Bridging regulatory science and innovation for dermal generics and advanced skin therapies

DC10: Extension of quantification of topically applied materials by in vivo CRS from Stratum Corneum to deeper skin layers

Host institution: Eberhard Karls University of Tübingen (EKUT), Pharmaceutical Technology and Biopharmacy, Germany

Supervisor: Prof. Dominique Lunter

Co-supervisors: Prof. Paulo Paixão, University of Lisbon (Academic); Dr. Gerwin Puppels, RiverD International B.V. (Industrial)

Project description: Confocal Raman spectroscopy (CRS) is a non-invasive in vivo technique increasingly used to quantify the penetration of topically applied substances within the stratum corneum. However, its application is currently limited to superficial skin layers, restricting its ability to fully characterise drug distribution and penetration into deeper viable epidermal and dermal regions. This represents a limitation for its broader use in regulatory assessment under the EMA guideline on quality and equivalence of cutaneous products.

The aim of this project is to extend the capabilities of CRS to enable quantitative assessment of topically applied materials beyond the stratum corneum and into deeper skin layers. The project will focus on methodological developments, including optimisation of signal acquisition, data processing and calibration approaches, to improve depth resolution and quantitative accuracy.

The enhanced CRS methodology will be validated using model compounds and formulations, with results compared to established ex vivo and in vitro methods. The resulting data will support the development of a robust and validated framework for in vivo quantification of dermal penetration across multiple skin layers. The outcomes will contribute to expanding the applicability of CRS as a non-invasive tool for regulatory evaluation and product development, in alignment with the EMA guideline.

Host laboratory: The doctoral candidate will be hosted at the Institute of Pharmaceutical Sciences, Eberhard Karls University of Tübingen (EKUT), Germany. The laboratory provides expertise in dermal formulation science, skin penetration studies and regulatory science, with access to advanced analytical platforms and strong collaboration with industrial and clinical partners. It operates within a network supporting translational and regulatory-relevant research.

The University of Tübingen is committed to equity and diversity and actively promotes equal opportunities. The University seeks to raise the number of women in research and therefore encourages qualified female academics to apply for the position. Disabled candidates will be given preference over other equally qualified applicants.

The employment will be handled by the central administration of the University of Tübingen.

Secondments: This project is carried out in collaboration with the following company partners, and extended mobility to their laboratories is expected during the project:

- 9 months at PhD Trials Lda, Portugal (supervisor: Dr. Pedro Pinto)
- 9 months at RiverD International B.V., Netherlands (supervisor: Dr. Gerwin Puppels)

A willingness to travel and spend time abroad is therefore essential.

Tentative starting date: 1st Nov 2026

Eligibility conditions:

- Master's degree in biophysics, pharmaceutics, biochemistry, or related fields.
- Applicants must be doctoral candidates, i.e not already in possession of a doctoral degree.
- Mobility rule: researchers must not have resided or carried out their main activity in the country of the recruiting beneficiary for more than 12 months in the 36 months immediately before their recruitment date.

Required skills:

- Strong background in biophysics, biochemistry, pharmaceutical sciences, or a related field.
- Prior experience with laboratory-based research including spectroscopic analytical techniques applied to skin or mammalian tissues and/or skin penetration research is highly desirable.

- Strong affinity for mathematics, data analysis, and statistics, with experience in MATLAB and/or Python is considered an advantage.
- Strong affinity for clinical research, including interaction with study participants is considered an advantage.
- Proficiency in the English language is required (minimum C1 level), as well as good communication skills, both oral and written. Successful candidates will need to provide an English test (e.g. IELTS, TOEFL, Cambridge English). You may be exempt if you are a national of a majority native-English speaking country, or have qualifications / degree that has been taught and assessed in English. The supervisor may also confirm that a candidate has the required level of English.

Remuneration:
The Doctoral Candidate will receive a gross yearly salary of ~48000 EUR in accordance with the MSCA Doctoral Networks programme, including a living allowance and a mobility allowance. This amount corresponds to the contractual gross salary and is indicated before deduction of employer costs, employee taxes and social security contributions. An additional family allowance (if applicable) is foreseen. The net salary will depend on local taxation, social security and employment regulations.

Enquiries:
For general information about the guideSkin Industrial Doctorate visit the project website (https://guideskin.eu/). Recruitment will be managed by the respective host or recruiting organisation. For additional information on this project, please contact Prof. Dr. Dominique Lunter (dominique.lunter@uni-tuebingen.de).

How to apply
Please send all the documents detailed below as one pdf file to dominique.lunter@uni-tuebingen.de.

Required documents:

- Statement of interest (limit of 2,500 characters) explaining why you wish to be considered for the fellowship and which qualities and experience you will bring to the role.
- Curriculum vitae et studiorum.
- A certificate of University examinations taken (with marks).
- A final degree certificate translated in English. If, at the time of application, candidates should not be yet in possession of a degree certificate, they can submit it at the time of the examination. However, if successful, the candidate will be required to provide a translated and legalised certificate as proof of eligibility for doctoral admission.

A limited number of applicants will be invited for an interview and will be required to provide contact information of up to two contact person for reference letters.

Application deadline: The closing date for applications is **31st July 2026.**