

Croda International Plc

Health Care Investor Seminar (7 October 2022)

Call transcript

Speakers:

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Daniele Piergentili	President, Life Sciences
Freek Snieders	Senior Vice President, Croda Health Care
James Lawrence	Global Business Director, Protein and Small Molecule Delivery
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Dr Steve Burgess	Managing Director, Nucleic Acid Delivery

Introduction

Steve Fooks, Group Chief Executive

Welcome to the London Stock Exchange. We were just reflecting over coffee that ten years ago if you came to Croda we'd be at Cowick Hall and we'd probably pack you off with a packed lunch on the way home. And how the world has changed ten years on.

You know today – a lot of today is really part two of our Investor Seminar, part one was all about Consumer Care, the deep dive that we did in March and there are a lot of familiar faces out there, a lot of you came there. Today is all about Health Care and all the growth potential that comes with that. So, the team are very excited to share with you some of the growth potential, particularly the strategy and also our world class platforms that we have got there as well.

Just a reminder on our strategic priorities, I mean they remain unchanged, no U-turns from Croda today. And they are consistent. And at its heart it is all about the passion for our purpose, you know the smart science to improve lives. Whether that is working with our partners to generate the next new medicines, or whether in Crop is it supporting economical food production for the future for the growing masses in the world, or in Beauty Care it is working with the big brands of the world to make us look good and feel good. We are improving peoples' lives and we are saving peoples' lives and there is nothing more powerful in Croda that drives us forward with that.

Building on that foundation are two important philosophies, one is to deliver innovation leadership in any market that we operate in. And the other one is to deliver sustainability leadership in any market that we operate in. And those two together offer a huge amount of growth potential.

Around the outside of the wheel, we have got the same six priorities that we've talked to you about before, so let me be brief. It's all about expanding Life Sciences and strengthening Consumer Care.

A lot of that is the deep passion that we have for this move into biologics which Daniele and the team will talk to you about for Health Care today. But it is also about sustainable ingredients as well, this big drive for sustainable ingredients.

And in Crop Care you know just taking the top right of the wheel, you know Crop Care you have seen the big move into biopesticides now and great opportunities for Croda. Plus, a big move into sustainable ingredients. So, you know we'll talk to you more about that probably in Investor Seminar three early next year about the whole Crop business. So, lots of growth potential there.

And in strengthening Consumer Care, you know we talked in March about the four businesses and the deep dive into those businesses. We feel the Consumer Care business is a much more resilient business than it was, and it is demonstrating that as we speak.

Doing the basics brilliantly in Croda is our tagline for being more responsive to customers in every way that we can. As we get bigger in our organisation, more knowledgeable in the Group we have to be more responsive, so how do we find mechanisms internally to do that.

And proactive M&A, you know we have appointed two chief scouts, one for each of our businesses. And chief scout is our football term for looking for the next generation 15-year-old. So, we are looking for Renaldo at 15 rather than him at 36, or 37. So we have appointed our best two business developers in the Group, and we are developing lots of targets. Their priority is technology advancement for the Group, it's building knowledge and capability for the Group.

And fast growing China is something that I spend a lot of my time with, you know we are building knowledge there, we're not building factories, we're building knowledge, that is people on the ground, sales, marketing, research, digital and we see significant expansion potential over the next five and ten years for ourselves and certainly for the industry as well.

And Nick and Dave Shannon talked in Consumer Care about scaling biotechnology. You know we have done that very well. And we are on a journey there. We are not sort of product launches and transformational product launches there, the big area there is operational scale up, something that we're doing. So, we are working with a lot of partners there and also in-house capability to scale that up. So more on that as we go along.

And then back to Health Care, you know biologics is really exciting for us. You've heard me speak and Jez speak a lot about that. You have got a lot of capex in your model; our job today is to develop the revenue model with you and really shine a light on the pipelines. So, as I said more on that from the team in a few minutes.

The portfolio is starting to take shape, you know it's a different business to ten years ago. You know Croda is looking different, it feels different internally as well, you know we're moving to faster growth. And we have got multiple businesses in the company now.

You know ten years ago if people were investing – and I joke when I become CEO most of the discussions about Actives, you know how do you invest in that part of Personal Care, you know Boots No. 7, Olay Regenerist, you know fascinating, you could still invest in that now. But you could invest in Croda because of our Beauty Care business, because of the sustainable ingredients, you could invest because of the emerging market exposure in F&F that we've got. And also, in Crop a big emerging growth potential in the whole move to biologics there as well. And that is before we talk about Health Care today. So, the breadth and depth of the opportunities in Croda is really great to see. And we expect all of these businesses to grow.

And our mandate is along the bottom there, you know we expect to deliver 1.5 times GDP growth in each of these business, greater than 20% return on sales and ROIC twice cost of capital. And Jez and I we sit above this, and we allocate capital resources in that way, to help – to encourage the businesses to grow as quickly as they can. And our job is to make sure that we do that. So that's that.

And also, I think we'd say it's more resilient as well now. We don't have an industrial portfolio that we had six months ago. And in Consumer Care, you know you can look at the F&F business that is now part of that and Home Care, both of those have got a lot of growth in them. So, the Consumer Care business alone is more resilient.

And also in Life Sciences, the niches have just got much bigger with this move to biologics, and this move to sustainable ingredients in Crop. So, we are moving into faster growth in those markets because of market changes too. So, we're very pleased with that.

I think the other thing we'd point out as well is they are all run by Managing Directors, so they all have innovation responsibility, accountability, technology advancement, M&A and their job really is to really search the world for next generation capabilities for us as well.

And then really just on today and meeting the team before we pass over. It really is today, it's not about Steve and Jez, Jez and Steve, where is Jez by the way – you know you see a lot of us, but it is really important that you see the team. There is a depth and breadth to the businesses and the product groups in Croda, there is a depth and breadth to the team in Croda as well and we are very keen to show you that today.

And I think throughout today the real thing we're trying to bring to life is the Health Care strategy and then the component parts of that, these three technology growth platforms and how we're thinking about the innovation pipelines there.

And I think the big message that we want you to take away today is really to be a message across about the size and shape of this innovation pipeline, this biopharma innovation pipeline that we call it, and the team will bring that to life.

As for the agenda, it's pretty straightforward, it's the strategy up front from the team and then the breakout groups will allow you to do a deep dive on each of these three platforms. And then back in here for a wrap up with Q&A and hopefully we should be finished by 12 o'clock and then that should help us to have a chat with you all and welcome you all for lunch. No packed lunches this time. So great – and the team are very happy to take further questions as well.

So just before I pass over, meet the team then, a blend of youth and experience. And you know we invest a lot in innovation and sustainability, not so much in professional photography, so we apologise for that, but some pictures – a few years old, including the Chief Exec, I think was 25 when they took that picture. So, there's Jez and myself and a very international team as well, a lot of new faces there. We've got representation from Italians, to Americans, Danish, to Dutch, with a sprinkle of Yorkshire in there as well, but only a sprinkle.

So, along the top you've got Jez and myself, Daniele Piergentili, I think I've pronounced that wrong. Daniele came, he is our winter signing from Inter Milan, he came last year from BASF, and he spent 20 years in the industry, predominantly in pharmaceuticals. So, Daniele is leading our drive into the pharmaceutical world. And you'll hear a lot more about him.

Along the bottom, the three business workshop groups outside, they will be led by James, Peter and Steve Burgess and they are all new to you. Peter and Steve came from the acquisitions of Biosector and Avanti.

Peter's claim to fame by the way – Peter was a professional footballer many years ago, I know when he stands up it's hard to believe but he was a professional footballer and he played at Anfield Liverpool, Liverpool versus a team called OB in Denmark. He doesn't want me to tell you about that, but they got beat and he was in central midfield, but he won't tell me what the score was. So can all the analysts out there try and get the score out of him. So, it was 1983 was it Peter, something like that, but a professional footballer, played against Alan Hansen, Mark Lawrenson. So anyway, that is his claim to fame.

And then moving on we've got Freek Snieders, and you know Freek, probably those that attended the Investor Event in 2019 will know Freek, who lead the Health Care session there, high purity excipients.

You know we've come a long way from there, but Freek will tell us a bit more about where we've come from to where we are now and where we're going.

And then to make up the senior team we have got Laura and we have got Ritesh. Laura heads up marketing across Life Science and Ritesh, Finance for Life Sciences. So, all very much happy to take questions from you as well.

So very new faces, it's a dynamic team with strong business opportunity. So, without further ado let me pass to Daniele to take it on from there. Thank you.

Health Care – Strategic Focus

Daniele Piergentili, President Life Sciences

Good morning, everybody. The pronunciation was excellent Steve, Daniele Piergentili, I joined Croda in 2021, my background is mainly pharmaceuticals. I have been working in pharmaceuticals in for around 17 years and then moved to Personal Care, Home Care in the last four years and as I say I joined Croda in 2021. I am responsible for the sector Life Sciences, which includes Crop Care, it includes Seed Enhancement and Health Care.

But today we will focus mainly on Health Care and the future of Health Care. But before we start on the future of Health Care, I would like to talk a little bit about where Croda is coming from in their Health Care journey.

It has actually been in Health Care for over 20 years. And it started really with the strength of Croda which is Personal Care, where all the dermatological applications were using some ingredients which could also be used in the application for Health Care. So, they developed an initial platform that was used in standard excipients for Consumer Care.

But then we have seen an acceleration of the value generation over time, from the consumer health, they moved into patient health. More complex molecules, more complex drugs needed specialty excipients. So, they developed the first platform of specialty excipients for the pharmaceutical industry.

Accelerated further with the acquisition of first Biosector, the vaccine adjuvant business a second platform for patient health and then with the transformation acquisition which came with Avanti. Avanti really gave us an entry point to new technologies, the technology of lipids for lipid nanoparticle and for the delivery of nucleic acid. That also strengthen and expanded our reach within the lifecycle of a drug. So, they have an exceptional entry point for a research organisation.

So, we started from a standard portfolio of excipients and then we added three very specialty platforms of ingredients for the patient health industry. And that creates a really, really good base for the strategy going forwards and we will talk about this in the next few minutes.

But it's not only about creating this great portfolio which works into niches, really the Croda Way, but also having the best relationship with customers. And this is really important to the business model of Croda in general. You can see all in Consumer Care, this is how we handle customers, we talk with the R&D organisation of our customers, we have a close relationship. We really integrate with all lifecycles of the development. And that makes us really successful in innovating, number one, and obviously having commercial relationships with our customers.

So now we have over 5,000 customers within the whole lifecycle of a drug, from research to commercial manufacturing. And that is the second unique point of our fundamentals for Croda Health Care.

So now I have spoken a little bit about the past and I would like to pass it on to Freek who has been responsible over the last of this business, to talk about what we have delivered in the last few years and what we plan for the next few years. Freek.

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Freek Snieders, Senior Vice President Health Care

Thank you. Hello everyone. My name is Freek Snieders, Senior Vice President for Croda's Health Care business a role that I have held for the last five years. And some of us will have met three years ago as said before during a similar event here in London when we were talking to investors.

And I am very pleased to talk about what's happened after that event and where we have gone to over the past years and really the transformation that we have seen in the business.

So, what we talked about in 2010 was first of all speciality excipients, high purity excipients being the stronghold of our business and how evermore demanding drug formulations needed a very stable formulation environment. And we really focused on that area, and I am very pleased to say that we have achieved a 20% compounded growth rate over the past three years. And that followed on from a 20% growth rate for a long time before that as well. So, a very strong performance in that area.

