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European Biotechnology

Life Sciences and Industry Magazine

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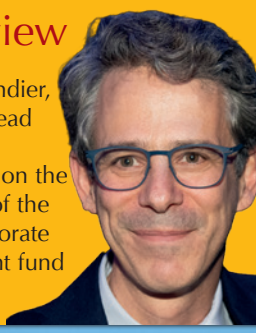
Interview

Alexis Vandier, Global Head of Servier Ventures, on the creation of the new corporate investment fund



FREE EXCERPT

A new generation of biotech contenders

Startups to watch in 2026

Macrocycle Boom
Combining small molecule strengths with biologic promise

Portugal Rising
Inside one of Europe's emerging biotech innovation hubs

CDMO Landscape
The figures behind Europe's evolving CDMO market

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Europe's pivotal choice: Vaccination is health security

The COVID 19 pandemic demonstrated that Europe can move fast, take risk, and deliver world class vaccines when political will, science and capital are aligned. Treating vaccines as strategic assets, backed by sustained political and financial support, will be key to maintaining Europe's long-term investment in public health and innovation.

Europe treats vaccination as a cornerstone of collective health security, economic strength, and societal resilience. Coordinating domestic policies, council recommendations, and European level funding, it supports next generation platform innovation, boost uptake, and tackle hesitancy. This integrated framework positions the European biotech sector as a global leader in vaccine development and pandemic preparedness.

CARSTEN RUDOLPH, PhD is a co-founder of Ethris and the lead inventor of its SNIM® RNA Technology. His deep expertise is delivering mRNA specifically to the lungs. He is the inventor of 15 patents/applications and has authored more than 120 scientific publications. Carsten is affiliated with the Dr. von Haunersche Children's Hospital, part of Ludwig Maximilian University in Munich. He obtained his pharmaceutical degree from the Freie Universität Berlin.

A recent example is the European Commission's commitment to spend €225 million to accelerate the development of next generation flu vaccines. The initiative will explore multiple vaccines in parallel via precommercial procurement contracts with three European consortiums and organizations. One of those is NOFLU, a pan-European initiative of seven partners, including Ethris. NOFLU supports the advancement of an mRNA-based mucosal vaccine against pandemic influenza, leveraging our technology. mRNA based vaccines and innovative approaches like mucosal delivery are relevant work to deliver improved protection against respiratory viruses, and an approach Europe is investing in.

NOFLU brings together complementary expertise spanning mRNA formulation and delivery, preclinical research, and clinical trial execution up to commercialization. It showcases a European model that is collaborative, platform-centric and milestone-driven.

Sustaining Europe's leadership in vaccine innovation and pandemic preparedness requires two reinforcing pillars: continuous political and financial support at European and national levels, and robust venture capital investment in early-stage innovation. Public funding derisks breakthrough platforms and ensures that preparedness is not left to market cycles alone, while private capital drives speed, scalability and translational excellence across the biotech ecosystem. Aligning these forces will strengthen Europe's long-term resilience and foster public health. ■

Carsten Rudolph

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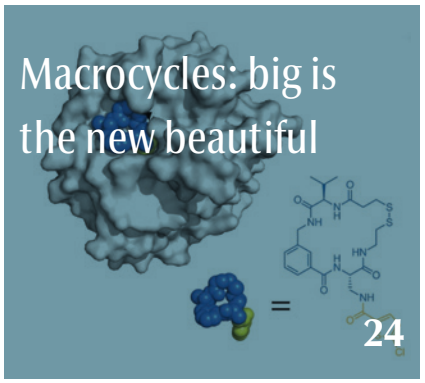
COVER STORY

