

# MechanosensorDB

Although cells do not have the ability to see or hear, they do possess sensory structures that allow them to detect and measure various environmental stimuli. Cells are constantly exposed to physical forces, either from their environment or from neighboring cells. Mechanical signals are needed for vital biological functions, including cell migration, growth and differentiation.

Mechanosensor is a protein which could sense the mechanical force and act accordingly. MechanosensorDB stores mechanosensor that mainly collected from UniprotDB.

## The use of MechanosensorDB

MechanosensorDB is willing to integrate all knowledge of mechanosensors, and hope to broaden your knowledge in mechanobiology.

1. Browse all mechanosensor grouped by 'Protein name', 'GO cellular component', 'GO molecular function', 'GO biological pathway', and 'organism'.
2. Search gene name, protein name, and functions through top right search bar.
3. Protein information page contains not only functions, GO terms, etc., but also several selected articles which studies the mechanosensing aspect of the protein.

## The design of MechanosensorDB

MechanosensorDB uses HTML, CSS, Javascript, Php, and mysql to support your research in mechanobiology.

1. The main page is 'index.html'.
2. All web page organization, event catch, sending and receiving data from server are done in Javascript.
3. Search mysql database use Php.
4. With AJAX, MechanosensorDB can update a web page, call php in server, and so on without reloading the page.

## Statistics

Counts	Item
37521	Number of Proteins
36758	Number of Proteins Name with 'mechano'
763	Number of Proteins Name without 'mechano'
7990	Number of Proteins with Family Info
29531	Number of Proteins No Family Info (in uniprot)
10846	Number of Organisms
146	Number of Proteins with Tissue Specificity Info
19	Number of Proteins with Expression Inducer Info
35143	Number of Proteins with GO
258 / 4164(all)	Number of GO CC
259 / 11185(all)	Number of GO MF
930 / 29741(all)	Number of GO BP
10800	Number of Articles
829	Number of Articles with 'mechano' or 'force'
2763	Number of Articles with 'mechano'(Pubmed)

## Enriched GO Terms

Counts	Item
33851	integral component of membrane(CC)
22375	transmembrane transport(BP)
8441	ion channel activity(MF)
7053	plasma membrane(CC)
2932	mechanically-gated ion channel activity(MF)
2320	cellular response to osmotic stress(BP)
711	membrane(CC)

- 253 calcium ion binding(MF)
- 187 ATP binding(MF)
- 150 mechanosensory behavior(BP)
- 126 integral component of plasma membrane(CC)
- 124 cytoplasm(CC)
- 119 nucleus(CC)(CC)
- 118 mechanoreceptor differentiation(BP)
- 96 positive regulation of synapse assembly(BP)
- 95 receptor complex(CC)
- 94 circadian rhythm(BP)
- 67 positive regulation of neuron projection development(BP)
- 67 positive regulation of gene expression(BP)
- 67 cell volume homeostasis(BP)


Snapshots of MechanosensorDB

Home Page

# MechanosensorDB


[Home](#)[Browse](#)[Statistics](#)[About](#)

Welcome to  
MechanosensorDB!  
The current time:  
2016.11.4 Fri  
14:43:58




Although cells do not have the ability to see or hear, they do possess sensory structures that allow them to detect and measure various environmental stimuli. Cells are constantly exposed to physical forces, either from their environment or from neighboring cells. Mechanical signals are needed for vital biological functions, including cell migration, growth and differentiation.

Mechanosensor is a protein which could sense the mechanical force and act accordingly. MechanosensorDB stores mechanosensor that mainly collected from UniprotDB.



SEARCH



All rights reserved by Luezheng

Browse Page

ne

ome

ano

curre

.11.4

8.9

Browse

Protein Name

Protein Family

GO\_CC

GO\_BP

GO\_MF

Pathway

Species

Statistics

About

i trans cisterna

i membrane

centriolar material

tochore

lensed chromosome kine

matin

ear chromatin

romatin

al tip

age-gated sodium channe

ss fiber

e

oreceptor outer segment

oreceptor inner segment

• polycystin complex

### GO ID Shown in Protein Information Page

GO ID

molecular\_function

GO\_name

protein kinase binding

GO\_ID

GO:0019901

GO\_def

Interacting selectively and non-covalently with a protein kinase, any enzyme that catalyzes the transfer of a phosphate group, usually from ATP, to a protein substrate.' [GOC:jl]

GO\_namespace

molecular\_function

GO\_is\_a

GO:0019900 ! kinase binding;

GO\_name

ion channel binding

### Selected Publication in Protein Information Page

These articles study the mechanosensing aspect of the mechanosensor.

Pubmed ID

Important Articles

16481400

16565258

17090781

17102641

19759016

20937836

21314639

21865467

22409330

23014991

23848298

25123959

### Search Results

## Results

G3V9H8	Proto-oncogene tyrosine-protein kinase receptor Ret (EC 2.7.10.1) [Cleaved into: Soluble RET kinase fragment; Extracellular cell-membrane anchored RET cadherin 120 kDa fragment]	Rattus norvegicus (Rat)
O17581	Maternal uncoordinated protein 2 (Cohesin loading complex subunit SCC4 homolog)	Caenorhabditis elegans
O77469	Fibulin-1	Caenorhabditis elegans
P07949	Proto-oncogene tyrosine-protein kinase receptor Ret (EC 2.7.10.1) (Cadherin family member 12) (Proto-oncogene c-Ret) [Cleaved into: Soluble RET kinase fragment; Extracellular cell-membrane anchored RET cadherin 120 kDa fragment]	Homo sapiens (Human)

