

Research Engineer - Development of a Human Osteoclast-Based Model for Biomaterial Biodegradation

Type of contract: 12 month fixed-term public contract/full-time
Category: Managerial
Job family: ENGINEER
Field of activity: research
Place of work: Saint-Etienne (42)
Earliest start date: 01/11/2026
Unit: Mines Saint-Etienne/Center for Biomedical Healthcare and Engineering/BIOMAT department
The position reports hierarchically to: Nathalie Douard, Associate Professor

Joining Mines Saint-Étienne means committing to an institution where **science and innovation build a more sustainable future**. It is a school of excellence where everyone has the **opportunity to unlock their full potential** and **contribute to tackling the challenges of tomorrow**.

Ranked among the top engineering schools in France and recognized worldwide, our school, a member of the *Institut Mines-Télécom*, educates the talents of tomorrow while actively addressing major industrial, digital, and environmental challenges. By joining us, you become part of a community of 500 members of staff, 2,500 students and take part in an ambitious project: combining academic excellence, cutting-edge research, and positive societal impact.

The *Institut Mines-Télécom* brings together France's leading *Grandes Ecoles* to tackle major industrial, digital, energy, and environmental challenges. With its eight public *Grandes Écoles* and two affiliated Graduate Schools, it is the leading public institute dedicated to engineers and managers. Together, we imagine and build a sustainable future by educating the leaders who will shape tomorrow's transitions.

At Mines Saint-Étienne, our research centres are the driving force of our School.

Designed as true innovation hubs, our five Research and Education Centres bring together their expertise to address major industrial, environmental, societal and technological challenges.

Their mission? To shape the world of tomorrow by combining academic excellence with tangible impact.

When technology meets medicine, the result is the Center for Biomedical Healthcare and Engineering.

From innovative medical devices (biomechanics, biomaterials, nanoparticles) to patient and hospital digital twins, the Center for Biomedical Healthcare and Engineering (CIS) develops tailored solutions to address today's healthcare challenges.

 Modelling, simulation, collective intelligence: our faculty members and researchers work closely with physicians, industrial partners and institutions.

 One ambition drives us all: improving healthcare and people's lives through science.

What we expect from you

As a Research Engineer, you will contribute to the research and innovation activities of the Center for Biomedical Healthcare and Engineering, within the Biomaterials Engineering Department. You will join

a multidisciplinary team developing innovative biomaterials for regenerative medicine, at the interface between materials science, cell biology and healthcare.

As part of the MARBLE project, funded by the French National Research Agency (ANR), we are recruiting a Research Engineer to further develop an experimental protocol for the *in vitro* characterization of biodegradation based on human osteoclast cultures. This protocol will be applied to evaluate the biodegradation of innovative calcium phosphate-based bioceramics containing specific dopants developed by a PhD student. The objective of the project is to gain a better understanding of the interactions between bone cells and these biomaterials in order to optimize their resorption and integration within bone tissue.

Based on previous work, the recruited Research Engineer will be responsible for establishing, optimizing and implementing a robust protocol for human osteoclast differentiation and culture, as well as developing methodologies to characterize biomaterial biodegradation.

The main responsibilities will include:

- Developing and optimizing a protocol for the differentiation of human osteoclasts from monocyte precursors.
- Performing cell culture experiments on doped calcium phosphate-based biomaterials.
- Evaluating osteoclast activity and characterizing biomaterial biodegradation using biological, imaging and analytical methods.
- Identifying and performing specific cellular analyses to study the biodegradation (staining, immunostaining, resorption assays, viability assays, microscopy, molecular analyses depending on project requirements).
- Contributing to the development, optimization and validation of experimental protocols to ensure robustness and reproducibility.
- Ensuring experimental traceability, data analysis and interpretation, as well as presenting results.
- Participating in ANR project meetings and contributing to the scientific dissemination of results (reports, conference presentations, publications).
- Contributing, together with other team members, to the transversal activities of the cell culture facility and participating in the scientific and technical life of the team.

Success in this position will rely on your ability to conduct rigorous experimental work, manage research activities in a project-based environment and collaborate effectively within a multidisciplinary team.

🔍 What we are looking for

You hold a PhD, Engineering degree or Master's degree with significant experience in cell biology. Experience in cell culture is essential. Experience in bone biology (osteoclasts, osteoblasts), healthcare-related biomaterials and/or image processing would be highly appreciated.

You are autonomous, rigorous and well-organized, with a strong interest in experimental research and the ability to manage multiple tasks simultaneously. You have excellent analytical, synthesis and communication skills, both written and oral.

You enjoy working as part of a team, sharing knowledge and contributing to a collaborative research environment. A good command of scientific English is expected.

Why join Mines Saint-Étienne?

We support each of our employees on the path to excellence, with the conviction that together, **we can have a lasting and significant impact on our world.**

Joining Mines Saint-Etienne is the opportunity to find:

- **A stimulating environment:** Cutting-edge experimental resources, a welcoming working environment and a solid international network (T.I.M.E., EULIST).
- **A real impact:** Contractual research projects worth €11 million/year, mainly with industrial partners, A science culture centre, *La Rotonde*, which has been committed to science outreach for 25 years, welcoming over 50,000 visitors per year.
- **An incomparable quality of life:** 49 days of paid leave, partial remote working, 75% reimbursed public transport, financial support for carpooling and cycling and a social barometer where 83% of employees praise the quality of life at work.

Let's build a more sustainable future, through **science, engineering, and projects that make sense.**

Apply now!

Application deadline: 31/08/2026

 Applicants are required to submit their application documents (CV, cover letter, letter of recommendation if applicable, and proof of identity) through the RECRUITEE platform.

<https://institutminestelemrecrutee.com/o/ingenieure-ou-ingenieur-de-recherche-en-developpement-dun-modele-de-biodegradation-par-osteoclastes-humains-cdd-12-mois>

As part of its Equality, Diversity, and Inclusion policy, the École des Mines de Saint-Étienne is committed to fair treatment of all applicants.

Additional information

- Remuneration set according to the candidate's profile, according to the rules defined by the management framework of the *Institut Mines Télécom*
- The positions offered for recruitment are open to all with, on request, facilities for candidates with disabilities
- All applications may be subject to an administrative investigation

The selected candidates, after review of their applications, will be invited for interviews on **14/09/2026** in Saint-Etienne

Contacts

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