SCS Swiss Chemical Society

Community News

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SWISS CHEMICAL SOCIETY NEWS

Highest expectations met at Ilmac Lausanne 2024

Ilmac 2024 closed its doors on 19 September at Expo Beaulieu Lausanne. Over two days, the chemical and life-science industry had networked at "their" industry meeting place in western Switzerland. 3,335 decision-makers and experts from the chemical, pharmaceutical and biotechnology industries had managed to find new products, solutions and inspiration during the trade fair, the international conference and in the newly launched Startup Area. The trade-fare management is very positive about the event.

The facts and figures for Ilmac Lausanne, which was held at Expo Beaulieu Lausanne for the fifth time from 18 to 19 September 2024, speak for themselves: 3,335 visitors, 5,400 square metres of booked space, 200 exhibiting companies from 20 industries and 20 countries, three stages featuring more than 70 talks and presentations during the conference and in the Speakers and Future Talks Corner. Brand Director Céline Futterknecht is delighted: "I'm getting positive feedback all round. In collaboration with our partners, we've managed to take Ilmac Lausanne to the next level in terms of quantity and quality. The market is responding and validating our concept."

"Inspiring the Future of Chemistry and Life Sciences"

Ilmac's value proposition was also honoured and shows that Ilmac Lausanne is at the cutting edge of the industry. Its blend of trade fair, international conference, Startup Area and Job Connect was well received among the exhibiting companies and visitors. The daily Networking Lunch and the Networking Aperitif on the first evening of the trade fair were popular opportunities to socialise with business partners, new customers and existing acquaintances. The modern venue at Expo Beaulieu Lausanne provided the ideal setting and was praised for its spacious reception area and light-filled appearance.

Broad showcase with Speakers Corner and Startup Area

The fully booked Ilmac Lausanne reaffirmed its status as the most important platform in western Switzerland. Decision-makers and specialists across the entire value chain were able to find products and solutions tailored to their day-to-day work. The industry event covered eight specialist areas, including lab technology, diagnostics and bioanalysis, biotechnology, process technology, robotics and automation, information technology and pharmaceutical logistics. Exhibitors included leading companies from the chemical and life science industry, among them Agilent, Bruker, Endress+Hauser, Milian, Thermo Fisher and Siemens. To complement their own stands, a number of companies used the Speakers and Future Talks Corner to present products or conduct experiments under professional moderation. The newly launched Startup Area was fully booked for its premiere. The many newcomers from the biotech, lab tech, software and cybersecurity sectors proved to be a crowd-puller with huge added value. Ilmac Lausanne also served as a job and career platform and was supported interactively with a job wall by Job Connect.

"Ilmac 2024 was a resounding success. I'm overwhelmed by the number of visitors and by the large number of exhibitors and speakers. We can report an increase of 67% in participants and an increase of 25% in exhibitors compared to the 2022 edition. Special thanks go to Isabelle Moret, State Councillor and Head of the DEIEP, who extended her best wishes to the attendees during the networking aperitif. Her commitment and support are highly significant to us. It's inspiring and gratifying to see our event gaining in importance and the community growing. We look forward to hosting more editions of Ilmac in Lausanne and Basel," said Brand Director Céline Futterknecht.

Ilmac Conference takes on an international dimension

The science-driven conference centred on the current industry topics of Food Chemistry and Laboratory 4.0 impressed participants with a line-up of leading Swiss and international speakers. The first-class programme was developed in close cooperation with partners Swiss Chemical Society (SCS), Bio Alps and Swiss Biotech Association (SBA).

The first day's symposium was dedicated to the subject of "Food Chemistry & Analytics". Speakers impressed the audience with their in-depth knowledge gained from practice and research.

The second day focussed on Lab 4.0 in collaboration with Bio Alps and the Swiss Biotech Association and was met with great interest. In addition to the sessions "Future of Labs – Latest innovations and outlook" and "Artificial Intelligence and Machine Learning applied to drug development", the roundtable discussions, networking events and start-up pitch sessions were also well received.

Online networking all year round with Ilmac 365

Thanks to the Ilmac app and the Ilmac 365 community network, the community can stay connected. All those interested can register free of charge at *365.ilmac.ch* to keep up to date with news, trends, topics and career opportunities from the chemical and life-science industry, both now and after the live event.

Ilmac will be back in Basel from 16 to 18 September 2025 and in Lausanne from 23 to 24 September 2026.
More information: *http://ilmac.ch*

IUPAC Elections for the 2026–2027 Term

Every two years, IUPAC holds an election for its officers and committee members. About 120 individuals are to be elected or reelected either as Titular Members, Associate Members, or National Representatives. Information concerning the voting process and the role of each kind of member is contained in the Union bylaws. Each member of an IUPAC body (Division, Standing Committee, or Commission) is

expected to become an active participant in the work of the body. This work includes helping to decide on the program and in reviewing proposals for projects. These duties require the members to have expertise in the relevant disciplinary. Much of each Committee's work is conducted by e-mail correspondence.

Any qualified individual interested in being nominated is invited to contact his/her National Adhering Organization (NAO) and/or the current committee officers. For Switzerland this is the Platform Chemistry of the SCNAT. The election will cover a two-year term that will start in 2026. Every division and standing committees have vacancies. As part of the nomination procedure, NAOs are invited to submit curriculum vitae for each nominee via the online form no later than 30 November 2024.
More information: *https://iupac.org*

IUPAC The Top Ten Emerging Technologies in Chemistry – Call for Proposals for 2025

The International Union of Pure and Applied Chemistry has released its call for proposals to identify the top ten emerging technologies in chemistry with the results to be announced in 2025.

This initiative began in 2018 in recognition of IUPAC's centenary in 2019, and while it was created to kick-off IUPAC's anniversary year in a very visible way, the end goal was to showcase the value of chemistry (and chemists!) and to inform the general public as to how the chemical sciences contribute to the well-being of Society and the sustainability of Planet Earth. The most recent finalists for 2024 are announced in October 2024 and detailed in the Oct 2024 issue of Chemistry International (CI).

