A Patient’s Journey to Precision Health: How Quanterix is disrupting modern healthcare and going after some of the most lethal diseases in the world using the power of biomarkers.

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CEOCFO: Mr. Hrusovsky, the first thing I see on the Quanterix™ site is, "The Science of Precision Health.” How are you addressing that? What does that mean for Quanterix?
Mr. Hrusovsky: There has been a lot of excitement around precision medicine, which typically talks about how to administer a pharmaceutical agent in a more precise way to create efficacy and ensure the safety of the patient. At Quanterix, we have evolved that term to precision health because we think that a big part of the future is not just precision medicine, but precision health as a whole. Medicine is just a component of precision health.

The combination of better efficacy and less toxicity is how Quanterix, through the ultra-early, non-invasive detection of disease in blood, plays a role in precision medicine. However, we think that there is another component to precision health, other than just precision medicine, which is the ability to prevent the disease in the first place. Our focus is not solely on the early detection for treatments though, prevention is another major component of precision health we support. A focus on prevention can guide people through their health journey, and by using digital biomarkers to see the impact of environmental triggers on their body long before the disease starts to affect them, they will be able take proactive measures to halt its progression and get the treatment they need before it’s too late. That is the concept of precision health.

CEOCFO: How does the HDX Analyzer and your SIMOA® technology work towards your goal?
Mr. Hrusovsky: Simoa has the ability to measure, quantitatively, protein biomarkers at levels that are considered the baseline of healthy individuals. No other technology is able to simultaneously measure multiple key protein biomarkers when someone is healthy and not only when they are already sick. This is because when you become diseased, your protein biomarker elevates, making it easier for technologies to see them. This ability to see it at healthy baseline levels helps, and then any small movement from that baseline indicates the earliest movement toward disease.

What is also really remarkable is that we are also doing the measurement through a non-invasive blood test, as opposed to looking at things like a cerebral spinal fluid spinal tap, which is very invasive, very painful, and very expensive; or imaging, which can yield a lot of radiation, have a lot of negative effects and is also very expensive. Our ability to non-invasively see these biomarkers at baseline levels is the uniqueness of the HD-X.
CEO CMO: How are you able to measure these baseline protein levels? What have you figured out that others have not?

Mr. Hrusovsky: The ability to take a sample, break it up into five hundred thousand little samples and then do an analysis on each of those little samples allows us to see these baseline levels at exquisitely low abundance or at really high sensitivity. We can digitally determine whether the protein is in any one of those little samples and by doing so, we can measure one thousand times more sensitively than conventional analog technology. The real trick here is the ability to break the sample up, and the way we do it is through magnetic beads.

We have put five hundred thousand beads into a sample. Those beads end up going into their own unique wells, where we can then differentiate whether a protein has been captured by that bead. In summary and in laymen’s terms, the ability to see that protein at one-thousand-times greater sensitivity is like seeing an image in a magnifying glass at one thousand times greater amplification. This is the real trick to our technology.

CEO CMO: Who is using your products and services today? Who should be?

Mr. Hrusovsky: Most of the pharmaceutical and biotechnology companies are using our products to help the FDA see that their drug is effective and less toxic and do so by bringing in patient cohorts earlier in the disease cascade. It’s much easier for these drug companies to get a drug approved by the FDA when they have the biomarkers and this exquisite sensitivity our technology provides. Today, half of our customers are these pharmaceutical biotechs that are trying to get drugs approved. The other half are diagnostic companies and universities trying to look at the next generation of diagnostics to be able to see diseases – particularly cancer – much earlier, when they are still very treatable. Seeing cancers earlier is a big area of future opportunities, called liquid biopsy. That is a key area that we and our service-users are focusing on next.

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Another area of discovery our technology is driving is in neurodegeneration. Researchers have already been able to see Alzheimer’s six years before dementia by using our biomarker technology. There is a specific biomarker called Nf-L, neurofilament light, that basically measures how many neurons have died. We can work in the blood and determine and quantitate the Nf-L level, and that has been correlated to different levels and different points in these disease cascades, whether it be Alzheimer’s, ALS, Parkinson’s, Multiple Sclerosis (MS) or CTE. MS is an area that is very advanced, and we can see this disease much earlier, and also determine whether the drug a person is taking is working or not. These are pretty important changes in the way we practice healthcare by using biomarkers to augment clinical decisions.

CEO CMO: Does the medical community understand what you are doing? It sounds almost too good to be true. Shouldn’t everyone, everywhere, make use of what you provide?

