**Search format:**

((ligand) OR (satellite cell proliferation) OR (myogenesis) OR (muscle stem cell proliferation) OR (teleost) OR (fish)) + ((GeneID) OR (GeneSymbol) OR (Gene description))

**All notes in my findings are from titles or abstracts only.**

**If search results are huge results filtered from 2013-2023**

**Candidates:**

1. platelet endothelial aggregation receptor 1
2. KIT proto-oncogene, receptor tyrosine kinase b
3. tumor necrosis factor receptor superfamily member 11B-like
4. fibroblast growth factor receptor 1a
5. tyrosine-protein kinase receptor UFO
6. chemerin chemokine-like receptor 2
7. CD44 molecule (Indian blood group) b
8. ~~F-box/WD repeat-containing protein 7-like~~
9. transferrin receptor 1b
10. fibroblast growth factor receptor 4
11. lamin B receptor
12. macrophage-stimulating protein receptor-like
13. leucine-rich repeat-containing G-protein coupled receptor 5-like
14. inositol 1,4,5-trisphosphate receptor type 1

**GeneID:** 121905205

**Symbol:** pear1

**Description:** platelet endothelial aggregation receptor 1

**Other designations:** platelet endothelial aggregation receptor 1

**log2 Fold Change:** 3.19733532283723

**Adjusted p-value:** 1.65235820523692e-119

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28%22ligand%22%29+OR+%28%22satellite+cell+proliferation%22%29%29+%2B+%28%28%22pear1%22%29+OR+%28%22platelet+endothelial+aggregation+receptor+1%22%29%29&sort=date>

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/36792666/>
  + SVEP1 is an endogenous ligand for the orphan receptor PEAR1
    - SVEP1 signals through PEAR1 to activate AKT and mTOR signaling
* <https://pubmed.ncbi.nlm.nih.gov/36695374/>
  + Heparin and heparin proteoglycan-mimetics activate platelets via PEAR1 and PI3Kβ
* <https://pubmed.ncbi.nlm.nih.gov/25713122/>
  + A Human Platelet Receptor Protein Microarray Identifies the High Affinity Immunoglobulin E Receptor Subunit α (FcεR1α) as an Activating Platelet Endothelium Aggregation Receptor 1 (PEAR1) Ligand
* <https://pubmed.ncbi.nlm.nih.gov/33356751/>
  + Is the endogenous ligand for PEAR1 a proteoglycan: clues from the sea

**GeneID:** 121905054

**Symbol:** kitb

**Description:** KIT proto-oncogene, receptor tyrosine kinase b

**Other designations:** KIT proto-oncogene, receptor tyrosine kinase b

**log2 Fold Change:** 6.9696057226272

**Adjusted p-value:** 3.18093948973572e-83

**Notes:**  
Proto-oncogene c-KIT is the gene encoding the receptor tyrosine kinase protein

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=((ligand)%20OR%20(satellite%20cell%20proliferation)%20OR%20(myogenesis)%20OR%20(muscle%20stem%20cell%20proliferation)%20OR%20(teleost)%20OR%20(fish))%20%20%20((121905054)%20OR%20(kitb)%20OR%20(KIT%20proto-oncogene%2C%20receptor%20tyrosine%20kinase%20b))&sort=date>

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/24243489/>
  + Differential regulation of Kit ligand A expression in the ovary by IGF-I via different pathways
  + “Kit ligand (KITL) plays indispensable roles both in primordial follicle activation and in the maintenance of meiotic arrest of the oocyte. The regulation of KITL expression in the ovary, however, remains largely unknown. In the zebrafish, there are 2 paralogues of KITL, kitlga and kitlgb, and 2 Kit receptors, kita and kitb.”
* <https://pubmed.ncbi.nlm.nih.gov/29779898/>
  + “Understanding the molecular pathways controlling hematopoietic stem cell specification and expansion is a necessary milestone to perform regenerative medicine. Here, we used the zebrafish model to study the role of the ckit signaling pathway in this process. We show the importance of kitb/kitlgb signaling in the specification and expansion of hematopoietic stem cells (HSCs), in the hemogenic endothelium and caudal hematopoietic tissue (CHT), respectively. Moreover, we identified the zebrafish ortholog of Oncostatin M (osm) in the zebrafish genome. We show that the osm/osmr pathway acts upstream of kitb during specification of the hemogenic endothelium, while both pathways act synergistically to expand HSCs in the CHT. Moreover, we found that osm, in addition to its role in promoting HSC proliferation, inhibits HSC commitment to the lymphoid fate. Altogether, our data identified two cytokines, kitlgb and osm, secreted by the vascular niche, that control HSCs during early embryonic development.”
* <https://pubmed.ncbi.nlm.nih.gov/35709278/>
  + “We identify the monocyte- and macrophage-derived cytokine METRNL (meteorin-like) as a driver of postinfarction angiogenesis and high-affinity ligand for the stem cell factor receptor KIT (KIT receptor tyrosine kinase). METRNL mediated angiogenic effects in cultured human endothelial cells through KIT-dependent signaling pathways. In a mouse model of myocardial infarction, METRNL promoted infarct repair by selectively expanding the KIT-expressing endothelial cell population in the infarct border zone. *Metrnl*-deficient mice failed to mount this KIT-dependent angiogenic response and developed severe postinfarction heart failure. Our data establish METRNL as a KIT receptor ligand in the context of ischemic tissue repair.”