We talked about leveraging the Croda selling network, we're represented across the globe with local people everywhere. And an example of how effective we have been in that we have doubled the vaccine adjuvant sales that came with the Biosector acquisition that Peter was in charge of.

We also talked about targeting adjacencies, broadening that portfolio that we have for the health care industry. And as such as were very pleased to acquire Avanti Polar Lipids back in 2020. Avanti Polar Lipids, headed up by Steve, a leading lipids producer, really operating at the smart premium end of the lipid industry. And it really was in collaboration with Avanti that we become a key part of the Pfizer COVID-19 vaccine. And in the process really took the lipid nanoparticle delivery system to market in a big way which has now been used by billions of patients around the world. So that really strengthened our presence the biologics industry.

And obviously we targeted high growth rates during the period, and I think that is something that we've really achieved with revenue, top line growing, at the same time expanding our margins.

Just a minute to put Health Care in context of Croda Group sales. So, on the left-hand side you'll see the overall sales for Croda, £1.9bn. Consumer Care remains the largest division, followed by Life Sciences, around 30% of the total. However, profit for Life Sciences represents a bigger percentage than 30%. And then you'll see the Industrial businesses, of which £360m was divested to Cargill so had Cargill bought the business at the start of the year we wouldn't have seen that number there. So, what remains is about £200m of Industrial sales today.

Then zooming in on Life Sciences on the right-hand side you'll see about two thirds of the total is Health Care, with a big part of COVID-19 lipids and about one third is the Crop business, of which about – again one third is the Seed business that we have.

Moving on – really to talk about the product mix and how it has evolved over the period, so over the five-year period. You see that back in 2017 the portfolio was dominated by APIs and standard excipients. Meanwhile, we have exited a large chunk of that API business for specific reasons. But as we move into 2019 you can see that share of standard excipients and APIs reduce and the proportion of speciality excipients, high purity excipients and of course the adjuvants increase a lot over the period. So then moving into 2021 last year, you see a further expansion of the higher end of the portfolio.

So, we have seen that top line grow as I said before, but also the product mix improve a lot over the period.

A little bit of talk about what has changed in terms of our footprint over the period as well. So, in Croda, as you have heard before, it is all around innovation, this is where it starts and I'm very pleased to say that we have beefed up our innovation capacity really in Asia, in Japan, in the UK, in Denmark and then in North America and also in Brazil. These are the key geographies for our pharmaceutical business.

North Asia, Western Europe, North America and also Brazil are key countries, therefore that is why we invest in these locations.

But also, we invest in our manufacturing capacity. So, in Japan – we increase our high purity excipients production capacity by about 50%. In Denmark we double capacity for our adjuvants business. In the UK in Staffordshire an existing Croda site was converted to become a prime scale up site for our lipids that we transferred over from Avanti. In Pennsylvania in North America, we doubled capacity for our high purity excipients business, it's a very important achievement there. And then last, but not least, we doubled the GMP capacity at Avanti, so to make these premium lipids.

And meanwhile also we strengthened the sales and marketing teams to be able to take all these products to market. So very big changes in this respect as well on top of what I said before.

A little bit on the acquired companies specifically. So Biosector, the acquisition we made in 2018, a leading independent producer of premium adjuvants, with a very strong pipeline in novel adjuvant technologies that we will be talking about more today.

Biosector also gave us access to a lot of the, if not all of the vaccine producers around the world, because this technology they make – these adjuvants are used throughout the world as the golden standard.

When it comes to Avanti on the right-hand side really as I said operating at the premium end of the range, and R&D leader. And it has really been instrumental as I said in delivering that LNP technology to the world. So, we're very proud to have Avanti as part of the Croda Group.

Again, like with Biosector the potential for further growth, the pipeline that they bring is really, really strong and Steve will talk more about that.

So, the benefits to Croda, really that expanded the patient health portfolio, the breadth of our portfolio really increased, bringing deep pharma knowledge, so really the experts and the expertise around GMP manufacturing that we've brought in with both companies.

And the benefits to both companies, the acquired companies are the benefit from the global selling network. As I said for Biosector we doubled the sales there. Collaboration on innovation between the two companies, between very, very strong but also with the rest of Croda. And of course, last but not least, access to capital. We really invested in those companies as you have seen – significantly.

The last slide really is to talk about how we are positioned for growth. We talked about the five-year period, a very strong performance and expanding top line, expanding margins and with that profitability. We have broadened the technology platforms significantly. We have seen the lipids and the adjuvants, but also, we have continued to innovate organically as well, which James will talk about a bit more. We have commercialised the novel technology, most notably the LNP technology, which has been ground breaking. And then you know building that global footprint in operations, but also in innovation as I said.

And all of that underpinned really by the Croda edge as we call it. The proximity to customers is second to none in Croda. We love to work with customers, winning their hearts and minds, with local people around the world. We don't like to use distributors where we can avoid it. We have a really broad portfolio today, but we really have ambitious targets to expand that continuously.

We are seen as the industry leader here, so we are the go to party for adjuvant systems, we are the go to party for high purity excipients. And we want to defend that position and strengthen it.

Our products are highly differentiated, so it is really hard for customers to formulate out of our products and inclusion rates tend to be really – really low. Our quality systems are really up there. And all this

is underpinned by a proven track record. With 100 years in excipients, 80 years in adjuvants and 50 years in lipids. So, we feel in a really strong position for future growth based on a strong track record.

And with that I'm handing back to Daniele for market trends and strategy.

Daniele Piergentili, President Life Sciences

Thank you, Freek. Thank you very much. So, we talked a little bit about the past, so the history of Croda in Health Care, very successful over 20 years. Then Freek has talked a little bit about what we have done in the last two or three years. And it is important to remember we did exactly what we said we were going to do, and we delivered on that. And now why we have great excitement about the future is because we see a great opportunity in front of us.

The pharmaceutical market is a large market, everybody knows that, over 1.2 trillion. It is a very, very resilient market, which is almost recession proof if you want. I have been working in this industry for over 20 years and honestly, I have seen it growing every year very steadily, yeah, over 6% year on year CAGR.

But this doesn't mean that it has stayed the same over the last hundreds of years. There has been a major shift over the last 50 or 60 years about the make-up of this industry. Originally all the drugs that we were taking were small molecule drugs. In the last 30 or 40 years there has been the growth of what we call biologics, which now grow really disproportionately in the market over 10, 30, 20% faster than the small molecules.

These drugs are different from the small molecules, I want to give you an example, everybody is taking ibuprofen, a small molecule, how much does it cost? Probably less than a dollar per treatment and it is used for one indication, pain relief. A large molecule, a biologic can cost up to \$2m. The latest drug in gene therapy Zolgensma, which is a blockbuster, one treatment is \$1.8m. but every health care insurance is actually paying for this, why? Because it's unique and it actually does cure a disease.

So, there is a quite dramatic shift and a quite dramatic revolution that is happening in the market today and this is a great opportunity.

To go into a little bit more detail about this journey, as I said we started the first generation types of drugs which were small molecules, these were drugs, relatively easy to make and today relatively cheap to buy, depending obviously on the drug. One indication usually or two indications per drug.

Then we developed over the last 40 or 50 years into the proteins, the second generation types of drugs. These drugs are actually much closer to what we have in our body, they are complex molecules, and they are much better at doing the job of treating the disease. In this case the cost of the drug can be thousands of dollars per treatments, yeah. But these drugs also – since they are much better received from the body, they can have a lot more indications. So Keytruda the number one drug in the world today, \$14.7bn in one year has over 40 indications in the pipeline. So, you go from one indication to over 40 indications from a relatively cheap drug to a more expensive drug.

And then in the last ten years something incredible happened, with the genome revolution now we are no longer giving a medicine to the body, but we are telling the body to create their own medicine. So, with the nucleic acid we now have a way to teach the body how to create its own medicine. And this is opening an incredible number of opportunities and possibilities. This is going to change the way that pharma is going to look in the next 10, 20, 30 years.

The analysts think that over 30% of all the new drugs in 10 years' time will be nucleic acid, DNA, mRNA based. So, this is a real change in the complexity, a big change in the increase of value for the patient that has been happening over the last 40 years.

How does that translate into a market opportunity for Croda? So, bear with me while I try to explain this graph. On the X axis we have got the development need, so how much does the technology still need development, innovation, how mature it is. On the epsilon axis we have got the growth potential of that technology in the market.

So, if we start left to right, we see that the small molecule market, as you'll remember it is still very big, over \$900bn market, still growing middle single digit, but it doesn't need a lot of development. It is relatively mature, the technologies have been developed over the last 200 years, so it is there, it is there to stay, it is big, and it is very steadily growing.

Next, we have the protein market, which includes monoclonal antibodies, and this protein market is relatively large already, \$300bn plus, and it is still growing double digit. It has been developed over the last 20, 30 years and today the majority of the blockbusters in the top 10 are actually monoclonal antibodies. So, this is a market which is more mature, but still growing very nicely.

Last, but not least, there is the nucleic acid market, currently a much smaller market, but growing extremely fast as a result of the genome revolution that I talked about before.

So, this really made us clearly understand that the focus for the future needs to be for us to empower biologic delivery. And in biologics we include proteins, and nucleic acid.

So as a result of this we really wanted to develop a new vision and a new strategy for pharma, which is the development of the existing strategy. Today we are recognised as the Health Care part of Croda, in the future we will want to be recognised as Croda Pharma.

In the past we have been recognised as an excellent producer and provider of high quality ingredients for pharmaceutical industry, in the future we still want to be recognised as that, but we want to add – we want to be recognised as a solution provider and a system provider. So not just the individual ingredients, but a combination of the ingredient and providing a solution to our customers.

And this vision was really necessary for us to also change a little bit our position in the market. For this we have created a new brand which is going to be exemplified in the video coming up.

It seems we have a small technical issue.

[Video Played]

Daniele Piergentili, President Life Sciences

So great, I hope you enjoyed the video, it's the new brand of Croda Pharma and what is important for us is to obviously create an image for Croda Pharma and raise that image in the market. But also, to create an umbrella under which Avanti Polar Lipids, Biosector and Croda is, and those verticals, those strategic platforms that cover the old business.

We talked about the market opportunity, right, but we want to go into a little bit more detail as to what we want to do in each and every area. The small molecules are still a big market I said, it's still an interesting market for us, we do have a very good portfolio to handle this market, so we will continue to maintain and sustain this market opportunity.

For the protein delivery, for the protein market monoclonal antibody, we have developed a very, very good speciality excipients market. We will broaden this portfolio of speciality excipients for proteins, and we want to lead. We have the opportunity in this case to lead because we start from a very, very strong position.

The nucleic acid market, which is the fastest growing, is the fastest growing for the whole market, so everybody is developing in this market. But we want to develop very aggressively and really take full advantage of the growth of the market and go even faster than the general growth of the market.

And you notice that there are some bubbles within the protein and in the nucleic acid which are blue and a different colour, because within this market there is the sub-market of vaccine. And given our position already in vaccine adjuvants we want to – and we will be able to lead in this market.

And this really is translating one to one in the strategic platform that we have created, and we are going to develop and accelerate in the future. As I said small molecule delivery, we'll maintain it, it's a good market for us, we really have already very good solutions. In the area of protein delivery and adjuvant systems we want to lead because we start already from a very strong position and a unique position that will be more explained by James and Peter, and here we can really lead. In nucleic acid delivery, this is a very fast developing market, yeah, and here we want to develop aggressively our capabilities.

