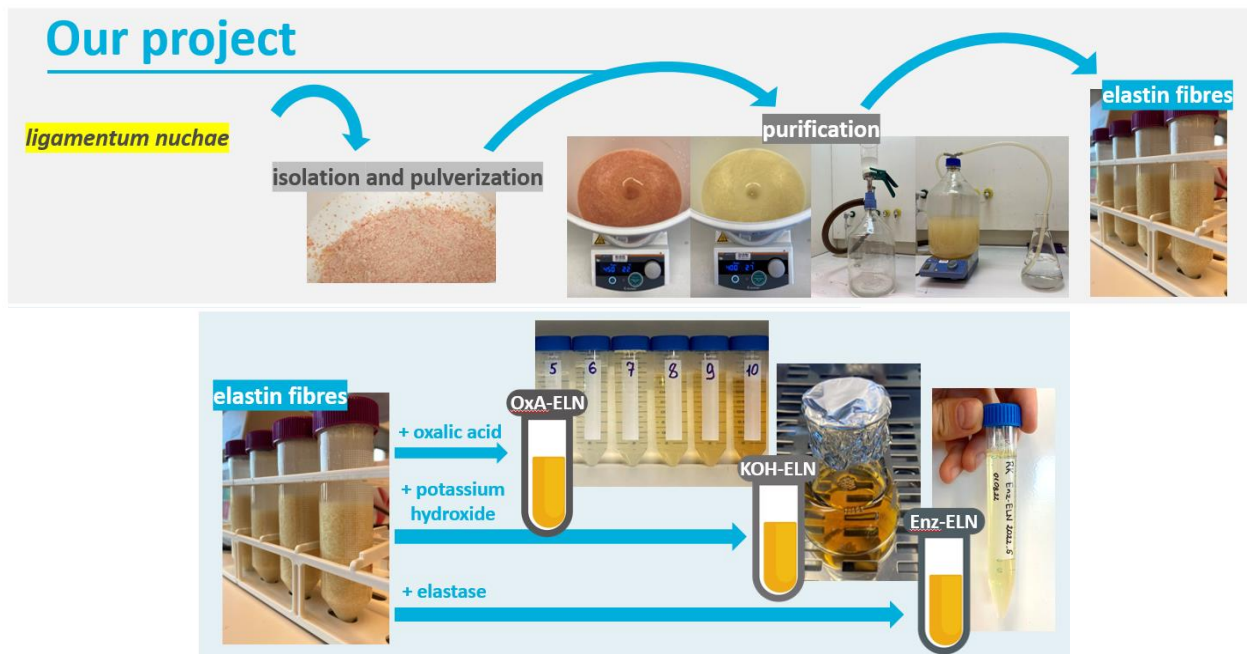


Research internship in regenerative medicine: Elastogenic potential of soluble elastin preparations and other compounds (MSc student, ≥ 6 months)



The [SkinTERM](#) project is currently running at the [Matrix Biochemistry lab](#) of the Dept. of Biochemistry at Radboud university medical center. This is an EU funded Marie Skłodowska-Curie Actions project where our lab is working on identification and application of specific elastin hydrolysates for scarless skin regeneration.

Elastin, a fibrous extracellular matrix (ECM) protein, is the major component of elastic fibres that contribute to skin elasticity and resilience. Although elastin production increases after an injury, it is usually inadequate, and its disordered deposition leads to scar formation. Elastin is vital in wound healing due to its various properties and may aid scarless skin regeneration.



This internship will start with purification of insoluble elastin from equine *ligamentum nuchae* in order to purify elastin fibres. The characterization of obtained elastin fibres will be performed with SDS-PAGE and scanning electron microscopy. Soluble elastin will be prepared from elastin fibres by one of the following methods: acidic, alkaline or enzymatic solubilisation. The potential of soluble elastin preparations and some other elastogenic compounds (e.g. GABA, minoxidil) to form new elastic fibres will be assessed with human fibroblasts in cell culture. The intern will be familiarized with the technique of ECM production by the cells via ascorbic acid supplementation and will have the opportunity to investigate and set up a novel approach using macromolecular crowding. Immunohistochemical assays along with real-time qPCR will be the main read-out parameters for assessing elastogenic properties for investigated compounds.

During the internship the following techniques will be performed:

Elastin purification:

- Extractions with different solvents
- Freeze drying

Characterization of purified elastin:

- SDS-PAGE for insoluble material
- Scanning electron microscopy

Soluble elastin preparation:

- Enzymatic digestion
- Lowry protein assay
- TNBS amine group assay
- SDS-PAGE for soluble material

In vitro experiments:

- Cell culture with human primary fibroblasts?
- Cell quantification
- RNA isolation, qPCR
- Immunohistochemistry

We are looking for a motivated student with a special interest in (skin) regenerative medicine. The intended starting date is in September/October 2022. Daily supervision will be provided by an English speaking PhD candidate. If you are interested in this position, please send your CV and motivation letter to Roman Krymchenko (Roman.Krymchenko@radboudumc.nl).