The call for the 2025 proposals is now open. Anyone can submit one or more proposals – this call for proposals is open to the global science community as well as to the general public.
Source: *https://iupac.org*

New SSbD Roadmap published

In a new peer-reviewed article from IRISS, an SSbD roadmap is presented that explores current needs and gives recommendations for the practical operationalization of SSbD in industrial operations and processes.

The European Chemicals Strategy for Sustainability, a core element under the European Green Deal, calls for a transition to safer and more sustainable chemicals and materials to support the goals of zero-pollution, a toxic-free environment. To achieve these goals, it introduces the Safe-and-Sustainable-by-Design (SSbD) concept.

The SSbD concept promotes the (re)design of chemicals, materials, and products, while comprehensively accounting for their manufacturing, use, and end-of-life management so that these innovations do not adversely affect human and environmental health at any point in their lifecycles. At the same time, SSbD promotes circularity, aims to meet societal needs, and to contribute to social and economic resilience.

The SSbD framework and methodological guidance published by the European Commission is a holistic Research and Innovation (R&I) approach, but to achieve the operationalization of SSbD, further necessities, requirements and barriers need to be addressed and overcome. SSbD needs to be translated from a policy ambition to a practical, operational and implementable concept in industrial operations and processes, including training and education. The roadmap provides recommendations on how to bring SSbD to practical applicability with the synergistic efforts of industry, academia, NGOs, policy makers, regulators and all stakeholders along the life cycle. It was co-created including different SSbD stakeholders and encompasses three interlinked agendas on (i) research needs, (ii) skills, competencies, and education needs, and (iii) knowledge and information sharing needs.
Source: *https://iriss-ssbd.eu/iriss*

A Warm Welcome to Our New Members!

Period: 27.08.2024–01.10.2024
Deborah Bäcker, Wallisellen - Jordan Gay, Fribourg - Alexandre Genoux, Lausanne - Freya Harvey , Faoug - Gabriela Henriques Silva, Fribourg - Maria Herz, Geneva - Nestor Iwanojko, Zurich - Besa Kadriu, Bern - Iris Landman, Zurich - Patrick Langrzyk, Lausanne - Enrico Lepre, Zurich - Matias Locate, Zurich - Pierre Mathey, Zurich - Gianluca Mazzotta, Fribourg - Elisa Mégroz, Aubonne - Anamarija Nikoletic, Muttenz - Tatsiana Petrasheuskaya, Fribourg - Gianluca Quargnali, Zurich - Pierre-Olivier Roy, Lausanne - Maruan Salim, Zurich - David Sánchez Roa, Bern - Nikita Shepelin, Villigen - Ramses Snoeckx, Dübendorf - Mark Soesanto, Zurich - Yannik Stiefel, Zurich - Quentin Stucker, Mies - Damien Terebenec, Dübendorf - Barbara Thiele, Rieden AG - Luca Vigliotti, Zurich - Wei Wu, Lausanne - Christian Zachau, Zurich.

HONORS, AWARDS, APPOINTMENTS

39 young scientists awarded with one of the Best Presentation Awards at the SCS Fall Meeting 2024

In collaboration with Metrohm and dsm-firmenich, the SCS offered again a very attractive and prestigious Fall Meeting Best Presentation Award program. We are very proud and happy to cooperate with our sponsoring partners, Metrohm and dsm-firmenich for so many years.
The 39 winners received travel vouchers to attend international conferences (total value CHF 16,500), cash (total value CHF 12,100) and invitations to publish an article in the laureates issue of CHIMIA 4/2025 (total value CHF 9,600).

Best Oral Presentation Awards 2024
Uwe Loyall, Head of Competence Center Voltammetry, CVS and Stability Measuring Instruments of Metrohm, awarded a total of 17 winners at the end of the SCS Fall Meeting on September 5, 2024 at Campus Pérolles, University of Fribourg.

Analytical Sciences
Winner: Verena Rukes, EPFL Lausanne
Runner-up: Tobias Schöberl, ETH Zurich

Catalysis Sciences & Engineering
Winner: Colin Hansen, ETH Zurich
Runner-up: Giacomo Rigoni, University of Bern

Computational Chemistry
Winner: Meghna Manae, ETH Zurich
Runner-up: Jeff Guo, EPFL Lausanne

Chemistry and the Environment
Winner: Kevin Kleemann, ETH Zurich
Runner-up: Jannis Grafmüller, Ithaka Institut
Inorganic Chemistry
Winner: Alessandro Walker, ETH Zurich
Runner-up: Atena B. Solea, EPFL Lausanne
Medicinal Chemistry & Chemical Biology
Winner: Vakil Takhaveev, ETH Zurich
Organic Chemistry
Winner: Willi Amberg, ETH Zurich
Runner-up: Oleksandr Vyhivski, University of Basel
Physical Chemistry
Winner: Liza Briant, University of Geneva
Runner-up: Livia Müller, University of Basel
Materials Chemistry
Winner: Carlotta Seno, University of Basel
Runner-up: Jana Wolf, Empa