When I talk about a strategic platform, I want to maybe spend a couple of minutes to also explain how we look at it. So, within a platform we don't only have in the biologics the opportunity to participate to the drug delivery part of it. A biologic is such a complex molecule that even the processing of a biologic presents great opportunities for us to provide solutions. So, ingredients and systems which are used in processing. So, for us a platform is not only the part of drug delivery, but also the part of bioprocessing.

And in each platform what we are aiming to achieve is to create not just ingredients, but systems, which are a combination of these ingredients, which provide a unique solution. And why do we like unique solutions? Because they are very sticky. And the way we want to utilise this model is not just price per kilo but really value for outcome. And in this new platform it's super important because if you remember what I said before is these platforms require a lot of development, so our partners actually do need those solutions and do come to us to create those solutions for them.

So that is a little bit about the platforms. And now I'll pass it on to obviously the gentlemen who make these platforms alive. And what we are going to talk about in the breakout is really what is the unique value proposition of each platform, what is the market opportunity for each platform and what is the execution plan that we have for each platform. And so, with that I thank you and I think now we're going to have the breakout sessions.

Growth platform – Protein & Small Molecule Delivery

James Lawrence, Global Business Director, Protein & Small Molecule Delivery

Good morning, everybody. Welcome to this session on Protein and Small Molecule delivery. My name's James Lawrence and I am the Global Business Director for Small Molecule & Protein Delivery. By way of introduction, I've been at Croda for 15 years, and have over 25 years' experience of working in the speciality chemical industry, having been based in Europe and in Asia.

Firstly a few definitions to help explain what we mean by protein delivery.

Drug products contain Active Pharmaceutical Ingredients (or APIs) which have an effect on the human body.

In first generation drug products, such as Paracetamol, Ibuprofen and Aspirin, the APIs were small molecules produced by traditional chemical synthesis.

Second generation drugs contain more effective protein APIs produced by biologic means via cells, bacteria or yeast.

They are large, sensitive molecules, typically injected into the body to protect their complex 3D structures from being broken down by digestion if taken orally. Examples would include hormones, enzymes, and antibodies.

A Monoclonal Antibody (or mAb) is a specific type of protein. They are manufactured using DNA technology in a bioreactor, using bacteria or mammalian cells, and bind specifically to target sites to stimulate the patient's immune system. They are the current flagship of the pharmaceutical industry, highly specific in targeting particular antigens, but well tolerated by the body so with minimal side effects, and they are being used to treat all manner of different diseases.

In addition to the active ingredient, drug products are made up of a number of inactive ingredients – called excipients – that are safe to the human body and protect the API ensuring it stays in the right form to give the desired medicinal effect. Different excipients make the API soluble, keep it stable, aid absorption and stop molecules from aggregating together.

Discovering an API that has a positive therapeutic effect is one thing, but to have a successful drug product you need to be able to stabilise this API in an easy to use formulation and deliver it, in the right form, to where it needs to go.

As we move from simple small molecule APIs to large molecule biologic APIs such as proteins and monoclonal antibodies, it becomes more of a challenge to keep the drug product stable and deliver it to the right place in the patient where it can then perform its action. Excipients perform an ever more crucial role in this stabilisation and delivery and become ever more critical to the success of the drug product.

The Protein Delivery platform is a logical progression in the journey of Croda Pharma, from our consumer health business originally spinning out of Personal Care, through our offering of standard excipients for small molecule APIs, to specifically designed speciality excipients for injectable drugs, and forwards into delivery systems and solutions for large molecule protein drug formulations.

The opportunities on the left hand side of the screen remain incredibly exciting for Croda, and only just recently we have secured a multi-million dollar deal for one of our high purity excipients with a major Chinese pharmaceutical company for use in their osteoporosis drug. Their demand will really start to take off in Q4 this year and is forecast to grow strongly through next year. Similarly in India we have numerous examples of generics companies utilising our high purity excipients for their versions of blockbuster drugs which are about to come off patent. Next year should see two major projects commercialise – one for diabetes and one for hypertension - and our sales into this generics market continue to grow at a high rate.

At the same time, our focus is increasingly on the next generation of large molecule pharmaceuticals, seen here on the right hand side, and in general we would say that as the value of the active increases, so the amount of complexity increases, and therefore the value that the excipient brings.

As you know, this business is based on high purity excipients, and primarily these are used in parenteral formulations – injections. APIs given by injection are usually highly sensitive as otherwise they would be formulated into a tablet and taken orally.

In general, the parenteral excipient market is estimated to be growing at 7% per annum, with the biologics market growing at a higher rate, and I'll come back to this shortly.

The small molecule market is growing at a slightly lower rate but remains very significant. Croda's standard excipients will continue to grow with this market, and our speciality excipients will continue to grow faster than this market.

Here at Croda we particularly focus on the high growth and high value niches, where our high performance products really make a difference, and where lowering risk is hugely valuable to the pharmaceutical company. When you have a potential multibillion dollar blockbuster drug on your hands, why would you take any risk? You would naturally use the highest performing excipients available, giving your drug product the highest chance of success, and quickest route to regulatory approval.

Now let's look more in detail at the burgeoning biologics market. Overall, the market for proteins and mAbs is worth \$300 billion – and growing fast with a CAGR of 10% forecast through to 2030. This is a huge market, and we are a lynchpin within it. The actual excipient market, so Croda's addressable market, is estimated to be worth around 1-2% of this total value. As the complexity of the protein increases, the value of the excipient grows.

The charts on the screen here show how the biologics proportion of the overall pharmaceutical market continues to increase. You can see here just how many biologic products are in development relative to small molecules, as well as the total number of monoclonal antibody and proteins drugs in various stages of development around the world. Thousands of products in research, in pre-clinical trials and in Phase I, Phase II and Phase III trials.

But remember, small molecules remain of importance to us as well, particularly as a lot of these products in development are complex and sensitive, can't be put into a tablet or oral form, and have to be delivered by injection. Again, this is an area where Croda's high performance excipients can make a crucial difference to the success of the overall drug product.

We focus on value at Croda, and increasingly are selling smaller quantities of specific products designed to meet niche requirements, unlike many of our competitors who focus more on volume. You can see on this chart from Kline that Croda is listed as the largest supplier of parenteral excipients by value, but not even in the top 10 by volume. Our positioning is unique - no competitor has a comparable portfolio of high purity excipients to Croda.

Our excipients are of the highest purity; we have market leading batch to batch consistency; we work closely with customers large and small all around the world, utilising our specialist R&D teams and local commercial teams to develop solutions for their issues; and we have absolutely the broadest range of high purity excipients available – a much wider portfolio than anyone else in this market.

Working with Croda and using our high purity excipients gives the greatest chance of success for a customers' pharmaceutical formulation. Really, when your potential drug product is this valuable, why would you use anything else?

Looking at our customers for this platform, we have over 1400 direct customers around the world, including all of the top 20 Big Pharma. But we are not dependant on these companies, as we have a balanced portfolio of customers spread across big pharma and biopharma, generics and biosimilars, contract manufacturing organisations, and contract research organisations – innovating with them to solve their delivery challenges. We also supply a huge number of research institutions through our specialist distribution partner Avantor. The diversity of this customer base is a huge strength for Croda and means our high performance excipients are in the drug formulation right through from the discovery phase to commercial manufacture.

In addition to our customer collaborations, we have a number of innovation projects with our own R&D partners, such as universities, academic institutions and SME's, to further fuel our R&D pipeline, and at the moment have 24 such projects running.

Our biopharma pipeline of customer projects is really exciting. We are partnering with both major pharma brands and small start-up companies to provide speciality excipients for monoclonal antibodies and protein APIs.

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Highlighted here are just 3 examples of the many many projects that Croda are involved in.

The example on the left is for a blockbuster monoclonal antibody based drug used in oncology. It is the biggest selling cancer drug in the world, used in the treatment of 40 different indications. And it is still being developed further, with multiple clinical trials ongoing looking at additional cancer indications.

Macular degeneration is a condition that radically effects peoples vision and is estimated to affect more than 200 million people globally. We are working with a biopharma company and their contract manufacturer on their monoclonal antibody based drug to treat this condition, using our Super Refined excipients to create a successful and stable formulation.

The third example uses one of our specialist high purity excipients which has been developed for APIs that require superior solubility performance. This will help enable diabetics take insulin orally rather than by injection, which is a huge potential market worldwide - an estimated 9% of the adult population suffer from the disease. The project is currently in phase 3 clinical trials in the US and progressing in China at the same time.

As we look to the future, the opportunity is there. We are involved in over 2000 customer projects around the world, helping find solutions for their particular challenges. And we are now increasingly focussing on two separate areas – delivery of the mAb or Protein to the human patient, and the bioprocessing stages to manufacture the mAb or Protein in the first place.

So, we will continue to broaden our range of speciality excipients designed to help protect and deliver advanced biologics, and as such will transition from an ingredient supplier to a solutions provider.

As an example, a global biopharma company was experiencing a repeated quality issue with their mAb formulation, which is a blockbuster drug. What was the result of this quality issue? Batches of very expensive drug product had to be disposed of, and potentially the drug could not be administered to patients at the point of need. They thought this was due to variability with their excipient, and so came to Croda to see if we could help. Working collaboratively, we developed a custom speciality excipient grade for them, with a much tighter specification, allowing for predictable supply and guaranteed quality. The result? Well, the problem was solved, no further quality issues with the drug product were seen, and the customer is now buying this custom excipient globally.

For bioprocessing we mean the biological process of creating the desired protein or mAb. As you will recall, this is carried out in a bioreactor, using DNA technology with either bacteria or mammalian cells. These cells need to be carefully looked after, fed with the right nutrients, and protected, so that they multiply and produce the specific protein that is required. Small differences in the materials used can lead to huge yield losses, or in some cases cell death, where a whole batch will fail and as you can imagine this is very expensive. We plan to build a specific range of reagents and process aids for use in bioprocessing, which will address the challenges faced by the market today.

These challenges vary depending on the material involved, with typically over 70 ingredients going into the cell culture process. Croda's innovation is guided by our customers, creating solutions for the products that cause the most problems. What customers are looking for is a process that gives a high and predictable yield of the desired API - batch after batch after batch. And to achieve this, what they require are raw materials that are high purity, high performance and hugely consistent from batch to batch. We have developed one such product, using new purification technology, where Croda will be giving a guarantee of performance for every single batch we supply. So, the customer will see higher yields, have a more consistent process, and will no longer need to carry out very expensive and time consuming testing of each batch of raw material.

Purity and batch to batch consistency remain the key quality attributes that customers are looking for and that Croda can provide like no other supplier.

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As you've already heard from Steve and Daniele, in order to take advantage of these market opportunities and deliver on our growth, we are investing in the business in Innovation, in Knowledge and in Capacity.

Innovation teams are being created or expanded to build our expertise, deliver the new product pipeline and solve individual customer challenges. Our drug formulation team will demonstrate the performance of our high purity excipients and the value they can bring to a customer's drug product. The biotech processing team will look at the protein manufacturing process itself, and demonstrate the benefits brought by using Croda's specifically designed process aids and reagents.

Our Protein Delivery commercial teams are being expanded across all of our target markets in the US, Europe, and Asia with increased local technical expertise being put in place, helping us to work closely with our customers wherever they may be.

Additional capacity is planned for all of our speciality excipient sites – in the US, in the UK and in Japan. In addition, we are bringing in new purification technologies to provide the highest performing products available.

In line with our strategy, we have a strong and valuable innovation pipeline, with a number of new product launches scheduled for the coming years. These products will both add to our range of speciality excipients and build our range of speciality reagents for use in bioprocessing.

