Teresa Rodó – EVP, Head of Global Healthcare Operations, Merck



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Teresa Rodó gives an overview of her role overseeing the development, manufacturing, supply, and quality of all of Merck's biotech and pharmaceutical medicines and medical devices. Rodó also explains how the company has been able to withstand the supply chain challenges posed by the COVID-19 pandemic, and why Merck is at the forefront of supply chain sustainability and the integration of cutting-edge digital tools.

Can you begin by introducing yourself and what role the function you lead plays within Merck?

Merck – known as Merck KGaA, Darmstadt, Germany in North America – is a leading science and technology company. Science and technology are at the heart of everything we do. Our work in three distinctive business sectors – healthcare, life science, and performance materials – makes a positive difference to millions of people's lives.

I am part of the healthcare business sector and head of Global Healthcare Operations, overseeing a team of 7,000 people worldwide responsible for the development, manufacturing, supply, and quality of all of Merck's biotech and pharmaceutical medicines, as well as medical devices.

Our mission is to deliver Merck’s medicines to the 85 million patients all over the world who count on them every day – on time, with the highest level of quality, and in the needed quantity.

Global Healthcare Operations has 18 manufacturing sites across the globe and presence in 60 countries with 160 different nationalities represented in our staff. We have a very diverse workforce united by the same goal: to best serve the patients.

How significant are development activities to Global Healthcare Operations at Merck and how do they interact with manufacturing and supply chain?

We not only do Merck’s manufacturing and supply, but also prepare for the future through development activities. This includes process development for the next generation of increasingly sophisticated therapies, ensuring that they are available in a timely manner for clinical trials and, upon their approval, for commercial use. In other companies, the process development unit may be in R&D, but here we have it very close to manufacturing which gives us agility and speed to make our drugs available even sooner. This is something rather unique in the way we coordinate our activities.

The quality, safety and efficacy of supply chains are a hot topic today during the COVID-19 crisis. With debates swirling not only over the availability of medicines but also how the industry’s supply chain is being organised, how has Merck reacted to the crisis and what have been your key concerns?

Obviously COVID-19 has presented enormous challenges; I have never seen such a diversity of challenges appear at once. These range from closed borders to cancelled flights and struggles in getting protective materials for our employees on some sites. However, I am a very positive person by nature and, having seen how we have tackled these challenges and what we have been able to achieve, I think that COVID-19 represents a great opportunity.

We have always had a purpose-centred organisation, working as one for patients, as any Merck employee could affirm. Although many companies now claim to have this purpose-centred mindset, we are lucky enough to have one ingrained in our DNA. This has been brought to the next level with COVID-19.

When the already-high levels of motivation and engagement among our employees were combined with the additional sense of purpose and urgency that COVID-19 has brought, our employees have been able to do amazing things. They have been able to find new routes of distribution and new solutions for getting into specific countries. No stone has been left unturned and, I am proud to say that not a single order has been undelivered. Our people have gone beyond their normal work and found opportunities to do things even better.

We have not had to stop any operations, with the exception of China, where we had to shut down our operations for two weeks, like most other companies in the country as per the request of authorities. All of our sites across Asia, Europe, and Latin America have shown a strong sense of purpose and engagement, allowing us to meet our commitment to the patients.

Will there be a temptation for governments, regulators and payers to demand a more localised supply chain in the future in order to create a greater sense of security?

It may seem to people outside of our industry that this is a new trend, but it has already existed for some time in geographies such as Turkey, Iran, and Argentina… just to name a few and even lately in the USA – so this is not anything new. For Merck, it is important to mention that we have been able to tackle the challenges of the COVID-19 crisis because of our global footprint and because of the thorough implementation of our business continuity plans across our entire network, not just one site.

We have actively been managing our stocks and assessing and implementing new routes to reach customers. I am proud of our business continuity plans and logistics setup in terms of where our value chain is based and how we have built contingencies and flexibilities into it over years. Our network has shown that it is still solid enough to serve a globalised world.