Best Poster Presentation Award 2024
Dr. Jonathan Medlock, Laboratory Head of Process Research, dsm-firmenich, awarded a total of 22 winners at the end of the SCS Fall Meeting 2024 on September 5, 2024.
Analytical Sciences
Winner: Paul Dutheil, Paul Scherrer Institute
Runner-up: Timon Käser, ETH Zurich
Catalysis Sciences & Engineering
Winner: Kazutaka Sakamoto, ETH Zurich
Runners-up: Aswin Gopakumar, ICIQ
Anies Rösch, University of Basel
Computational Chemistry
Winner: Andrea Levy, EPFL Lausanne
Runner-up: Shu-Yu Chen, ETH Zurich
Chemistry and the Environment
Winner: Simon Rath, Eawag / EPFL Lausanne
Inorganic Chemistry
Winner: Na Jin, University of Bern
Runner-up: Tzu-Chin Chang Chien, University of Basel
Medicinal Chemistry
Winner: Tamara Balsiger, University of Basel
Runner-up: Austia Puckett, University of Bern
Chemical Biology
Winner: Dorothea Kossmann, University of Zurich
Runner-up: Adeline Schmitt, ETH Zurich
Organic Chemistry
Winner: Valeriia Hutskalova, University of Basel
Runners-up: Alena Budinska, ETH Zurich
Egor Zhilin, University of Bern
Physical Chemistry
Winner: Johannes Wega, University of Geneva
Runners-up: Ghewa Al Sabeh, EPFL Lausanne
Richard Karl, University of Basel
Materials Chemistry
Winner: Flavio Augusto von Philipsborn, ZHAW / Uuniversity of Zurich
Runner-up: Coline Boulanger, EPFL Lausanne

Website of the SCS Fall Meeting 2024: *https://fm24.scg.ch*

Best Contributed Talks and Best Poster Presentation Awards at the Swiss Summer School on Chemical Biology 2024

The Swiss Summer School «Chemical Biology» in Bergün took place from Aug 25–29, 2024. The Summer School offered a great platform for the exchange with experts and peers from academia and industry in a wonderful Alpine environment. As part of the program, students were welcomed to present a poster or a short communication. Helvetica and Chemistry Europe supported the Best Presentation Award Program and honored the winner and two runners-up in the categories Best Oral Presentation and Best Poster Presentation.

Best Contributed Talk Award

1st Prize:
Marie-Désirée Schlemper-Scheidt, University of Neuchâtel
«Combining comparative metabolomics and molecular networking to study secondary metabolism of Caenorhabditis elegans and briggsae»

Runners-up:
Karolis Norvaisa, University Brussels
«Development of Synthetic Transmembrane Phosphate Transporters»

Andrei Zhauniarovich, EPFL Lausanne
«Exploring the Crosstalk Between Tubulin Post-Translational Modifications»

Best Poster Presentation Award

1st Prize:
Laura Marie Poller, ETH Zurich
«Evaluating Lysyl Oxidase Activity with Turn-On Fluorescent Probes»

Runners-up:
Claire Grigglestone, University of Zurich
«Phosphorylation of alcohol sidechains»

Xinyan Lu, University of Basel
«A chemical degron system for exploring PALB2 synthetic lethal combinations»
More information: *https://summer-school24.scg.ch*

German Chemical Biology Lectureship 2024 for Prof. Nina Hartrampf, University of Zurich

The German Chemical Biology Lectureship 2024 was given to ***Prof. Nina Hartrampf***, University of Zurich for her important contributions to the rapid high-fidelity synthesis of proteins using automated flow chemistry. Further work included reaction development in flow, development of peptide-drug conjugates for targeted delivery and the synthesis of nonribosomal peptides.

The award will be presented at the New Frontiers in Chemical Biology and Biochemistry conference in Dortmund (30.09.–02.10.2024). Afterwards, the award winner will give a scientific lecture on her research work at at least three other locations in Germany.

The German Chemical Biology Lectureship is awarded every two years to young scientists who work in other EU countries or associated countries, who have not yet reached the age of 40 and who stimulate chemical biology through particularly creative or interesting research approaches. The Gesellschaft für Chemische Technik und Biotechnologie e.V. (DECHEMA), the Deutsche Pharmazeutische Gesellschaft e.V. (DPhG), the Gesellschaft

für Biochemie und Molekularbiologie e.V. (GBM) and the Gesellschaft Deutscher Chemiker e.V. (GDCh) are co-financing the award money of EUR 2,000. The selection is made by the board of the joint Chemical Biology Division of the four societies.
Source: *https://nachrichten.idw-online.de*

JOURNAL NEWS

Helvetica, Volume 107, Issue 9, September 2024

Synthetic Procedure
Micelle Enabled Buchwald-Hartwig Amination in Water with the Bening by Design Surfactant TPGS-750-M for the Synthesis of the JAK Inhibitor 4-((2-Chlorophenyl)amino)-6-((6-methylpyridin-2-yl)amino)nicotinamide
Hao Jiang, Bin Wu, Dominik Rufle, Liping Wang, Min Shi, Michael Parmentier, Fabrice Gallou

A Telescopic, Scalable and Industrially Feasible Method for the Synthesis of Antidepressant Drug, Moclobemide
Akanksha Keshri, Anjali Gupta, Upma Gulati, Tara Datt Bhatt, Maneesh Kashyap, Joydev K. Laha

Research Articles
Fluorinated-Thiolate Osmium(III) and Osmium(IV) Complexes Bearing N,N-diethyldithiocarbamate and Substituted Phosphines. Synthesis, Crystal Structures and DFT-Studies
Bertín Anzaldo, Andrés Álvarez-García, Sylvain Bernès, Armando Ramírez-Monroy, Maribel Arroyo-Carranza

En Route to Enantioenriched Quaternary Stereocenters via Lewis Base/Palladium Cooperative Catalysis
Maygan M. McGuire, Andrew C. Bach, Maren Pink, Thomas N. Snaddon

Platinum-Catalyzed Isomerization of Cyclopropenes to 1,3-Dienes
Vladyslav Smyrnov, Antonin Homassel, Leander Choudhury, Jerome Waser

A Novel, Industrially-feasible Synthetic Route to (+)-Biotin from *L*-Cysteine
Qiongmei Zhang, Kun Peng, Werner Bonrath, Zili Zhang, Zhibin Zhu, Yuehan Xing, Xiaoyan Wang, Bo Gao, Jonathan A. Medlock

Website: *https://onlinelibrary.wiley.com/journal/15222675*

INDUSTRIAL NEWS

Source: *www.chemanager-online.com*

Lonza Completes Expansion of Microbial Manufacturing Facility

September 09, 2024: Lonza recently announced that it has completed a planned expansion of the mid-scale microbial manufacturing facility at its Visp, Switzerland site. This multi-product facility was recently granted a GMP license, allowing cGMP manufacturing and release of biologics produced using microbial fermentation.