The chart here shows a snapshot of this innovation pipeline for protein delivery

The vertical axis highlights the relative probability of success of a given innovation project. The probability of success is influenced by technical, regulatory, and commercial success factors. Across our platforms you will see a differing probability of success which results in a balanced portfolio for Croda Pharma.

The horizontal axis shows the year of introduction to market and availability of first material (note this is not the year at which peak revenue is achieved)

The size of the bubble reflects the non-risk adjusted annual peak sales value, and please note that different projects will reach peak sales at differing years.

I'm not going to go into each project individually, but this indicates the spread that we have and overall, the total weighted annual sales value of this innovation pipeline is worth £150m by 2030.

To summarise, Croda has a market leading position. We have a 20 year track record in supplying excipients into the pharma industry.

Our speciality excipients business has delivered high double digit growth over recent years, meeting the needs of the growing biologics drug delivery market

The growth opportunity is significant. The mAb / Protein market is worth \$300bn today and growing at 10%. The increasing complexity of these APIs means that there is more value add for high performing speciality excipients

We anticipate exciting future growth. Double digit growth over the next 3 years from existing customer projects, leveraging our recent capacity expansion. Then further growth from 2026 onwards based on our innovation pipeline for both protein delivery and bioprocessing

Thank you.

Growth platform – Adjuvant Systems

Peter Tygesen, Managing Director, Adjuvant Systems

Good morning, I'm Peter Tygesen, Managing Director for Vaccine Adjuvant Systems at Croda. I am an organic chemist by training, and I've spent the last 30 years in the pharmaceutical industry in various areas. I joined Croda when it acquired Biosector 3.5 years ago.

Let me start by explaining what a vaccine adjuvant is and the role it plays in a vaccine dose.

To work, a vaccine needs to deliver the right amount of antigen, in the right conformation, to the right sub-set of cells for a sufficient amount of time. That creates the immune response which will prevent or treat disease.

We distinguish between two different type of vaccines:

Prophylactic vaccines, which is administered to a person in order to prevent disease, like influenza or COVID-19.

Therapeutic vaccines, which is administered to patients that have the disease and which are intended to stimulate the immune system to fight the disease. The latter could be cancer or viral infections like HIV.

In order to be efficacious, the vaccine dose will often need the right co-stimuli delivered precisely and for a sufficient amount of time. This is exactly the role of the Vaccine Adjuvant System, and many vaccines will not work as intended without a well-designed vaccine adjuvant system. The vaccine adjuvant system acts as a delivery system as well as an immune modulator. Challenges in vaccine development are complex and it is important to bear in mind that there is "no-one-size-fits-all" when it comes to adjuvant systems.

Croda is the only company capable of combining a unique technology platform with deep expertise in vaccine adjuvants to create the solutions required for both existing and future vaccines to be efficacious and safe.

The vaccine adjuvant business in Croda Denmark was established in 1939. In 1990, the company moved to its current location, where it has gradually expanded.

In 2018, Biosector was acquired by Croda and was Croda's first move into the human vaccine space. The subsequent acquisition of Avanti Polar Lipids really accelerated our position in the vaccine adjuvants space, giving us all the necessary building blocks to develop the innovative vaccine adjuvant systems which create the solutions the vaccine R&D community requires.

Given that Croda has only really been operating in this space for human vaccines for the last 3½ years, the strong progress that we have made to build this business segment in such a short time is impressive.

The global market for vaccines was growing pre-COVID, but we have seen a significant acceleration in growth over the last two years.

Looking at the vaccine market today. The main hub for break-through innovation is in Europe and North America, which is why these regions represent roughly 75% by value. The Top 4 companies (GSK, Pfizer, MSD and Sanofi) are the key companies bringing break-through innovation to market, but break-through discovery is to a large extent being driven by academia, start-ups and biotech, which subsequently feed the major pharma companies.

By volume, the largest manufacturer of vaccines is Serum Institute of India, which reflects that the volume based vaccine manufacturing is centred around Asia, with India being the largest and most

developed country for vaccine manufacturing followed by China. China, however, is investing heavily in the industry and developing at a fast pace.

The main growth driver in the traditional prophylactic vaccine adjuvant segment, is the WHO immunization agenda 2030, the increased government preparedness programs and the general increase in vaccine awareness in the public following COVID-19.

In 2019, WHO launched its "Immunization Agenda 2030", aiming to treat or eradicate a number of vaccine preventable diseases. As an example; Between 2010 and 2018, an estimated 23 million deaths were prevented by vaccination of measles. The agenda has set out to defeat a number of diseases which still cause concern, such as diarrhoea, typhoid, pneumococcal infections, meningitis and other infectious diseases, and is therefore a significant driver for growth.

Through our commitment to use smart science to improve lives, Croda is committed to support the agenda by being part of more than 10 clinical phase 3 programs by 2024. We are currently ahead of our commitment – part of 15 different vaccine developments in different stages of development and more importantly, part of 5 marketed vaccines in different indications.

Generally, Croda is uniquely positioned to serve the needs of both the innovative and the volume-based prophylactic vaccine business due to our footprint. We are focusing our R&D efforts in Europe and US, building an R&D "centre of excellence" in Denmark and integrating the efforts between Avanti and Croda Denmark, whilst our local reach in different parts of the world allows us to cater for the volume-based business.

The main growth driver in break-through innovation is the move into therapeutic vaccines, which typically are significantly higher value than their traditional prophylactic counterparts.

The use of vaccinology as therapeutic intervention is evolving. Provenge against prostate cancer was the first therapeutic vaccine approved by the FDA in 2010.

Therapeutic vaccines are intended to stimulate the patient's own immune system to fight the disease. They will therefore often be more efficacious and give less side-effects other interventions. Therapeutic vaccines are highly innovative and require us to take the vaccine adjuvant innovation to the next level.

Therapeutic vaccines will in the future help treat some of the most prevalent diseases on the planet, including cancer, complex diseases like malaria and neurological disorders. This development is therefore one of the biggest leaps in the pharma industry for many years and a significant growth driver in the next decade.

Not surprisingly, the share of therapeutic vaccine R&D programs is steadily growing. Even though the attrition rate of these programs is high, with only around 10% making it through clinical phase 2, we will see a significant higher number of therapeutic vaccines within oncology and other areas reaching the market in the next 5-10 years.

Looking ahead, we expect both the heritage aluminium-based adjuvant business to grow and for break-through innovation in vaccinology to create significant growth in the mid- to longer term.

Growth in the vaccine adjuvant space in the near- to mid-term will predominantly come from the heritage aluminium based adjuvants, which we expect to grow between 5-8%. We will also achieve growth from the adjuvant systems, because we will increase our presence in vaccine R&D programs with our adjuvant systems thereby expecting double-digit growth in the period.

Growth in the break-through innovation adjuvant systems will however not really materialise before the end of the 2020's and beginning of 2030's. This is simply due to the long lead times in vaccine development. Bear in mind that we are in the process of launching our adjuvant systems into the

vaccine R&D community now. We have some of our systems in a number of clinical programs, but before any of them get commercial and significant growth materialises, we need to see them clear the different clinical stages and other development activities. Once these vaccines go commercial, growth for our adjuvant systems will accelerate significantly.

Why will Croda win? The simple answer is we have a leading position in the market and a unique value proposition within vaccine adjuvant systems. Croda has the most extensive portfolio of adjuvants and components of anyone in the business. And besides that, we are the market leaders in aluminium-based adjuvants, with the only manufacturing plant globally which is able to manufacture adjuvants aseptically.

Our unique blend of products and adjuvant components such as saponins, liposomes, lipids and excipients, with both formulation and immunology expertise in our Vaccine Adjuvant R&D, is not matched by anyone else in the business and enables us to take vaccine adjuvant innovation to the next level.

Last but not least, by developing innovative solutions we gain a strong IP position and the ability to use licensing as a business model for our patented technologies, which is a new way for Croda to generate revenue from our protected New Product Development.

Our customers are faced with three main challenges in their development efforts:

1. They need to work with complex pathogens, which change over time and thereby creates a moving target, like Malaria,
2. There is a search for new and non-invasive routes of administration, such as intradermal or intranasal delivery.
3. And finally the biggest challenge of them all, namely developing therapeutic vaccines

As stated previously, we have products and expertise to be the partner in creating solutions for all the challenges.

The major pharma companies and leading regional companies are our biggest customer base. They are bringing the new products to market and are therefore more than 50% of our customer base.

However, the majority of the breakthrough discovery happens in the academic, start-up and biotech environment. It all starts in the discovery phase, and we are therefore very active in supporting early discovery with scientific interaction and samples. In 2022, we have sent out more than 200 samples to more than 60 R&D groups so far. And we are also very visible in engaging with the R&D community in scientific meetings, and conferences.

A couple of examples of customers we work with are set out on the bottom right. We have been a supplier for Janssen Vaccines for a long time, and they approached us some years ago in order to become the supplier for vaccine adjuvant for their HIV-1 program. Working with a disease that suppresses the immune system, the fact that Croda could manufacture our adjuvant aseptically was really critical to this partner.

The other example is Evaxion, a Danish-based biotech company, who are engaged in using an AI-supported technology platform to develop a personalized cancer treatment. They are using one of Croda's Vaccine adjuvant systems in this work. They are currently in clinical phase 2 with their lead program and we are supporting this with our vaccine adjuvant system.

Consequently, Croda is active in all different customer segments to support projects ranging from early discovery to late-stage development through to commercial projects.

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The heritage business is primarily the aluminium adjuvants, where we hold a leading position having more than 100 commercial customers globally. Our customer base is ranging from major pharma to leading regional players. Aluminium-based adjuvants are still considered to be the "golden standard" in vaccines, and they are applicable in 30-35% of all human vaccines.

The Adjuvant systems are basically divided into two segments.

The current marketed adjuvant systems like Matrix-M from Novavax or AS01 from GSK are typically owned by the pharma company and not available for licensing. There is a demand for "work-arounds" and other solutions with these type of systems. Again, we have all the necessary building blocks and expertise to develop and market "work-around" adjuvant systems.

But the future of vaccinology also requires us to take adjuvant systems to the next level and develop innovative systems, possessing completely new mode of actions. It is within our key focus to develop the innovative adjuvant systems, which will enable the next generation vaccines to be efficacious and safe.

Finally, vaccine adjuvants are critical for the development of new and non-invasive administration routes. We are in a number of projects with different companies to develop delivery systems which are for instance patches or intra-nasal delivery of vaccines.

Our investment activity is focused around three main areas, all of which will support our future growth.

We are first and foremost investing in innovation to realize the potential of the pipeline and drive future value. We are investing in R&D capabilities to fuel our innovation in both EU and US to develop the novel adjuvant systems, which create solutions for future vaccines.

Adjuvant systems are combinations of different components like lipid-based adjuvants with for instance saponins. This requires investments in multipurpose facilities and engineering expertise.

We are therefore investing in knowledge, bringing more people with the right skills and expertise to help us expand.

And we are upgrading our infrastructure to support our growth, both in terms of capacity and manufacturing technologies. The vaccine adjuvant building we plan in Avanti, will enable to manufacture the lipid-based adjuvant building blocks we need and the multipurpose facility we will build in Denmark will enable us to assemble the vaccine adjuvant systems we develop in our R&D team.

Croda has several adjuvant systems in our pipeline, which we are working hard with partners to mature and commercialize. Our current adjuvant systems are in several clinical programs in different indications ranging from more "traditional" targets in for instance Hepatitis B or pneumococcal infections, to innovative targets in diseases such as HIV-1, Chlamydia or cancer.

