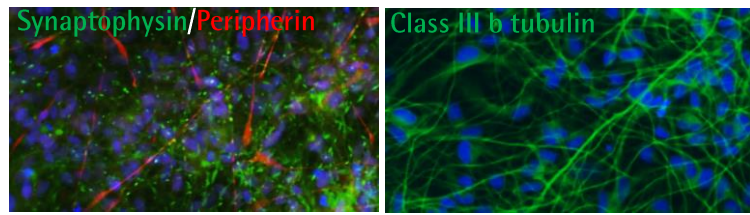
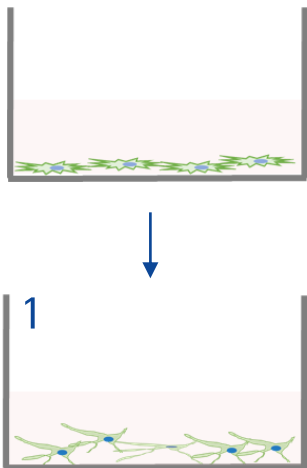


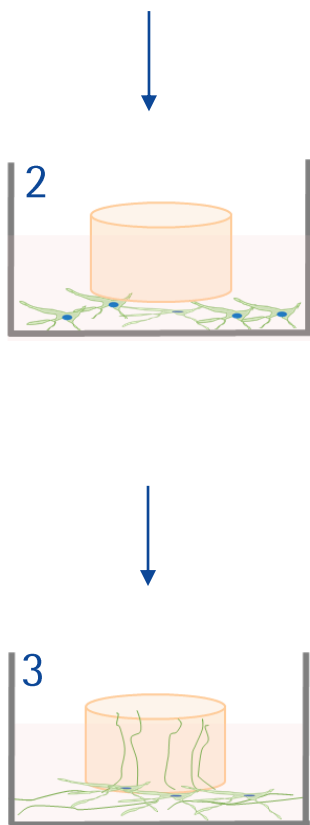
A NEW pre-clinical assay for testing the effects of compounds/drugs on innervated skin *ex vivo*

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



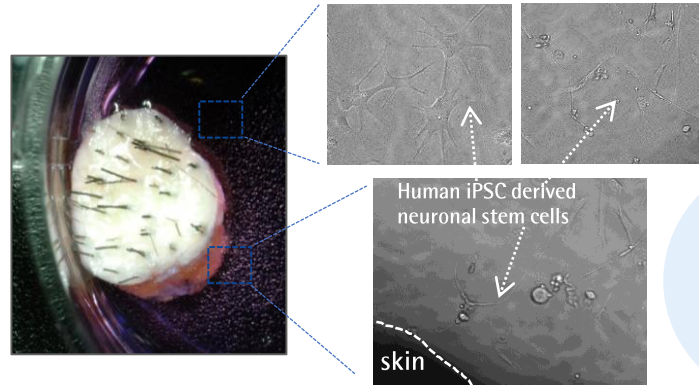
Human iPSC derived neural stem cells start to express: **class III β -tubulin** which is associated with neuronal maturation and is a microtubule element of the tubulin family found almost exclusively in neurons and neurite extensions (Sainath and Gallo, Cell Tissue Res 2015), **peripherin** which is 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*



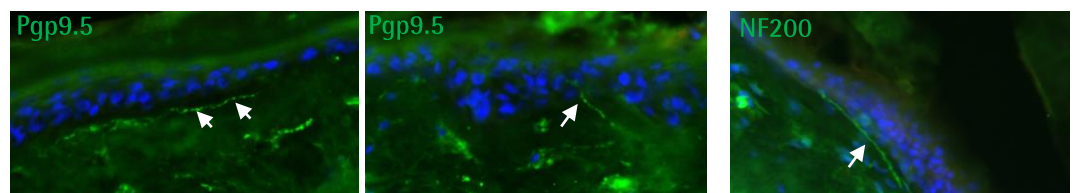
Topical application possible

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:

Principal Scientist: Dr. Marta Bertolini (PhD)
COO: Dr. Janin Edelkamp (PhD)

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

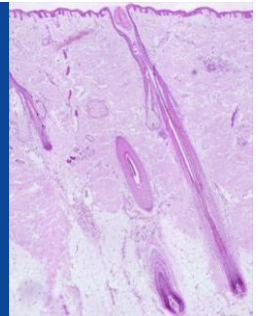
For more details see also our webpage:
www.monasteriumlab.com



**MONASTERIUM
LABORATORY**
Skin & Hair Research Solutions



Your one-stop source for all
in vitro, *ex vivo* and *in vivo* testing
plus additional services.



- ▶ Preclinical Research
- ▶ Clinical Research
- ▶ Innovative Technologies Program
- ▶ Education



"We combine
our unique expertise,
our project design creativity,
and our passion to advance
our clients' success in
delivering novel and game-
changing skin and hair
research solutions"

Founder & CEO:
Prof. Dr. Ralf Paus

Reasons why you should choose
Monasterium Laboratory:

- Cutting edge methodologies and techniques
- Tailor-made & customized assays for all needs
- A focus on novel targets and therapeutics for skin & hair disorders: identify-characterize-validate
- Delivering mechanistic action stories, biomarkers & predictors of response
- Claims support for cosmetic ingredients in skin or hair follicle models
- Clinical trials carried out with strategic partners for healthy skin and hair benefits
- Comprehensive project reports & manuscript drafting and submission

Monasterium Laboratory

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

www.monasteriumlab.com

For enquiries, please contact:

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

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