**GeneID:** 121896741

**Symbol:** ptpn9a

**Description:** protein tyrosine phosphatase **non-receptor** type 9a

**Other designations:** tyrosine-protein phosphatase **non-receptor** type 9

**log2 Fold Change:** 2.08612901097489

**Adjusted p-value:** 4.83296516099897e-78

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121896741%29+OR+%28ptpn9a%29+OR+%28ptpn%29+OR+%28protein+tyrosine+phosphatase+non-receptor+type+9a%29+OR+%28tyrosine-protein+phosphatase+non-receptor+type+9%29%29&sort=date>

Added “ptpn” to search

**Findings:**

* “Non-receptor”
* <https://pubmed.ncbi.nlm.nih.gov/24727614/>
  + These findings imply that PTPN9 plays an important role in erythropoiesis by disrupting an inhibitory complex of phosphorylated STAT3, GATA1 and ZBP-89, providing new cellular and molecular insights into the role of ptpn9a in developmental hematopoiesis.

**GeneID:** 121904884

**Symbol:** LOC121904884

**Description:** tumor necrosis factor receptor superfamily member 11B-like

**Other designations:** tumor necrosis factor receptor superfamily member 11B-like

**log2 Fold Change:** 3.44599482371074

**Adjusted p-value:** 1.62780132144936e-77

**Notes for search terms to add:**

tumor necrosis factor receptor superfamily member 11B = osteoprotegerin (OPG)

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%28%28121904884%29+OR+%28TNFRSF11B%29+OR+%28LOC121904884%29+OR+%28tumor+necrosis+factor+receptor+superfamily+member+11B-like%29+OR+%28tumor+necrosis+factor+receptor+superfamily+member+11B%29%29&sort=relevance>

**Findings:**

* <https://journals.physiology.org/doi/full/10.1152/physrev.00045.2017?rfr_dat=cr_pub++0pubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org>
  + *The TNF Family of Ligands and Receptors: Communication Modules in the Immune System and Beyond*
  + Interactions among these TNFSF ligands and TNFRSF receptors mediate signaling that controls the survival, proliferation, differentiation, and effector functions of both immune and non-immune cells.
  + RANKL (high affinity) and TRAIL (low affinity) bind to OPG
  + Observed that RANKL increased the ability of dendritic cells to stimulate naive T-cell proliferation
* <https://pubmed.ncbi.nlm.nih.gov/31120440/>
  + osteoprotegerin (OPG) inhibits, osteoclastogenesis
  + OPG also improves muscle strength in mouse models of Duchenne's muscular dystrophy (mdx) and denervation-induce atrophy, but its role and mechanisms of action on muscle weakness in other conditions remains to be investigated
* <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9181319/>
  + The RANK/RANKL/OPG Pathway in Dystrophic Skeletal Muscle, Inflammation, and Repair
  + Seems largely involved in skeletal muscle strength rather than proliferation

**GeneID:** 121904665

**Symbol:** trpv4

**Description:** transient receptor potential cation channel, subfamily V, member 4

**Other designations:** transient receptor potential cation channel subfamily V member 4

**log2 Fold Change:** 4.16117104737394

**Adjusted p-value:** 2.56140090299815e-74

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121904665%29+OR+%28trpv4%29+OR+%28transient+receptor+potential+cation+channel%2C+subfamily+V%2C+member+4%29%29&sort=date>

**Findings:**

* Receptor seems not very relevant
* <https://pubmed.ncbi.nlm.nih.gov/37011730/>
  + Non-inositol 1,4,5-trisphosphate (IP3) receptor IP3-binding proteins
  + “Conventionally, myo-D-inositol 1, 4,5-trisphosphate (IP3) is thought to exert its second messenger effects through the gating of IP3R Ca2+ release channels, located in Ca2+-storage organelles like the endoplasmic reticulum. However, there is considerable indirect evidence to support the concept that IP3 might interact with other, non-IP3R proteins within cells.”
  + “The remaining 26 structures represent a diverse range of proteins, including inositol-lipid metabolizing enzymes, signal transducers, PH domain containing proteins, cytoskeletal anchor proteins, the TRPV4 ion channel, a retroviral Gag protein and fibroblast growth factor 2. Such proteins may impact on IP3 signalling and its effects on cell-biology. This represents an area open for exploration in the field of IP3 signalling.”
* <https://pubmed.ncbi.nlm.nih.gov/36993766/>
  + “RPV4, expressed in the plasma membrane of a wide range of cell types, is a polymodal ion channel whose gating is controlled by multiple endogenous and exogenous stimuli including synthetic ligands, cell swelling, shear stress, and moderate heat[17](https://www.biorxiv.org/content/10.1101/2023.03.15.532784v2.full#ref-17)–[19](https://www.biorxiv.org/content/10.1101/2023.03.15.532784v2.full#ref-19).”
* <https://pubmed.ncbi.nlm.nih.gov/36563892/>
  + N-arachidonoyltaurine (20:4 NAT) acts as an excellent ligand for the subset of transient receptor potential (TRP) channels, especially vanilloid type channels TRPV1 and TRPV4

