MYBIOTECH
CDMO Experts in Nanomedicine

Doctoral Candidate Position (m/w/d)

Location: 66802 Überherrn, Germany **Employment type:** Full-time **Start date:** 01.04.2027

Application deadline: 30.11.2026

About the project

IDEAS - Improving drug efficacy with next-generation amorphous materials and trained experts.

The Marie-Skłodowska Curie Doctoral Network (MSCA DN): "Improving drug efficacy with next-generation amorphous materials and trained experts", (IDEAS) funded by the European Community is **recruiting 15 young researchers**.

The doctoral candidates (DCs) will be trained not only to perform original and independent research on an internationally competitive level, but also in developing creative, critical and entrepreneurial mindsets, to be prepared for a wide spectrum of career opportunities.

The IDEAS Doctoral Network is designed to empower a new generation of young scientists in the field of amorphous pharmaceutical systems, strengthening Europe's biotech/pharma industry and academic innovation capacity. This effort demands a unified project bringing together the cross-disciplinary expertise of academic research groups in materials science, physics, chemistry, and pharmacy, alongside industry partners. The network comprises a consortium of 7 universities (University of Lille, University of Pisa, University of Silesia in Katowice, Polytechnic University of Catalonia, Université Catholique de Louvain, Trinity College Dublin, NOVA University of Lisbon), 2 large companies (Janssen Pharmaceutica, Zentiva) and 1 SME (MyBiotech). Through this programme, the fellows will collaborate to develop eco-friendly manufacturing technologies for amorphous materials, establish science-based control over material properties, and explore a wide range of materials to achieve efficient production of high-quality amorphous formulations. This advanced research-driven training will be further enriched with dedicated training events (e.g., online and in-person workshops, summer schools) and intersectoral and interdisciplinary mobility through secondments. After having completed their studies and the IDEAS programme, this innovative and multidisciplinary training will qualify this new generation of scientists not only for an academic career, but also for working in industry and beyond.

See also https://ideas-msca.eu/ for more details.

Note that all of projects have their individual job advertisement. Candidates can apply for a maximum of THREE projects. The DCs will be employed by the host institution of the selected project and enrolled in the host organisation's or affiliated university's PhD programme.

General job description

- manage and carry out the individual research project;
- participate in the IDEAS training and network activities;
- take PhD courses;
- write scientific articles and the PhD thesis;
- participate in national and international congresses and scientific meetings;
- research stay at external research laboratories or company sites;
- disseminate the research outcomes;
- participate in the undergraduate teaching of students.

Research project description

DC 15 at MyB (Germany) – Design of polymeric drug delivery systems for biopharmaceuticals using green microfluidic manufacturing technologies.

Context: Biopharmaceuticals—such as proteins, peptides, and biologics—are revolutionizing modern medicine but remain challenging to formulate and deliver due to their structural fragility, instability, and susceptibility to degradation. Polymeric nanoparticle-based delivery systems offer a promising strategy to enhance stability, control release kinetics, and improve bioavailability. However, their production through conventional batch methods often suffers from poor reproducibility, limited scalability, and significant solvent and energy consumption.
Objectives: This project aims to develop protein-loaded polymeric nanoparticles using green and continuous microfluidic reactor technologies. These systems will enable precise control over particle size, morphology, and release behaviour while minimizing solvent waste and energy usage. The resulting delivery platforms will provide tuneable, stable, and sustainable carriers for a wide range of therapeutic biomolecules.
Expected results: Protein-loaded polymeric nanoparticles with tuneable size, morphology, and release kinetics, produced by green continuous microfluidic technology; Establishment of process–structure–property relationships for predictive design of nanoparticle-based biopharmaceutical formulations; Environmentally sustainable and scalable manufacturing protocols, reducing solvent use, waste generation, and energy consumption; Improved encapsulation efficiency and stability of therapeutic proteins and peptides, enhancing bioavailability and therapeutic efficacy. Industrial translation of the developments obtained.
Research Methodology: The doctoral candidate will employ microfluidic reactor systems as eco-efficient, continuous manufacturing tools for the production of protein-loaded polymeric nanoparticles. Microreactor platforms provide precise control over mixing, residence time, and solvent exchange, leading to nanoparticles with narrow size distribution and high reproducibility. Key materials will include biocompatible and biodegradable polymers such as PLGA, PEG, and chitosan derivatives. Process conditions will be optimized for high encapsulation efficiency and protein stability. The influence of microreactor design and operational parameters (channel geometry, flow ratio, solvent polarity) on particle size and drug release will be systematically studied. Tangential Flow Filtration (TFF) may be integrated as a downstream purification step to remove non-incorporated materials and concentrate the formulation. Comprehensive characterization will be performed using DLS, TEM, DSC, FTIR, and UV–Vis spectroscopy, along with in vitro release and stability assays under physiologically relevant conditions.
Planned secondments:
• University of Pisa (Italy): Advanced physicochemical characterisation.

