

Hier  
entsteht  
Zukunft!



UNIVERSITÄT  
DES  
SAARLANDES

Foto: Oliver Dietze



Saarland University is a campus university that is internationally recognized for its strong research programmes. Fostering young academic talent and creating ideal conditions for teaching and research are a core part of the university's mission. As part of the University of the Greater Region, Saarland University enables students and staff to share and exchange knowledge and ideas between disciplines, between universities and across borders. With over 17,000 national and international students, studying more than a hundred different academic disciplines, Saarland University is a diverse and dynamic learning environment. [Saarland University is officially recognized as one of Germany's family-friendly higher-education institutions and with a combined workforce of more than 4,000 it is one of the largest employers in the region.]

The department for Biophysics is inviting applications for the following position commencing at the earliest opportunity

## Academic research assistant (m/f/x)

**Reference number W2264**, salary in accordance with the German TV-L salary scale<sup>1</sup>, pay grade: E13 TV- L, duration of employment: initially one year with the opportunity for extension, volume of employment: 50 % of standard working time.

### Workplace/Department:

Biological Experimental Physics, Chair of Prof. Dr. Albrecht Ott

### Non-Canonical Amino Acid Incorporation into Proteins Using a Cell Free Expression System – Cooperative Effects

We are a biophysics group. We study the incorporation of amino acids into proteins. Experiments are performed with an innovative *E. coli*-based cell-free gene expression system(1). We are interested in the incorporation of non-canonical amino acids acting as surrogates for canonical ones. Our project focus is on competitive situations where both species are simultaneously. Due to a process called "kinetic proofreading" at the level of the synthase, the presence of canonical amino acids will prevent effective incorporation of non-canonical ones. However, we successfully incorporated canavanine, an arginine analog, and hydroxylysine, a lysine analog (2,3). In addition, we

<sup>1</sup> TV-L = collective agreement on remuneration of public sector employees in the German *Länder*

The pay grade assigned to an employee depends on their professional qualifications and the number of years of service. Each pay grade is further subdivided into levels. Entry-level employees with no previous experience will initially be assigned a level 1 rating. After one year at level 1 of the E10 pay grade, an employee will move up to level 2. After a further two years, the employee will move to level 3, etc.

could already find first hints for cooperative effects in the competitive amino acid incorporation. Previously we observed that the presence of a competitor can have surprising effects on the binding pattern of DNA due to cooperativity (4,5). We expect that similar effects occur for binding in connections with synthases and in general throughout the organism. Since the aminoacylation of tRNAs is the initial step of amino acid incorporation, we focus on this level. We plan to show that the observed cooperative binding will also occur during the aminoacylation of tRNAs. First experiments were already performed and gave promising results - it will be your task to continue from that point on for a PhD.

(1) E.G. Worst, M.P. Exner, A. De Simone, M. Schenkelberger, V. Noireaux, N. Budisa and A. Ott. Residue-specific incorporation of noncanonical amino acids into model proteins using an Escherichia coli cell-free transcription-translation system J. Vis. Exp. [114 \(2016\) 54273](#)

(2) E. G. Worst, M. P. Exner, A. De Simone, M. Schenkelberger, V. Noireaux, N. Budisa and A. Ott. Cell-free expression with the toxic amino acid canavanine Bioorganic & Medicinal Chemistry Letters [25 \(17\) \(2015\) 3658](#)

(3) M. Finkler, S. Ravanbodshirazi, F. Grimm, P. Hartz, A. Ott. Full incorporation of the noncanonical amino acid hydroxylysine as a surrogate for lysine in green fluorescent protein. Bioorg. Med. Chem. 41 (2021) 116207

(4) M. Schenkelberger, C. Trapp, T. Mai, V. Giri, M. Mohammadi-Kambs, A. Ott. Ultrahigh molecular recognition specificity of competing DNA oligonucleotide strands in thermal equilibrium: a cooperative transition to order New Journal of Physics [23 \(2021\) 043044](#)

(5) M. Mohammadi-Kambs, A. Ott. DNA oligomer binding in competition exhibits cooperativity New J. Physics [483 \(2019\) 113027](#)

#### **Job requirements and responsibilities:**

- Basic knowledge in molecular biology
- Ability to learn fast as part of a team
- Skilled in either English or German or both

#### **Your academic qualifications:**

- A master's degree in biophysics, biochemistry, physics or a comparable field

#### **The successful candidate will also be expected to:**

- Learn German
- Work as a member of a team

#### **What we can offer you:**

- A flexible work schedule allowing you to balance work and family, among other things the possibility of teleworking
- Secure and future-oriented employment with attractive conditions
- A broad range of further education and professional development programmes (for example language courses)
- An occupational health management model with numerous attractive options, such as our university sports programme
- Supplementary pension scheme (RZVK)
- Discounted tickets on local public transport services ('Job-Ticket Plus' of the saarVV)

We look forward to receiving your **meaningful online application** (in a PDF file) by **02.04.2023** to **stephanie.uhrig@uni-saarland.de**. Please include the reference number **W2264** in the subject line of the e-mail.

If you have any **questions**, please contact us for assistance. Your contact:

Stephanie Uhrig

stephanie.uhrig@uni-saarland.de

Pay grade classification is based on the particular details of the position held and the extent to which the applicant meets the requirements of the pay grade within the TV-L salary scale. Part-time employment is generally possible.

If you have obtained a foreign university degree, a proof of the equivalence of this degree with a German degree by the Zentralstelle für ausländisches Bildungswesen (ZAB) is needed before hiring. If necessary, please apply for this in time. You can find more information at <https://www.kmk.org/zeugnisbewertung>.

Unfortunately, neither costs for attending an interview at Saarland University nor costs for any certificate evaluation by the ZAB can be reimbursed in principle.

We welcome applications regardless of gender, nationality, ethnic and social origin, religion/belief, disability, age, and sexual orientation and identity. In accordance with its policy of increasing the proportion of women, the University actively encourages applications from women. Applications from severely disabled persons will be given preferential consideration in the event of equal suitability.

When you submit a job application to Saarland University you will be transmitting personal data. [Please refer to our privacy notice for information on how we collect and process personal data in accordance with Art. 13 of the Datenschutz-Grundverordnung](#). By submitting your application you confirm that you have taken note of the information in the Saarland University privacy notice.