**GeneID:** 121884723

**Symbol:** kdelr2a

**Description:** KDEL endoplasmic reticulum protein retention receptor 2a

**Other designations:** ER lumen protein-retaining receptor 2

**log2 Fold Change:** 2.02382824086684

**Adjusted p-value:** 1.09317504637082e-73

**PubMed Search:**

((ligand) OR (satellite cell proliferation) OR (myogenesis) OR (muscle stem cell proliferation) OR (teleost) OR (fish)) + ((121884723) OR (kdelr2a) OR (KDEL endoplasmic reticulum protein retention receptor 2a) OR (ER lumen protein-retaining receptor 2))

**Findings:**

* One irrelevant paper
* Receptor seems irrelevant

**GeneID:** 121903603

**Symbol:** fgfr1a

**Description:** fibroblast growth factor receptor 1a

**Other designations:** fibroblast growth factor receptor 1-A

**log2 Fold Change:** 3.17586069778009

**Adjusted p-value:** 5.92473110930753e-72

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28%22ligand%22%29+OR+%28%22satellite+cell+proliferation%22%29%29+%2B+%28%28fgfr1a%29+OR+%28fibroblast+growth+factor+receptor+1a%29+OR+%28fibroblast+growth+factor+receptor+1-A%29%29&sort=date>

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/31175226/>
  + “Fibroblast growth factor (Fgf) signaling regulates many processes during development. In most cases, one tissue layer secretes an Fgf ligand that binds and activates an Fgf receptor (Fgfr) expressed by a neighboring tissue. Although studies have identified the roles of specific Fgf ligands during development, less is known about the requirements for the receptors. We have generated null mutations in each of the five *fgfr* genes in zebrafish. Considering the diverse requirements for Fgf signaling throughout development, and that null mutations in the mouse *Fgfr1* and *Fgfr2* genes are embryonic lethal, it was surprising that all zebrafish homozygous mutants are viable and fertile, with no discernable embryonic defect. Instead, we find that multiple receptors are involved in coordinating most Fgf-dependent developmental processes. For example, mutations in the ligand *fgf8a* cause loss of the midbrain-hindbrain boundary, whereas, in the *fgfr* mutants, this phenotype is seen only in embryos that are triple mutant for *fgfr1a;fgfr1b;fgfr2*, but not in any single or double mutant combinations. We show that this apparent *fgfr* redundancy is also seen during the development of several other tissues, including posterior mesoderm, pectoral fins, viscerocranium, and neurocranium. These data are an essential step toward defining the specific Fgfrs that function with particular Fgf ligands to regulate important developmental processes in zebrafish.”
* <https://pubmed.ncbi.nlm.nih.gov/36841347/>
  + Fibroblast growth factor pathway component expression in the regenerating zebrafish fin
* <https://pubmed.ncbi.nlm.nih.gov/35624341/>
  + Gremlin1 is a therapeutically targetable FGFR1 ligand that regulates lineage plasticity and castration resistance in prostate cancer
* <https://www.nature.com/articles/s41388-018-0311-3>
  + We show that activation of FGFR1 by its ligand fibroblast growth factor 2 (FGF2) promoted proliferation, EMT, migration, and invasion in FGFR1-amplified lung cancer cell lines H1581 and DMS114, whereas inhibition of FGFR1 suppressed these processes

**GeneID:** 121899214

**Symbol:** LOC121899214

**Description:** tyrosine-protein kinase receptor UFO

**Other designations:** tyrosine-protein kinase receptor UFO

**log2 Fold Change:** 2.51462682836006

**Adjusted p-value:** 8.9963029518674e-69

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%28%28121899214%29+OR+%28LOC121899214%29+OR+%28Axl%29+OR+%28Tyro7%29+OR+%28tyrosine-protein+kinase+receptor+UFO%29%29&filter=years.2013-2023&size=200>

Added “axl” and “Tyro7”

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/17332061/>
  + “The receptor tyrosine kinase, adhesion-related kinase (Ark) (also known as Axl, UFO, and Tyro7), has been implicated in the migration of GnRH neuronal cells. Binding of its ligand, growth arrest-specific gene 6 (Gas6), promotes cytoskeletal remodeling and migration of NLT GnRH neuronal cells via Rac and p38 MAPK.”
* <https://pubmed.ncbi.nlm.nih.gov/25568918/>
  + The TYRO3, AXL (also known as UFO) and MERTK (TAM) family of receptor tyrosine kinases (RTKs) are aberrantly expressed in multiple haematological and epithelial malignancies. Rather than functioning as oncogenic drivers, their induction in tumour cells predominately promotes survival, chemoresistance and motility.
* <https://pubmed.ncbi.nlm.nih.gov/15492251/>
  + The AXL/UFO family of tyrosine kinases is characterized by a common N-CAM (neural adhesion molecule)-related extracellular domain and a common ligand, GAS6 (growth arrest-specific protein 6). Family members are prone to transcriptional regulation and carry out diverse functions including the regulation of cell adhesion, migration, phagocytosis, and survival.
* <https://pubmed.ncbi.nlm.nih.gov/31684958/>
  + AXL receptor tyrosine kinase as a promising anti-cancer approach: functions, molecular mechanisms and clinical applications

