



Shaping change: this is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association with some 7,600 employees, we conduct interdisciplinary research into a digitalized society, a climate-friendly energy system, and a sustainable economy. We focus on the natural, life, and engineering sciences in the fields of information, energy, and bioeconomy. We combine this with expertise in high-performance computing and artificial intelligence using unique scientific infrastructures.

Are you eager to pursue a project that bridges scientific disciplines? Are you excited by complex challenges that demand interdisciplinary solutions? Are you fascinated by swimming in the microcosmos? Do you care for making the world a better place? Then Sperm Dynamics is for you! In this collaborative project you have the opportunity to learn biology and physics alike, while working to reduce animal suffering and simultaneously increasing farming efficiency.

Inspired by the natural fertilization process, the "Sexing by Self-Propulsion" (SEB) project is developing a new platform technology for determining the sex in animal farming by sorting the sperm. The project uses differences in the movement patterns of X and Y sperm to separate them without the traditional methods of DNA labeling with fluorescent dyes. The innovative approach relies on microfluidic structures in which the sperm can self-sort based on minimal differences in movement. If successful, severe animal suffering like neutering of piglets or neglect of calves can be avoided.

**Join our team to the next possible date as**

## PostDoc - Quantifying Sperm Dynamics

### **Your Job:**

This work will be performed as part of an agile team unified by a common goal: An Industry partner from semen production provides fresh sperm cells and pre-analysis. A second industry partner from data sciences provides data management and AI based Image analysis, an internal simulations group working on quantitative models to reproduce and predict experimental data, and an internal experiments group (You+Supervisor+support by lab). These collaborations enable practically relevant and breakthrough results.

This team goal requires initially videomicroscopy of X-Y fluorescently labeled sperm cells to develop a quantitative model. Once established, predicted separation mechanisms need to be tested. You will perform these experiments.

Your tasks will include:

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our

**Online-Recruitment-System!**

**Questions about the vacancy?**

Get in touch with us by using **our contact form**.

Please note that for technical reasons we cannot accept applications via email.

[www.fz-juelich.de](http://www.fz-juelich.de)

- Adapt existing DNA labeling protocols to our Workflow
- Performing microscopy experiments on sperm dynamics under various controlled environmental conditions
- Merging experimental results, simulations, and literature for optimal conditions inducing movement differences, in collaboration with the team
- Testing proposed separation techniques
- Participation in conferences in Germany and abroad (incl. presenting your research results)
- Travel to industry partners to learn and set up on-site research
- Preparing scientific publications and project reports

**Your Profile:**

- Strong motivation for an interdisciplinary project that combines physics and biology together with simulation and data science and practical relevance
- A master's degree or diploma and subsequent PhD in biophysics, biology, biochemistry, or other relevant discipline
- Excellent written and spoken English skills
- High degree of independence and commitment
- Experience in relevant work tasks are advantageous but not mandatory: Wet-Lab work, ideally with sperm cells and/or labelling, Different forms of microscopy, Programming

**Our Offer:**

We work on highly topical, socially relevant issues and offer you the opportunity to actively shape change! You can expect a wide range of opportunities:

- EXCELLENCE IN RESEARCH: As one of Europe's largest and most multidisciplinary research centres, Forschungszentrum Jülich provides access to world-class infrastructure and a vibrant international scientific community.
- INTERNATIONAL ENVIRONMENT: Work in an experienced and friendly international research team with strong expertise in biophysics and soft matter.
- INDUSTRY COLLABORATION: Benefit from direct integration into a science-industry collaboration with practical relevance
- HIGH-PERFORMANCE COMPUTING: Leverage cutting-edge computational resources, including access to top European supercomputers on site.
- STATE-OF-THE-ART INFRASTRUCTURE: Enjoy excellent scientific and technical infrastructure — both within the group and across the entire research campus.
- NETWORKING: Participate in (international) conferences and project meetings
- FLEXIBILITY: Flexible working time models, including options close to full-time (<https://go.fzj.de/near-full-time>), allow you to tailor your working hours to suit your individual needs
- WORK-LIFE BALANCE: The option of flexible working (in terms of location) is generally available after consultation and in line with upcoming tasks and (on-site) appointments
- VACATION: You will receive 30 days of vacation plus additional days off (e.g. between Christmas and New Year's)
- FIXED-TERM: The position is limited to 2 years but with the prospect of extension
- FAIR REMUNERATION: Depending on your existing qualifications and the tasks assigned to you, you will be classified in pay grade 13 of the TVöD-Bund (Collective Agreement for the Public Service). All information on the TVöD-Bund collective agreement can be found on the BMI website: <https://go.fzj.de/bmi.tvoed> The monthly salaries in euros can be found here: <https://go.fzj.de/bmi.tvoed.entgelt>
- SUPPORT FOR INTERNATIONAL EMPLOYEES: Our International Advisory Service makes it easier for international employees to get started

In addition to exciting tasks and a collegial working environment, we offer you much more: <https://go.fzj.de/benefits>

We welcome applications from people with diverse backgrounds, e.g. in terms of age, gender, disability, sexual orientation / identity, and social, ethnic and religious origin. A diverse and inclusive working environment with equal opportunities in which everyone can realize their potential is important to us.

The following links provide further information on diversity and equal opportunities:

<https://go.fzj.de/equality> and on specific support options:

<https://go.fzj.de/womens-job-journey>