

Sector reviews continued

Life Sciences strategy: Empowering biologics delivery



“In the last ten years something incredible has happened. With the genome revolution, we are no longer giving medicine to the body, we are telling the body to create its own medicine. This is opening an incredible number of possibilities that will change the pharma sector in the next ten years.”

Daniele Piergentili, President Life Sciences

Business units

Pharma

(c.60% of sector sales)

Pharma targets leadership in biologics drug delivery, delivering drug and vaccine systems through synthesis, system formulation and application technology know-how, and comprises three platforms:

Protein/Small Molecule Delivery has an established record of providing excipients (delivery systems) for complex protein drugs. These large, sensitive molecules are typically injected. Our differentiated range delivers the highest purity excipients to customers, including ‘Big Pharma’. Our strategy is to support established small molecule drugs and develop excipients for complex protein and monoclonal antibody (mAb) applications.

Adjuvant Systems was created by our 2018 acquisition of Biosector, creating the best invested third party supplier of adjuvants (immune response boosters) for vaccines. Our strategy is to accelerate use of innovative adjuvant systems, comprising multiple building blocks, supporting WHO vaccine programmes and the development of future preventative and therapeutic vaccines.

Nucleic Acid Delivery was created by our 2020 acquisition of Avanti and delivered the world’s first commercial lipid system for mRNA vaccines for COVID-19. Nucleic acid therapeutic drugs and vaccines will be increasingly commercialised from 2025. Avanti brought an unmatched portfolio of R&D customer relationships, with over 3,000 customers and a diverse range of lipids and similar components. Our strategy is to be a global leader in nucleic acid delivery systems by expanding our portfolio of technologies and ingredients.

Crop Care

Crop Protection

(c.30% of sector sales)

Crop Protection has leading relationships with the major crop science companies, offering ingredients that improve performance and delivery of crop formulations. Our strategy is to deliver sustainable solutions using technology platforms and expertise in complex crop formulation systems, improving yields, accelerating the transition to biologics and contributing to food security.

Seed Enhancement

(c.10% of sector sales)

Seed Enhancement leverages our leadership in seed coating systems to improve germination, stimulate healthy development of seeds and increase crop yield. Our strategy is to be the leader in sustainable solutions for field and vegetable crops.

Life Sciences SDG alignment:

Contributes to 18 SDG targets



Total number of
Pharma
customers:

>5,000

Partner to major
crop science
companies and
growing number
of small and
medium sized
customers



For more information on Pharma, see the investor seminar hosted in October 2022. A Crop Care investor day is to be held in 2023.

Expanding Life Sciences to empower biologics delivery

In Life Sciences, Croda focuses on providing delivery systems for active pharmaceutical and crop ingredients. Our technologies deliver the active, improve its efficacy and solve challenges of stability and sustainability in customer formulations. Our ‘buy and build’ approach to new technology platforms has made Life Sciences as important to Croda as Consumer Care.

Our global footprint gives us presence in the major crop regions and access to leading pharma R&D. Our strength in North America and Western Europe is now leveraged through expansion in Asia and Latin America. Working as an innovation partner to the major crop science companies, we have also expanded with medium and smaller sized customers, especially local customers in Latin America, India and China. Our acquisition of research-focused Avanti in 2020 expanded our pharma customer base to span drug and vaccine discovery and clinical trial stages, alongside our established commercialisation business. These relationships extend beyond global brands to academia, start-ups and biotech, where significant breakthrough discovery happens.

Our strategy is to expand Life Sciences to empower biologics delivery, enabling the move from small chemically synthesised molecules to large and complex biologics, a megatrend which is transforming the pharmaceutical market and which will transform agriculture. In Pharma, we focus on segments with the strongest growth and highest innovation needs, leveraging our delivery systems and technology platforms to create new solutions for customers. In Crop Care, we are reinforcing our leadership with sustainable solutions and leveraging our expertise to accelerate the transition to biologics, which will enable greater targeting of actives and reduced biodiversity impact.