TECHNOLOGY



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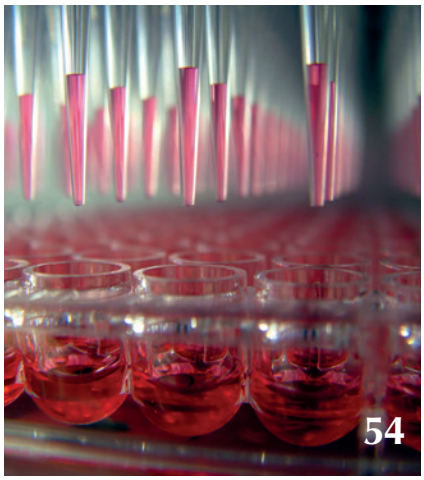
SPECIAL

Portugal's biotech industry

Portugal is stepping out of Europe's biotech shadows. New science parks, faster clinical trials, fresh funding and a new generation of startups are giving the country something it long lacked: real momentum and a clearer path to scale.

SPECIAL



Lab automation + data science

Laboratory automation is evolving fast. What used to be a patchwork of isolated device solutions has steadily moved toward smarter, interconnected labs. And now that robotics is pushing the field one step further, a fully autonomous research environment no longer feels like science fiction.

SPECIAL

CDMO Landscape Europe

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EDITORIAL

Print that lasts

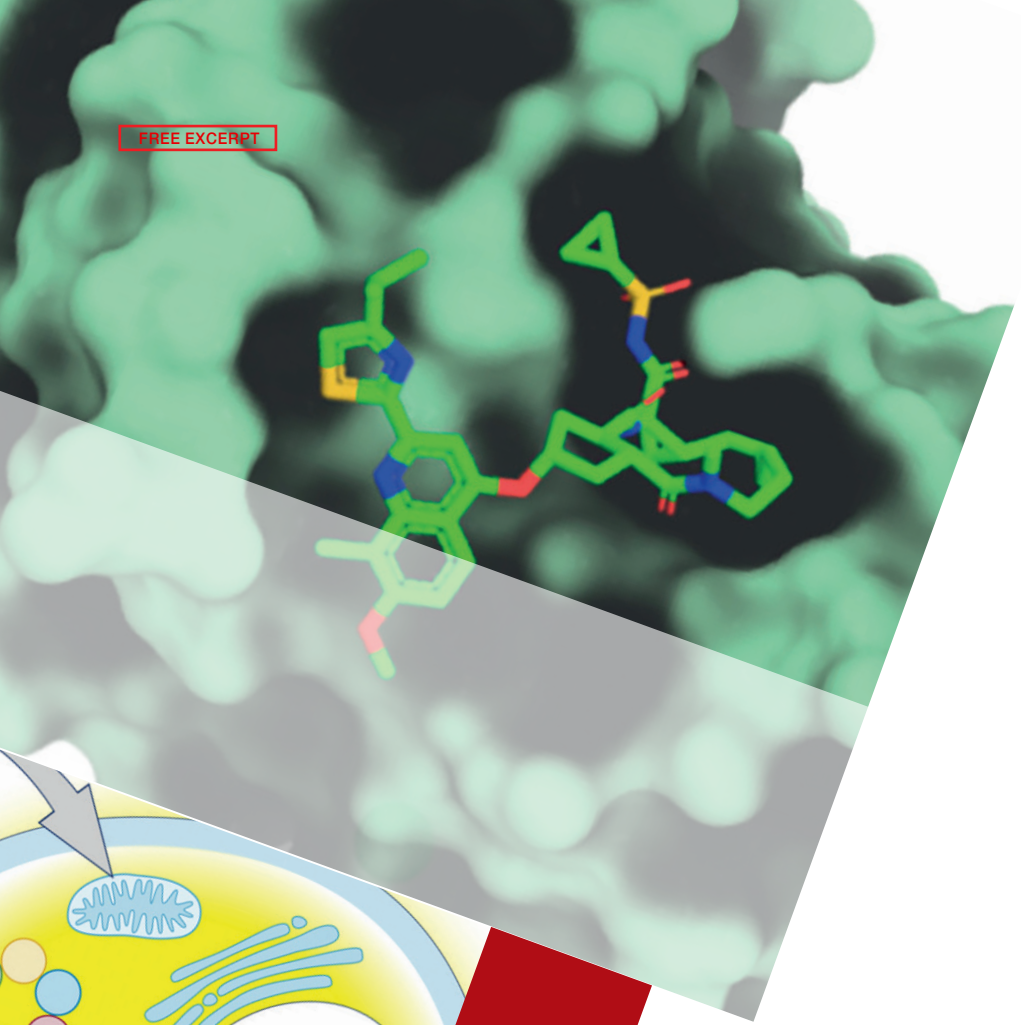
Print journalism, at its best, is built to outlast the moment. Online is where we chase the breaking update; a magazine is where we earn the reader's time. It invites slower journalism: reporting that can breathe, arguments that can be tested, and stories that carry context rather than noise. In marketing language, print should be "evergreen"; useful today, and still worth keeping on a shelf months from now. The format itself encourages focus.