Merck does have contingency plans in place and the ability to give access to certain steps of the value chain to CMOs in countries where it may be a legal requirement to do so. There is no one-size-fits-all solution. However, establishing a facility in every country in the world would be unsustainable; the key is to have enough flexibility and contingency in how supply chains are set up. There is a need for dual sources, not only of active pharmaceutical ingredients but also for other key materials.

Moreover, in terms of supplying countries, having the ability to do things from more than one place has paid off during COVID-19.

The temptation to localise comes to the surface in times of crisis when restrictions are in place. It is likely that some politicians may take a short-sighted view and succumb to this temptation, so the industry needs to take this threat seriously and make reasonable concessions that secures access to medicine. That is, in the end, what counts.

A recent study from McMaster University demonstrated that the pharma industry represents a significant contributor to global warming, environmental degradation and even eclipses the automotive industry in terms of carbon emissions. Could you please tell us about your efforts to improve supply chain sustainability across Global Healthcare Operations?

To start with, all our sites meet a strict set of environmental regulations and go above and beyond legal requirements whenever possible, in terms of minimizing emissions into the air, water or soil; making efficient use of natural resources; and protecting the fauna and flora around our sites whenever applicable. This is the foundation of our efforts to preserve the environment and we are continuously striving to do more.

For example, through an initiative that we started in 2018, we are reducing the CO2 emissions associated with the logistics of our medicines by converting air freight into sea freight transportation routes. We are in the process of converting up to 90 percent of our medicine shipments to sea freight by 2023, corresponding to a reduction of 10,000 tons of CO2 emissions versus 2018. This is the equivalent of neutralizing the CO2 emission of 20,000 passengers flying from Paris to New York every year.

I also would like to mention the Zero Plastics initiative that we launched this year, which aims to restrict single-use plastic waste in the non-manufacturing areas of our sites, such as grocery bags, food packaging, bottles, straws, containers, cups and cutlery. By the end of the year, we aim to avoid 100 tons of single-use plastics, which are so harmful to the ocean fauna and entire ecosystems, and ultimately representing a threat for living beings including humans.

These are just examples to show you that we aim to address environmental aspects at each level of our operations and are always thinking of what more we can do!

Merck has invested heavily in supply chain development, shifting towards an automated and cognitive supply chain. This includes in areas such as artificial intelligence (AI) and

blockchain to empower decision-making processes. What have been the challenges of integrating all this new technology into your operations, and what opportunities does it bring?

I am a firm believer in the power of digitalisation to improve the way we work and better serve the patients. I feel lucky to work at a science and technology company that can leverage a myriad of opportunities from across the firm in this field. As head of Global Healthcare Operations, I see that digitalisation can help evolve our function across the full spectrum of our activities – development, manufacturing, supply and quality – and, more importantly, develop our employees' roles into more value-added ones. This is only possible today thanks to data analytics, artificial intelligence (AI), machine learning and augmented reality (AR), among other technologies.

This has required and will continue to require constant investments in the technology itself, but also in manpower capabilities. We have invested a lot in training and getting people to understand that digitalisation is not the enemy, but rather an opportunity to evolve jobs into higher-added-value ones. The most significant performance improvements can be achieved by combining human engagement with computers and machines that can do transactional work to perfection. For example, our employees in countries that were previously doing forecasting manually can now leverage machine learning and use information outcomes based on three years of data to inform their decisions. This is much faster, effective and accurate.

From the start of this journey, we have progressed one step at a time to evolve our manpower and broaden our understanding. We are convinced that this is the future and we all get great satisfaction from granting greater access to our medicines. Moreover, the better the decisions you can take based on data and the more agile your way of working, the better for efficiency at all levels.

Another important point regarding digitalisation is that we train both employees and management on digital tools. When I joined the company in 2017 I had a full morning of training on digital and we have an app internally for new employees to explain some key concepts about digital, thereby allowing leaders to understand their projects better and take better decisions.

Many of your partners in this digitalisation push are smaller, emerging companies. What is the risk for a company like Merck of partnering with such young companies whose technology has never been implemented into such a large global business?

