



Postdoctoral Position in RNA Nanocarrier Design

The EPFL's Laboratory of Biomolecular Engineering and Nanomedicine (LIBN), headed by Prof. Angela Steinauer, is excited to announce an opening for a postdoctoral researcher position in RNA Nanocarrier Design.

Main duties and responsibilities include:

1. **Protein Design:** Utilize rational and computational tools to design innovative protein-based RNA nanocarriers.
2. **Molecular Biology and Protein Production:** Clone and produce the designed proteins, ensuring high-quality outputs for subsequent experiments.
3. **Characterization of Designed Proteins:** Conduct structural characterization using Transmission Electron Microscopy (TEM) and cryo-Electron Microscopy (cryoEM). Assess RNA loading and integrity through quantitative PCR (qPCR) and digital PCR (dPCR).
4. **Efficacy Testing in Cell Culture Models:** Evaluate the delivery efficiency of nanocarriers in relevant cell culture models. Analyze RNA translation and perform functional assays to determine the effectiveness of the designed systems.
5. **Research Execution and Communication:** Develop a comprehensive research plan to design RNA nanocarriers, rigorously analyze experimental data using advanced tools, and effectively disseminate findings through scientific publications and presentations, guiding the project's scientific direction and contributing to the broader scientific community.

Your profile:

The successful candidate is expected to hold a **PhD degree in Biochemistry, Molecular Biology, Chemical Biology, Bioengineering, Biophysics** or a **closely related discipline** with outstanding academic record indicated by publications in peer-reviewed scientific journals and international conferences. Specialization in **protein design, RNA biology, or cryo-EM** is highly desirable.

In addition, the following qualifications are desired:

Technical Skills:

- **Protein Design and Production:** Demonstrated experience in protein design using rational and computational approaches. Proficiency in molecular biology techniques for cloning and protein production.
- **Structural Biology Techniques:** Skilled in structural characterization methods, particularly TEM and cryoEM.
- **RNA Techniques:** Experience with RNA handling, including qPCR and dPCR, for assessing RNA loading and integrity.
- **Cell Culture and Assays:** Proficiency in working with cell culture models, including conducting delivery efficiency assessments, RNA translation studies, and functional assays.
- **Data Analysis:** Strong analytical skills with experience in statistical and computational data analysis. Familiarity with relevant software and tools.

Personal Attributes:

- **Innovative Thinking:** Ability to think creatively and propose novel solutions to complex scientific problems.

- **Collaborative Spirit:** Strong interpersonal skills and the ability to work effectively in a collaborative research environment.
- **Communication Skills:** Excellent written and verbal communication skills, with the ability to disseminate research findings effectively.
- **Detail-Oriented:** Meticulous attention to detail in experimental design, execution, and data analysis.
- **Self-Motivated:** High level of self-motivation and the ability to work independently when required.
- **Commitment to Diversity and Inclusion:** A demonstrated commitment to contributing to a diverse and inclusive research environment.

We offer:

- **Emerging Research Environment:** Join a new, dynamic laboratory at EPFL focused on innovative biomolecular engineering and nanomedicine.
- **Collaborative Team:** Work in a supportive, interdisciplinary team environment.
- **Career Development:** Engage in groundbreaking research with opportunities for publication and conference participation.
- **State-of-the-Art Facilities:** Benefit from access to advanced research tools and technologies.
- **Competitive Compensation:** Receive a competitive salary and benefits package, aligned with EPFL standards.
- **Life in Lausanne:** Enjoy Lausanne's rich cultural scene, natural beauty, and dynamic academic environment.
- **Commitment to Diversity:** Be part of a lab that values diversity and promotes an inclusive work culture.

Keywords:

Protein design, protein engineering, directed evolution, RNA delivery, virus-like capsids

Group website:

<https://www.epfl.ch/labs/libn/>

Group leader: Prof. Angela Steinauer

Relevant publications:

1. *Tetter, S.; *Terasaka, N.; ***Steinauer, A.**; Bingham, R. J.; Clark, S.; Scott, A. P.; Patel, N.; Leibundgut, M.; Wroblewski, E.; Ban, N.; Stockley, P. G.; Twarock, R.; Hilvert, D. "Evolution of a virus-like architecture and packaging mechanism in a repurposed bacterial protein." *Science* **2021**, 372, 1220–1224. DOI: 10.1126/science.abg2822. *equal contribution

1. Edwardson, T. G. W.; Levasseur, M. D.; Tetter, S.; **Steinauer, A.**; Hori, M.; Hilvert, D. "Protein Cages: From Fundamentals to Advances Applications." *Chem. Rev.* **2022**, 122, 9145–9197. DOI: 10.1021/acs.chemrev.1c00877.

Start date: 1.7.2024 (flexible)

Term of employment: Fixed-term (CDD)

Work rate: 100%

Duration: 1 year renewable

Contact:

Please send your application with the subject line «LIBN 2024 Postdoctoral Position» to angela.steinauer@epfl.ch in a single pdf file containing following information: cover letter, CV, transcript, list of publications, and contact details of at least three referees.