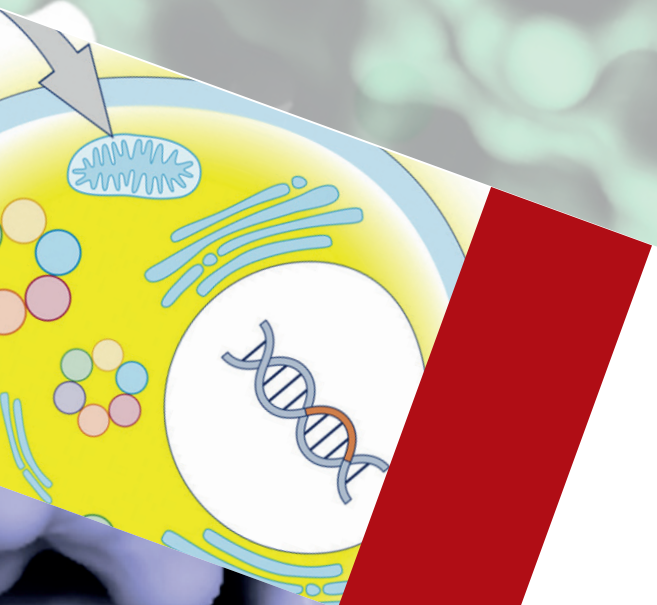
That idea guided this first edition of 2026. You'll find fewer quick hits and more long-form pieces, written to go deeper into the science, the business, and the people behind it. We've aimed for stories designed to last beyond deal announcements, trial headlines, and fleeting trends. And when I say "we," it is a collective effort: this issue welcomes new writers, whose voices strengthen the magazine and whose names you'll see at the end of their articles.

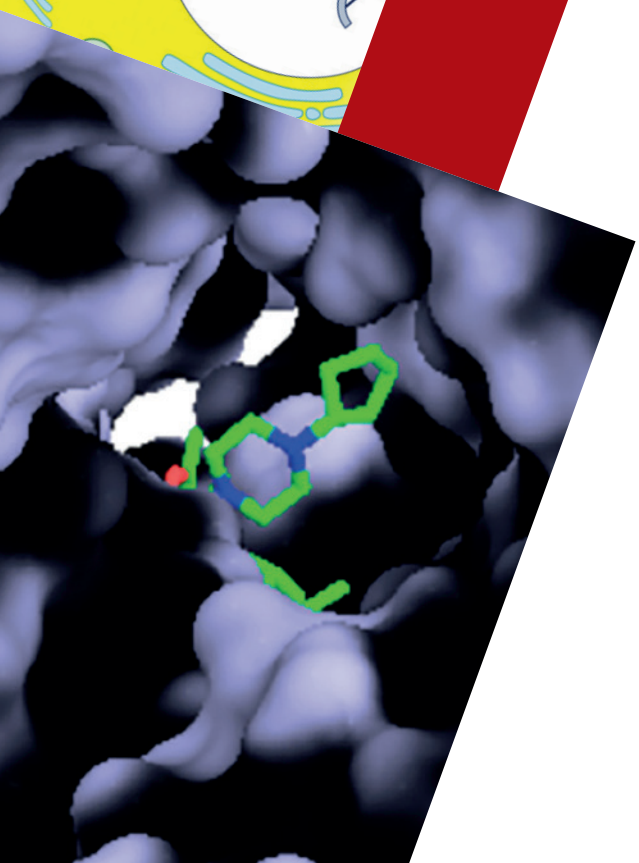
You'll also discover a new feature: our first-ever "startups to watch" selection. Covering this industry puts us in the front row to discover the next generation of biotech builders. Predictions are always risky, but we've made them carefully, and we hope our shortlist sparks your curiosity (and, ideally, holds up).

