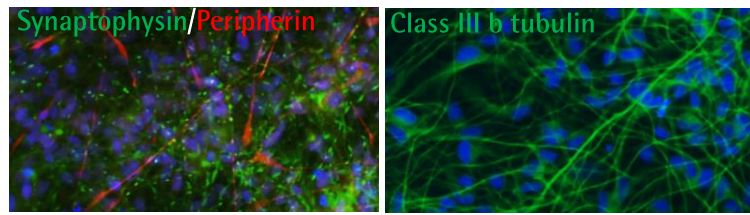
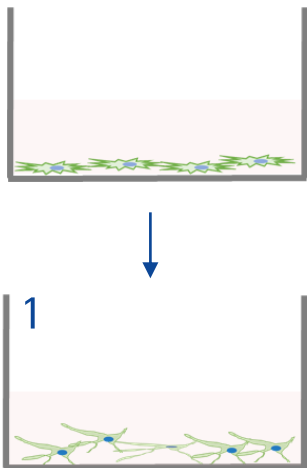


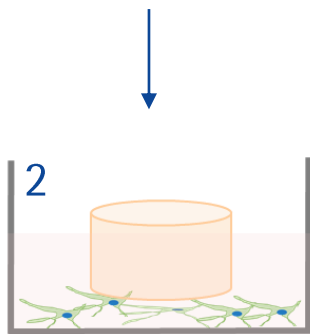
A NEW pre-clinical assay for testing the effects of compounds/drugs on innervated skin *ex vivo*

1. Differentiation of human iPSC derived neural stem cells *in vitro*



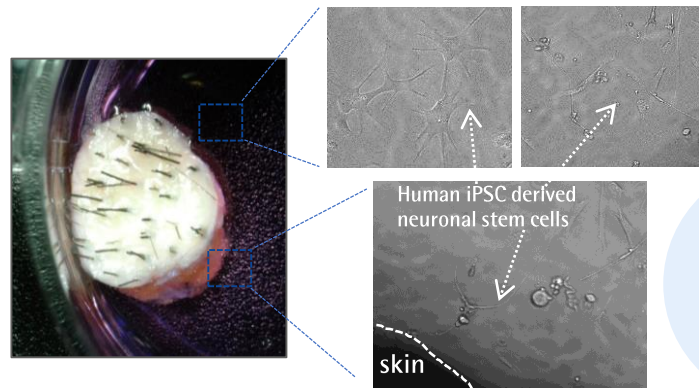
Human iPSC derived neural stem cells start to express: **class III β -tubulin** which is associated with neuronal maturation and is a microtubule element of the tubulin family found almost exclusively in neurons and neurite extensions (Sainath and Gallo, Cell Tissue Res 2015), **peripherin** which is a peripheral nervous system neuronal marker (Yuan et al., J Neurosci. 2012), and **synaptophysin** which is a marker of mature neurons (Kwon et al., Neuron. 2011)

2. Initiation co-culture of human skin with human differentiated iPSC derived neural stem cells *ex vivo*



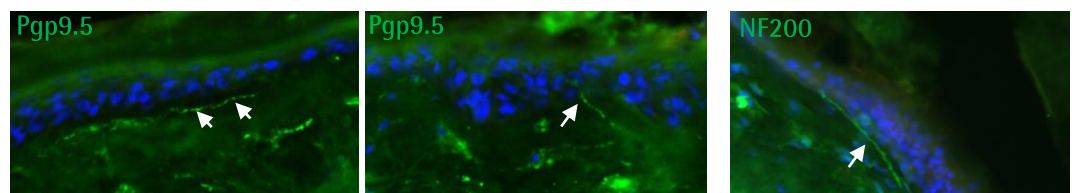
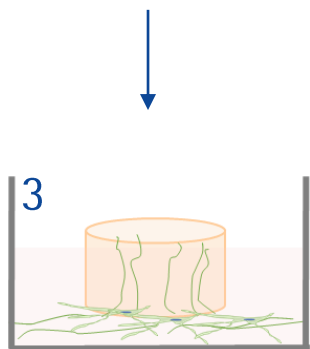
Topical application possible

Chéret et al., J Invest Dermatol 2021



Animal-free model!

3. Model ready to use: Human skin punch is fully re-innervated



nerve fibers (Pgp9.5+) reaching the epidermis

nerve fibers (Pgp9.5+) entering into the epidermis

myelinated (NF200+) nerve fibers along the hair follicles

INSTEAD: No remaining nerve fibers can be detected in human skin cultured *ex vivo* in the absence of human iPSC derived neural stem cells

This novel assay can be utilized for dissecting and manipulating the bi-directional communication between defined skin and hair follicle cell populations and (sensory) human nerve fibers under stringently controlled *ex vivo* conditions, or for testing cosmeceuticals or drugs that target the cross-talk between human skin and hair follicles and cutaneous nerve fibers.

Relevant for e.g. sensitive skin, itch, atopic dermatitis, psoriasis

Contact us for a customized study:

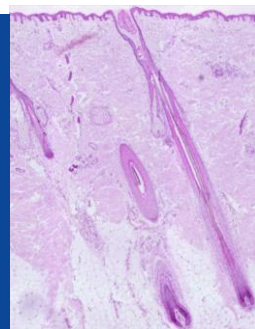
CSO & Deputy General Manager:
Dr. Marta Bertolini (PhD)
Deputy CSO & Team Leader:
Dr. Janin Edelkamp (PhD)

m.bertolini@monasteriumlab.com
j.edelkamp@monasteriumlab.com
+ 49 (0)251 93263-080

For more details see also our webpage:
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Monasterium Laboratory

Skin & Hair Research Solutions GmbH
Mendelstr. 17, 48149 Münster, Germany

www.monasteriumlab.com

For enquiries, please contact:

CSO & Deputy General Manager:
Dr. Marta Bertolini (PhD)

m.bertolini@monasteriumlab.com
+ 49 (0)251 93263-080