The value of the pipeline will increase over time, both due to the progression in development of the vaccine projects using our vaccine adjuvant systems, and because we will introduce other vaccine adjuvant systems in the future, which are not depicted here.

Based on our current picture, we value our current pipeline at around £80Mn in 2030. The growth will accelerate from 2030 to 2035 as vaccines are launched in the market. A number of the vaccine projects which are currently in preclinical or clinical development, will reach the market by the early 2030's. That is the main reason for the increased growth in the first half of the 2030's.

Let me conclude with some key takeaways:

Vaccinology is the fastest growing therapeutic intervention in the Pharma industry. This was the case pre-COVID, and it has been significantly accelerated by the pandemic.

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Croda is uniquely positioned in the field of vaccine adjuvant systems with high ambitions to fuel our innovation further, because we have a head start with all the key building blocks to be successful, as well as a well-established expertise within the adjuvant market today

And we are investing in infrastructure, people and technology platforms to fuel our innovation capabilities and become the key "go-to partner" for the vaccine R&D community and Pharma companies.

Growth platform – Nucleic Acid Delivery

Dr. Stephen Burgess, Managing Director, Nucleic Acid Delivery

Welcome to our session on Nucleic Acid Delivery. It is a pleasure to be with you today to introduce this exciting technology and Croda's role in Empowering Biologics Delivery.

I am Dr. Stephen Burgess, Managing Director of the Nucleic Acid Delivery platform.

I have been a part of Avanti for 43 years, and my background is in chemistry, biochemistry, and biophysics, with an emphasis on lipid synthesis, lipid biophysical properties, and lipid membrane dynamics.

Nucleic acids are the building blocks of our genetic code and essential for all forms of life. They are present in two major forms, DNA and RNA, and their primary role is to store and process genetic information.

Nucleic acid-based therapeutics require sophisticated technologies to overcome inherent challenges such as stability and delivery.

Most of what we will be discussing today will centre around Lipid Nanoparticle Delivery or LNPs, which is a non-viral delivery system utilising multiple synthetic or semi-synthetic lipids.

Croda's entry into the Nucleic Acid Delivery space began over 50 years ago with the founding of Avanti Polar Lipids.

Avanti was originally founded to provide high purity lipid reagents for biomedical research and worked exclusively in this space until 1985 when Burroughs Wellcome requested material suitable for a drug product they were developing.

Avanti worked together with Burroughs Wellcome to initiate GMP manufacturing and successfully supplied API material for the commercial launch of Exosurf in 1990.

Avanti continued to build relationships with the pharmaceutical industry in various drug delivery applications, and over the next 30 years, Avanti provided clinical grade material to support trials in the developing field of gene therapy.

The relationships cultivated with researchers in academic and pharma positions over these 30 years gave Acuitas Therapeutics and their partners confidence that Avanti could successfully supply the ALC compounds for clinical development. Over the next 3 years, Avanti supplied Acuitas' partners with clinical-grade material for multiple programs.

When the COVID-19 pandemic began, BioNTech and Pfizer reached out to Avanti for supply of these materials to develop a vaccine.

Through collaboration and acquisition by Croda Pharma, we were collectively able to supply the materials needed for clinical trials and launch of Comirnaty. That's a very simple statement for what was a monumental task. Avanti and Croda, working together, scaled a clinical process to commercial

scale and provided the delivery vehicle for the COVID vaccine, and we did it in 8 months during a global pandemic with lockdowns and travel restrictions. This was truly historic.

Following the acquisition of Avanti, Croda immediately invested in the site to expand production capacity to support the vaccine as well as provide capacity to support new pipeline projects for future nucleic-acid based products. In addition, becoming part of the Croda Pharma family gave us immediate access to new markets and commercial capacity, removing a limitation and constraint on commercial development.

With these investments, Croda Pharma is now in a strong position to innovate and supply the rapidly expanding field of Nucleic Acid Delivery.

The success of the COVID-19 mRNA vaccines demonstrated the viability of nucleic acid delivery as a therapeutic option. If we look at nucleic acid-based therapies that are currently in the development pipeline, we see there are over 2500 projects in early development through Phase 1 trials. This represents a significant investment in this area and a confidence in the technology. Nucleic acid delivery is expected to have an annual growth rate north of 20% from now to 2030, with much of that being driven by mRNA and cell & gene therapy.

I think everyone is familiar with mRNA and its use in vaccines. Cell and gene therapy is a broad area that encompasses several therapeutic applications. Cell therapy uses an unmodified cell to treat a patient. A good example of this is a blood transfusion. Gene therapy, on the other hand, focuses on the modification of genetic material in cells to produce a therapeutic effect. A recognizable application of this technology is CAR T-cell therapy, which is a cell-based gene therapy. An emerging area of gene therapy that is of particular interest to Croda is gene editing. With gene editing, it is possible to modify a person's genetic material, possibly permanently, to correct a genetic disorder. This is an exciting area of medicine with great potential to improve patient lives, both in quality of life and lifespan.

If we look at the strategically-relevant markets for Croda's Nucleic Acid Delivery platform, two areas that we see having potential are the mRNA-based products (including vaccines and therapeutics), and the gene editing space. These are just part of the broader market of Cell and Gene Therapy that offer numerous opportunities for Croda to expand and address the growing needs.

As the mRNA COVID vaccine pulls back to a baseline volume, the success of the vaccine is driving new vaccine development for other infectious diseases like influenza, as well as therapeutic vaccines and therapeutics. This market will be a bit erratic with some fluctuations due to the number of products in development and timing of approvals but should show overall growth after the COVID decline. With a projected market value in the \$25-30 billion range, the niche lipid market is estimated to be around \$1.5 billion, perhaps a bit higher.

With respect to gene editing, the market anticipates a bit more aggressive growth with a growth rate >20% and hitting \$36 billion by 2030. Obviously, there is more risk in this area as we are only now entering clinical trials with this technology, but the reward could be bigger than projected given the volume of lipid materials needed is 100-1000 times that needed for vaccines. Again, the niche lipid market is estimated to be around \$1.5 billion, perhaps a bit higher.

To capitalise on these market potentials, Croda offers its clients full support along the development path from discovery to commercial supply. We do this through the strong relationships and trust built over many decades with the Avanti brand. It starts with having the leading lipid technology experts in synthesis and formulation and approaching the discovery process in a collaborative nature, then having the expertise to transfer those learnings to our GMP manufacturing environment to support clinical development, something we have been doing successfully for over 30 years. And finally, having the commercial production capability within Croda assets to support launch and commercial supply. While we are focusing much of the attention today on lipids used in the Cell & Gene Therapy market, we are

also working diligently to provide solutions and additional products to address the needs of bioprocessing and manufacturing, e.g., polymer/lipid hybrid systems as transfection agents.

When we look at the competitive landscape for these markets, there is one primary competitor in the core lipid space, Lipoid, and three primary competitors in the nucleic acid delivery space, Evonik, Merck, and Corden. No competitor has a more diverse portfolio of lipid products or pipeline opportunities in this area than Croda.

Based on historical feedback from our research and pharma clients, Croda/Avanti has the highest quality standards, both in product and customer service, which generates strong brand loyalty. We offer expert technical collaboration on product design, as well as formulation expertise in lipid-based delivery, and no one has the unique products we can offer for developing next-generation materials for this space. Now with the combined strengths of Avanti and Croda, we can support discovery through commercial launch and supply.

These are the attributes that consistently set us apart from the competition and bring partners back for their new projects.

This is demonstrated by the key relationships we have built through our strong presence in pharma research. As you can see here, 50% of the total research sales from the Avanti R&D business is in the pharma/biotech space. We are equally strong in the academic space, the source of ideas and innovation as well as the training ground for researchers moving into pharma/biotech. We develop the trust and loyalty with researchers during the academic years of their career, and they carry that brand loyalty with them when they transition to a pharma/biotech career.

Two examples of key partners that have developed through our collaborative nature of building relationships are Acuitas Therapeutics and BioNTech. Acuitas came to us 6 years ago when they were ready to transition their products to clinical development because many of their scientist, including the founder and members of the management team, had been using Avanti products throughout their scientific career. We worked with their licensing partner to successfully transfer a bench-scale process to GMP manufacturing for clinical trials. Our relationship with Acuitas remains strong and continues to grow as we now supply additional compounds from Acuitas to a broad range of licensing partners.

The relationship with Acuitas ultimately led to becoming a key supplier to BioNTech, which has evolved to include a collaboration to develop advanced materials for next-generation products to improve vaccine delivery and tolerability.

As we look to the future and the growth opportunities in the vaccine and gene therapy space, there is a great deal of work that is already in progress. Based on a report published in 2021 that polled 31 companies working on mRNA vaccines, there were 180 total projects in various stages of development across the companies reported at that time. This number has increased dramatically in the past year, as have the number of companies working in this area. Just looking at these 31 companies, Croda is working with at least one-third of the companies and contributing to at least half of the projects in their pipeline.

I'm not going to go through all these case studies for vaccines, but I would like to highlight prophylactic vaccines where we could see the broadest impact for the near term. In addition to the COVID-19 vaccines in development, these vaccines offer the greatest opportunity to improve healthcare for a broad range of infectious diseases. We have the opportunity with this technology to develop a universal flu vaccine that is more effective than the current annual flu vaccine, as well as develop combinations within a single vaccine to address multiple infectious diseases, e.g., a single vaccine to address flu, RSV, and COVID-19.

An area within gene therapy that I am particularly excited about is gene editing. With gene editing, we are not just treating the symptoms of a genetic disease, we are altering the genetic flaw to potentially

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eliminate the disease permanently, a “one and done” treatment. This could have a profound impact on patient lives, with respect to both quality of life and lifespan.

One example of this is genetically induced high cholesterol leading to accelerated heart disease and early death. This condition affects 31 million people worldwide. Verve Therapeutics recently dosed the world’s first patient with a gene editing medicine to correct the problem. In preclinical studies, a single dose to turn off the problematic gene resulted in a 60% reduction in LDL-cholesterol that persisted for 20 months (at last reporting of results). The gene editing was quite specific, with no off-target editing in 3000 related targets. We are very excited that our lipids were used in this ground-breaking study and clinical trial. If all goes well with the clinical development, we could see this therapy launched and saving lives as soon as 2027.

The impact on material supply from gene editing applications could be substantial. Compared to vaccines, the amount of nucleic acid material required per dose is 100 to 1000 times more. The ratio of lipid to nucleic acid remains constant, so gene editing will require 100 to 1000 times more lipid than mRNA vaccines, or roughly 2 metric tons of lipid per 1 million patients treated with a gene editing medicine (based on today’s dosing levels). Just looking at three of the top genetic diseases, thalassemia, sickle cell, and heart disease, this accounts for 700 million patients worldwide, or 1400 metric tons of lipid. If gene editing companies are successful, we’re going to need a bigger boat!

To address the future needs for Nucleic Acid Delivery, Croda will continue to invest in Innovation, Knowledge, and Capacity.

We will invest in innovation through extensions to the product pipeline from internal R&D and licensing, including new products to improve Lipid Nanoparticle delivery systems, and new transfection agents for Cell & Gene Therapy.

We will invest in people to enhance our capabilities across the organization to support our ambitious strategy, including expanding our reach in the Asia market.

And finally, in addition to the £50m already invested in the Avanti site to expand GMP manufacturing and Quality Control, Croda will be expanding manufacturing capability for R&D to support innovation, discovery, and new pipeline opportunities for clinical development.

At the UK scale-up site, Croda will be investing in further capacity, supported by a co-investment from the UK government.