**GeneID:** 121908711

**Symbol:** tnk2b

**Description:** tyrosine kinase, non-receptor, 2b

**Other designations:** tyrosine kinase, non-receptor, 2b

**log2 Fold Change:** 2.07259792201258

**Adjusted p-value:** 5.11211528940113e-63

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121908711%29+OR+%28tnk2b%29+OR+%28tyrosine+kinase%2C+non-receptor%2C+2b%29%29&sort=date>

**Findings:**

* 4 results. No initial results seem relevant.
* Non-receptor

**GeneID:** 121892115

**Symbol:** slitrk6

**Description:** SLIT and NTRK-like family, member 6

**Other designations:** SLIT and NTRK-like protein 6

**log2 Fold Change:** 6.6918529823923

**Adjusted p-value:** 1.22214422318299e-62

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121892115%29+OR+%28slitrk6%29+OR+%28SLIT+and+NTRK-like+family%2C+member+6%29+OR+%28SLIT+and+NTRK-like+protein+6%29%29&sort=date>

**Findings:**

* 5 results. No initial results seem relevant.

**GeneID:** 121906797

**Symbol:** cmklr2

**Description:** chemerin chemokine-like receptor 2

**Other designations:** G-protein coupled receptor 1

**log2 Fold Change:** 4.4265214595399

**Adjusted p-value:** 3.73271075838346e-62

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121906797%29+OR+%28cmklr2%29+OR+%28chemerin+chemokine-like+receptor+2%29%29&sort=date>

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/35370637/>
  + Chemerin Regulates the Proliferation and Migration of Pulmonary Arterial Smooth Muscle Cells via the ERK1/2 Signaling Pathway
* <https://pubmed.ncbi.nlm.nih.gov/34029211/>
  + Curcumin inhibits the proliferation and migration of vascular smooth muscle cells by targeting the chemerin / CMKLR1 / LCN2 axis
* <https://pubmed.ncbi.nlm.nih.gov/35040613/>
  + Chemerin review paper (2022)
  + Chemerin is a small chemotactic protein and a key player in initiating the early immune response. As an adipokine, chemerin is also involved in energy homeostasis and the regulation of reproductive functions. Secreted as inactive prochemerin, it relies on proteolytic activation by serine proteases to exert biological activity. Chemerin binds to three distinct G protein-coupled receptors (GPCR), namely chemokine-like receptor 1 (CMKLR1, recently named chemerin1), G protein-coupled receptor 1 (GPR1, recently named chemerin2), and CC-motif chemokine receptor-like 2 (CCRL2). Only CMKLR1 displays conventional G protein signaling, while GPR1 only recruits arrestin in response to ligand stimulation, and no CCRL2-mediated signaling events have been described to date. However, GPR1 undergoes constitutive endocytosis, making this receptor perfectly adapted as decoy receptor. Here, we discuss expression pattern, activation, and receptor binding of chemerin. Moreover, we review the current literature regarding the involvement of chemerin in cancer and several obesity-related diseases, as well as recent developments in therapeutic targeting of the chemerin system.
* <https://pubmed.ncbi.nlm.nih.gov/35327393/>
  + Chemerin, produced mainly in adipocytes and liver, is a natural ligand for chemokine-like receptor 1 (CMKLR1), G-protein-coupled receptor 1 (GPR1) and C-C motif chemokine receptor-like 2 (CCRL2), which have been identified in many tissues and organs. The role of this protein is an active area of research, and recent analyses suggest that chemerin contributes to angiogenesis, adipogenesis, glucose homeostasis and energy metabolism.
* *Lots of other interesting papers*

**GeneID:** 121896675

**Symbol:** cd44b

**Description:** CD44 molecule (Indian blood group) b

**Other designations:** CD44 antigen

**log2 Fold Change:** 2.51368547524503

**Adjusted p-value:** 1.34289683137307e-56

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121896675%29+OR+%28cd44b%29+OR+%28CD44+molecule+%28Indian+blood+group%29+b%29+OR+%28CD44+antigen%29%29&sort=date>

**Findings:**

* <https://www.frontiersin.org/articles/10.3389/fcell.2017.00018/full>
* <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8699317/>
  + CD44, a non-kinase cell surface transmembrane glycoprotein, has been widely implicated as a cancer stem cell (CSC) marker in several cancers. Cells overexpressing CD44 possess several CSC traits, such as self-renewal and epithelial-mesenchymal transition (EMT) capability, as well as a resistance to chemo- and radiotherapy. The CD44 gene regularly undergoes alternative splicing, resulting in the standard (CD44s) and variant (CD44v) isoforms. The interaction of such isoforms with ligands, particularly hyaluronic acid (HA), osteopontin (OPN) and matrix metalloproteinases (MMPs), drive numerous cancer-associated signalling. However, there are contradictory results regarding whether high or low CD44 expression is associated with worsening clinicopathological features, such as a higher tumour histological grade, advanced tumour stage and poorer survival rates. Nonetheless, high CD44 expression significantly contributes to enhanced tumourigenic mechanisms, such as cell proliferation, metastasis, invasion, migration and stemness; hence, CD44 is an important clinical target.

