Morten Graugaard â?? CEO, Orbis Medicines

> Technologies enabling oral biologics development will become increasingly valuable as pharmaceutical companies recognize the commercial imperative for accessible, cost-effective alternatives to current injectable therapies.

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Morten Graugaard, former partner at Novo Holdings A/S, a global life science investment fund, became CEO of Orbis Medicine in February 2025. Drawing on his deep experience in life sciences and venture capital, he has led the company to raise EUR 116 million in funding, positioning Orbis as a pioneer in oral biologics through its next-generation macrocycle platform.

Shifting from investor to entrepreneur, what first drew you to Orbis Medicines, and how did you navigate the transition from board member to CEO?

My journey to Orbis Medicines was indeed atypical for most biotechnology CEOs. Prior to assuming the full-time CEO role at Orbis Medicines in February 2024, I served as a partner within the company creation team at Novo Holdings, where I was instrumental in launching multiple biotechnology ventures. Orbis Medicines emerged from an investment thesis developed around the significant commercial opportunity in creating orally available biologics. This investment thesis was developed along with several very talented colleagues at Novo Holdings, Entrepreneurs in Residence (EiRs) as well as the initial Orbis team.

At the time, considerable excitement surrounded AI-driven biotechnology companies such as Exscientia, SchrÃ¶dinger, Atomwise, and Isomorphic Labs. However, these platforms predominantly focused on small molecule applications, leaving a substantial gap in the space between small

molecules and biologics. The industry exhibited strong interest in developing molecules that could replicate the therapeutic efficacy of biologics while maintaining oral bioavailability. This represents a fundamental industry trend with profound implications for patient accessibility and market dynamics.

Through one of our EiRs at Novo Holdings, we came into contact with Professor Christian Heinis at EPFL, a distinguished macrocycle expert with notable credentials as co-founder of Bicycle Therapeutics, now a successful NASDAQ-listed company. The challenge with first-generation macrocycle technologies was their limited oral bioavailability, which ultimately led Bicycle Therapeutics to pivot toward injectable medicines within the area of oncology. Professor Heinis returned to fundamental research to develop next-generation technology capable of producing truly orally available peptides. This work was done in close collaboration with Sevan Habeshian a Doctoral Researcher in his lab. Both Christian Heinis and Sevan Habeshian are scientific co-founders of Orbis Medicines.

This technological breakthrough became the foundation for Orbis Medicines. We established the company as a Danish entity, licensing the technology from EPFL. I served as executive chairman for the initial three years, effectively functioning as the operating CEO before formally assuming the title. The company secured initial funding from Novo Holdings, followed by an official EUR 26 million seed round in early 2024 with Forbion as a co-investor, culminating in our EUR 90 million Series A in January 2025.

Following several good discussions with colleagues at Novo Holdings I decided to take the jump and become the full time CEO â?? a role that I am very excited about but also humble as the task of developing oral biologics is a truly â??holy grailâ?• of the pharmaceutical industry. I truly enjoy being a part of Orbis and have been focused on building the team, setting up our site here in Copenhagen as well as focusing on building a strong culture of One Orbis â?? a company where we work as one team. Personally, I also greatly benefitting from having Mikael Dolsten, former CSO and President of Pfizer Research and Development join Orbis as Chairman of the Board. Not only is he very excited about Orbisâ?? potential he also brings vast experience from managing large R&D organizations and is also a great personal sparring partner.

Macrocycles represent a sophisticated therapeutic modality that may be unfamiliar to many industry observers. Could you provide an overview of their therapeutic potential and the commercial opportunity they present?

Macrocycles are fundamentally cyclic peptide molecules composed of amino acids arranged in a ring structure. Their strategic importance lies in their capacity to mimic the therapeutic action of large biological entities such as antibodies and peptides while potentially maintaining oral bioavailability. This capability addresses a critical industry need, as evidenced by two pioneering programs approaching market entry.

Johnson & Johnson (via a collaboration with Protagonist) has developed an oral macrocyclic IL-23 inhibitor that replicates antibody function in an oral format, while Merck has created an oral PCSK9 macrocyclic inhibitor with similar therapeutic equivalence (program originated from a collaboration with RA Pharma). However, these first-generation natural amino acid-based macrocycles suffer from significant limitations. Their large molecular size as well as limited diversity constrained by the twenty natural amino acids available for each ring position results in compounds with minimal oral bioavailability and only using permeation enhancers are they able to achieve around one percent oral bioavailability.

This inefficiency necessitates producing one hundred times the active pharmaceutical ingredient required for therapeutic effect, with the remainder essentially wasted. The drug discovery process for these molecules is extraordinarily complex and resource-intensive, requiring hundreds of medicinal chemists and specialized formulation enhancers to achieve even marginal oral bioavailability. In addition, the low oral bioavailability impacts patient convenience and potentially therapeutic effect as patients need to be fasted before and after taking the medicine.

