

Research line: Tissue regeneration scaffolds based on marine origin collagen

Research group: Universidade do Minho - 3B's Research Group (Biomaterials, Biodegradables and Biomimetics)

One of **3B's** goals is the valorization of marine resources, by isolation of **collagen** from several **marine resources**, and its use in the **development** of **biomedical applications**.

- **Collagen Extraction and Characterization**

Marine resources from where collagen is extracted:

Codfish skins	Salmon skins	Squid skins	Freeze-dried collagen from salmon skins
			

Collagen is characterized through different techniques: FTIR, DSC, Aminoacid analysis, SDS-PAGE and Circular dichroism.

- **Collagen-based Structures and Characterization**

3B's has been developing different collagen-based architectures, with the extracted marine collagen. Examples:

- ✓ **Scaffolds**, for bone regeneration. Also with hydroxyapatite to produce composites.
- ✓ **Solvent casting membranes** and
- ✓ **Electrospinning membranes**, both for the regeneration of several tissues (e.g. skin) and also for controlled drug delivery.

Developed architectures:

3D scaffolds – collagen and hydroxyapatite	Solvent Casting Membranes	Electrospinning Membranes
		

Scaffolds and membranes are characterized through different techniques: FTIR, DSC, Mechanical tests, Degree of hydrophobicity. To assess biological properties of the structures, *in vitro* and *in vivo* tests are performed.