The facility offers mid-scale commercial manufacturing with two 4,000 L fermenters, providing scalable capacity to meet customer needs. It features extensive automation for efficiency, product quality, and regulatory compliance. Located in the Ibex Biopark in Visp, it benefits from existing infrastructure, capabilities, and talent. "Microbial manufacturing is a well-established and a favored option for producing complex proteins," commented Michael De Marco, Vice President, Head of Microbial, Lonza. "Recent growth in the heterogeneity of the biotech pipeline, alongside the growth of smaller and more complex next-generation molecules, has increased demand for microbial manufacturing capacity. This expansion adds to our suite of scales and further strengthens our offering to flexibly adapt to all demand and life cycle scenarios of our customer's medicines." Lonza's new mid-scale facility boosts its microbial manufacturing flexibility, complementing its existing small and large-scale capabilities. It supports a wide range of drug developers with phase-appropriate supply and features advanced automation, including an electronic manufacturing execution system (MES) and integrated sensors.

The CDMO/CMO Report

Several Large- and Smaller-Scale Biomanufacturing Expansions are Underway – an Overview
September 11, 2024: Driven by increased demand in biologic-based drugs, biologic drug substance manufacturing continues to be an active area of investment by contract development and manufacturing organizations/contract manufacturing organizations (CDMOs/CMOs), including several multi-billion large-scale biomanufacturing projects. What companies are expanding, and where do these expansions stand?

Large-Scale Biomanufacturing Expansions Underway
Samsung Biologics is proceeding with a multi-billion-dollar-plus investment to expand its biomanufacturing capacity, which includes the addition of a new biomanufacturing plant in South Korea. The expansion includes the addition of a fifth biomanufacturing plant and the expansion of its Bio Campus II, along with the establishment of a new stand-alone antibody-drug conjugate (ADC) facility in Songdo, South Korea. Plant 5, with a capacity of 180,000 L and spanning an area of 96,000 m², is slated for completion in April 2025, contributing to a significant increase in the company's overall biomanufacturing capacity, which will reach a total of 784,000 L upon Plant 5's completion. The investment for Plant 5 amounts to KRW 1.9 trillion (~$1.46 billion). For the development of Bio Campus II, which will entail four plants (Plants 5–8) and an open innovation center, Samsung Biologics plans to allocate KRW 7.5 trillion (~$6 billion). Capacity expansion involves the construction of Bio Campus II, featuring four plants, each with a 180,000 L capacity. Combined with the company's Bio Campus I, the company aims to offer total capacity exceeding 1.3 million L by 2032.

Fujifilm Diosynth Biotechnologies is proceeding with a multi-billion-dollar investment to expand large-scale cell-culture bulk drug substance and flexible single-use cell culture capacity, along with the addition of commercial-scale drug-product and finished goods capacity.

The company is proceeding with a $1.6-billion expansion of its large-scale cell-culture capacity at its site in Hillerød, Denmark. With mechanical completion achieved in January 2024, the first drug-substance expansion is set to come online later this year (2024). A new drug-product facility in Denmark is expected to be operational by early 2025, following a successful filling line test run in February 2025. The second drug-substance expansion is slated for online activation in 2026.

Earlier this year (April 2024), the company announced an additional investment of $1.2 billion in its large-scale cell cul-

ture biomanufacturing facility in Holly Springs, North Carolina, bringing the total investment in the facility to over $3.2 billion. The new investment will add 8 x 20,000 L mammalian cell-culture bioreactors by 2028, to the already planned 8 x 20,000 L bioreactors for bulk drug substances as part of the initial investment. The company was already investing $2 billion in its Holly Springs facility with the planned addition of large-scale cell-culture drug-substance suites in 2025.

In August (2024), Fujifilm Diosynth Biotechnologies opened a microbial fermentation manufacturing facility in Billingham, UK. The new facility triples existing microbial production throughput with the addition of a new production line equipped with 2 X 4,000 L fermenters, a primary separations suite, and a modular purification suite with an investment of over £100 million ($131 million). In addition, the company signaled in 2021, the company's intent to establish a flexible cell-culture facility at its Billingham site. A significant project scope change focused on applying modular principles, allowing lanes to mix 2,000 L and 5,000 L bioreactors. The facility is set to be operational by 2026.

Lonza is making a large investment through its pending $1.2-billion acquisition of a large-scale biologics manufacturing site in Vacaville, California, from Roche's Genentech. Lonza plans to invest an additional CHF 500 million ($554 million) to upgrade the facility and enhance capabilities for producing mammalian biologic therapies. The products currently manufactured at the site by Roche will be supplied by Lonza, with committed volumes over the medium term and phasing out over time as the site transitions to serve alternative customers. The Vacaville facility currently has a total bioreactor capacity of approximately 330,000 L. Upon deal closing, approximately 750 Genentech employees at the Vacaville facility will be offered employment by Lonza. The transaction is expected to close in the fourth quarter 2024, subject to customary closing conditions. Upon closing, the Vacaville site will be integrated into Lonza's Biologics Division, joining a network of existing mammalian manufacturing sites in Visp, Switzerland; Slough, the UK; Tuas, Singapore; Portsmouth, New Hampshire; and Porriño, Spain.