**GeneID:** 121906561

**Symbol:** caska

**Description:** calcium/calmodulin-dependent serine protein kinase a

**Other designations:** peripheral plasma membrane protein CASK

**log2 Fold Change:** 2.35395803053907

**Adjusted p-value:** 1.11161245117203e-54

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121906561%29+OR+%28caski%29+OR+%28calcium%2Fcalmodulin+dependent+serine+protein+kinase%29+OR+%28peripheral+plasma+membrane+protein+CASK%29%29&sort=date&page=1>

**Findings:**

* 250 results. None of the initial results seem relevant.

**GeneID:** 121904572

**Symbol:** hdr

**Description:** hematopoietic death receptor

**Other designations:** hematopoietic death receptor

**log2 Fold Change:** 2.97875861946302

**Adjusted p-value:** 1.37617293770341e-54

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=((ligand)%20OR%20(satellite%20cell%20proliferation)%20OR%20(myogenesis)%20OR%20(muscle%20stem%20cell%20proliferation)%20OR%20(teleost)%20OR%20(fish))%20%20%20((121904572)%20OR%20(hdr)%20OR%20(hematopoietic%20death%20receptor))&sort=date&page=2>

**Findings:**

* 82 results. None of the initial results seem relevant.

**GeneID:** 121889601

**Symbol:** LOC121889601

**Description:** F-box/WD repeat-containing protein 7-like

**Other designations:** F-box/WD repeat-containing protein 7-like

**log2 Fold Change:** 2.31786629858542

**Adjusted p-value:** 1.64251338954465e-52

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121889601%29+OR+%28LOC121889601%29+OR+%28F-box%2FWD+repeat-containing+protein+7-like%29+OR+%28F-box%2FWD+repeat-containing+protein+7%29%29&filter=years.2013-2023&size=200>

**Findings:**

* <https://onlinelibrary.wiley.com/doi/10.1111/asj.12687>
  + Fbxw7 degrades positive regulators of the cell cycle such as cyclin E, c-Myc, Notch and c-Jun by mediating their ubiquitination. Our data showed that Fbxw7β expressing myoblasts did not degrade cyclin E and c-Myc despite its decreased growth rate: however, the identity of the molecules binding to Fbxw7β remains to be resolved. In conclusion, our data suggest that cellular function of mammalian skeletal myoblast is negatively regulated by Fbxw7β expression. Future experiments using knock-out animals and muscle disease in case of, especially, abnormal over-expressed Fbxw7β in myofibers could further clarify the relationship between Fbxw7β and disease-induced muscle degeneration.
* <https://pubmed.ncbi.nlm.nih.gov/27925341/>
  + Skeletal muscle atrophy is induced by Fbxw7β via atrogene upregulation

**GeneID:** 121887818

**Symbol:** tfr1b

**Description:** transferrin receptor 1b

**Other designations:** transferrin receptor 1b

**log2 Fold Change:** 2.36897685729127

**Adjusted p-value:** 1.04296272068992e-50

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121887818%29+OR+%28tfr1b%29+or+%28tfr1%29+or+%28CD71%29+OR+%28transferrin+receptor+1b%29+or+%28transferrin+receptor+1%29%29&filter=years.2013-2023&size=200>

Added “CD71” and “TFR1” and “transferrin receptor 1”

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/33955709/>
  + From in vivo and ex vivo experiments, Tfr1 deletion in SCs results in an irreversible depletion of SCs (~60% reduction, P < 0.005) and cell-autonomous defect in SC proliferation and differentiation, leading to skeletal muscle regeneration impairment, followed by labile iron accumulation, lipogenesis, and decreased Gpx4 and Nrf2 protein levels leading to reactive oxygen species scavenger defects.
* <https://pubmed.ncbi.nlm.nih.gov/33110194/>
  + Iron is essential for living cells. Uptake of iron-loaded transferrin by the transferrin receptor 1 (CD71, TFR) is a major but not sufficient mechanism and an alternative iron-loaded ligand for CD71 has been assumed. Here, we demonstrate that CD71 utilizes heme-albumin as cargo to transport iron into human cells. Binding and endocytosis of heme-albumin via CD71 was sufficient to promote proliferation of various cell types in the absence of transferrin. Growth and differentiation of cells induced by heme-albumin was dependent on heme-oxygenase 1 (HO-1) function and was accompanied with an increase of the intracellular labile iron pool (LIP). Import of heme-albumin via CD71 was further found to contribute to the efficacy of albumin-based drugs such as the chemotherapeutic Abraxane. Thus, heme-albumin/CD71 interaction is a novel route to transport nutrients or drugs into cells and adds to the emerging function of CD71 as a scavenger receptor.
* <https://pubmed.ncbi.nlm.nih.gov/33318410/>
  + Previous studies demonstrate an accumulation of transferrin and transferrin receptor 1 (TfR1) in regenerating peripheral nerves. However, the expression and function of transferrin and TfR1 in the denervated skeletal muscle remain poorly understood. In this study, a mouse model of denervation was produced by complete tear of the left brachial plexus nerve. RNA-sequencing revealed that transferrin expression in the denervated skeletal muscle was upregulated, while TfR1 expression was downregulated. We also investigated the function of TfR1 during development and in adult skeletal muscles in mice with inducible deletion or loss of TfR1. The ablation of TfR1 in skeletal muscle in early development caused severe muscular atrophy and early death. In comparison, deletion of TfR1 in adult skeletal muscles did not affect survival or glucose metabolism, but caused skeletal muscle atrophy and motor functional impairment, similar to the muscular atrophy phenotype observed after denervation. These findings suggest that TfR1 plays an important role in muscle development and denervation-induced muscular atrophy.