And a new multi-product scale-up site located in the US will be established to support commercial production. This investment will be supported by a co-investment from the US government.

This graphic represents a snapshot of our innovation pipeline for nucleic acid delivery.

It highlights the relative probability of success of a given innovation project vs the year of introduction to market and availability of first material (this is not the year at which peak revenue is achieved).

The probability of success is influenced by technical, regulatory, and commercial success factors. Across our platforms you will see a differing probability of success which results in a balanced portfolio for Croda Pharma.

The size of the bubble reflects the non-risk adjusted annual peak sales value. Note different projects will reach peak sales at differing years.

As an example, in the nucleic acid delivery pipeline you can see we have an LNP project worth >£20m being made available to customers in 2023. The project is then in early-stage development and peak sales will only occur following regulatory approval and successful commercialisation of the customer product.

CRODA

For the projects you see here, the total estimated risk adjusted revenue in 2030 is expected to be ~£150m

To sum up today's presentation. Our strong position in pharma/biotech research leads to development opportunities with supply for commercial launch.

The business opportunity is significant. The COVID-19 mRNA vaccines demonstrated the viability of nucleic acid delivery as a therapeutic modality providing new treatment options to address disease with greater effectiveness, and gene editing, while new and still unproven, may have substantial requirements for material supply, far surpassing that of mRNA vaccines.

And finally, the future is exciting. Demand will stabilise in the near term with new projects offering significant commercial opportunities in the years to come.

Thank you for your attention, and I am happy to take any questions you may have.

Empowering Biologics Delivery

Daniele Piergentili, President Life Sciences

So welcome back everybody, I hope you enjoyed the session with Steve, Peter and James. The purpose of those sessions obviously was to give you a much better idea in detail for each platform of what is the unique value proposition, what is the market opportunity, what is the execution plan. But even more it was to give you an idea of the people who are going to deliver that execution plan. That is important for us, and I hope we could share that with you.

Now what I am going to try to do in the final session is to try and summarise it all, yeah. So, let's start with why we are so excited with these three platforms.

On protein delivery James has shared with you – we have this fantastic portfolio of speciality excipients which we are going to further improve and develop in the coming years. But we have a unique position because there is limited competition for those speciality excipients for delivery of proteins and the market is growing double digit, so we like that very much.

Peter has been talking about vaccine adjuvant and has been talking about the fact that we also see ourselves with the broadest portfolio of components of vaccine adjuvants, but also the ability of putting those vaccine adjuvants together for powering the therapeutic vaccines which are coming up in the market. So, this is also a unique value proposition and is working in a market which is growing over double digit.

Finally, Steve has talked the nucleic acid delivery platform. This is the fastest growing market in the pharmaceutical industry today. And we are excited about the market growth, but we are also excited by the fact that we have a very good fundamental in the knowledge that Avanti brought into the company and also the fact that we are developing that knowledge further and growing as fast.

In 10 years', time 30% of all the pharmaceuticals that are going to be developed and brought to market will be nucleic acid delivery. This is a unique opportunity.

And then we have talked about execution, you know, it's good to have a strategy, but it's very, very important to have a clear execution plan. So, what I'm going to talk about in the coming slides is the summary of what are we going to do in innovation, how we are going to increase our knowledge when we need to increase it and then how we are expanding our capacity and what are we doing for inorganic growth.

Let's start with innovation. Smart science to improve lives – well in this case we improve lives, and we save lives, and we are very proud of that. This is our purpose and the way that our business model works is that we create value to the customer via innovation.

If you remember the graph that I showed in the previous section – it was about development need. We like this area of business very much because there is a need for high development need. And so, we will do innovation in these areas. And we will create new ingredients which come from sustainable sources and have a unique quality. And then we will create from these ingredients, systems which will be unique for the customers and will allow us not just to sell the products and our services at a price per kilo but as a value per outcome.

Steve, Peter and James have gone one by one through their pipeline, and I go back to how this graph works. So, you've got on the X axis the time of launch and at the epsilon axis the relative probability of success. What we have done, we have been very careful in understanding what is the risk associated with the clinical trials, the risk associated with the regulatory journey of the drug, and the technical risk of development. And we have weighted that risk into our pipeline. So, this is what you see there.

And what is important about this pipeline is that it is not dependent on one platform or the other platform, it is pretty much spread across the three platforms. And it is not dependent on one product or another product, as you can see there is multiple opportunities within each platform. And there are different kinds of projects, smaller projects, more incremental projects, and more structural projects. It is very important in pharma and in the supply of pharma to have a balanced pipeline.

Together with investment in the pipeline it is super important for us also to invest in people and knowledge. Obviously, we have a great fundamental in the knowledge we got from Avanti, from Biosector, from Croda and we have taken all the knowledge within the strategic platform. But we are adding on to that, because these are developing technologies and we need to be at the forefront of these technologies. So, we will be adding people where needed in R&D, in operations, in new business development. And we will structure these people and businesses under the umbrellas of the three strategic platforms.

And Freek, has been talking about the investment in the last couple of years. We said we were going to do something; we have delivered those investments and those investments have fuelled our growth. We are doing the same for the next couple of years. And we have clear investment ideas for the new scale up plant in the United States. Here we are actually collaborating with the United States Government, which is co-investing with us in this multi-product plant. The same in the UK, where we are expanding our capacity together with the United Kingdom Government. And on top of that we are investing in our capacity and capabilities in R&D globally.

And last, but not least, we have chief scouts, as Steve called them, who are going out there in order to make deals, potentially, where we see the need to increase our technology platform. In some cases, we will partner with companies, in some cases we will license technology from a university or a company, and in some cases, where we see an opportunity, we will obviously also have an acquisition or an inorganic growth.

But a good strategy and a good plan and good people is not enough. All these will bring us sustainable value creation for the coming years. So, in the near term if we go platform by platform, from the left to the right, let's start with small molecules and proteins. We believe in 2021 to 2025 we will grow high single digit in this platform. And this platform obviously is a blend of the small molecules part, which is growing middle single digit and the large molecule protein which is growing double digit.

Next, the vaccine adjuvant, here we believe we are going to be able to grow double digit. And this growth will actually accelerate as soon as the vaccine adjuvant system will come into play.

And last, but not least, the nucleic acid delivery platform is also going to grow double digit. This is the fastest growing market and net of COVID we see that as a solid double-digit growth.

So, this is the near-term future, a very clear continuation of the growth that Freek has shown you for the last few years. But this growth will then be accelerated, thanks to the innovation pipeline that we have put together and have shown you. So, from 2025 onwards, that growth will strongly accelerate. And will be based, as you see on the graph on the right, on a combination of innovation from the three platforms. So, it is a balanced growth.

So, we do have really very, very strong building blocks to achieve our ambition. We start with a very good business in 2021 where we have delivered what we said we will deliver. We believe that in the next five years we will continue to deliver at the same rate of high single digit growth and then accelerate with the pipeline of around £380m, that growth between '25 and '30. And then with some acquisitions we will reach our ambition to become a £1bn business for Croda by 2030.

So, a couple of takeaways from the session today. We build on the strong delivery of the past. We have built a really, really strong portfolio and we have been very successful with the buy and build expansion strategy. This will continue to work well for us.

We have seen a significant growth opportunity and that is why we developed this new strategy of empowering biologics delivery. A strategy which is based on three strategic platforms and a clear execution plan. The result of this strategy and the clear execution plan is that we are going to have a double-digit growth, customer driven, and then later on in the decade and even faster growth driven by our innovation.

And with that I really want to thank you for your attention, and I think that now we have got a little bit of time for questions.

Q&A

Steve Foots, Group Chief Executive

Well thanks, Daniele and thanks to the team for some great presentations there. Before we start the questions, I'm going to invite the team, all the presenters up to the stage, because in the normal way in Q&A I'd like them to answer most of the questions.

So, we'll let them get settled first and you can start thinking about the questions. Charlie.

Charlie Webb, Morgan Stanley

Thank you. Maybe first just around – you know clearly an extremely exciting opportunity you find ahead of yourselves; it's going to attract a lot of attention from competition, other people wanting to also participate in this market opportunity. So how do you see yourselves positioned versus that competition and how do you plan to stay ahead? You know how differentiated will these solutions be to continue to allow such an attractive rate of return and such an attractive growth opportunity for yourselves?

Steve Foots, Group Chief Executive

Okay, great. I think we'll let Daniele, over to you.

Daniele Piergentili, President Life Sciences

Yeah sure, that's a great question. We believe in leading first of all with having the best innovation out there. You have seen how much time we have spent trying to grow the innovation pipeline, this is how you win in Health Care. And actually, it is the same model that Croda has used in Personal Care for many years successfully. We will continue to do that.

We do also believe that for each platform we have not two years, three years at the start versus our competition, but in some cases like for lipids we have a 40-year head start versus competition. It is not easy to really close the gap for competition.

The other point which I want to make very clear is that Croda's business model is we focus on niches and those niches we want to lead into. So, we don't go into the large commodity markets, we really look into the specific niches where we can win by technology.

Charlie Webb, Morgan Stanley

Maybe just a second one around M&A, obviously a small item in the bridge, obviously this is an area you've had some success with M&A in terms of building out the platforms you have today. You know what do you see out there that's compelling – are there other platforms that you're not in that you would like to be in, or is it more about kind of adding to what you have – so adding to the same technologies you have today?

Steve Foots, Group Chief Executive

Well let me kick off and I'll pass to Daniele. I mean yeah – as you can see from that bridge at the end, you know a lot of that you can draw the conclusion that it's organic growth in the main that is going to get us there, which is great. And the £160m capital investment that is out there with you in your numbers is really to get us match fit for 2025, for that inflection to make sure that we can deliver that growth.

We don't expect another ramp to deliver that growth in terms of capital investment, of course we will spend a little bit more beyond '25, but the major spend is before that to get us to that inflection so that we can cater for that growth going forwards. So, I think that's the big point.

And you know in Croda, Jez and I will always say that organic growth is much more lucrative for Croda than the inorganic growth. So, this is a model that's not reliant on big M&A.

Having said that, we are keen to – if the opportunities arise, we're obviously very keen to deploy capital into this space, because as you can see you know we're not short of opportunities. And if we can consolidate around the three platforms that would be the priority. But we would also look at a fourth platform as well if we felt that was appropriate as well to offer more synergistic benefits to some of the other platforms.

So, a good example is you know we have acquired Avanti, Avant is great in polar lipids, but there are some terrific synergies between Peter's business and Steve's business. So, you know we are developing synergies along the way as we build our capabilities.

So, these chief scouts, they have a technology list, which is probably the most important intellectual property that we have got, they know what we are looking for. We map that to potential target customers that we're interested in.

So interesting times as they say and you know we normally do our best business through or after a recession, you know I've been in Croda for 30 years now, 32 years and I have seen five recessions and each time we have grabbed opportunities because we have a very strong balance as well now.

So, I think the take home message – organic growth first, quite a lot in the story for organic, opportunistic and targeted inorganic opportunities and we will deploy the balance sheet in this space if we can.

Georgina Fraser, Goldman Sachs

Thank you and thanks for the breakout sessions, they were very interesting. And in both the nucleic acid and also in the small molecule sessions, I noticed that a large chunk of the innovation partners is

listed as distributors, which seems like a bit of a step out from the normal Croda business model, if you could just talk to us about that.

Steve Foots, Group Chief Executive

Daniele, do you want to kick off and then I'll pass it back.

Daniele Piergentili, President Life Sciences

So actually, there are still an enormous amount of direct business and relationship with the customers, and as you have seen over 5,000 customers which go through the lifecycle. In some cases, we do have some distributors that we use as multipliers where they can also put together our products with other offerings and then create a better solution maybe for the customer.

