

# Human stem cell derived sensory neurons

*Commonly used acronym: hSCDS neurons*

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## Organisation

**Name of the organisation** Katholieke Universiteit Leuven (KUL)

**Department** Cellular and molecular medicine

**Specific Research Group or Service** Cellular and molecular medicine

**Country** Belgium

**Geographical Area** Flemish Region

**Name of the organisation** Katholieke Universiteit Leuven (KUL)

**Department** Stem cell institute

**Country** Belgium

**Geographical Area** Flemish Region

**Name of the organisation** VIB - KU Leuven

**Department** Center for Brain & Disease Research

**Country** Belgium

**Geographical Area** Flemish Region

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human health
<b>The Method is situated in</b>	Basic Research
<b>Type of method</b>	In vitro - Ex vivo
<b>Specify the type of cells/tissues/organs</b>	Starting from human embryonic stem cells to sensory neurons with a nociceptor phenotype

## DESCRIPTION

## **Method keywords**

Stem cell differentiation

## **Scientific area keywords**

human sensory neurons

## **Method description**

We use stem cell-derived sensory neurons and via a small molecule-based protocol ( *Young et al, 2014*) we derive them into human sensory neurons with a nociceptor phenotype (express somatosensory ion channels).

## **Lab equipment**

Cell culture.

## **Method status**

Still in development

Published in peer reviewed journal

## **PROS, CONS & FUTURE POTENTIAL**

### **Advantages**

One of the only available methods to have easy and accessible human sensory neurons.

### **Challenges**

You work with artificial cells.

Differentiation protocol can vary and give variability.

### **Modifications**

Yes, optimalization of the protocol to obtain less variability, more research into what type of neurons you obtain, and more protocols to other types of neurons.

Differentiation in the presence of other neuronal cell types might give a more natural environment and result.

### **Future & Other applications**

Mutating the initial stem cells might give information about neuronal development. Adding genetic fluorescent proteins can give information about expression at different time points and locations.

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### References

The protocol is based on :

- Chambers et al, nat biotech, 2012 ;
- Young et al, mol ther, 2014.

And was later optimized by the stem cell institute @ KU Leuven.

References that use the protocol (for different research purposes):

- Desiderio et al, cell rep, 2019 ;
- Vangeel et al, JBP, 2020.

*Coordinated by*



*Financed by*