Lotte Biologics in July 2024 broke ground on its inaugural plant at its Songdo Bio Campus in Incheon International City, South Korea, the first plant of a $3.4 billion biocampus that the company is establishing. The company plans to build three biomanufacturing plants at its new biocampus in South Korea by 2030 that will provide total production capacity of 360,000 L, with each plant having 120,00 liters of production capacity. Lotte Biologics entered the CDMO market with the acquisition of a commercial scale biomanufacturing facility in Syracuse, New York, from Bristol-Myers Squibb in January 2023.

Other Biomanufacturing Expansions

AGC Biologics in June 2024 completed a new $200 million biomanufacturing building at its Copenhagen, Denmark, campus. The building doubles the site's single-use bioreactor capacity for mammalian services and allows the company to produce 150 more batches of drug product each year. The expansion adds 19,000 m2 of space in a building that houses a manufacturing floor, expanded quality control and process development lab space, utilities to support all operations, and a dedicated warehouse to serve the entire AGC Biologics Copenhagen campus. In addition, in January (2024), AGC Biologics announced an investment of JPY 50 billion ($350 million) to construct a new biomanufacturing facility at its Yokohama Technical Center in Japan. The new facility will offer preclinical through commercial services for mammalian-based protein biologics, cell therapies, and mRNA. The site will house multiple 2,000-liter single-use bioreactors and several 4,000 L or larger reactors for mammalian cell-culture products. The facility is expected to be operational in 2026. The company currently operates one site in the region, in Chiba, Japan, which provides mammalian expression and microbial fermentation services.

MilliporeSigma, the life science business of Merck KGaA, is investing more than €300 million ($326 million) for biomanufacturing support through a new bioprocessing production center in Daejeon, South Korea, to provide products such as dry-powder cell-culture media, process liquids, pre-GMP small-scale manufacturing, and sterile sampling systems. Covering an area of 43,000 m^2, the facility will include production capacities, a distribution center, and an automated warehouse. The investment is expected to create approximately 300 additional jobs by the end of 2028.

Wacker Biotech, a CDMO of biologics and a subsidiary of Wacker Chemie, in June 2024 opened an mRNA Competence Center at its biotech site in Halle (Saale), Germany, with an investment of over €100 million ($107 million). The new facility enables the large-scale production of active ingredients based on messenger ribonucleic acid (mRNA). Four new production lines have more than tripled the site's capacity. Some of the new capacity will be made available to the German government as part of its pandemic-preparedness plan to supply Germany with vaccines as and when required.

Just-Evotec Biologics, a subsidiary of Evotec, is investing in a new facility for continuous biomanufacturing in Toulouse, France. The facility applies the company's J.POD design featuring a single-use continuous cell-culture manufacturing platform set inside production-on-demand modules within a ballroom manufacturing space. In this way, it replicates the design of the company's J.POD facility in Redmond, Washington. The investment of approximately €150 million ($163 million) was announced in April 2021, and the company broke ground in September 2022. Last October (2023), the building shell was completed, and the autonomous cleanroom POD installation occurred at the beginning of this year (2024). The facility is set to be operational by the second half of 2024 and will contain two continuous cell-culture manufacturing streams. J.POD Toulouse will manufacture both clinical and commercial material and will have capacity to produce up to 2000 kg of antibody per year.

Aurigene Pharmaceutical Services, a Dr. Reddy's Laboratories' company, in June 2024 opened a biologics facility spread across 70,000 sq ft in Hyderabad, India. The facility provides process and analytical development and small-scale manufacturing of antibodies and other recombinant proteins for preclinical and early-phase clinical requirements. The process and analytical development laboratories are now operational while the commissioning of manufacturing capacity will be completed later in 2024.

Enzene Biosciences, a Pune, India-based CDMO, is adding a new facility for continuous biomanufacturing in the US via its US entity, Enzene Inc. The company is building a new GMP manufacturing facility in New Jersey, built around the company's proprietary EnzeneX technology. The company has successfully identified, leased, and set up this inaugural manufacturing plant. The facility is 54,000 sq ft and will be launched in three phases, with the Phase I launch date slated for the third quarter of 2024. The full expansion will also include a drug-product manufacturing suite with formulation and small-volume filling equipment. The facility will also include a quality control lab, development lab, warehouse, freezer rooms, and a cell-bank store.

Aragen Life Sciences, a CDMO of small molecules and biologics, is proceeding with a biomanufacturing expansion by investing $30 million for a cell-culture biomanufacturing facility in Bengaluru (Banagalore), India. The process development laboratory has been operational since December 2023. The first manufacturing suite is scheduled to be operational by December 2024.

Uncovering Potential Addressing Customer Needs with Innovative and Sustainable Solutions

September 11, 2024: Interview with Olivier Lambrechts, executive leadership team member and president NCE at Arxada. Arxada was created in 2021 following the carve-out and sale of Lonza Specialty Ingredients to private equity firms Bain Capital and Cinven. The Swiss specialty chemicals company achieved sales of CHF 2 billion in 2023 in its two businesses, Microbial Control Solutions (MCS) and Nutrition, Care & Environmental (NCE), which focus on multiple end-markets such as Human Health & Nutrition, Home & Personal Care, Paints & Coatings and Wood Protection. Michael Reubold spoke with Olivier Lambrechts, executive leadership team member and president NCE at Arxada, about the plans and vision for the future, and current CDMO market trends.

CHEManager: After the businesses were carved out from Lonza and Arxada was established in 2021, how has independence transformed the company since?

Olivier Lambrechts: In our first year, we focused heavily on building Arxada as an independent company, focusing on establishment as a player in the chemical industry and setting up best practices to serve our customers in an agile and flexible way. We also made two key acquisitions, Troy Corporation and Enviro Tech, which allowed us to offer customers an even broader portfolio of microbial control solutions and performance additives. We expanded our global supply chain capabilities, improving operations, supplying ability and other efficiencies that benefit our customers.

What do the company's owners, Bain Capital and Cinven, expect from you in terms of further development?

