



Faculty of Mathematics and Natural Sciences

PhD position (f/m/x) in protein homeostasis (proteostasis)

Institute for Plant Sciences | AG Zuccaro

We are one of the largest and oldest universities in Europe and one of the most important employers in our region. Our broad range of subjects, the dynamic development of our main research areas and our central location in Cologne make us attractive for students and researchers from around the world. We offer a wide range of career opportunities in science, technology, and administration.

This position will be located at the Institute for Plant Sciences at the Cologne Biocenter. Dr Ernesto Llamas will lead the project in collaboration with Professor Alga Zuccaro (CEPLAS) and Professor David Vilchez (CECAD).

Unlike animals, plants have chloroplasts that expand their repertoire of protein homeostasis (proteostasis) mechanisms. We found that chloroplast proteostasis components enable plants to prevent aggregation of the pathogenic fragment of the human protein huntingtin. This discovery opens new possibilities for treating human proteinopathies using plant-based molecular mechanisms. We showed that the expression of a synthetic plant protein reduces the aggregation of huntingtin in human cells and *C. elegans*.

(Nature Aging, In press; see Llamas et al., 2022, bioRxiv <https://www.biorxiv.org/content/10.1101/2022.03.19.484971v1>).

The selected candidate will focus on improving synthetic plant-derived proteins to develop a potential therapy for treating Huntington's disease or other neurodegenerative diseases associated with protein aggregation.

YOUR TASKS

- » Explore how plants deal with human toxic proteins that tend to aggregate.
- » Use synthetic biology and directed evolution to improve protein activity.
- » Work with different research models to study neurodegenerative disorders such as other polyQ diseases and amyotrophic lateral sclerosis (ALS).
- » Get involved in the development of patents and the creation of start-ups.
- » Write and publish scientific articles.

YOUR PROFILE

- » A talented, highly motivated, and enthusiastic researcher with a Master's degree (or equivalent) in biology, biochemistry, or related disciplines.
- » Applicants should have experience in one or more of the following areas: plant biotechnology, synthetic biology, proteostasis, and neurodegenerative diseases.

- » Applicants should show a high degree of self-initiative and individual responsibility as well as excellent oral and written communication skills in English.
- » Applicants should be open to actively engaging in discussions and collaborations with research centres and the pharma industry.

WE OFFER

- » A highly motivated, international and committed team embedded in a highly interdisciplinary research environment
- » A diverse working environment with equal opportunities
- » Support in balancing work and family life
- » Extensive advanced training opportunities
- » Occupational health management offers
- » Flexible working time models

The University of Cologne is committed to equal opportunities and diversity. Women are especially encouraged to apply and will be considered preferentially in accordance with the Gender Equality Act of the State of North Rhine-Westphalia (LGG NRW). We also expressly welcome people with disabilities/special needs or of equal status.

The position is available from 01.01.2024 on a part-time basis (25,89 hours per week). The contract is for a fixed-term period of 3 years. If the applicant meets the relevant wage requirements and personal qualifications, the salary will be based on remuneration group 13 TV-L of the pay scale for the German public sector.

Please apply online with proof of the required qualifications without a photo under: <https://jobportal.uni-koeln.de>. The reference number is Wiss2309-11. The application deadline is 17.10.2023.

For further inquiries, please contact Dr Ernesto Llamas (ellamasp@uni-koeln.de).