# WP4

# Natural Materials for stem cell tissue engineering therapy

**Objectives:** to investigate the effect of the different selected materials on stem cells differentiation, by using different progenitor cells and considering tailored possible applications.

**Tasks:**

**Task 1** - Stem cells differentiation: Scaffolds able to trigger/control cells differentiation; Evaluation of the differentiation of human derived stem cells

**Task 2** - Growth factors

**Task 3** - Differentiation of commercially available animal mesenchymal stem cells

**Task 4** - In vitro and in vivo evaluation

**Task 5** - Bone and cartilage

## WP PROGRESS

- Specific processing methods were considered for stem cells encapsulation, focusing on hydrogels prepared by ultrasound treatment, SF $CO_2$, temperature treatments, and evaluated by using alginate based materials.

- Scaffolds so obtained are under investigation from the physical-chemical point of view and preliminary tests with stem cells are ongoing.

## Deliverables/Milestones

**Deliverables not yet achieved:**

D4.1- Fabrication and characterization of natural biomaterial scaffolds

**Milestones achieved:**

None due in year 1

## WP4 Secondments

| N. | Start date | Duration months | Type | Name | Destination | Activity / Major Achievements | Task |
|---|---|---|---|---|---|---|---|
| 25 | Apr. 2018 | 3 | ESR | Cristiano Carlomagno | CBNU | -Collagen-alginate-based matrix for stem cell incapsulation | T1 |
| 7 | Aug 2018 | 0,5 | ER | Antonella Motta | MUST | -Evaluation of experimental work on allium extract | T1 |
| 12 | Sept 2018 | 3 | ESR | Rita Sousa | CHU | -Training on biological protocols | T1, T4 |
| 26 | Sept 2018 | 3 | ESR | Isabel Oliveira | CBNU | -In vitro and in vivo preliminary biological evaluation of gellan gum based hydrogels<br>-Training on biological protocols | T1,T4 |

**Deviations occured from the initial plan:**

- D4.1-Fabrication and characterization of natural biomaterial scaffolds – not achieved. The foreseen delivery date has turned out to be too premature and the partners asked to move it to month 30
- Rescheduling of UMINHO ER Secondments - WP4 scientific work plan was not affected. UMINHO ER secondments are already planned for the next months
- Rescheduling of CBNU ESR Secondments - WP4 scientific work plan was not affected

**Future implementation**

Continue the work in progress related with the investigation from the physical-chemical point of view of the adequate scaffolds for stem cell differentiation and continue tests with stem cells to achieve D4.1