But I wouldn't say that this is a departure from our model, our model is actually learning very closely from direct relationships with the customers in order to get the best innovation and really get that innovation through the commercial phase.

Steve Foots, Group Chief Executive

David.

David Bishop, Director, Investor Relations

Don't look so surprised. It's a question from the webcast.

Steve Foots, Group Chief Executive

I didn't know where you were going there David, ask him one on football.

David Bishop, Director, Investor Relations

On behalf of Camila Ayling, who said – are you not tempted to be more cautious on capex spend given the macro environment?

Steve Foots, Group Chief Executive

Yeah, I mean it's a good question, I mean I think a lot of companies are. But I think the biggest – for a growth company like Croda, I mean you can see the opportunities ahead of us, I think the biggest challenge for us for us to be bold enough to continue that investment. You know through the five recessions I've lived through is there is a regret of growth companies I think it is that they haven't continue to invest through that period. Because that period is never as long as you think and also when we come out, we need to be strong when we come out.

We can't afford to miss the '25 and beyond pipeline. So the £150m spend which is – let's be honest is the only additional spend that we're making on top of our normal routine capital, you know, to deliver an extra £380m of revenue I think you know when we look at it it's a no brainer for Croda that we would do that, why wouldn't you do that? And we have got Government support to do that.

So, I think for lots of companies I think that is right, a lot of companies are probably pushing capital out, but you won't see Croda doing that.

Charlie Bentley, Jefferies

So, if I look at the innovation pipelines in both lipids and excipients and something that has been talked about is bioprocessing reagents. Can you just talk a little bit about that because I think it sounds like that is essentially a new like leg, it's slightly different to the core business, how that has come about,

whether there is like a shared chemical base or something like that, just the fundamentals around it would be very helpful? Thanks.

Steve Foots, Group Chief Executive

We'll start with James, it was in your session, so do you want to respond to that?

James Lawrence, Global Business Director, Protein & Small Molecule Delivery

Sure. So, the first thing to say is it is a very attractive market for us. So, it is growing very fast and there are issues with the current products available on the market today. There is a similarity between the chemistry of those products and the chemistry of some of the products that we offer. And then by applying the Croda expertise, purification approach to providing solutions to customers we believe it is a very close adjacency that we can move into and then once we're in for that we can move onto the next thing and so on. But it is very attractive, and I would say very adjacent.

Daniele Piergentili, President Life Sciences

Maybe I'll add one point just to give you an example of why is this so important. So, bioprocessing into nucleic acid for instance it can be extremely complex. Cell therapy, you take the blood from the human body, you actually take the cells from that blood and then you change their DNA and then you inject them back into the patient. So, this process is actually very, very unstable.

This creates a great opportunity because there are no good solutions to that process. So that is why we are excited, also in nucleic acid delivery, to look at bioprocessing needs, because they are as complex as the challenges, we see in the drug delivery. So, it is a really very attractive market for us, with similar technology, similar challenges as drug delivery where we have good solutions.

Steve Foots, Group Chief Executive

Matthew at the back.

Matthew Yates, Bank of America

Thanks very much. Maybe I'll direct it at Steve given your tenure as part of Avanti. The revenue from the Pfizer COVID vaccine will obviously drop away at some degree, do you see a longer lasting benefit from that product in terms of the Croda brand, the franchise driving more customer engagement than you've seen before, having proved your ability to supply such a complex product in big reliable quantities. Is there a longer lasting halo that can be extracted from the vaccine?

Dr. Stephen Burgess, Managing Director, Nucleic Acid Delivery

Yes, absolutely. We don't have just one customer. We have got quite a few people spread across a number of applications – not just in the vaccines, but in the gene editing, which are utilising – there are some partners that are utilising the same products that are in the COVID vaccine and then there are next generation products that are in the development pipeline that we have already moved into GMP manufacturing in clinical development. So, there's – so we are taking advantage of the fact that we are a recognised leader in this field and supplied the COVID vaccine.

Steve Foots, Group Chief Executive

I think just an additional anecdote for you, I was in Avanti just about two weeks ago and talking to the marketing team, we look at peer review articles from academia with Avanti in and you know every month now we're picking up about 300 peer reviews monthly on Avanti being coded in with polar lipids in research work. And there is nothing better for the growth here as a leading indicator of future indications. So, there is a lot being written about Avanti, much more than there has been in the past.

Matthew Yates, Bank of America

And a second question if I can around profitability. We are using a lot of words like speciality, purity, which all sounds like it bodes very well for incremental margins. I don't know if it's for you Steve or Jez, but I haven't seen a comment today around profitability or mid-term margin targets. How do we think about how that trends as we get towards the £1bn revenue number?

Steve Foots, Group Chief Executive

Margins are always the finance director in Croda.

Jez Maiden, Group Finance Director

So, I guess the peak Health Care margins were really probably high 30s and that was seen in the first half of 2021 and that was the combination of producing the requirements for the COVID vaccines in actually quite a manual way before we put in the sort of automation and capital and so on that came onstream in the second half year. So, I guess that is the peak of where we've been.

Margins in the pharma space are now around the mid-30s and we expect that to stay broadly there given the investment that we're making here over the next couple of years. And then we would expect with the innovation profitability to start to see those margins coming up through the second half of the decade, again, back to sort of levels of where we were at the beginning of 2021.

Of course, you combine that for the Life Science reporting, which is the level with which we report, with Crop Care, Crop Care tends to run a few percentage points below pharma in terms of profitability, but still very profitable. So overall at the moment I'd say Life Sciences, we're in the low 30s and we will expect with that innovation to see the margin move certainly up to the mid-30s at the reported level for Life Science if that makes sense Matthew.

Steve Foots, Group Chief Executive

Thank you. Sebastian.

Sebastian Bray, Berenberg

Thank you for taking my questions. I have two please. The first is on the slides, I appreciate that this is a little product specific, but stock prices of biologics produced has worldwide rallied when Biogen unveiled its Alzheimer's results for phase 3 about two weeks ago. Are these slides that you're showing net of that data for phase 3, or do they not include it? I.e., could there be a material tailwind beyond what is shown in the slides, particularly for the biologics, the peptides?

And my second question relates to your presentation James, it was very interesting to see the market share in parenteral – the injectables, I didn't see the names of any CDMOs there, companies like Lonza and Catalent have increasingly been marketing themselves as one stop shops. Are they your buddies or your rivals in this market? Are they your customers or are they potential competitors that are looking at the excipients market and seeing a source of value? Thank you.

Steve Foots, Group Chief Executive

Okay, we'll let James do question two and I'll let Daniele in with question one.

James Lawrence, Global Business Director, Protein & Small Molecule Delivery

Yeah, so people like Lonza, we wouldn't view them as a competitor, they are people that could be a customer of ours, could be somebody that we work with in this area. But they are doing a different thing and providing a different service to the excipients that Croda is providing.

Daniele Piergentili, President Life Sciences

And on question one, we will see over the next years a lot of those examples coming up where a new therapy is going to be launched in the market. Once you see the first gene editing therapy actually coming to the market you will see a lot of tailwind behind everything we have talked about today.

So, it's really not a question of if there is going to be this large tailwind, but only exactly when. You know we are bound from the regulatory journey of our customer, but we will see more and more examples coming up where it will constitute proof that these new technologies around nucleic acid and biologics, do work, and they are going to be having a huge effect on the pharmaceutical industry.

We have seen it first with the COVID vaccine and mRNA, who would have said three years ago that we would have had an mRNA vaccine and then huge tailwind out of there. Your example is another tailwind, but we will see a number of these coming up in the near future.

Steve Foots, Group Chief Executive

Thanks, Daniele. Charles.

Charles Eden, UBS

Thank you, James it's probably a question for you again please. Just on the speciality excipients, I thought the chart was interesting where you showed a much higher value share for Croda than the volume share. I am just trying to get a sense of the defensibility of that business, i.e. if you give one of your competitors one of your speciality excipients, is it easy for them to go and replicate it, do you have patents in place – I guess because it will be higher margin, what is the risk that that gets competed away? Thank you.

James Lawrence, Global Business Director, Protein & Small Molecule Delivery

I think the risk is low because these are made using our proprietary technology, it's not patented, it's not in the public domain, people don't know how we make the level of purity that we do and that level of purity is very, very hard to achieve, so trying to kind of reverse engineer to that level is not something that people can do.

I would also say that a lot of our competitors don't understand the value that our products can bring. They have a successful business; they have a premium for their excipients versus standard grades and they are kind of happy with that. And where Croda operates is in a sphere really where we're on our own.

Freek Snieders, Senior Vice President Health Care

Yeah, maybe to add to that I think the competition by and large in the chemical industry is driven by volume growth, which is a very different mindset than the one that we have. So, the competition has been around potentially in this area for a long time and what we have seen, as I have pointed out this morning, 20% growth and we don't see that change.

Charles Eden, UBS

That's great, thank you. And just following up on that you mentioned – it sounded like the people are very important and they all know how you do it, how do you protect I guess other than compensating them very well those people moving to competitors and therefore replicating?

Freek Snieders, Senior Vice President Health Care

I think I'll go first and then anybody can contribute here. But it's really about building that team and you know creating the excitement to work within the company and within Croda Pharma in particular. You know you see what we're doing, the projects we're working on, I mean it's really – for somebody in this space it's super exciting to be part of this and this journey like what we've been through in the last three years.

So, you know of course we will lose somebody here and there, but it is by and large we see people wanting to join us rather than the other way around.

Steve Foots, Group Chief Executive

Martin.

Martin Evans, HSBC

Thanks. Maybe following on in fact from Freek's comment about the mindset because very different in the chemical industry versus the pharmaceutical industry. As you become more successful and bigger supplying the pharma industry, I'm just thinking in terms of the potential shape of the Group and requirements for capital within the two distinct end markets. Do you think there could come a point, obviously much further down the road, where it is appropriate, or you think it useful to basically spin off, or separate Croda Pharma from the heritage chemical business, or do you see indefinitely the synergies of having the manufacturing and so on together in many cases outweighs that?

Steve Foots, Group Chief Executive

Yeah, good question, I mean yeah where we see it at the moment it's still very integrated, you know you look at this and you can see it as a detached business, I mean ultimately maybe, but not for the next two or three years, there are still a lot of synergies connected with the core of that business to a lot of Croda sites. And as you all know if you walk around a number of Croda sites they are supplying most of our end markets and we get a lot of synergy that way.

I think the most important thing is you know the culture is the same, the way we go to market is broadly the same, there are nuances in the pharma industry which are different than the personal care industry, particularly with revenue streams and profit shares and licensing agreements. And it is important that we make sure that we adapt our business model to allow us to capture that. So, Daniele is leading that and the team, we're very tuned into that.

I think if I ever thought there was a handbrake on that growth then we could separate that out. But we don't expect to. You know our model is very similar, it's B2B, small inclusion levels, terrific value. This is very similar to the Personal Care business that we knew when we started out, you know it is lots of treatments with lots of products and lots of customers. And that is where we started with Croda Personal Care. And this is has got that look about it, you know it's not one product and it's not one treatment that we are back solving for. So, the sheer breadth and depth of the pipeline is the exciting bit. So, it's very, very Croda, we manage complexity very well and this is a complex business.

So, no plans for that, but I think that would be detrimental to the Group performance in the short term. Jez do you want to add to that.