**GeneID:** 121910392

**Symbol:** fgfr4

**Description:** fibroblast growth factor receptor 4

**Other designations:** fibroblast growth factor receptor 4

**log2 Fold Change:** 2.62779627712691

**Adjusted p-value:** 6.42846211096338e-49

**PubMed Search:**

**Findings:**

* <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7494643/>
  + Whole section on “Role in muscle differentiation and tissue repair”
    - FGFR4 is highly expressed in adult mouse and chick muscle satellite cells, which are responsible for proliferation and differentiation
    - Additionally, PAX3, a critical factor regulating skeletal muscle stem cell behavior, can directly bind to the promoter of FGFR4, promoting myogenesis
  + Contains table on “FGF activation potential for FGFR4”

**GeneID:** 121882707

**Symbol:** lbr

**Description:** lamin B receptor

**Other designations:** delta(14)-sterol reductase LBR

**log2 Fold Change:** 2.22811979919759

**Adjusted p-value:** 3.07244362865954e-48

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121882707%29+OR+%28lbr%29+OR+%28lamin+B+receptor%29+OR+%28delta%2814%29-sterol+reductase+LBR%29%29&sort=date>

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/33958580/>
  + One of the critical events that regulates muscle cell differentiation is the replacement of the lamin B receptor (LBR)-tether with the lamin A/C (LMNA)-tether to remodel transcription and induce differentiation-specific genes. Here, we report that localization and activity of the LBR-tether are crucially dependent on the muscle-specific chaperone HSPB3 and that depletion of HSPB3 prevents muscle cell differentiation. We further show that HSPB3 binds to LBR in the nucleoplasm and maintains it in a dynamic state, thus promoting the transcription of myogenic genes, including the genes to remodel the extracellular matrix. Remarkably, HSPB3 overexpression alone is sufficient to induce the differentiation of two human muscle cell lines, LHCNM2 cells, and rhabdomyosarcoma cells. We also show that mutant R116P-HSPB3 from a myopathy patient with chromatin alterations and muscle fiber disorganization, forms nuclear aggregates that immobilize LBR. We find that R116P-HSPB3 is unable to induce myoblast differentiation and instead activates the unfolded protein response. We propose that HSPB3 is a specialized chaperone engaged in muscle cell differentiation and that dysfunctional HSPB3 causes neuromuscular disease by deregulating LBR.
* <https://pubmed.ncbi.nlm.nih.gov/29415520/>
  + One of these proteins is the lamin B receptor (LBR) that binds lamin B1 and tethers heterochromatin to the INM in embryonic and undifferentiated cells. It is replaced by lamin A/C with specific lamin A/C binding proteins at the beginning of cell differentiation and in differentiated cells. Our functional experiments in cancer cell lines show that heterochromatin in cancer cells is tethered to the INM by LBR, which is downregulated together with lamin B1 at the onset of cell transition to senescence. The downregulation of these proteins in senescent cells leads to the detachment of centromeric repetitive sequences from INM, their relocation to the nucleoplasm, and distension. In cells, the expression of LBR and LB1 is highly coordinated as evidenced by the reduction of both proteins in LBR shRNA lines. The loss of the constitutive heterochromatin structure containing LADs results in changes in chromatin architecture and genome function and can be the reason for the permanent loss of cell proliferation in senescence.

**GeneID:** 121893833

**Symbol:** LOC121893833

**Description:** macrophage-stimulating protein receptor-like

**Other designations:** macrophage-stimulating protein receptor-like

**log2 Fold Change:** 4.13311424880604

**Adjusted p-value:** 1.87353888739945e-47

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121893833%29+OR+%28LOC121893833%29+OR+%28macrophage-stimulating+protein+receptor-like%29+OR+%28MST1R%29%29&sort=date>

Added MSTR1 since that is the name of the macrophage-stimulating protein receptor in most literature.