O. Lambrechts: Bain Capital and Cinven are investors with a long-term commitment to Arxada's success. The expectation is for our business to focus on growth through sustainable innovations. In our Microbial Control business, these innovations will allow us to lead a transition towards more sustainable products that meet or exceed regulatory changes and global macrotrends towards more eco-friendly microbial control. For our NCE business, it means building upon our strong CDMO capabilities and using them to provide low carbon footprint solutions to our customers. Sustainability is key for our owners. In fact, Arxada's financing includes a sustainability-linked bond, the first of its kind. This founding principle guides us as we plan and invest in our sustainability strategy and help our customers adapt to meet their own sustainability goals.

Arxada's roots go back more than 120 years. Having such a heritage of innovation and technology, what would you define as your key differentiators in the CDMO market today?

O. Lambrechts: Our more than 100-year history is most visible at our manufacturing site located in Visp, Switzerland. The Visp site is extremely well invested and offers an unparalleled level of vertical integration into chemical building blocks that no other company can provide. We have on-site production of ethylene and acetylene through an efficient and compact acetylene generating unit. Additionally, we can produce other base building blocks including complex and sophisticated molecules such as ketenes and diketenes as well as hydrogen cyanide. The latter is unique in the Western world given the complexity of producing and safely handling these molecules. This vertical integration combined with our multipurpose assets enables us to provide a flexibility to our customers that no one else can offer. Depending on customer needs, Arxada has the capability to: 1) tailor towards more cost competitive solutions through a leaner supply chain 2); protect from supply chain disruptions by foregoing the need to source molecules from overseas; 3) provide low carbon footprint solutions through the usage of green electricity and feedstock combined with mass balancing through our vertically integrated assets. For some customers, it's a combination of all three value propositions!

Increasing Gap in Biotech Venture Funding Bianca Adolphs, Principal at Boston Consulting Group (BCG), on the competitiveness of German biotech locations

September 11, 2024: Consulting firm BCG has evaluated the effectiveness of biotech innovation centers in Europe and the USA. Adolphs explains what is lacking in Germany in particular. The Boston Consulting Group (BCG) has evaluated the effectiveness of biotech innovation centers in Europe and the USA. Thorsten Schüller asked Bianca Adolphs, Principal at BCG, to explain what is lacking in Germany in particular.

CHEManager: Ms. Adolphs, what are the characteristics of a strong biotech cluster?

Bianca Adolphs: Biotech hubs, as we call regional clusters, are epicenters of scientific and tech-nological development, which facilitate the exchange of resources like knowledge, data, talent, and funding among firms, universities, and institutions within a geographic area. The resulting ecosystems create a positive feedback loop and foster innovation. The Biotech Innovation Hub Index (BIHI) can provide a tangible representation of this concept.

How is the BIHI determined?

B, Adolphs: We assess regions along four dimensions: Public infrastructure, Business environment & Entrepreneurship, Biotech Research & Development and Biotech venturing. Each of these dimensions can be broken down into four to six measurable characteristics, e.g., number of graduates and hospitals for public infrastructure, number of start-ups for the business environ-ment, or how often scientific publications were cited as a proxy for biotech R&D. We find that bio-tech clusters thrive in areas with seamless collaboration between universities and the industry, when universities are fostering an entrepreneurial culture, and in areas with a strong venture capital and start-up ecosystem.

Why can't biotech hubs in Germany match the innovative power and strength of other Euro-pean or even US locations?

B. Adolphs: As we observe the metrics throughout the innovation process, we see that European countries score relatively similar to the US in the early stages. However, in terms of sheer sci-en-tific output volume and especially for private biotech venture funding, there is an increasing gap between Germany and broader Europe, including the UK compared to the US. Germany's biotech innovation landscape is highly decentralized and fragmented, with multiple biotech hubs and uni-versity clusters lacking scale and efficient expertise sharing, thus limiting their potential com-pared to the more cohesive ecosystems in the US, France, and the UK.

In your study you point out that Germany's sub-par performance could also stem from the traditional reluctance among scientists and physicians to engage with the business side of their discoveries. Why is that?

B. Adolphs: Within the German university system, structured incentives and encouragement to translate scientific outcomes into business ideas is often lacking, with a cultural emphasis on research for research's sake and no clear pathway to commercialization. In contrast, US biotech hubs intrinsically incorporate business acumen into scientific education and build up infrastruc-ture to support scientists along the journey. This includes mentorship programs and access to venture accelerators/incubators that allow scientists to spend time working on translating re-search into marketable innovation. Technology transfer at universities is often less bureaucratic and more supportive for scientists, leveraging strong industry connections to succeed. This results in numerous successful ventures within university departments and positive role models, which German scientists often lack.

Biotech investors in the US are known to be much more willing to take risks and invest larger sums of money than investors in Europe. What needs to happen to close this gap?
B. Adolphs: Higher venture capital investments and a risk-taking culture are not unique to bio-tech but apply broadly. To strengthen biotech hubs in Germany, aspects of innovation funding could be tackled: redirecting government funding to later stages of the innovation process, sup-porting science-to-business translation programs in initial grants, or considering incentives for private investors to co-fund innovation. Moreover, cross-hub collaboration in Germany's decen-tralized innovation system could standardize processes and benefit from joint expertise and ex-perience with commercialization. Creating innovation nuclei can be a starting point.