To deliver this strategy, we are investing in innovation, knowledge and capacity. Our R&D investment is creating an extensive innovation pipeline. We are increasing our knowledge base in innovation, sales and manufacturing, co-investing with national governments who recognise the importance of biologics in the 21st century. We are supplementing organic growth with acquisition of new technology platforms, building on the successful growth of our vaccine adjuvant platform, acquired in 2018 and already doubled in sales, and our lipid systems platform, acquired in 2020 and the first to deliver a commercial COVID-19 mRNA delivery system.

Life Sciences targets high single digit percentage annual sales growth, with a return on sales over 30% over the medium-term.

Purpose:

Smart science to improve lives™

Life Sciences vision:

To empower biologics delivery

Strategy to Expand to Grow Life Sciences

Pharma	Crop Care
<ul style="list-style-type: none"> Focus on delivery system niches with high development needs Transition from ingredients supplier to systems provider 	<ul style="list-style-type: none"> Reinforce leadership in sustainable delivery systems Enable the transition to biopesticides

Invest in innovation pipeline, knowledge and capacity



Investing in organic expansion in Crop Care
 Atlox 4913™ is valued by customers for creating stable dispersions in complex crop formulations, ensuring consistent distribution of actives and preventing formulation breakdown. Market demand for this product has increased significantly in recent years, particularly in 2022 with high crop prices incentivising farmers to invest in yield improvements. Despite high input costs, growers are seeking new crop protection solutions as they try and secure the highest possible yields. We have invested in expanding our capacity to meet the needs of our customers and in 2022 created additional capacity for the manufacture of Atlox 4913™ at our Campinas site in Brazil. Our customers value local access to this key dispersant and further investment is mapped for the next five years to expand capacity in other key regions such as Asia.

Sector reviews continued

Life Sciences performance review

Building on an exceptional prior year

“Our strategy is to expand Life Sciences to empower biologics delivery, enabling the move from small chemically synthesised molecules to large and complex biologics which is transforming pharmaceuticals and which will transform agriculture.”

Sales

£682.3m

(2021: £572.3m)

Adjusted operating profit

£229.4m

(2021: £208.5m)

Following an outstanding year for Life Sciences in 2021, with the rapid expansion of Pharma following the Avanti acquisition and exceptional demand for COVID-19 vaccines, 2022 saw further strong progress. Sales increased by 19% and adjusted operating profit by 10%. Across the three businesses, Crop Protection led the way, with exceptional growth driven by double-digit percentage volume and price/mix increases. Seed Enhancement, with its innovative microplastic-free product innovation, also grew sales by double-digit percentage. Croda Pharma consolidated on its stellar growth in 2021, with continued expansion in delivery systems in Protein/Small Molecule Delivery and for non-COVID nucleic acid applications.

Sector sales grew by 19% to £682.3m (2021: £572.3m) with performance strengthening in the second half of the year. Price/mix grew by 6%, while volume was 8% higher. Currency translation added 5% to overall sales growth. Adjusted operating profit increased by 10% to £229.4m (2021: £208.5m), with IFRS operating profit also up 10% to £220.3m (2021: £201.0m). 2022's performance was achieved despite an anticipated near 40% decline in sales of lipid systems to our principal COVID-19 vaccine customers. With Crop Protection a larger proportion of the sales mix and normalising lipid systems margin, return on sales reduced to 33.6% (2021: 36.4%).

Crop Protection was the standout business, delivering strong double digit percentage sales growth, with a combination of high global demand and significant commodity price inflation supporting value added crop treatments. Working in partnership with crop science customers and collaboratively to solve sustainability challenges and improve yields, our aspiration is to be Net Nature Positive by 2030. A particular area of focus is biodegradability to promote soil health, with a number of new biodegradable ingredients coming to market. Syngenta awarded Croda its 'Reduction in Carbon' supplier award, recognising the carbon benefits in use of Croda's products and the customer benefits from our sustainability strategy. We are investing to develop systems for next generation biopesticide delivery that use microbials and RNA, a market which is currently much smaller than conventional pesticides but is growing fast. Biologic actives are more complex and specific, meaning land treatment can be at a much lower level than conventional chemical pesticides.

