

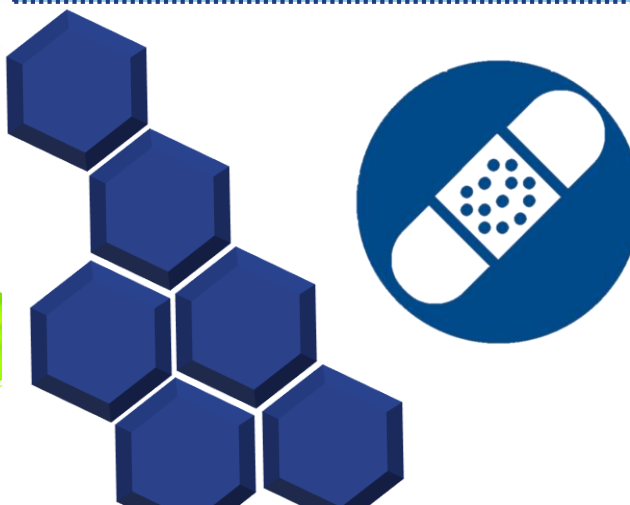


# ChitoWound

**Biotechnological tools implementation for new wound healing applications of byproducts from the crustacean seafood processing industry**

## Aims

1. Developing more efficient and environmentally friendly processes for manufacturing of chitosan
2. Producing chitosan biomaterials that are targeting the wound healing market



## Work Packages (WPs)

### WP 1

Processing of crustacean biomass

### WP 2

Preparation and chemical/physical characterization of chitosan based biomaterials

### WP 3

Biological characterization of chitosan based biomaterials

### WP 4

Management, dissemination and training

### ChitoWound Website

<http://chitowound.elearning-chemistry.ro/>

## Consortium



Norwegian University of Science and Technology (NTNU)



SINTEF, Institute of Materials and Chemistry



Institute of Molecular Biology and Biotechnology (IMBB / FORTH)



West University of Timisoara (WUT), Faculty of Chemistry-Biology-Geography



Tallinn University (TU), School of Natural Sciences and Health



AlgiPharma AS

# WP Tasks

## WP 1 Tasks

**T 1.1** Enzymatic treatment of crustacean biomass for extraction of chitin

**T 1.2** Production of chitosan for targeted modifications

**T 1.3** Recovery, analysis and utilization of the peptide fraction from crustacean biomass

## WP 2 Tasks

**T 2.1** Preparation of chitosan batches with different molecular weight

**T 2.2** Peptide grafting of chitosans

**T 2.3** Enzymatic degradation of chitosans

**T 2.4** Characterization of modified chitosans

**T 2.5** Preparation of chitosan/alginate gels

## WP 3 Tasks

**T 3.1** Characterization of physico-chemical properties

**T 3.2** Antimicrobial properties

**T 3.3** Wound healing properties

**T 3.4** *In vivo* testing of biomaterials

## WP 4 Tasks

**T 4.1** Project management, coordination and training

# Course

**Module 1** Computational methods

**Module 2** Wound healing generalities

**Module 3** *In vitro* assays: antibacterial, biocompatibility and wound healing assays

**Module 4** Practical work: agar diffusion and wound healing assays

# Objectives

The objectives of **ChitoWound** are as follows:

- ❖ To increase the quality and reproducibility of chitin from crustacean waste by development of processing steps utilizing non-destructive enzymatic treatment of the biomass.
- ❖ To characterize the isolated protein/peptide fraction and explore potential use of this as a media component for microbial cultivation and for bioactive properties
- ❖ To produce large batches of chitosans with widely different chemical composition
- ❖ To increase functionality and value of these chitosans by peptide modifications
- ❖ To use the functionalized chitosans for creating new biomaterials targeted for wound healing applications, including also the preparation of new chitosan-based biomaterials
- ❖ To test the new chitosans and biomaterials in *in vitro* cell based assays