Conditions and Remuneration

Extent of employment: **Full time**

Duration of employment: Limited to 36 months

IDEAS will cover three years of full-time research.

This doctoral position DC15 is fully funded by the Marie Skłodowska Curie Action Industrial Doctorate **IDEAS** (HORIZON – MSCA – 2025 – DN-01-01). The monthly gross salary will comprise a living allowance (€4010/month corrected with the country factor of the recruiting institution (before taxes and including employer contribution), mobility allowance (€710/month) and if applicable a family allowance (€660/month). The family allowance will be implemented if the doctoral candidate has or acquires family obligations (i.e. marriage or relationship with equivalent status to a marriage recognised by the legislation of the country or region where this relationship was formalised or dependent children who are actually being maintained by the researcher) during the action duration.

Please note: National and institutional taxes, and social contributions apply to all DC fellowships and will be deducted from the allowances. The provided amount is not conclusive, and a country correction coefficient applies to the living allowance in order to ensure equal treatment and purchasing power parity for all researchers and will be defined prior the recruitment starting. For further details see the specific positions following the link provided in the section above.

For more info on MSCA-DN visit the website https://marie-sklodowska-curie-actions.ec.europa.eu/actions/doctoral-networks

Requirements

Research Field

Chemistry (Applied chemistry, Biochemistry, Inorganic chemistry)
Engineering (Biomaterial engineering, Chemical engineering, Materials engineering)
Technology (Biotechnology, Chemical technology, Industrial technology, Materials technology, Nanotechnology, Pharmaceutical technology)
Environmental science (Natural resources management)
Pharmacological sciences (Pharmacy)

Education Level

Master's degree or equivalent (see below)

Skills/Qualifications

General requirements for admission into IDEAS

- Applicants **must** be eligible (see eligibility criteria below)
- Applicants **must** hold a BSc, MSc or equivalent degree in a related subject area, **as required by the specific research project (see below)**.
- Applicants must have the necessary academic skills and background to make the success of a doctoral degree. The skills needed will depend on the project chosen.

- Applicants **must** be sufficiently proficient in written and spoken English (English CEFR at least B2, preferable C1 or higher. IELTS 6, preferably higher. Project-specific requirements apply).
- DC applicants must fulfil the local requirements of the recruiting institutions.
- Applicants must be eligible to enrol on a PhD programme at the host institution.

Furthermore, all future DCs of IDEAS should demonstrate:

- A high willingness to travel.
- Independent problem-solving skills.
- High resilience and flexibility.
- Excellent communication skills.
- Integrity, team spirit, dedication to science and learning, dependability, punctuality, pro-activity.
- Interest to work in an intersectoral, interdisciplinary team and to learn new techniques, methods etc. also outside their comfort zone.
- A high competence level in scientific writing and public speaking as required by the discipline of the project.
- Proficiency with computers, office, web-based learning.
- Willingness to participate in outreach activities, conferences, extracurricular events etc.