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/35626096/>
  + RON ( MST1R) and HGFL ( MST1) Co-Overexpression Supports Breast Tumorigenesis through Autocrine and Paracrine Cellular Crosstalk
  + RON (*MST1R*) and HGFL (*MST1*) genes are located on human chromosome 3 and mouse chromosome 9 respectively and are found near each other in both species. Based on co-expression patterns, we posited that RON and HGFL are co-regulated and that coordinate upregulation drives aggressive tumorigenesis.
* <https://pubmed.ncbi.nlm.nih.gov/36833444/>
  + An Introduction and Overview of RON Receptor Tyrosine Kinase Signaling
  + RON is a receptor tyrosine kinase (RTK) of the MET receptor family that is canonically involved in mediating growth and inflammatory signaling.
* <https://pubmed.ncbi.nlm.nih.gov/30863365/>

**GeneID:** 121904549

**Symbol:** unc5db

**Description:** unc-5 netrin receptor Db

**Other designations:** netrin receptor UNC5D

**log2 Fold Change:** 3.37539083812489

**Adjusted p-value:** 3.1437308517736e-43

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28ligand%29+OR+%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28teleost%29+OR+%28fish%29%29+%2B+%28%28121904549%29+OR+%28unc5db%29+OR+%28unc-5+netrin+receptor+Db%29+OR+%28netrin+receptor+UNC5D%29%29&sort=date>

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/23806443/>
  + UNC5 family proteins are trans-membrane receptors which mediate both repulsion and attraction signals for the axonal growth cones. The UNC5 family proteins may also play critical roles in angiogenesis and carcinogenesis.
* <https://pubmed.ncbi.nlm.nih.gov/34321999/>
  + Intermediate progenitor cells of cerebral cortex projection neurons expressed several "dependence receptors" (*Unc5d*, *Dcc*, *Ntrk3*, and *Epha4*) that induce apoptosis in the absence of ligand, suggesting a competitive mechanism for IPs and new PNs to detect key environmental cues or die.

**GeneID:** 121897079

**Symbol:** LOC121897079

**Description:** leucine-rich repeat-containing G-protein coupled receptor 5-like

**Other designations:** leucine-rich repeat-containing G-protein coupled receptor 5-like

**log2 Fold Change:** 7.54328514139445

**Adjusted p-value:** 3.52765795624466e-42

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28proliferation%29+OR+%28ligand%29+OR+%28teleost%29+OR+%28fish%29%29+AND+%28%28121897079%29+OR+%28LOC121897079%29+OR+%28leucine-rich+repeat-containing+G-protein+coupled+receptor+5-like%29+OR+%28leucine-rich+repeat-containing+G-protein+coupled+receptor+5%29+OR+%28LGR5%29+OR+%28G-protein+coupled+receptor+49%29+OR+%28GPR49%29+OR+%28G-protein+coupled+receptor+67%29+OR+%28GPR67%29%29&size=200&sort=relevance>

Added LGR5 and GPR49 since those are the names of the leucine-rich repeat-containing G-protein coupled receptor 5 in most literature.

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/36849411/>
  + Leucine-rich repeat-containing G-protein-coupled receptor (LGR5) and LGR6 mark epithelial stem cells in normal tissues and tumors.
* <https://pubmed.ncbi.nlm.nih.gov/36099053/>
  + We found that R-spondin 3 (Rspo3), a ligand for leucine-rich, repeat-containing GPCR 4 and 5 (LGR4 and LGR5), was the main subtype of R-spondins and was produced by myofibroblasts beneath the crypts in the intestine. HFD upregulated colonic Rspo3, LGR4, LGR5, and β-catenin gene expression in specific pathogen-free rodents, but not in germ-free mice, and the upregulations were prevented by the bile acid (BA) binder cholestyramine or antibiotic treatment, indicating mediation by both BA and gut microbiota. Cholestyramine or antibiotic treatments prevented HFD-induced enrichment of members of the Lachnospiraceae and Rumincoccaceae, which can transform primary BA into secondary BA. Oral administration of deoxycholic acid (DCA), or inoculation of a combination of the BA deconjugator Lactobacillus plantarum and 7α-dehydroxylase-containing Clostridium scindens with an HFD to germ-free mice increased serum DCA and colonic Rspo3 mRNA levels, indicating that formation of secondary BA by gut microbiota is responsible for HFD-induced upregulation of Rspo3. In primary myofibroblasts, DCA increased Rspo3 mRNA via TGR5. Finally, we showed that cholestyramine or conditional deletion of Rspo3 prevented HFD- or DCA-induced intestinal proliferation. We conclude that secondary BA is responsible for HFD-induced upregulation of Rspo3, which, in turn, mediates HFD-induced intestinal epithelial proliferation.
* <https://pubmed.ncbi.nlm.nih.gov/36030657/>
  + Leucine-rich G-protein-coupled receptor 5 (LGR5) is determined as a modulator of Wnt signaling cascade and R-spondins are a family of secretory agonists in the Wnt signaling and act as ligands to interact with LGR5.
* <https://pubmed.ncbi.nlm.nih.gov/34205481/>
  + New Stable Cell Lines Derived from the Proximal and Distal Intestine of Rainbow Trout ( Oncorhynchus mykiss) Retain Several Properties Observed In Vivo
  + The expression by the stromal component of *lgr5*, a stem cell niche regulatory molecule, may explain why these lines proliferate stably in vitro.
* <https://pubmed.ncbi.nlm.nih.gov/23354049/>
  + In vitro expansion of single Lgr5+ liver stem cells induced by Wnt-driven regeneration
* <https://pubmed.ncbi.nlm.nih.gov/25866367/>