Old habits don't disappear entirely and news still matters, but this time, we've gathered it in one dedicated section for clarity and convenience. It begins on the next page, so if you're ready, turn it over and enjoy the read!

Joachim Eeckhout
CEO







Macrocycles: big is the new beautiful

DRUG DESIGN In the evolving landscape of drug discovery and new design, scientists and pharmaceutical innovators continually strive to develop therapies that are both highly selective and clinically effective, while addressing targets previously deemed “undruggable”. In recent years, macrocycles – a class of large, ring-shaped molecules – have emerged as a compelling solution at the crossroads between traditional small molecules and large biologics, offering a blend of high specificity, rich chemical diversity and promising pharmacological profiles.

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What if synthetic large molecules could be designed to fit almost any receptor pocket imaginable? While this may sound like a new frontier in drug development, the underlying idea is far from new. A wide range of protein scaffolds has already been explored and advanced from preclinical research toward the clinic, including Pieris' lipocalin scaffold in Munich and the DARPin-based molecules developed by Molecular Partners in Zurich. Although Pieris ultimately failed to deliver on the promise of an antibody-like structure with greater flexibility and smaller size, Molecular Partners is now entering the clinic, where the first data will reveal whether this approach can carve out a place in the biologics space. But a new player has now entered the scene, and this time size seems to matter less than ever. Fueled by advances in chemistry, machine learning, and automated discovery platforms, macrocycle drug discovery has surged into the spotlight, attracting major biotech investors, global pharmaceutical companies, and ambitious European startups alike.

What are macrocycles?

At their core, macrocycles are organic compounds in which the atoms form a large ring structure. Formally, they contain a circle of at least 12 non-hydrogen atoms in a single contiguous loop. This cyclic topology grants them distinct conformational properties compared with simpler linear molecules: they are preorganised and semirigid, which can dramatically enhance how they bind to biological targets.

Macrocycles cover a diverse chemical space that overlaps neither with traditional "Rule of Five" small molecules (designed for ease of oral absorption) nor with large biologics such as monoclonal antibodies. This hybrid space lets macrocycles combine the high target affinity and selectivity often associated with biologics with the cell permeability and, increasingly, oral bioavailability more typical of small molecules.

This feature makes macrocycles particularly valuable for tackling protein-protein interactions, flat or groove-like binding surfaces, and other challenging targets that have frustrated small-molecule efforts for decades.

Early success and history

Macrocycles are not entirely new to medicine, their therapeutic potential has been recognised for decades. Indeed, some of the earliest and most successful macrocycle drugs were discovered in nature. The immune-suppressant cyclosporine, isolated from a fungus in the early 1970s, transformed transplant medicine by suppressing T-cell activation and helping prevent organ rejection.

Natural macrocyclic compounds and their derivatives have since made their way into numerous approved medicines, particularly in infectious disease and oncology. Yet, historically, most macrocycles approved to date have been natural products or closely related derivatives rather than synthetic designs.