The commercial imperative for oral biologics is compelling across multiple dimensions. In the rapidly expanding obesity therapeutics market, we observe significant competitive pressure driving the transition from injectable to oral formulations. Eli Lillyâ??s oral GLP-1 program exemplifies this trend and is widely anticipated to provide substantial competitive advantage.

Similarly, in immunology, numerous blockbuster antibody therapies reach only ten to twenty percent of eligible patients due to market access restrictions. Payers increasingly resist the high costs associated with biologic medicines, limiting patient access despite clinical eligibility. Oral biologics offer the potential for improved manufacturability, reduced costs, elimination of cold supply chain requirements, and ultimately greater patient accessibility to highly effective treatments.

For pharmaceutical companies, this shift aligns with a broader move from injectable platforms to scalable, oral delivery systems especially in areas of chronic diseases where patients will need life-long treatment including the possibility of co-administering several oral biologics for maximal therapeutic effect. There is growing strategic interest across big pharma in securing in-house capabilities for oral biologics. Macrocycles are uniquely suited for this purpose, provided the chemistry challenges can be addressed.

That is precisely what Orbis is doing. Our high-throughput synthesis platform, nGen, built on rational design and advanced synthetic chemistry, represents a step change in how macrocycles are discovered and optimised. At Orbis we are developing fully synthetic macrocycles that we have termed nCycles. We are also integrating artificial intelligence and machine learning tools into the process, further accelerating lead identification and candidate selection.

You recently established a partnership with the Danish Centre for Artificial Intelligence to utilize Denmarkâ??s first supercomputer. How will this collaboration enhance your platform capabilities?

This collaboration represents a strategic convergence of computational power and our proprietary synthetic capabilities. We will leverage this supercomputing capacity to optimize artificial intelligence and machine learning models across two critical applications: de novo generative design and hit-to-lead optimization.

The de novo design component employs generative AI to computationally identify novel molecular hits for specific targets. This approach provides access to the complete known chemical diversity, which in our case is over 1030 potential nCycles utilizing thousands of synthetic synthetic building blocks, significantly expanding the chemical space from the normal 20 natural amino acid building blocks. Each macrocycle typically contains four to eight building blocks, creating a theoretical chemical space requiring more combinations than stars exist in the universe. Physical testing of this complete space is impossible, making computational filtering essential.

The hit-to-lead optimization component utilizes AI to generate superior compound suggestions based on initial binding molecules. Our distinctive advantage lies in our ability to rapidly synthesize and test tens of thousands of these computationally designed molecules through our high-throughput

platform, whereas traditional approaches might evaluate only hundreds of compounds.

This creates what we term â??lab-in-the-loopâ?• methodology which utilizes AI as well as our large physical libraries of compounds (currently we have more than 140 Bn compounds in our libraries) to identify potential compounds, followed by our unique synthetic capability to test thousands of these hypotheses, generating data to inform subsequent design and synthesis cycles. The Danish Centre for AI collaboration specifically focuses on optimizing our diffusion models using NVIDIAâ??s computational infrastructure, enhancing the probability of successful de novo design.

As machine learning and AI continue to evolve, how do you see its role in improving the efficiency, precision, and risk profile of molecular discovery and early drug development?

While acknowledging the significant enthusiasm surrounding AI in pharmaceutical research, I believe measured expectations are essential. The technologyâ??s true impact requires validation through actual compound data and clinical outcomes. Our advantage lies in the ability to rapidly translate in silico AI designs into real data from our in-house lab-in-the-loop nGen platform, enabling continuous model refinement and validation.

AIâ??s transformative potential stems from its capacity to address challenges impossible through physical means alone. Our platform can theoretically generate more than 10^30 potential compounds , far exceeding our physical testing capabilities. AI enables filtering this astronomical chemical space into manageable sets of thousands of molecules suitable for experimental validation.

Rather than dramatically accelerating timelines, AIâ??s primary contribution for Orbis in the short to medium term lies in risk reduction and probability enhancement. Traditional hit-finding approaches might yield three viable scaffolds for optimization; AI-enhanced approaches could provide five or six, fundamentally improving success probability. As machine learning models incorporate additional parameters such as drug-like properties, bioavailability, stability, and safety profiles, we anticipate achieving higher productivity and faster cycle times.

Our strategic differentiation involves focusing on targets with established biological validation to mimic marketed biologics or those with clinical proof-of-concept. This approach eliminates biological risk while leveraging our highly automated platform to reduce molecular discovery risk as well as lowering R&D cost due to a highly automated lab-in-the-loop platform.

What factors do you believe have driven such strong investor interest and confidence in Orbis Medicinesâ?? platform and strategic vision over the past year?

The financing trajectory reflects substantial investor confidence in our technological approach and market positioning. Our seed financing of EUR 26 million from Novo Holdings and Forbion, followed by our EUR 90 million Series A within twelve months, demonstrates strong market validation.

Our investor syndicate represents an optimal combination of strategic capabilities: leading European investors Novo Holdings and Forbion, premier US venture capital firm NEA as our Series A lead, crossover investor Cormorant, the Danish Growth Fund, and crucially, Eli Lillyâ??s venture arm. This pharmaceutical industry validation provides essential credibility and strategic value.