**GeneID:** 121906580

**Symbol:** marco

**Description:** macrophage receptor with collagenous structure

**Other designations:** macrophage receptor MARCO

**log2 Fold Change:** 2.28877108530214

**Adjusted p-value:** 1.57126026648606e-40

**PubMed Search:**

((satellite cell proliferation) OR (myogenesis) OR (muscle stem cell proliferation) OR (proliferation) OR (ligand) OR (teleost) OR (fish)) AND ((121906580) OR (marco[Ti][Ab]) OR (macrophage receptor with collagenous structure[TI][Ab]) OR (macrophage receptor MARCO[ti][ab]) AND (2013:2023[pdat])

**Findings:**

* One irrelevant result

**GeneID:** 121912879

**Symbol:** LOC121912879

**Description:** tetratricopeptide repeat protein 31-like

**Other designations:** hsp70-Hsp90 organizing protein 3-like|tetratricopeptide repeat protein 31-like

**log2 Fold Change:** 2.24073762321642

**Adjusted p-value:** 1.5834809868372e-40

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28proliferation%29+OR+%28ligand%29+OR+%28teleost%29+OR+%28fish%29%29+AND+%28%28121912879%29+OR+%28LOC121912879%29+OR+%28tetratricopeptide+repeat+protein+31-like%29+OR+%28hsp70-Hsp90+organizing+protein+3-like%29+OR+%28TTC31%29+OR+%28Tetratricopeptide+repeat+domain+31%29%29+AND+%282013%3A2023%5Bpdat%5D%29&sort=relevance>

**Findings:**

No relevant results

**GeneID:** 121897435

**Symbol:** ptprq

**Description:** protein tyrosine phosphatase receptor type Q

**Other designations:** phosphatidylinositol phosphatase PTPRQ

**log2 Fold Change:** 4.79726447664758

**Adjusted p-value:** 2.09842187735785e-39

**PubMed Search:**

<https://pubmed.ncbi.nlm.nih.gov/?term=%28%28satellite+cell+proliferation%29+OR+%28myogenesis%29+OR+%28muscle+stem+cell+proliferation%29+OR+%28proliferation%29+OR+%28ligand%29+OR+%28teleost%29+OR+%28fish%29%29+AND+%28%28121897435%29+OR+%28ptprq%29+OR+%28protein+tyrosine+phosphatase+receptor+type+Q%29+OR+%28phosphatidylinositol+phosphatase+PTPRQ%29%29+AND+%282013%3A2023%5Bpdat%5D%29&sort=relevance>

**Findings:**

* <https://pubmed.ncbi.nlm.nih.gov/35546749/>
  + Subsequently, studies found that PTPRQ has phosphotyrosine phosphatase and phosphatidylinositol phosphatase activities and can regulate cell proliferation, apoptosis, differentiation, and survival.
* Not much on pptr type q

**GeneID:** 121901771

**Symbol:** slit3

**Description:** slit homolog 3 (Drosophila)

**Other designations:** slit homolog 3 protein

**log2 Fold Change:** 3.19785024126953

**Adjusted p-value:** 5.37135572123583e-39

**PubMed Search:**

**Findings:**

**GeneID:** 121897263

**Symbol:** LOC121897263

**Description:** receptor-type tyrosine-protein phosphatase beta-like

**Other designations:** receptor-type tyrosine-protein phosphatase beta-like

**log2 Fold Change:** 4.78304180019011

**Adjusted p-value:** 3.12796428722998e-37

**PubMed Search:**

**Findings:**

**GeneID:** 121890376

**Symbol:** LOC121890376

**Description:** inositol 1,4,5-trisphosphate receptor type 1

**Other designations:** inositol 1,4,5-trisphosphate receptor type 1

**log2 Fold Change:** 2.50855609816948

**Adjusted p-value:** 2.71068512229743e-36

**PubMed Search:**

**Findings:**

**GeneID:** 121911659

**Symbol:** fgfr2

**Description:** fibroblast growth factor receptor 2

**Other designations:** fibroblast growth factor receptor 2

**log2 Fold Change:** 3.98714249515147

**Adjusted p-value:** 3.59516802292247e-36

**PubMed Search:**

**Findings:**

**GeneID:** 121901064

**Symbol:** tie1

**Description:** tyrosine kinase with immunoglobulin-like and EGF-like domains 1

**Other designations:** tyrosine-protein kinase receptor Tie-1

**log2 Fold Change:** 3.10325602866699

**Adjusted p-value:** 2.49810465146903e-34

**PubMed Search:**

**Findings:**

**GeneID:** 121891942

**Symbol:** gpr180

**Description:** G protein-coupled receptor 180

**Other designations:** integral membrane protein GPR180

**log2 Fold Change:** 2.24914589350782

**Adjusted p-value:** 2.59649005170296e-34

**PubMed Search:**

**Findings:**