Mr. Hrusovsky: There was a failed company called Theranos, run by Elizabeth Holmes, who had a very similar vision to ours and it did capture the imagination of much of the industry. There were many who believed that if you could achieve what she was espousing, it would be an immense achievement. Therefore, instead of letting people know that we could do what it was that she was saying, we formed an independent summit that I founded five years ago. It is called “Powering Precision Health.” The idea of the Summit is to attract all of the leading neurologists and oncologists around the world to teach them about our technology and then to have them actually deploy it in clinical trials and then report on it in third-party, peer-reviewed publications. It is a way to validate our technology could work, and that was a great validation.

The last Powering Precision Health Summit took place Barcelona in November, and there are videos that show over 40 different public presentations from some of these top thought leaders. It was sold out, standing room only. These oncologists and neurologists presented their data and by doing so, that is a way to validate what our technology is doing for the medical community. There are now 650 third-party, peer-reviewed publications validating our technology, coming from people outside of our company. That is important because investors felt somewhat defrauded by some of the claims that made by Theranos. We formed Powering Precision Health to prove that we are different, and then Quanterix went
public two years ago – further fighting the scrutiny this industry now faces due to Theranos. We are excited for the progress we are making, and that there is now substantial belief in what we are doing thanks to these peer-reviewed validations, but we are really in the first inning of a nine inning baseball game as it relates to biomarkers. We are still very early and are discovering new biomarkers all the time in the correlation to diseases, which has been commented on and presented in these publications, and at the Powering Precision Health Summit.

CEOCFO: **What surprised you throughout the process of building Quanterix to what it is today?**

Mr. Hrusovsky: I think the biggest surprise was that once there was this kind of Theranos affect, where there was a lot of disbelief around the possibilities, and it was hard to create a system that could encourage breakthrough thinking to achieve what we consider to be disruptive innovation. It was surprising just how difficult it was to create momentum for something that, as you pointed out, is so magical and could be very much adopted by everyone. It took some time to get to where we are today. I think the second surprise was just how hard it was to master the technology needed to achieve what it is that we do. We have invested over a couple of hundred million dollars to perfect this technology, and it was a lot harder than we originally thought. However, now five years later we have become a very formidable public company.

We have raised close to a quarter billion dollars over the last five years in support of building out this technology. It has been an incredible opportunity but again, we are in the first inning. There is so much to do here and our company and our employees are very focused and driven by a greater purpose, such as taking down cancer and neurodegeneration. That is the great news here: there is an incredible purpose that has motivated our employees and our team to work with investors and all of the thought leaders through PPH, to truly create a movement that accelerates the adoption of this breakthrough.

CEOCFO: **Would you tell us about your recent agreement with Siemens? Is that something that is typical for you?**

Mr. Hrusovsky: When I first joined, we were focused one hundred percent on what we call IVD diagnostics (in vitro diagnostics). We had a partner, bioMériex, and we focused on creating early detection diagnostics. We migrated from that when I joined the company to focus on research markets, where we deployed these biomarkers to help drug companies get drugs approved.

Our theory was that it would be better to get drugs approved that could take care of diseases before deploying a technology to uncover diseases, if there was not treatment for the disease. We started with treatments and research, and then systematically we are heading back into diagnostics. The future is very bright, and looking at the whole diagnostic landscape, I think the opportunity of creating a business and a company based on research was a smart first step to solving longer-term challenges that face the industry.

CEOCFO: **What does the next year hold for Quanterix?**

Mr. Hrusovsky: For a company like ours, it is continuing to gauge how far we have advanced. We just launched the HD-X this year, primarily for neurology, and the SP-X for cancer. We are monitoring the performance of these technologies very closely, and once we have mastered the reliability and what we would consider to be engineering challenges to the technology, we will then look at how fast and how much investment is wise for us to put forth to accelerate the growth of the company.

This next year is fairly pivotal because there is a lot of momentum right now for customers to turn in their old instrument, called the HD-1, and trade it in for this new HD-X, which is significantly higher performing in enabling better tests to be run. To the extent that the HD-X continues to perform and provide this unique tool for the markets, which is what it is doing, and couple in the SP-X going into cancer, we are pretty excited to be in a position to have the optionality to look at accelerating our investments for growth even further. This is a unique position for a company like ours to get to and it has taken us quite a few years to build it out.

We have raised about $120M just in the last half-year and are poised to accelerate our strategic investments if all continues to play out. We have also acquired two companies that further augment our strategy, and these kinds of opportunities will continue to be looked at as we further build out this incredible potential to disrupt the way healthcare is practiced and truly go after some of the most lethal diseases in the world.