CAARE

NEWSLETTER NO. 1

WELCOME TO THE FIRST EDITION OF THE CAARE NEWS

The CAARE – Doctoral Network officially launched in October 2024, marking the beginning of an exciting journey in the characterization and recovery of bionanoparticles for vaccine delivery and gene therapy. This innovative project brings together leading academic and industry partners to train the next generation of researchers in this rapidly evolving field. If you want to dive deeper into our objectives, you'll find a summary on page 3, along with an explainer video that provides a clear overview of our mission.

A highlight of the first months was our Kick-off Meeting in October, hosted by our coordinator acib GmbH in the beautiful city of Vienna, Austria. This event brought together our consortium members to align on the project's vision, research goals, and collaborative efforts for the next four years. It was an inspiring start, setting the stage for the exciting work ahead. In this edition, we also take the opportunity to introduce acib GmbH, the coordinating institution that plays a key role in guiding the project.

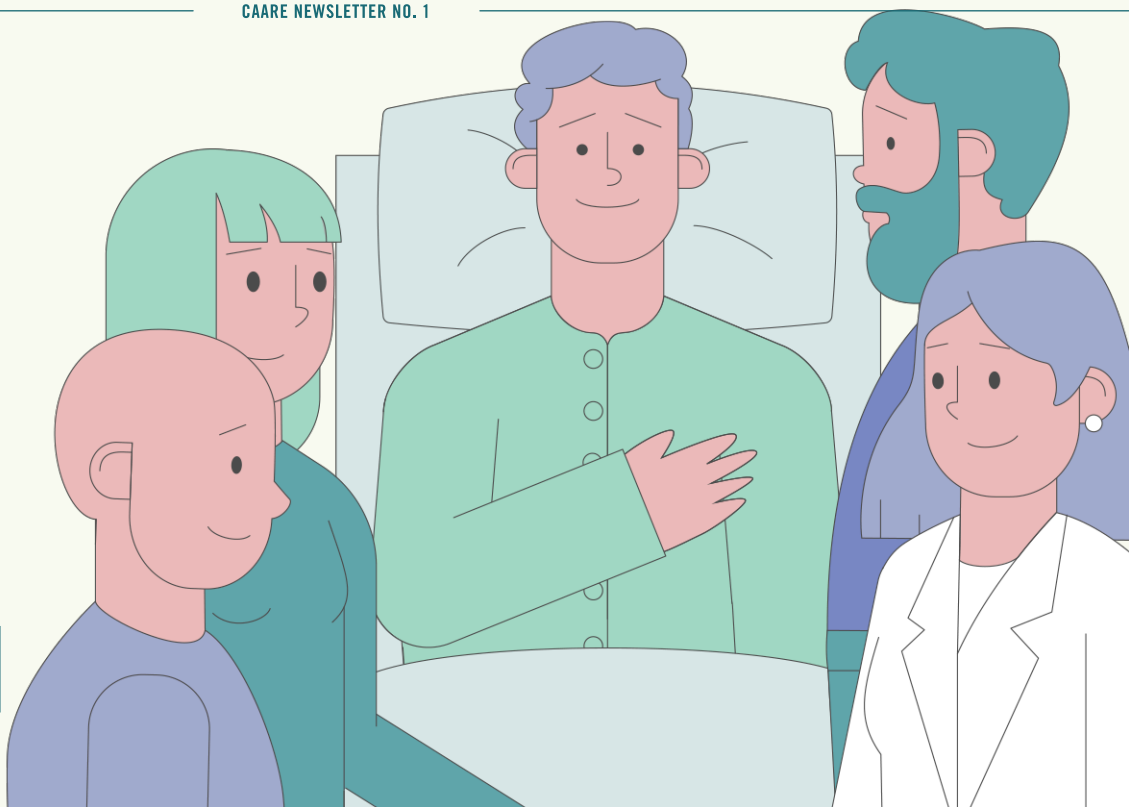
Another exciting aspect of CAARE is the group of Doctoral Candidates who will drive the research forward. In each newsletter, we will introduce some of them – starting with the first two in this issue. Their work and perspectives will provide valuable insights into the project's progress.

Looking ahead, we are eager to meet again for our second partner meeting in Leiden, Netherlands. More about this gathering will follow in our next newsletter, set for release in October 2025.

For more informations, visit our project website: www.caare-project.eu.