Specific additional requirements and experience required for the research project DC15 at MyBiotech GmbH

- The candidate must not be already in possession of a doctoral degree at the date of the recruitment. Researchers who have successfully defended their doctoral thesis but have not yet formally been awarded the doctoral degree will not be considered eligible.
- Degree in life science (included but not limited to chemistry, pharmacy, biotechnology, etc) or related field. M.Sc. preferred.
- Experience in at least one of the following areas: chemistry, (bio)chemical engineering, pharmacy, pharmaceutical technology, biotechnology
- Practical experience in laboratory environment is a plus.
- Basic knowledge of data analysis and Microsoft Office.
- Good organisation and communication skills, willing to travel for short or longer periods.
- Flexible and co-operative with a well-structured and autonomous working style.
- Fluency in written and spoken English is a must. German knowledge is a plus.

Languages

ENGLISH; Level: Excellent

Additional Information

Eligibility criteria

The applicant must comply with the following criteria to be eligible for any project in IDEAS:

- Applicants **must fulfil the mobility rule:** Applicants must not have resided or carried out their main activity (work, studies, etc.) in the country of the host organisation for more than 12 months in the 3 years immediately before the recruitment date. (Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status are not taken into account.).

- Applicants **must not hold a PhD** or equivalent doctoral degree.
- Applicants **must not have a conflict-of-interest** with their future supervisors (family, relationship, economic interest…).

Selection process

Application

https://ideas-msca.eu/open-positions/

Applicants are requested to submit their application for **one to three** positions within IDEAS electronically (docx of pdf format).

The application should contain (please adhere to the naming conventions for the documents as laid out in the application form):

- A completed application form (download from https://ideas-msca.eu/open-positions/), including an indication which 1-3 preferred laboratories / research projects within IDEAS you would like to join
- Research Exposé: Max. two pages on your previous research (e.g. BSc and/or Master's thesis). The aim is to evaluate your scientific writing skills and ability to present information in a precise and concise way.
- Your current academic CV (max. 4 pages)
- Your graduation certificate (if available) and academic transcript incl. university grades. Foreign documents must be sent as certified English translations. These documents must show the grades attained in exam periods, when applicable, and evidence that the required degree will be obtained by the expected time of recruitment if it has not already been awarded.
- Proof of English language proficiency (if available)
- Up to three letters of reference in support of your application (Mandatory template to be used). Applicants will be responsible for ensuring that referees submit these letters on time to coordinator-ideas@univ-lille.fr.

All documents must be sent to: coordinator-ideas@univ-lille.fr with all the required documents. Please title the email: "IDEAS application[your first and last name]".

Only complete applications sent in will be considered for the selection procedure. The shortlisted candidates at some of the partner institutions might then need to apply also through the institution's official recruitment channels.

Selection procedure

The IDEAS selection procedure for DCs will be open, transparent, merit-based and in line with the European Code of Conduct for the Recruitment of Researchers.

The recruitment process consists of an **initial written application (see above)**. Eligible applications will be ranked by a selection committee based on:

- the quality of the applicant's CV and academic record,
- the quality of the written exposé,
- the motivation of the applicant to join IDEAS and the selected project(s),

- the fulfilment of the required and desired criteria for the selected project(s)
- the applicant's technical expertise for the selected project(s),
- the referee sheets and letters of recommendation.

Those not selected will be informed. Shortlisted applicants will be invited for **interviews at the selected host institution(s)**, preferably online, or where possible, in person.

Interviewed candidates will be ranked and invited to join IDEAS in order of their ranking. This process may take a few weeks. We will keep a small number of candidates on a reserve list just in case candidates pull out before the final recruitment stage. Successful candidates will be informed as soon as possible after the interview.

Successful candidates will be subsequently enrolled into the PhD programmes of appropriate universities. This is a separate process that may require additional documentation and qualifications such as language tests. These will be made known to candidates.

MSCA will cover three years of full-time research.