Europe's Biotech Cluster Powerhouses Knowledge, Innovation, Financing: What makes a successful biotech region

September 11, 2024: Cambridge, Leiden, Heidelberg or Paris - many European countries have biotechnology clusters in which scientific expertise meets a well-developed infrastructure, committed entrepreneurship and attractive financing opportunities. A subjective look at the best. Whether Cambridge, Leiden, Heidelberg or Paris — many European countries have biotechnology clusters in which scientific expertise meets a well-developed infrastructure, committed entrepreneurship and attractive financing opportunities. The drugs of tomorrow often emerge from such knowledge conglomerates. But what characterizes the outstanding biotech hubs on the European continent? A subjective look at the best. The discussion on the online platform Reddit is symptomatic for the structure of the biotech industry. A user from the USA asks which are the most important biotech hubs in Europe. The feedback overwhelms him: "Seems like the Europeans are giving a ton of different answers. Would you guys say the biotech industry is just distributed more evenly across the continent compared to the US? It seems very different compared to here." In fact, while Europe has numerous biotech hubs, only one or at most two centers stand out in the USA: Boston/Cambridge and the San Francisco Bay Area.

Network, Funding, Patents, Jobs: But what characterizes a successful, strong cluster? US Commercial real estate investor Brad Thomas says: "There is a unique desire among life science entities to cluster together in campus ecosystems in order to drive productivity and collaboration, to recruit and retain top talent, to attract strategic capital, and to ensure best-in-class, 24/7 operations of their mission-critical real estate."

Ralf Huss, Managing Director of the Bavarian BioM Biotech Cluster Development company, goes into more detail: "The outstanding thing (...) is a network based on excellent science and also partly applied research (at least in selected key areas), efficient technology transfer in translation centers with the possibilities of accelerated incubation, a sustainable industrial environment consisting of start-ups, successful SMEs and, if possible, globally active pharmaceutical and biotech companies. In addition, there is a supportive policy at local, regional and national level with a close relationship to European decision-makers. Such a cluster is a strong partner for global and strategic investors, which is an important driver for further growth." The differences between a strong cluster and a less good one depend above all on the criteria used as a basis. According to the US trade journal "Gen – Genetic Engineering and Biotechnology News", this definitely includes funding from state healthcare systems and venture capital (VC) investors, patents, lab space and the number of jobs. For its part, the Boston Consulting Group (BCG), together with the Institute for Deep Tech Innovation (DEEP) and the Berlin educational institution ESMT, designed a so-called Biotech Innovation Hub Index (BIHI, see interview) to help evaluate and compare the effectiveness of biotech innovation hubs. A key finding of the study entitled "Biotech Innovation Hubs in Germany — Divided and Conquered?" is that while European hubs excel in terms of the quality of academic research, they otherwise lag behind those in the USA. A key issue here is the lack of transferability of academic research into successful biotech companies in the German biotech sector. This shortfall can be attributed to several factors, with fragmentation playing a significant role. In addition, German biotech centers in particular lack effective collaboration. However, BioM Managing Director Huss considers this view to be "somewhat one-dimensional". If you apply classic KPIs for biotechnology companies, such as the number of new drugs or candidates in clinical trials, the financial volume of takeovers or even IPOs, this impression undoubtedly arises. However, the German clusters, and in particular Heidelberg, Berlin and Munich, are "certainly the most innovative centers, even in comparison with the USA". This is demonstrated not only by the number of "German" Nobel Prizes in this field, but also by the trend towards deeptech and techbio companies in the national clusters. Huss also points to the increasing interest of strategic partners in gaining access to innovations in Europe and Germany. More and more large global pharmaceutical and technology companies are establishing their research locations in Europe and Germany with long-term investments. In his opinion, it is only a matter of time before financial investors also follow this trend and "recognize the sustainable value creation of modern biotechnology in Germany and Europe."

European Biotech Clusters in Concrete Terms: Let us take a look at some important European biotech clusters and their characteristics. A selection that is inevitably also subjective:

Oxford/Cambridge/London: The region of London, Oxford, Cambridge and England's greater southeast is also known as the 'Golden Triangle'. It is made up of the most life science companies in one place and has been named as one of the top 25 clusters in the world. Back in 2019, the magazine "Management Today" asked: "Can Cambridge become the world's leading biotech cluster?" The cluster is a network of renowned research centers, healthcare providers and medical charities in a compact region that claims to be home to four of the world's top ten universities for healthcare. Furthermore, it has five out of seven of the UK's academic health science centers and is home to leading medical research institutes including the Wellcome Trust, the Medical Research Council, Cancer Research UK, and the national Cell Therapy Catapult, focusing on stem cell research and industri-

alization. As part of the Golden Triangle, Cambridge alone is described as Europe's largest biotechnology cluster, consisting of more than 30 science and technology parks within ten miles of the city. According to the marketing firm Cambridge& the region attracted over £700 million in private investment in 2020 and counted 440 life sciences companies based in or around the city last year. Between them, they employed 14,000 people and generated £4.2 billion in revenue, an increase of 56% over the previous two years. The venture investor Cambridge Innovation Capital points out, that the demand for Golden Triangle lab space surges with highest annual volume since 2015. Incidentally, the German biotech company BioNTech has leased around 79,000 sq ft at the Cambridge Biomedical Campus.

Stockholm

"Stockholm-Uppsala life science sector has a reputation of being not only Scandinavia's leading cluster, but also one of the world's most productive hubs for health care advancement and life science know-how. On average, 15 to 20 new life science companies were formed in the region each year during the last decade. The cluster organization Stockholm Science City (SSCI) points out that Stockholm was ranked number 1 by the EU Commission's "Regional Innovation Scoreboard," 2022, with life sciences as an important industry there Here are 50% of all life sciences employees in Sweden, around 1,000 life sciences companies where all sectors in the industry are represented. In addition, there are five universities with significant life science activities, three university hospitals, and essential authorities such as the Medical Products Agency and the Public Health Agency. An example where the focus is on life science besides real estate and urban development is Hagastaden. As of SSCI, one of the neighborhoods main attractions is "proximity, proximity, proximity." In Hagastaden is the Karolinska Institutet, Karolinska University Hospital, St Erik's Eye Hospital, and within walking distance of KTH and Stockholm University. Close ties between government, industry, and academia shall facilitate the development of ideas into commercially viable products. On top there is the basic principle in Sweden that the individual researcher owns the result of his or her research – which can be a considerable motivation.