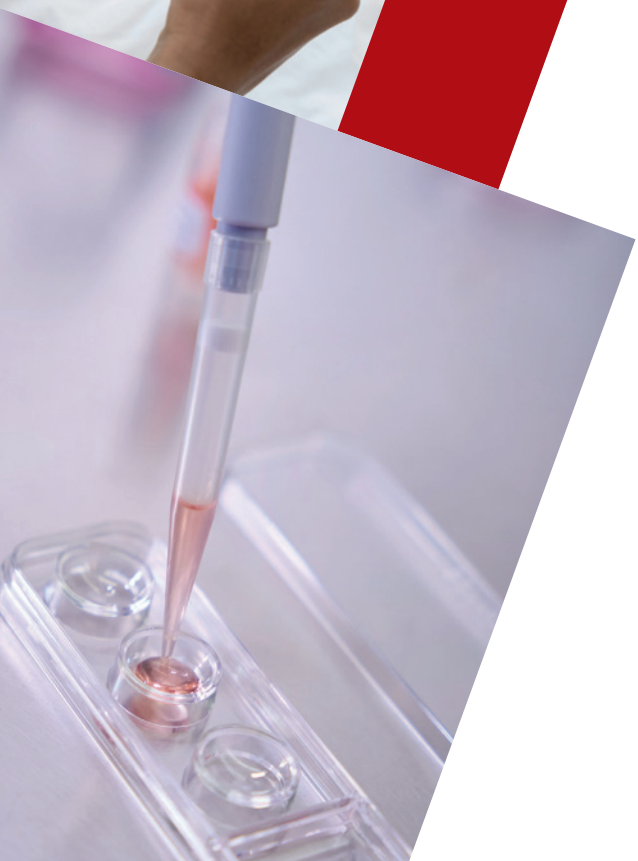
This presents an important nuance: although macrocycles have long been known to be effective drug molecules, designing and synthesising them de novo – especially with properties amenable to oral dosing – has proven difficult. The complexity of macrocycle chemical space made systematic exploration extremely challenging until recently.

Why macrocycles matter today

In the past decade, technological and scientific advances have begun to unlock macrocycles as a practical and versatile drug class. Several factors are converging to propel macrocycle innovation:

- Enhanced binding capabilities: Macrocycles can often achieve higher affin-

›› **Read the full story in the printed issue**.



Can biotech finally fix infertility?

DEEP DIVE According to the WHO, one adult in six globally is affected by infertility, but beyond this statistic, infertility is best understood as a couple's problem, even when the underlying biology sits with one partner. The way we currently handle infertility issues is more about bypassing biology through procedure, with in vitro fertilisation (IVF) as its backbone. But while IVF is indispensable, success rates still vary, pushing biotech to step in and find new solutions.

Infertility care is now heavily structured around assisted reproduction technology (ART). IVF and its close relatives have become the default pathway, largely because they give clinicians control over the part of reproduction that can be influenced reliably, such as fertilisation and early embryo development.

But even in this highly optimised setting, outcomes still vary widely from one couple to the next. According to the European Society of Human Reproduction and Embryology (ESHRE), in 2020, the mean pregnancy rate per embryo transfer was about 33% after IVF and intracytoplasmic sperm injection (ICSI), about 36% after frozen embryo transfer, and around 51% after egg donation, with a success rate higher in younger patients.

IVF works often enough to have become the backbone of treatment, but it still leaves a lot of biology unaddressed. Implantation is a clear example. Successful implantation depends on a dialogue between embryo and endometrium, and when that dialogue fails, the embryo simply doesn't take, in many cases without a clear explanation.

Reviews of recurrent implantation failure describe it as a persistent clinical phenomenon, affecting an estimated 10% of couples undergoing IVF and embryo transfer[1]. If you can improve endometrial receptivity, reduce inflammation, or shift the local environment in a measurable way, you could theoretically raise the odds of success without changing the IVF process itself. Another blind spot is that assisted reproduction often works around underlying biology rather than correcting it, especially in cases of male factor infertility. Technologies such as ICSI can bypass many sperm-related barriers by design, but it's not a direct treatment of the male reproductive problem itself.

Over time, ICSI also expanded well beyond clear male-factor indications in many settings, and there has been criticism that it is used where it doesn't improve outcomes and may add cost and complexity. A 2025 analysis in Reproductive BioMedicine Online argues that ICSI should be limited to couples with male infertility, describing widespread overuse in ART[4].

