellular matrix formation.
FGF1	Fibroblast Growth Factor 1	Functions as a modifier of endothelial cell migration and proliferation, as well as an angiogenic factor. It acts as a mitogen for a variety of mesoderm- and neuroectoderm-derived cells in vitro, thus is thought to be involved in organogenesis.
FGF9	Fibroblast Growth Factor 9	FGF family member with an important role in the regulation of embryonic development, cell proliferation, cell differentiation and cell migration. May have a role in glial cell growth and differentiation during development, gliosis during repair and regeneration of brain tissue after damage, differentiation and survival of neuronal cells, and growth stimulation of glial tumors.
TDGF1	Teratocarcinoma-Derived Growth Factor 1	Plays an essential role in embryonic development and tumor growth. Mutations in this gene are associated with forebrain defects.
VEGFA	Vascular Endothelial Growth Factor A	Growth factor active in angiogenesis, vasculogenesis and endothelial cell growth. Induces endothelial cell proliferation, promotes cell migration, inhibits apoptosis and induces permeabilization of blood vessels.
VEGFC	Vascular Endothelial Growth Factor C	Promotes angiogenesis and endothelial cell growth, and can also affect the permeability of blood vessels.

3

4

5

6

7

8

9

10

11

12 **Table S2:** Percent change in proliferation in interzone cells at 48 hrs after exposure to media
13 conditioned by FEF: Fetal dermal fibroblasts, FEC: Fetal anlage chondrocytes, IZ: Fetal interzone cells
14 (n=2). The numerical prefix to the sample name represents the individual identifier. Data are presented
15 as mean percent change in proliferation \pm SE.

16

17

Cell type	Proliferating cells as a % of total cells (Mean \pm SE)
BSA	3.42 \pm 0.23
FBS	78.58 \pm 1.65
1501 FEC	32.36 \pm 2.65
1511 FEC	65.56 \pm 3.16
1509 FEF	44.24 \pm 4.52
1510 FEF	39.44 \pm 2.03
1506 IZ	35.67 \pm 2.53
1509 IZ	54.26 \pm 2.04

18