Yours sincerely,
The CAARE Team

OUR MISSION



The future of medicine is being shaped by bionanoparticles – the key to revolutionizing vaccine delivery and gene therapy. These tiny yet powerful biomolecules form the foundation of mRNA vaccines, viral vector-based treatments, and next-generation gene therapies, offering new possibilities for conditions once considered untreatable. But despite their potential, significant challenges remain:

How can we ensure the highest purity and stability of these therapeutics? How can we refine manufacturing processes for large-scale production? And how do we equip the next generation of scientists with the expertise to drive these advancements? That's exactly what CAARE's mission is about.

Pushing the Boundaries of Bionanoparticle Research

CAARE is a Marie Skłodowska-Curie Doctoral Network bringing together leading experts to develop better purification strategies, advanced analytical tools, and optimized bioprocesses. Over the next four years, we will work to ensure that bionanoparticle-based therapies are not only safe and effective but also produced with greater efficiency and reliability. A key part of this effort is training 14 Doctoral Candidates in cutting-edge methods across bioprocess engineering, nanofluidics, mass spectrometry, and downstream processing. By uniting expertise from top academic institutions, industry leaders, and regulatory bodies, CAARE is preparing a new generation of scientists to take bionanoparticle research to the next level.

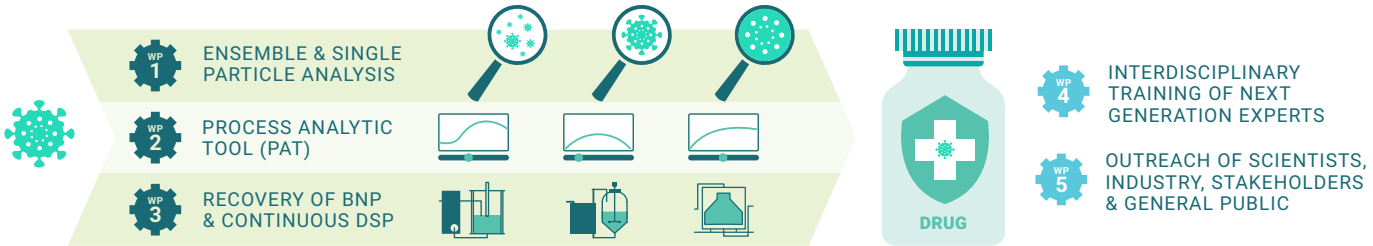
Breakthrough Technologies for a New Era of Medicine

CAARE's interdisciplinary approach integrates:

- Advanced Analytical Techniques – ensuring precise characterization and safety validation.
- Innovative Process Control & Monitoring – improving efficiency in vaccine and gene therapy production.
- Next-Generation Purification Strategies – tackling key bottlenecks in bionanoparticle recovery.

A Lasting Impact

By addressing both scientific and regulatory challenges, CAARE is shaping the future of biopharmaceutical manufacturing. Our work will help bring safer, more effective therapies to patients worldwide and set new standards in vaccine and gene therapy production.



DOCTORAL CANDIDATE

MARKUS MOZGOVICZ

Scientific mission:

Markus Mozgovicz is a PhD student at acib GmbH, the coordinating institution of CAARE. His research focuses on bioprocess engineering and downstream processing, with a special emphasis on protein purification. Within CAARE, he is working on separating and purifying bionanoparticles using convective material and 3D-printed materials.

Academic Journey:

Markus laid the foundation for his expertise at the University of Natural Resources and Life Sciences, Vienna (BOKU), where he earned his Bachelor's and Master's degrees in Biotechnology. His studies focused on bioprocess engineering, chromatography, and purification techniques–key elements in the CAARE project for the development of innovative biopharmaceuticals. Before starting his PhD, Markus contributed his expertise as a scientific staff member in Brussels at Vrije Universiteit Brussel (VUB) in the Chemical Engineering and Separation Science Group, further enriching his experience in analytical bio-separation.

Favorite Lab Gadget:

Vortex Mixer. Why? Because, as Markus puts it, "It shakes its hips, and they don't lie."

Beyond the Lab:

Markus doesn't just excel in the lab–he brings rhythm and creativity into his daily life. As a passionate LindyHop dancer, he enjoys the energy and movement of swing and jazz. He also plays Ultimate Frisbee and explores his artistic side through pottery, while his love for plants reflects his patience and curiosity in and out of the lab.

Spirit Animal:

Duck

„All things are difficult before they are easy".

Thomas Fuller

DOCTORAL CANDIDATE

GIULIA POLAZZO

Scientific mission:

Giulia Polazzo is a PhD student at the Karlsruhe Institute of Technology (KIT), contributing her expertise to the CAARE project. Her research focuses on developing advanced analytical tools to assess the integrity and stability of virus-like particles and adeno-associated viruses during bioprocessing. This work is pivotal in ensuring the efficacy and safety of novel biotherapeutics and vaccines.