This is also where the female-centred dynamic of infertility care becomes hard to ignore. Even when infertility originates in the male partner, the most established solutions tend to move the clinical burden toward the female body: ovarian stimulation, egg retrieval, embryo transfer, and hormonal support. That's not because clinics ignore male factors, but because the dominant toolbox is procedural and couples-focused, and the interventions that reliably change outcomes have historically been built around the female cycle and the IVF workflow.

> "Although infertility is 50% men related, there is no approved treatment addressing this segment. There is no standard of care for half the population."
>
> Florent Ferré, CEO of Igyxos

"The issue that we are facing with IVF is that more and more women don't respond well to the hormonal stimulation, which is the first part of the IVF treatment, and therefore are not very successful when they go through the procedure. This is why there is a need for more effective treatment," said Florent Ferré, CEO of Igyxos, a fertility-focused biotech based in France.

Much of the current innovation isn't trying to replace IVF or promise cures. It's trying to intervene in the unresolved steps where IVF has blind spots.

Treating biology upstream

One reason fertility care has become so tightly organised around IVF is that it offers predictable control that drug-based approaches have struggled to deliver consistently. Hormone biology, in that setting, has often been used less as a way to correct underlying dysfunction and more as a means of making IVF cycles work through ovarian stimulation protocols, trigger injections, and luteal phase support. Endocrine signalling, in other words, has largely been folded into the IVF workflow rather than treated as a therapeutic target itself.

On the female side, hormone manipulation is central to controlled ovarian stimulation, but primarily to optimise egg yield and timing rather than restore ovarian function. On the male side, medical options are even more limited. "Although infertility is 50% men related, there is no approved treatment addressing this segment. In a couple, even if infertility is men-related, the healthy wife will go through the IVF, meaning there is no standard of care for half the population," said Ferré.

Outside a narrow set of endocrine deficiencies or surgically correctable conditions, most male-factor infertility is managed procedurally: if sperm parameters are poor, IVF with ICSI can bypass the problem, but it does so without addressing the biological cause.

Targeting male infertility biology may become increasingly important over time, too. "Over the last 25 years, we have seen more and more sperm decline. We are looking at a decline of 2% to 2.5% every year. If this trend stays on track, by 2040, almost half of the men will be in a situation of low concentration," noted Ferré.

According to Igyxos' CEO, the first reason why the male factor of infertility has been overlooked comes from a cultural bias. "Also, infertility related to men was not well understood. And looking at the available data, it's probably only since the 2000s that more studies confirmed that it's not a woman's issue, but a couple's issue."

That upstream gap, where reproductive biology sets the odds before IVF begins, is where Igyxos positions its approach. The French company is developing IGX12, a monoclonal antibody designed to potentiate the follicle-stimulating hormone (FSH), a regulator of gamete production in both sexes. The

›› Read the full story in the printed issue.

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Coming up in the Summer edition

Q2 2026 PREVIEW The next issue of *European Biotechnology Magazine*, **published on 4 June 2026**, will once again explore the trends, technologies, and business dynamics shaping Europe's biotech industry.

This Summer edition will spotlight three special topics with strong commercial and editorial relevance: Drug Delivery, RNA Technologies, and a Country / Region Special dedicated to showcasing the strengths of one of Europe's most dynamic biotech hubs.

Alongside these special topics, the issue will also feature coverage of start-ups, an in-depth interview, analysis of emerging technologies, a deep dive into key industry developments, insights on intellectual property and drug development, and profiles of notable people in biotech.

For companies and organisations looking to position themselves in front of a pan-European audience of biotech leaders, innovators, investors, and policy stakeholders, this issue offers a strong platform for visibility and thought leadership.

The booking deadline for advertisements is 21 May 2026.

For the Country / Region Special, we are also inviting regional stakeholders interested in putting their biotech ecosystem in the spotlight to get in touch and help shape this feature.

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