Leiden/Amsterdam

The Leiden Bio Science Park (LBSP) was established in 1984 in the Leeuwenhoek area and comprises 411 companies. LBSP claims to have taken a strong, global position and evolved into the Netherlands' largest life sciences / health cluster, connecting talent, researchers and entrepreneurs. The district and its community include more than 21,000 innovators and 22.500 students Leiden, on the other hand, is part of the Amsterdam biotech region, around 36 kilometers away. The Amsterdam Life Sciences District in the southeast of the city comprises multiple start-ups, global medical companies, and universities. The cluster organization underlines Amsterdam´s global leading role in cancer research and artificial intelligence (AI), as well as its extensive base of clinical research. The city is home to two academic hospitals, united under the umbrella of Amsterdam UMC, plus the Netherlands Cancer Institute (NKI), Sanquin and the Academic Centre for Dentistry (ACTA). Furthermore, several industry players have relocated to Amsterdam after the European Medicines Agency (EMA) moved here from London in 2019.

Paris

Paris concentrates most of the French biotech industry. Some call it even Europe's biggest bio cluster. Medicen, the local cluster organization, says, it has around 500 members – 350 small and mid-sized enterprises, structured in the main areas of biotech, medtech and e-health. In total the cluster organization counts 150 biotech companies. As of Labiotech, Paris was clearly lagging behind compared to the UK until the end of the 20th century. In the meantimemeantime, the city not only caught up but outpaced the UK in many aspects. The biotech platform took its own approach to site evaluation by setting the selection criteria of €1 million raised capital respectively revenues and the grade of proprietary technology. Accordingly, Paris is leading the way in Europe with 47 biotech companies matching these criteria. The news site also has an explanation why only few people know about Paris´s position as the biggest bio cluster of Europe. One of the reasons is the performance of the politics respectively the cluster management. Labiotech: "Medicen, the cluster of the region, has been recognized as one of the worst in France."

Basel

The Swiss city of Basel is not only home to well-known pharmaceutical companies such as Roche and Novartis, but also hosts numerous biotech companies. According to the local life sciences marketing company, the location has around 800 companies and 28,000 employees and covers the entire value chain from research and development to production and marketing. Labiotech.eu had already included Basel in its list of European biotech hubs with the most interesting companies in 2018. The region has developed into a "hotspot for pharma and biotech." For example, the biopharmaceutical company Actelion, which was acquired by the US group Johnson & Johnson for almost $30 billion, is "one of the largest companies in European biotech history." The proximity of Big Pharma, the presence of flagship companies and a large number of small and medium-sized biotech companies such as Basilea, Allecra, Santhera Pharmaceuticals and Polyphor make the region an incubator for success stories. The proximity to prominent life sciences research at the universities and research institutes as well as the proximity to clinical research at the university hospitals in Basel are also considered essential for innovation.

Berlin

The Berlin-Brandenburg region also counts itself among the leading locations when it comes to health and innovation. The region is particularly strong in its concentration and networking of science, clinics and industry. According to the cluster management, more than 670 companies from the biotechnology, pharmaceutical and medical technology sectors benefit from the scientific environment, the clinical research landscape and the proximity to decision-makers from politics and the healthcare sector. The biotech sector alone accounts for 281 companies with almost 7,200 employees

The consulting firm BCG says: "More specifically, Berlin stands out for its strength in the category business environment and entrepreneurship (…) driven by the considerably higher number of companies funded by angel investors."

Heidelberg

BioRN describes itself as the innovation cluster of the Rhine-Main-Neckar region around Heidelberg, "one of Germany's strongest biotech hubs". The non-profit network counts more than 140 members, including universities, research institutions and technology parks. Ten global pharmaceutical companies have R&D sites or are active in the BioRN network. The ecosystem is completed by a range of small and medium-sized enterprises as well as local government organizations and interest groups. BCG points out that "Heidelberg is renowned for its strong scientific output and prestigeprestige, but has only a small lead compared to Munich and Berlin in terms of scientific output quantity and quality. The city's reputation and achievements in scientific research contribute significantly to its standing in the biotech community, although this rarely translates into commercial success."

Munich

According to its Managing Director Ralf Huss, the Bavarian biotech cluster BioM in Munich-Martinsried has been a national and European leader since it was founded more than 25 years ago. The starting point was and is a supportive policy with the provision of financial resources and an infrastructure with numerous innovation and start-up centers. The innovations and start-up ideas mainly come from the two universities of excellence, the Technical University (TUM) and the Ludwig-Maximilians University (LMU). In recent years, there has not only been a growth in biopharmaceutical companies, but also an increasing number of technology companies settling here. The state's current biotech report lists 527 companies with 58,000 employees throughout Bavaria. In addition to Munich, Regensburg and Nuremberg-Erlangen are also important locations in Bavaria. In the opinion of BCG "Munich emerges as a leader in biotech venturing within Germany. The city's ecosystem is particularly favorable to the growth and development of biotech start-ups. This is remarkable because the overall start-up activity is clearly behind Berlin."

Germany not in the top league

However, the positive characteristics of the German locations cannot hide the fact that they do not play in the top league in international comparison. Looking at all three German locations, BCG states: "Collectively, these findings suggest that the Berlin, Heidelberg, and Munich hubs exhibit strong complementarity. However, Germany does not capitalize on these synergistic potentials. Indeed, the combined BIHI of these three hubs is 30% lower than Paris's score and 45% lower than London's."

The consulting firm concludes: "The results of this study call for a wake-up call, particularly for Europe, and more specifically for Germany. The findings are stark: Europe's performance in biotech innovation is suboptimal, with Germany displaying particularly concerning outcomes. This requires a reevaluation and reinvention of Germany's approach to collaboration and innovation in the biotech sector."