Merck has a very entrepreneurial and empowering working culture. With this culture, the hurdle for this risk is lower than it might otherwise be. This entrepreneurial spirit and empowerment culture also drives us to be more curious; something we really value a lot. Because of this, we can work well with start-ups despite our status as a multinational. Although occasionally we may not be fast or reactive enough, we have not been afraid to utilise agile working methods and cut and add projects when necessary.

How well have your manufacturing employees reacted to the introduction of new technology?

It gives them a lot of confidence. For example, two years ago we launched a pilot to make the changeover of the lines with intelligent glasses. Using these glasses, employees can see the key cornerstones of the process they need to consider and take a picture that is then documented in the system. We took slow steps at the beginning but employees clearly saw the benefit. It is much more comfortable and practical, and at the end of the day efficient, to work like that than on paper checklists and forms.

Our employee population is very diverse, so some employees may have a harder time than others with these technologies, but all in all they have been very well accepted.

How do you integrate these technologies over such a vast and diverse supply chain spanning both developed and developing markets?

While we are internally very integrated when it comes to data, we are not fully integrated system-wise with our suppliers; we have some systems where we share information and have a much greater deal of transparency than before. The consumer industry may be leveraging these technologies more than we are in healthcare.

Merck has many sites across the world. We took a human-centric approach in all of them, qualifying people and giving understanding to leaders, then going in small steps on projects implementing things that make the advantages for the employees visible.

With personalised medicine and cell and gene, the line between the manufacturing process and the therapy itself becomes blurred. What are the key challenges this new

dichotomy throws up in terms of manufacturing and supply chain?

This is going to be a challenge. Merck's healthcare division is not in gene therapies at this point in time; that is however strongly the case for our life science business, which is supporting several start-ups in their development processes.

However, the molecules we are developing are of greater sophistication now than ever before. We have moved from standard antibodies to bispecific and trispecific antibodies, antibody-drug conjugates (ADCs) etc.... And we are deploying and combining many different innovative technologies, for instance around development, formulation and continuous manufacturing, so that we are able to be much more effective and efficient in our development, make the right decisions in a much shorter time, find the best and most optimized formulation for our medicines and reduce our manufacturing lead times.

Personalised medicine will bring disruption, but I am not yet convinced that it will be a fully-fledged substitute for traditionally developed medicines as we know them now. With the development group, we are now setting up a biotech development centre where we will integrate functionalities and capabilities of R&D and manufacturing to shorten time to market, make drugs available much sooner to patients, and leverage technology that we could not before. This includes digital technologies which allow to complete in one or few weeks what previously took months or years.

Although companies always talk about their "upcoming pipeline", with no new blockbusters in development they need to be good at managing their bottom line. What is the impact of your function for Merck healthcare?

The P&L of our company is positively impacted by our efforts in continuous improvement, in efficiency, and in economies of scale. Like all our industry peers, we have programs of efficiency and we benchmark ourselves regularly.

We can bring forward a lot of initiatives from the top-down, but our organisation is also empowered from the bottom-up to suggest ideas and implement things that can improve our cost base. Furthermore, we are not shy of investing in new technologies when we can see the impact, whether that means shortening development timelines and thereby making drugs available sooner, increasing capacity, or lowering the cost base. Even if depreciation goes up in the short term, we move forward with these projects if strategically meaningful.

Having said this, focus is very important to deliver on business or anything. We regularly challenge and scrutinize our portfolio and projects. Our focus is put on those areas that fit with and support our core mission. We are not afraid to divest projects that do not; accepting that we have come so far with certain projects or aims and that others may be able to bring them further if they have a higher fit or critical mass on scope. Our ambition as a Healthcare business sector is to become a global specialty innovator. We focus on areas which we can master and in which we can make a real difference for the patient.

Is there anything else you would like to share about Merck and the work you do with your peers?

I am very happy to work for a company that has been able to continuously reinvent itself, that has a culture that drives curiosity in a very inclusive environment, and that leverages the potential that its employees around the world have. Merck can be proud of its science and technology, its results, but also its people and leaders.

As the oldest company in the pharma sector with a 352-year history, we are very long-term-oriented. A company that can reinvent itself over centuries has an extremely strong and innovative culture, which makes anything possible.

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