Bachem in Oligonucleotides: Interview with Seamus White

Capacity and sustainability are important unmet needs in oligonucleotide API manufacturing, that's why providing solutions is key for the future. Find out in this interview with Seamus White, Business Development Manager at Bachem, how Bachem started the journey into oligonucleotide therapeutics with the ambition to help and simplify the lives of pharma and biotech companies to ultimately transform the lives of patients.

Link to YouTube video: https://youtu.be/jItdzpr_o2k

1- **Bachem's journey into oligonucleotides started in 2018. What led to the decision to enter this field?**

Well, the potential of oligonucleotide-based medicines is finally receiving the focus it deserves. Rare diseases especially are benefiting from these molecules. This demand will get even greater as oligonucleotide therapeutics move more into chronic diseases too.

However, there are significant unmet needs in the field – revolving around capacity, cost-effectiveness and sustainability. Thus, we saw an opportunity to expand Bachem's customer base by leveraging existing expertise and equipment and to ultimately support the development of novel API.

We are the world's leading company in developing and manufacturing peptides and oligonucleotides. As an API manufacturer, we offer the best solutions for today and are developing innovation for tomorrow. We work with passion and dedication to support our customers in achieving breakthrough medical advances that will significantly transform patients' lives. We will address larger-scale patient populations and indications by transforming how oligonucleotide therapeutics are supplied.

2- **Can you please share any specifics about Bachem's achievements so far?**

We started by purchasing and installing off-the shelf synthesis automates and invested considerable resources in the design of a custom build cleavage and deprotection system. This set-up is used for complex siRNAs synthesis in multi-hundred gram quantities. A first GMP batch for clinical investigations was released in 2019.

In 2021, we completed the qualification of the Pilot Plant dedicated to the downstream processing of oligonucleotides. This will allow us to efficiently process material under GMP conditions in the single-kg range. Even more exciting, we recently completed the installation of our first large-scale equipment train for oligonucleotides. The line has been designed for the processing of synthesis of multi-kg batches. And we have already started working with some pharma and biotech companies for this line.

3- How do you differentiate Bachem from other CMOs in the oligonucleotide market?

We have already 50 years' experience of innovative medications development and manufacturing, with customer-centric excellence. During this time, we have shown to be a trusted and reliable partner for pharmaceutical and biotech companies. With our tailored approach, we are committed to serving customer's needs and ultimately always have patients in mind. Because of this, we keep innovating and developing new technologies! We want to transform the oligo field by bringing solutions to our partners for scalability, cost-effectiveness and sustainability! We will bring innovation to every piece of equipment and processes - from solid-phase synthesis to downstream processes.

4- Can you share some innovation used for your oligonucleotide manufacturing?

At Bachem, we have mastered the art of large-scale solid-phase synthesis, chromatographic purification and lyophilization with tailor-made engineering solutions over decades. We now find that some of these solutions can be adapted for oligonucleotides. An example is MCSGP technology for the purification of crude materials in a continuous chromatography mode. We have introduced this technology for peptide APIs and meanwhile demonstrated feasibility for oligonucleotides as well. We are convinced that MCSGP technology will be cost effective and reduce waste substantially. We are also working on multi-faceted solutions to make the oligonucleotide synthesis process more scalable and more sustainable. Here, we are trying to leverage our scientists' vast experience in protecting group chemistry and in solid-phase synthesis.

5- Looking in to the future, what can you tell us about the oligonucleotide market?

With 14 oligonucleotide medicines already approved by the FDA and EMA, they are now delivering on their promise of curing rare diseases. Furthermore, we see that the pace keeps increasing with about 200 clinical trials and more than 600 preclinical trials for oligo-based products. The market keeps growing as well as the demand, so we want to keep pace with these changes and truly help our pharma and biotech partners develop and manufacture their oligo-based therapeutics that will transform patients' lives.

6- How will Bachem respond to the increasing market demand?

Simply put, we keep investing in our manufacturing capabilities and capacities for peptides and oligonucleotides. Worldwide, we will invest in the next few years about USD 500 Mio in new equipment and production facilities. At the Bubendorf site specifically, we started the

construction of a brand new TIDES manufacturing building which will house additional equipment trains for the production of oligonucleotide based APIs at commercial scale.

7- What do you foresee for oligonucleotide therapeutics?

With the increasing use of oligonucleotides therapeutics, advances in scalability and sustainability of oligo manufacturing is key for the coming years! As a matter of fact, we have launched an internal innovation program to address these challenges. In addition to large-scale and sustainable manufacturing, we see a steady evolution in medicinal chemistry and oligonucleotide conjugation. The molecules tend to become more and more complex featuring various backbone modifications and new conjugation moieties to address pharmaceutical targets located also outside of the liver.

8- Where will Bachem position itself into the future of oligonucleotides?

At Bachem, we are in a great position to support this trend with relevant experience in conjugation chemistries (Peptides, Lipids, PEG, etc) and expert analytical capabilities. We will help enabling the benefits of oligonucleotide treatments to expand from rare to chronic disease – and into more therapeutic indications. Ultimately, we want to use our proven innovation to transform lives – the lives of everyone we work and partner with – and ultimately of course, the lives of patients.

About Bachem

Bachem is a leading, innovation-driven company specializing in the development and manufacture of peptides and oligonucleotides. The company, which has over 50 years of experience and expertise, provides products for research, clinical development, and commercial application to pharmaceutical and biotechnology companies worldwide and offers a comprehensive range of services. Bachem operates internationally with headquarters in Switzerland and locations in Europe, the US and Asia. The company is listed on the Six Swiss Exchange. For further information, see www.bachem.com.