Jez Maiden, Group Finance Director

Yes, I'd also add from the capital point of view I don't think the capital allocation is particularly different. I mean it's easy to take away from this with £160m investment programme from '21 to '24 which Daniele showed, about £110m to run now through '22 to '24, to think well that's a more capital-intensive

business. But this is about getting ready, as Steve says, match fit for 2025 and that growth that we really see taking off from there.

But fundamentally it's got very similar capital characteristics and I think both of them are imminently fundable from the cash generation that we get from the Group as well. So, I don't think for a capital point of view you'd say that they're different businesses.

Steve Foots, Group Chief Executive

You might compare us to people like Lonza and others and their capital utilisation rates would be different – I would say would be different to ours. You know the panacea that we mention is refinement purification and separation, in capital investment terms that is relatively modest, because the output – you know if one of these products hits the market beyond '25, you know we're talking tens of kilos, maybe hundreds of kilos you know we're not talking about thousands of kilos per se. So, you know for Croda that is perfect, we get the pricing right and we can make a lot of money.

So, the intensity as Jez said, if anything it is probably going to be more capital light than the Personal Care business once it's established. So, this ramp if you like, if you call it that, is to really make sure that we are unrestricted for this pipeline growth. And £150m, £160m in a market capitalisation of whatever we are £9bn, you know relative terms, you know it's nothing compared to the potential growth.

But I don't want you to lose sight of – and I don't want you to think that this is capital intensive going forward because it isn't, it's very capital light and carbon light actually as well, which is important for us as well.

Yes, Nicola.

Nicola Tang, Exane

Thank you. Hi everyone. You talked quite excitedly about the sort of sales opportunity in 2030, but I was wondering if you could help us, from the outside what are the kind of milestones or the things that we should be tracking between now and 2030 to understand that you're on the right track, or things are accelerating or not going as well as planned?

And will you I guess continue to breakout – or will you start to breakout I suppose I should say the contribution from something like speciality excipient versus nucleic acid and all the other parts?

And then the sort of final question is do you see any risk to the standard excipient side of your business; do you end up cannibalising the market with the speciality stuff or can that continue to grow as you say at that kind of mid-single digit rate? Thank you.

Steve Foots, Group Chief Executive

Well let's start with the last, I'll come back to the first point, I mean the standard – James, sorry it's you again, standard and speciality excipients.

James Lawrence, Global Business Director, Protein & Small Molecule Delivery

Yes, the standard excipients business will continue to grow with the market. And at the same time, we can grow our speciality excipients business faster than the market.

Steve Foots, Group Chief Executive

And I think generally on the communication we are going to have a lot more sessions, deep dive sessions like this. So, our job is a bit like what Freek – you know Freek's presentation was, taking you on a journey from where we today from where we were in 2019. So, we are going to update you more

regularly on progress. So, we're not going to – you know we've got a number out there on the pipeline, so clearly that's important. But what's also important is to update that number regularly with you. So, you know through our communications with David and Jez we will figure out the right approach to that. So, we keep you updated. And of course, we've got our results season and our results sessions that we can also provide colour on part of that or all of the pipeline as well. So yeah, you're going to get a regular update on that for sure.

James Hooper, Bernstein

So, it's almost a lead on from the previous question, because when we think about the commercialisation of a drug there is the opportunity through the clinical trials and then there's the kind of ramp up to commercialisation. When I think about the pipeline do I need to be kind of tracking the kind of hit rates of what comes through? So to what extent do I need to be – if things start to fall away in phase 1 and phase 2 or phase 3, will you still be able to kind of achieve the targets that you presented today, or do I need to be hitting quite a lot on some of the biological blockbusters coming through?

Daniele Piergentili, President Life Sciences

So, our model is to have one ingredient which goes into several applications with several customers. So practically we de-risk our innovation by the fact that we are not exclusively going for one clinical trial, but we are going for several clinical trials for several customers and several applications. So, I think that is the way we look at this.

And when you look at our pipeline it is really – it is risk adjusted already taking into account the clinical risk, the regulatory risk, and the technical development risk. So practically our business model is really one that is balancing the risk and reducing that risk.

Freek Snieders, Senior Vice President Health Care

They are universally applied technologies, so we want to be in a position where whoever comes out of the clinic successfully uses our technology.

Steve Foots, Group Chief Executive

And in the weighting in there, there isn't sort of one big project that is a must win project, or two big projects in there that are sort of £100m at 10% weighted average, you know there's a lot - I think the point that we're trying to make it there's a lot of moving parts. So, you know we'll figure that out and we'll communicate that. There will be new projects coming on, there will be failures, there will be clinical programmes moving on from one to two to three. You know it's quite fluid.

But I think for us the big message is it is very well balanced, it's very much like – if you take away anything it's very much like a Personal Care business, there are lots of moving parts in this. And that is what gives us the confidence.

I think you know back to the capital investment question before, I think we would be more reluctant to deploy £160m if it was on one bet, or two bets, you know that would be higher risk. But it is completely de-risked from the fact that there is a breadth to the portfolio as Daniele said.

James Hooper, Bernstein

And just as a quick follow up, just for my own education. When a kind of drug comes to market will there be dual sources, so for example with yourselves and similar to the Pfizer, with yourselves and one of the competitors, both saw growth from that. So, is that a factor I should be considering?

Steve Foots, Group Chief Executive

Daniele, do you want to comment?

Daniele Piergentili, President Life Sciences

I can answer that, yeah. So, it really does depend. In some cases, to be honest with you many of our speciality excipients, there is nobody else that has those speciality excipients. Many of the vaccine adjuvants, there is nobody else who has those vaccine adjuvants, so there is no dual sourcing, there is mono sourcing.

In some other situations like for instance a lipid which was used for the first generation LNP then there will probably be some dual sourcing at a point in time. But I think it does depend very much on the product class and there is a lot of our products which are unique, there is no competition for that.

James Hooper, Bernstein

Thank you very much.

Freek Snieders, Senior Vice President Health Care

I would say that brings some responsibility for us to always make sure that we have had space in our operations so that we can continue to supply, because you don't want to let down if you're single sourced.

Steve Foots, Group Chief Executive

Waiting patiently over there.

Ioana Subasu, Royal London

I'm not sure you're going to like this question. We hear a lot of detailed aspects of your strategy and execution, and I want to take a step back. We hear innovation is the core identify at Croda and for me it's a function of how many smart people you have in the lab creating knowledge and strong IP product with very specific niches. If you strip that I wonder what is left? If you strip the innovation from the identity is there a secondary identity that keeps Croda running?

Steve Foots, Group Chief Executive

Yeah, that's a good question. I mean I can never foresee us stripping innovation out, I mean you know that's the most important thing, the big driver of anybody in Croda and if you feel Croda it's the ingenuity, the entrepreneurship, that ability to try and transform the need for a customer, sometimes without them even thinking about it themselves, you know.

So, our job is to create markets, not destroy them. So, we don't really talk about volume and market share in our business, we talk about white space. And there is a lot of white space opportunities. I mean the big excitement is that some of these niches have just got much bigger because of the biological trend, or the sustainable ingredient trend.

So, I think you know innovation is the most important thing for the Group, as is sustainability leadership which you have heard me talk about before. We have to take a leadership position, not just on Scope 1 and 2, Scope 3 and you know everything that goes with doing the right things.

But aside from innovation you've got a very down to earth organisation. You know we've delivered a lot of great success over 20 years. And perhaps the biggest element of value in the company is the culture of the organisation. And the culture drives the innovation for sure, the culture is the raw material of our innovation. But you know straightforward, down to earth people, very professional, they know

what they're doing. And you know we're very proud when we deliver great results, but we don't agonise over it, we get on just constantly trying to improve the company.

So, you know we keep our heads down and deliver great results, that's our job, through brilliant innovation and brilliant people. So, we commercialise peoples' knowledge ahead of metal capacity. We must always do that. And we are a bit different to the rest of the chemical industry for that. You know we don't have to commercialise metal capacity, if you start to do that you don't get the values that we get.

So, I would say you know – I never want you to think about stripping innovation out, we would be a weaker business of course, but it's a culture that drives Croda. That culture is the heartbeat, it's the soul of the organisation.

Daniele Piergentili, President Life Sciences

Maybe I can I add one point as well? In all the presentations I think you have heard how much we have talked about customers. That is actually one of our unique propositions. We really mean it when we say we add value by having close relationships with those customers. We know them intimately, we've followed the drug cycle from research to commercialisation, so we really have it as a business model to be close to the customers. And I know that it is not quantifiable, but that makes all the difference I would say between us and probably some of our competitors what maybe just focus on innovation.

By the way we cannot have good innovation if we do not have a fantastic relationship with our customers, right. So, for us the relationship with customers – direct, is really important.

Ioana Subasu, Royal London

Thank you. No follow up questions here.

Steve Foots, Group Chief Executive

Thank you. Anyone else? Yes, at the back there.

Isha Sharman, Stifel

Hi, thank you for the presentations all of them, they were great. I have a question for you Daniele, what made you move from a giant like BASF to Croda? And have you recognised areas of unlocked value potential, what would you change at Croda, or what would you introduce?

Daniele Piergentili, President Life Sciences

Well, let's start with the first one. I remember very well the day that I said, hmm, this is a good idea. The Avanti acquisition came up on the newsletter and I said, wow, this is really something. Croda understands how the market is evolving. And then I did a little bit more research and then I have seen that they have done the acquisition of Biosector vaccine adjuvant, and I said, oh wow, this is another data point which is really strong.

So, what really attracted me is the fact that I understood that Croda was entrepreneurial, they were really looking at the market. And then I got to know much more about their relationship with customers. That was very passionate when I made that point just a minute ago. That makes a humungous amount of difference in how successful companies are. If you have a close relationship with customers, you will be successful in innovation and you will be successful commercially.

So those are the reasons why I think I moved to Croda.

And then you know I was also pleasantly surprised to be perfectly honest with you, just much more on a personal level, about you know how is the spirit and the environment in the company. That is also why we are able to acquire companies. When we acquire a family company it is because they see Croda as another family. And I think this is a big added value.

What I would work with in Croda, to be honest with you it's - we want to have a large aspiration, I hope that we gave you that feeling today, that the aspiration is big. So, we will work together to actually reach this big aspiration, yeah. And we will manage that because we are the best team.

So, I hope that answered that question.

Isha Sharman, Stifel

Yes, thank you. Just one more follow up, the £380m that you talk about organic growth, is it a modest or an ambitious target for you? And does the upside to that mainly come from gene editing from nucleic acid?

Daniele Piergentili, President Life Sciences

We have been extremely careful in the risk weight of that pipeline. We really have used all the potential risk that we have seen because we want to be as realistic as possible. Honestly, especially in gene editing, or in the nucleic acid delivery part, we really don't know how that exponential growth is going to come. In the next ten years it could be that the Verve product will go into the market. If that happens then we will get this acceleration and tailwind of many more projects in that area. But we cannot project that easily, yeah.

So, we know, as I said before, it's not about it, it's about when exactly these things are going to happen. And we did the best we could do to look at this in a risk managed way to weight that pipeline.

Isha Sharman, Stifel

Thank you so much.

Steve Foots, Group Chief Executive

Any more for anymore?

David Bishop, Director, Investor Relations

Lunch is ready.

Steve Foots, Group Chief Executive

Yeah, lunch is ready, no packed lunches you'll be pleased to know. Well great, look thanks very much. I hope it has informed you, that was the most important thing, and it has given you the size and shape of the pipeline and particularly the component parts as well.

If you don't mind, can we just give the presenters a bit of a round of applause for what they've done. And you can certainly continue the conversations over lunch, so thank you.

END

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