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 doctoral 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, sever animal suffering like neutering of piglets or neglect of calfs can be avoided.

Join our team to the next possible date as

PhD-Position - Quantitative modelling of 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 experimental group, and an internal simulation-sciences group (You+Supervisor+support by lab). These collaborations enable practically relevant and breakthrough results.
This team goal requires a quantitative model describing and predicting sperm motility under various conditions. You will develop the digital twin of sperm motility, and utilize it to develop a separation method. Your tasks will include:

- Performing computer simulations and matching them to experimental data

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

- Very close collaboration with experiments, including occasional wet lab work
- Merging experimental results, simulations, and literature for optimal conditions inducing movement differences, in collaboration with the team.
- 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 in biophysics, biology, biochemistry, or other relevant discipline
- Excellent written and spoken English skills
- High degree of independence and commitment
- Good knowledge of python and C++
- Experience in relevant work tasks are advantageous but not mandatory: Simulation sciences, ideally modelling microswimmers, Wet-Lab work, Different forms of microscopy

Our Offer:

We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We offer ideal conditions for you to complete your doctoral degree:

- 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
- SUPERVISION & SUPPORT: Receive continuous professional guidance and support from your scientific supervisors
- 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 3 years
- FAIR REMUNERATION: Depending on your qualifications and assigned responsibilities, you will be classified according to pay group 13 (75%) of the TVöD-Bund. Additionally, you will receive a special payment (“Christmas bonus”) amounting to 60% of one month’s salary. All information about the TVöD-Bund collective agreement can be found on the BMI website (pay scale table on page 66 of the PDF download): https://go.fzj.de/bmi.tvoed
- 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