The Series A round was oversubscribed, requiring us to decline numerous interested funds while maintaining substantial inbound interest. This enthusiasm reflects several factors: our positioning

within the global pharmaceutical trend toward oral biologics, our low biological risk profile through validated target selection, and macrocyclesâ?? growing momentum as a therapeutic modality.

The technology validation is evident through over fifty macrocycle-based products currently marketed, though traditionally developed through complex, resource-intensive processes. Our engine platform industrializes this approach through highly automated synthesis, making it compatible with modern R&D productivity requirements while having the possibility of achieving superior oral bioavailability compared to current market standards.

How would you characterise the advantages and limitations of scaling a biotech company like Orbis Medicines within Denmarkâ??s ecosystem, and how are you addressing them?

The scaling challenge transcends Denmark, representing a broader European versus US capital allocation disparity. European venture capital significantly underweights biotechnology investment compared to the US, with only a handful of major European funds capable of supporting companies through multiple growth stages.

Denmark provides exceptional advantages for Orbis Medicines including access to the Gefion supercomputer, strategic investors Novo Holdings and the Danish Growth Fund, and a robust life sciences ecosystem. However, long-term scaling requires a dual-footprint strategy. We maintain active operations in both Denmark and Switzerland, with plans for expanded US presence at the right time.

The fundamental challenge lies in European limited partner investment patterns. European pension funds and institutional investors must increase their venture capital allocations to create funds capable of supporting companies through complete development cycles. Currently, most Danish biotechnology companies require US capital market access for later-stage financing and eventual public market listing, as NASDAQ remains the primary global biotechnology capital market.

Our strategic approach involves conducting substantial R&D in Denmark while having the potential to establish US subsidiary operations to access capital markets and pharmaceutical industry networks. This dual/triple-footprint model enables us to leverage Denmarkâ??s research excellence while accessing global capital and commercial opportunities.

Looking forward, what strategic options might Orbis Medicines pursue to maximize your platformâ??s potential?

Our primary obligation involves creating optimal shareholder value through various potential pathways: public listing, strategic acquisition, asset divestiture, or partnership arrangements. As a platform technology for orally available biologics, Orbis Medicines represents exceptional strategic value for pharmaceutical companies seeking to expand their therapeutic portfolios.

The pharmaceutical industryâ??s historical investment in antibody platforms during the 1990s and 2000s provides a relevant precedent. Today, we observe similar enthusiasm for oral biologics platforms, driven by the opportunity to extend blockbuster antibody and peptide franchises to broader patient populations, including mild-to-moderate disease states currently underserved by existing treatments.

Our platformâ??s versatility enables pharmaceutical partners to transform their existing biologic portfolios into orally available therapeutics, significantly expanding market opportunities while addressing current market access limitations. The specific value realization path will depend on market dynamics, strategic opportunities, and optimal timing.

What are some of the key milestones Orbis Medicines is focused on achieving in the near future?

In the near term, we are concentrating on three core areas of strategic execution. First, on the platform side, we are deepening the integration of artificial intelligence and machine learning into our discovery engine. These technologies will play a critical role in accelerating design-make-test-analyse (DMTA) cycles, enhancing the precision of our candidate selection, and enabling more robust prediction of drug-like properties from early-stage chemical structures.

Second, we are progressing our internal pipeline with the objective of advancing at least one programme toward clinical development. The financing secured to date is expected to support us through the preclinical optimisation phase and into the clinic with a lead candidate. We are working toward development milestones across multiple projects.

Third, from a business development perspective, we are actively exploring partnership opportunities with pharmaceutical companies. These collaborations may take the form of research and development agreements, where we apply our platform to targets of strategic interest to the partner. This model could include upfront platform access fees, development milestones, and downstream royalties. Importantly, some of these potential partnerships extend beyond oral biologics and into adjacent therapeutic spaces where our macrocycle platform offers differentiated value. These partnership discussions represent a significant area of focus for us over the short to medium term.

As we conclude, what key message would you like to convey about Orbis Medicinesâ?? vision and the broader industry transformation you are driving?

The pharmaceutical industry is experiencing a fundamental transition from injectable biologics toward orally available alternatives, exemplified most visibly in the obesity therapeutics space with Eli Lillyâ??s oral GLP-1 program, however, we will soon see similar trends in the I&I space with J&Jâ??s oral IL-23 macrocyclic inhibitor. This transformation extends across chronic disease areas where patient convenience, ability to combine multiple oral biologics for optimal patient efficacy, market accessibility, and health economic considerations drive demand for oral therapeutic options.

Technologies enabling oral biologics development will become increasingly valuable as pharmaceutical companies recognize the commercial imperative for accessible, cost-effective alternatives to current injectable therapies. Orbis Medicines is positioned to become the definitive orally available macrocycle platform, enabling pharmaceutical partners to develop oral biologics across diverse therapeutic areas.

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