Seed Enhancement also delivered a double-digit percentage sales increase. As an innovation partner to leading seed companies, our range of microplastic-free seed coatings have been proven in field trials across a variety of vegetable and field crops, with all major customers and in all major regions. This is creating significant growth opportunities, with commercial sales in multiple field crops and vegetables already secured. The business delivered the first successful field trials in the Americas for drought-resistant seed coatings, helping farmers to reduce the negative impact from abiotic stress. It also developed a tailored treatment for potato seeds which have multiple sustainability benefits over potato tubers that farmers have traditionally used.

In 2022, our Health Care business was repositioned as 'Croda Pharma' to focus on segments with complex development requirements. The relaunch was accompanied by a new brand, organisational structure and governance for its exciting project and innovation pipelines. Protein/Small Molecule Delivery grew strongly, providing delivery systems for both mature small molecule drugs and higher growth protein and mAb applications. With 1,400 direct customers, the business is working on over a thousand customer projects across both clinical development and commercial supply. These include projects in several therapeutic areas, such as osteoporosis, hypertension, diabetes and cancer, particularly in Asia, North America and Europe. Strong demand in India will be supported by a new Pharma innovation centre opening soon in Hyderabad.

Within Pharma, the Adjuvant Systems business saw reduced demand from COVID systems in 2022 but has grown to over 100 commercial customers for prophylactic vaccines that prevent disease. It is also supporting many hundreds of pre-clinical and clinical projects, including new prophylactic vaccines driven by the WHO's immunisation agenda and novel therapeutic vaccines that fight already contracted disease. These include a respiratory syncytial virus (RSV) vaccine in phase III trials, a personalised cancer vaccine in clinical phase II development and a new vaccine for Ebola. The innovation pipeline is focused on the development of adjuvant systems to power the therapeutic vaccines of the future, leveraging expertise added with the Avanti acquisition and a new applications laboratory in Denmark.

With mRNA vaccines for COVID-19 having proven the viability of our Nucleic Acid Delivery business, the market for new drug and vaccine applications is developing fast, both for mRNA-based drugs and gene editing applications, which modify a patient's genetic material to correct a disorder. 2022 sales were approximately US\$170m (2021: \$230m), a little ahead of expectations. Sales outside the principal COVID-19 vaccine customers now represent almost 40% of business sales and are expected to be the majority of the \$120m sales expected in 2023, as COVID-19 sales continue to decline. Supporting close to 100 nucleic acid drugs currently in development, including manufacturing materials for a phase III trial of a flu vaccine, combination vaccines, cancer immunotherapies and the world's first human trial of a gene therapy application, the pipeline for this business is strong.

We are investing in innovation, knowledge and capacity to broaden our footprint and capabilities in drug delivery, including new application laboratories aligned to each business. We have a £175m capital programme for the period 2021-24 to expand our Pharma capability, including the expansion of the US Avanti site into a full GMP facility, the expansion of our UK lipid scale up facility and the creation of a second US GMP scale up plant in Pennsylvania. Our investment is supported by up to an additional £75m from the UK and US governments, in recognition of the importance of our delivery systems to future drug development and their pandemic preparedness plans.



Supporting the next generation of therapeutic vaccines

Vaccine adjuvants are used to enhance immune response to an antigen, improving the overall efficacy of the vaccine and increasing protection against the target disease. Croda is the leading independent supplier of vaccine adjuvants with unrivalled breadth across aluminium, saponin and lipid based adjuvants.

In addition to traditional prophylactic (preventative) vaccines, our technology is enabling the next generation of therapeutic vaccines, used to combat an already contracted disease. These are typically higher value, requiring more advanced adjuvant systems. One of Croda's adjuvant systems is included in a personalised immunotherapy drug candidate, currently in phase II clinical trials. The vaccine, in combination with an inhibitor treatment, targets metastatic melanoma, a disease occurring when cancerous cells from the primary tumour spread, starting a new tumour elsewhere in the body.