Academic Journey:

Her academic journey began at the Politnecico di Milano, where she earned both her Bachelor's and Master's degrees in Biomedical Engineering, specializing in cells, tissues, and biotechnologies. Her master's thesis delved into the synthesis, functionalization, and characterization of polymeric nanoparticles, underscoring her interest in the pharmaceutical and nanoparticle fields.

Favorite Lab Gadget:

The micropipette, a simple yet essential instrument that ensures precision in experiments.

Beyond the Lab:

Outside the laboratory, Giulia enjoys expressing her creativity through crochet and watercolor painting. She is a fan of board games and of fantasy books, that allow her to escape into imaginative worlds. She also values time outdoors and finds winter walks in the snow especially refreshing–a perfect way to clear my mind and recharge.

Spirit Animal:

The Rabbit, sunny and gentle, bringing joy and curiosity to every moment.

"If you're not part of the solution, you're part of the precipitate."

Unknown

THE DRIVING FORCE BEHIND CAARE

At the heart of the CAARE project is acib GmbH, the Austrian Centre of Industrial Biotechnology, an international leader in applied biotechnology research. acib specializes in translating cutting-edge scientific discoveries into industrial applications, bridging the gap between academia and industry. With more than 180 employees and expertise drawn from over 50 scientific partners, acib stands as a powerhouse for innovation in biopharmaceutical technologies.

acib's Role in CAARE

As the coordinator of CAARE, acib ensures the seamless collaboration between project partners, overseeing scientific progress, training, and dissemination efforts. The team at acib is responsible for developing advanced biopharmaceutical technologies–ranging from optimized manufacturing processes to next-generation virus-like particles for gene therapy and vaccine development. The focus lies on efficient and controllable production methods, ensuring the highest standards in quality and safety

MEET THE KEY PEOPLE BEHIND CAARE AT ACIB

Prof. Dr. Alois Jungbauer

leads as the Project Coordinator, bringing his extensive expertise in downstream processing and protein technology. He was serving as a professor at the Institute of Bioprocess Science and Engineering at BOKU Vienna. Having supervised over 90 PhD students and participated in numerous EU projects, he ensures the scientific and strategic alignment of CAARE.

Dr. Patricia Pereira Aguilar

plays a crucial role as a project manager and a supervising senior scientist in downstream processing and analytics within the same institute at BOKU. She specializes in bionanoparticles and virus-like particles, leading projects on novel analytical methodologies for vaccine applications.

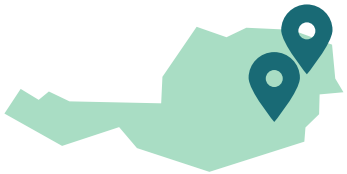
Dr. Verena Beck

supports the CAARE Project Management and contributes with her expertise from managing a previous Doctoral Networks project. She oversees the organizational and operational aspects to ensure smooth project execution. Her role is essential in keeping the consortium aligned and facilitating efficient collaboration – key factors in driving CAARE toward success.

Dr. Katharina Schwaiger

manages dissemination and communication, ensuring that CAARE's findings reach the scientific community, industry stakeholders, and the public.

Why acib?



acib is an innovation hub that brings together expertise to develop practical solutions for industrial applications. With a strong multidisciplinary approach, acib connects research and industry to advance biopharmaceutical technologies. Over the years, acib has gained extensive experience in EU-funded projects, both as a coordinator and partner. Projects like Codobio, which focuses on continuous downstream processing of bioproducts, and Bionanopolys, which supports the development of nano-enabled bio-based materials, highlight its role in shaping bioprocessing innovations.

INNOVATIONS FROM NATURE

acib austrian centre of industrial biotechnology

UPCOMING EVENTS

ISPPP 2025 MUNICH

You want to connect with our CAARE coordinators and members in person? Meet us at the

INTERNATIONAL SYMPOSIUM & EXHIBITION ON THE PURIFICATION OF PROTEINS, PEPTIDES AND POLYNUCLEOTIDES (ISPPP)

9-12 NOVEMBER 2025
MUNICH, GERMANY

The International Symposium and Exhibition on the Purification of Proteins, Peptides and Polynucleotides (ISPPP) cordially invites you to participate in the 44th edition in November 2025, at the Garching campus of Technical University of Munich near Munich, Germany. Over forty years after the first meeting in Washington DC, USA, the ISPPP remains a leading scientific event fostering innovation and advancements across all areas of bioseparation – from analytical techniques to bioprocess operations.

www.isppp.net

NEWSLETTER EDITORIAL TEAM

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