Sumit Jamuar: Indians are 20% of the world's population, but represent only 1% of existing genetic data

As the new frontier in medicine, genomics brings with it the hope of allowing researchers to find the cure for a number of largely incurable diseases, from cancer to Alzheimer's, to infectious diseases and beyond. The challenge now is to map the DNA of as many ethnicities and nationalities as possible. Currently, 81 per cent of the existing genetic data is from Caucasians. One company is trying to bridge the gap by analysing the genome of different ethnicities in India, with hopes of expanding to the rest of Asia, Latin America and Africa. "You look at India, with 1.3 billion people, 20 per cent of the world's population. A lot of people of Indian ethnicities reside globally, and yet they comprise less than 1 per cent of genomic insights and understanding", says Sumit Jamuar, chairman and CEO of Global Gene Corp. He spoke with LSE Business Review's managing editor, ***Helena Vieira****, on 9 November 2017, during Web Summit in Lisbon.*

What exactly does Global Genecorp do?

One of the biggest problems you have in genomics is that a large percentage of the world's population is not well understood genetically. Currently, 81 per cent of the existing genetic data is from Caucasians. From studies, we know that different populations exhibit different traits. Consequently you need the underlying insights and data – the data foundation – to be able to use this technology. Science is all about data. The right data give you the insights. That's what we're creating.

To give you a sense of the numbers, I estimate that 60 per cent of the world's population represent less than 5 per cent of genomic data. You look at India, with 1.3 billion people, 20 per cent of the world's population. A lot of people of Indian ethnicities reside globally, and yet they comprise less than 1 per cent of genomic insights and understanding.

We're very excited by genomics as a technology, because it's one of the truly disruptive technologies with the potential to affect each one of us as an individual. We're fascinated by the possibility that not only can you treat disease, but also keep people healthier for longer. Given that we're at Web Summit, think about DNA as a computer code. The code gives us a sense of who human beings are, with the operating instructions included. It allows us to see the risks over our lifetime and understand what we need to do in order to mitigate and manage those risks. If something happens, we know what the right course of treatment is. That is truly the possibility of genomics and precision medicine.

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So you're going to be focussing on India?

Our focus is Asia, Latin America and Africa, which is a very large scope. Where did we start? We started in India, because in the beginning you need to set up and operate new systems. Given the large contribution that India has, from a population perspective, with 5,000 ethnicities and special characteristics in terms of family structures and other elements, it gives us a tremendous opportunity to create greater understanding. India in some ways was the last frontier of genomics. Building from that, we'll expand in the rest of Asia, Latin America and Africa. Our fundamental aim is, 'how do we solve the data problem?" That goes back to our objective of democratising healthcare through genomics.

What is the product that you're selling?

At the current moment we're looking at collaborations and partnerships with other esteemed parties, which could be governments, research institutions, pharmas or biotechs, to enhance the understanding, create the genomic understanding about individuals and the insights. We're working towards that. Let's create the data foundation, and start generating insights. Of course you can apply a lot of artificial intelligence and machine learning to create algorithms as well as products that are relevant to help the individual stay healthy and look at the propensity, cause-effect, and what can be done to manage certain conditions.

We have to look at the different phases. As an industry we're still at an early stage. The first human genome project was done in 2003. It took 13 years and $ 2.7 billion. Now, 14 years later, sequencing DNA takes about $1,000 and just a few hours. That's the transformation of technology. We're 2.7 million times cheaper, and much faster. Over the past 30 years, artificial intelligence has improved its capability 1 million times. We expect that in the next 30 years you will see it a million times improved. These are logarithmic movements, not arithmetic movements. We're looking at significant improvement in performance.

As the technology improves, it just keeps building up. But what you need to have is the first phase of the foundation in order to be able to build the next phase of things. I always liken it to the same stage where the internet was in 1995, when Amazon was just starting out, Google wasn't yet created, the iPhone didn't exist. Now, 20 plus years since, we have this thing where smart phones are indispensable. Our behaviour has changed significantly. And that's the sort of generational shift that we expect.

So you're not profitable yet…

No, at this point, such an early stage, it's like building a dam. Once you build it, electricity costs you nothing to generate, but to build a dam takes a substantial amount of investment to make it happen.

Who do you foresee would be your clients, using what you're building?

