
60 MINUTES WITH RENAUD DE PLANTA, SENIOR MANAGING PARTNER, PICTET AND STÉPHANE BANCEL – CEO MODERNA

Today, over a year into the covid pandemic, our most promising ticket out of it is through mass vaccination. A year ago, many experts doubted that a vaccine could even be developed, let alone within 12 months. What is still more remarkable is that the most effective solution so far is that of messenger RNA (mRNA) technology, which was pioneered by Moderna, a young, Boston-based biotech firm.

THE RACE FOR VACCINATION

RdP: Given the novelty of mRNA vaccines, many are concerned about potential safety issues. What has the data around this shown so far?

SB: The mRNA technology has proven extremely safe and well tolerated so far. Over 65mn doses have been administered with zero cases of blood clotting. mRNA is a natural molecule found in the human body and the synthetic mRNA used in our vaccines leave the body within 48 hours of injection. Older vaccine technologies often have added adjuvants and chemicals that boost the immune system but can have detrimental side effects.

RdP: How quickly can mRNA vaccines be adapted to combat new covid variants?

SB: It took us 30 days from the sequencing of the South African variant to producing a booster, which

we are hoping to receive global regulatory approval for by late summer, in time for the winter season. For future variants, our goal at Moderna is to conclude this entire process within 100 days. I don't think we have seen the end of covid variants; this virus is more likely to evolve quite a lot. And with our technology we can combine up to six mRNA molecules into a single vial of vaccine.

PRODUCTION & SUPPLY

RdP: What formidable logistics and manufacturing challenges had to be overcome in order to distribute the Moderna vaccine and how was it possible to achieve so much so quickly?

SB: Our biggest challenge was that the covid vaccine is the first commercial mRNA product. In 2019, we made fewer than 100,000 doses of vaccine. In the first quarter of 2021 alone, we shipped over 100mn doses

and are now on a trajectory to produce 1bn doses for this year. That is a multiple of 10,000x. The production machines were not available off the shelf and had to be custom built, there were issues around sourcing raw materials and hiring expert staff. However, the technology is highly scalable. Traditional cell culture technology on the other hand, is extremely difficult to scale because it makes use of living cells. In contrast, mRNA vaccines, which use enzymes and water, are massively scalable once the infrastructure is in place.

mRNA INNOVATION AND GENE ANALYSIS

RdP: Beyond covid, what can mRNA (and Moderna in particular) offer in the coming months and years to treat diseases?

SB: Vaccination plays a bigger role in the level of health that we currently enjoy than we often appreciate. Since 1918, 80 new viruses that hurt humans have been discovered. Many of us don't realise that a lot of the diseases that afflict us – including cancer – are caused by viral infections. For example, cytomegalovirus (CMV) is the number-one cause of birth defects, and there is no vaccine for it currently on market. Moderna is close to phase three in developing this vaccine. Studies have shown that those infected with CMV have

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shorter lifespans because their immune systems are engaged with combatting the CMV rather than cancers in the body.

For cancer treatment, we are working on customised vaccines created from a biopsy of a patient's cancerous tumour. We have five cancer treatments in the pipeline, including in partnership with AstraZeneca. Another treatment in the pipeline is against cardiovascular disease via a single injection into the heart in the wake of a heart attack. Using natural human proteins, it teaches the body how to build new blood vessels, thereby harnessing regenerative medicine within the body. mRNA technology is disrupting the pharmaceuticals sector as it has operated until now.

MODERNA AS A COMPANY

RdP: As a company, Moderna has transformed from a start-up into a household name with USD ~18bn top-line sales in just over two years. What made the difference and what are the greatest management lessons we can all take from it?

SB: Preparedness. We were ready for this because we knew that mRNA would either become a broad platform or go bankrupt. It was going to be zero or colossal and since no business venture pursues a “zero” opportunity, we were expecting colossal, which we have been preparing for over the last two years. The pandemic accelerated this outcome by three to four years

and enabled us to achieve breakeven cashflows five to 10 years sooner.

I built Moderna as a massively digital company that could scale, based on many years' observation that scalability and an agile culture are very difficult to realise. Layers of people and management often slow things down. And we achieve this scalability at Moderna through extensive use of technology; if something can be done by a machine, we do not have it done by a human. We have made immense investments in IT, robotics and AI (artificial intelligence) over the last couple of years.

With AI, the biggest hurdle is around change management. At Moderna, we have run thousands of experiments over 10 years and computers are now providing mRNA insight derived from these inputs. Computers can identify correlations from these masses of data that humans cannot. I need AI to become part of the company's DNA and the challenge lies in how to make the top 200 people within the organisation fluent and comfortable in AI.

RdP: What else do you hope to achieve with Moderna in the coming three to five years?

SB: I expect Moderna to multiply by 10x over the next 10 years. This “10x thinking” is the single most important management tool I have used over the last decade. I focus on this every morning when I come into the office. What is remarkable in the human mind is if you apply a time

constraint that is too tight, you shut down creativity. A 10-year timeframe allows room for thinking and dreaming. Another management tool we use regularly is “what if you had a magic wand”? When a vision is thus agreed, we then pedal backwards to track to this vision and the incremental steps required to achieve it. We have done this every day for the last 10 years.

Our biggest challenge is in culture dilution. We have an amazing technology and that technological risk is now behind us. Financing risk has now also moderated. We must strive to preserve what made Moderna special - taking calculated risk, moving really fast and adapting to the data. All decisions we take are driven by data. ●

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