One use case is pharmaceuticals. They're facing a huge challenge in terms of their pipeline, huge pressures in terms of the patent cliffs. Over 90 per cent of pharmaceutical drugs that go into trial fail. That's their reality. When you look at application genomics and biomarkers, you find that the success rate triples. That's the data. Think about a drug development process in which $1,5 to $2 billion are invested. You want to generate insights that allow you to accelerate drug development. You fail faster, but also succeed faster. Let's try to link that to what happens in genomics.

If you look at the global perspective, you find certain isolated populations that give you understanding, because they should have some special characteristics that allow you to find your next blockbuster. I'll give you an example. There's a gene called PCSK9 that was found in a particular population with low cholesterol levels. That understanding and insight about the mechanism that led to lower cholesterol allowed the creation of blockbuster cholesterol drugs with global applications. While this was found in one small population, it was applied globally.

There are similar things with promising results. In Canada, in a homogeneous population, there's a gene called SCN9A. People with that gene do not feel pain. That is being used to develop analgesics and other things, which is really exciting. If you look at pharma now, there are enough studies being done by the FDA and others. In most cases, drugs aren't effective. If you look at cancer, unfortunately, 3 out of 4 oncology drugs developed are ineffective.

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So if you move from the drug development side, there could be drugs on the market right now where they figured out that Helena has a higher propensity to respond to that drug than Sumit, or vice versa. There's a classic case of small cell lung cancer. You look at something like EGFR mutation. If you have this mutation, the drug is 15 times more effective than if you don't. You have a 76 per cent chance of a positive response. If you don't have that mutation, you have a single digit chance of a positive response (about 5 per cent). Its predominance is more on the East Asian population. So suddenly you have this opportunity to collect data that could lead to the development of new drugs.

Regulators are rightly asking, "show me real world evidence, show me that this works". If you're able to work collaboratively with partners to demonstrate real world evidence, that is absolutely phenomenal. What we're passionate about is producing positive consequences for any individual. That's what the promise of precision medicine is.

Sometimes with start-ups, once they grow, their mission becomes secondary to the profit motive. Are you building anything in your project that will make sure that this will really benefit the majority of the population?

The most important thing in my mind is why we set this up. I am exceptionally privileged and fortunate to have achieved what I have. The kinds of people that I have connections with, whether it's Jonathan, Kushagra or Saumya, who are the co-founders, or the folks that we have in our team, whether it's Yaron, or Shalendra or others, we're blessed with that network.

As a company, the most important thing is to say, "What is the philosophy? Why are we doing what we're doing? What's our mission?" And it's very important to have that mission right and centre, at the heart of it. You start out with the mission, then you create the right business model. We actually tell people, "If you don't believe in this mission, if you're coming for other reasons, don't join us. It's going to be fun, but you may not enjoy it, because it's a journey. And you have to believe in those values."

Then you put the right business model in place. Everything else is a consequence, because if you're addressing a real customer need, everything else takes care of itself. My family and my co-founders and the company, because it's really important, will continue that dialogue. As we grow, we have a mission for what we use the resources we create for. Our view is to create a science company to do exceptional science. The scientists and the clinicians have to get on with doing this. My role is to make sure that that core happens and it remains, and that's why we do what we do.

One of the most profitable business models today is to collect private consumer data, package it and sell it, often times without the consumer knowing that information is being collected. Is that going to be part of your model?

It's too early to tell what our evolution will look like. Maybe when we have a conversation in the future, I will be in a much better position to reply. What we're very clear on is that it's important to be very consistent, and not only follow ethical standards and guidelines, but make sure that you're a part of it. That's a core principle of the business. When we're closer to the bridge those values will allow us to respond to that situation and we'll have a much more real conversation in the future.

One last question regarding the subject of your talk here, do you expect humans to live to be 125 any time soon?

I don't know about me, but I would definitely say that about future generations. Some very promising insights are being created around the science. There are also clusters such as Okinawa and Sardinia, where people live a long and healthy life. The key objective for me would be: it's not about longevity, personally and necessarily, but it's also about the quality of life. What I would definitely like, personally, is to reduce the length, between morbidity and mortality. So I would say in the next couple of generations we'll definitely see that happening more and more. Already if you look at Japan, there are about 65 thousand people who are above the age of 100. That's a phenomenal number. So, we have societies that we can learn from. Genetic insights will be coming and will be translated, and then in the future you will likely have things like gene editing. So, I would expect that in a couple of generations people will have healthier, longer lives.

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- *This Q&A is the last one in a series of 11 interviews during the Web Summit conference in Lisbon, 6-9 November 2017. The conversation was edited for clarity and brevity.*
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