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LS TECH TRENDS - THE METAVERSE CONTINUUM FOR BIOPHARMA R&D

TRANSCRIPT

than it is now. So the time is now to embrace the ways of working, move to new, innovative ways, and get to a better outcome, I think.

02:28 TOM LEHMANN: I think you're right and we certainly have seen an acceleration of not only the development of new technologies but also the adoption of those technologies—and the expectation is that will continue. What do you think this all means for R&D?

02:41 ROSS WOODDISSE: I like to think that there's a fundamental opportunity in the next decade for the Biopharma industry to reconsider its role from looking at disease management and looking instead at more risk prediction and disease prevention. There's no doubt that R&D will be at the heart of this change, as the combination of patient-centric, health-focused, outcome-oriented, risk-based, technology-enabled techniques mature and become the new normal. But at the end of the day, that's a lot of buzzwords. We hear our clients and colleagues talk about this all the time, but the art of all of this new science is to try and find a way to make it really work and improve the healthof patients at a scale that really moves the needle in health.

03:23 The prospect of getting real-time data stream seamlessly and accessible in the hands of researchers in the right format across the globe on a massive scale is really enticing and changes the prospect of the delivery of clinical trials quite a lot. But it's not going to happen if we can't establish the trust of patients, health care professionals, and regulators, so that people can really take control of their health data, leveraging the Metaverse capabilities. If anyone can be part of a global clinical trial at any point without the need for traditional sites, I think the experience would be really transformed.

03:57 TOM LEHMANN: With that transformation, I would imagine, comes a different degree of monitoring. Part of the conversations we've had in previous episodes is the things like wearables and implantables and other ways to connect to patients—and obviously, the data that comes from that—creates a very different paradigm for monitoring. And we've seen new entrants come into the industry. There's a new generation of digital trial capabilities out there in the market moving from much more of, I'd say moving into a passive data capture model. Do you see that really integrating into this Metaverse?

04:28 ROSS WOODDISSE: I think it will. And if we can link new digital biomarkers with a vastly greater amount of data, increased use of global standards, more predictive approaches, risk-based approaches, then I believe that we can transform the way that clinical trials are delivered.

TOM LEHMANN: Let me just pause there and just talk a little bit more about data. You've talked a lot about it and it certainly is a huge component of what happens in R&D. You might even say it's the raw material or the building blocks for the case for the efficacy of a new product, the safety associated with it, and ultimately the quality that comes along with not only in a clinical-stage, but also as you move into the manufacturing parts, so much of it is based on data.

What's your thought on how the Metaverse will help us to use data in a different way?

05:13 ROSS WOODDISSE: It's a really good question, and more data isn't always a good thing. If you're trying to solve one of the classic needle in a haystack problem and you see the needle and you're just piling more hay on top of it, it doesn't help.

05:27 So, this is where new computer science, data science, technology platforms, visualizations, and user experience, are all going to make difference. I've been following quite carefully the companies like DeepMind, what they've been doing with AlphaFold technology, for example, accurately predicting 3D models of protein structures, and I think it's got real potential to revolutionize the process. If we can model proteins, then we can model the interaction of proteins within organs and model entire biological systems.

05:2594 It would be absolutely incredible if we can model and simulate this as a digital twin and to be truly relevant across multiple therapeutic areas. We've seen with today's high-performance computing environments, they're making leaps and bounds in the use of data at this sort of scale. And there's a lot of experimentation with quantum computing that's got the potential to deliver exponential outcomes.

06:23 I also like to think of researchers combining scientific literature with population health data and developing deep learning algorithms that identify new drug applications and candidates. What if we can match digital twins with data and our own genetic profiles to determine if a product will work or if it represents an undue risk? It might be science fiction now, but the pace of compound innovation makes it more realistic by the day.

06:52 TOM LEHMANN: Well, it certainly sets up the case for real precision medicine, right? Imagine if we could reduce patient risk, improve health outcomes, and have much more tailored therapies by just using all the data and the ability to bring it closer to an individual's specific genetic profile, etc. It does feel like the future perhaps is not that far off as we get closer. And some of the examples you mentioned, it's getting closer by the day.

07:19 ROSS WOODDISSE: Yes, I think that's right. I'm a big fan of Formula One motor racing. I like to think about the way that the Formula One teams do simulation. They do about 300 million race simulations using the Monte Carlo method before deciding on a strategy. They continue this during the race to inspire their real-time decision-making. They use digital twins, computational fluid dynamics, models of wind tunnels before looking for correlation with real-world performance on the track, and the drivers get in and test simulators to provide rapid feedback before moving into the car and going to the racetrack.

But if we consider those technologies in the context of healthcare and use them to reduce the risk of harm and increase the chances of winning a therapy, metaphorically speaking, then maybe the decade-long R&D cycles could be a thing of the past.

08:12 TOM LEHMANN: Well, it certainly is a fascinating analogy, and one that I think this industry has looked to, to the automotive industry more broadly, but then also to Formula One in that type of data-intensive, rapid decision-making, highly simulated environment as a place for a potential solution.

07:56 At the end of the day, I don't know that in our industry we've explored all those possibilities, and I think we've heard from previous guests that just the to look outside the industry. So It's a fascinating analogy.

What's your sense on, maybe other uses of data in the metaverse continuum, that can enable R&D in different ways?

08:48 ROSS WOODDISSE: We've been talking about this a lot with the number of companies across the industry, all of which have established data science and AI capabilities that are looking at new ways of using data. For example, we're entering a world of synthetic data where AI-generated data convincingly reflects the real world. So in this world of synthetic data, the biopharma industry could gain many benefits. They could do things faster, better trials, enhanced pharmacoepidemiology, more ambitious cross-border research, ease the patient burden, reduce cost. Synthetic data as a control arm is a very valuable tool in the context of costly time-intensive clinical trials, especially in the fields of oncology and rare diseases where a placebo or standard of care control arms are not an option

09:37 TOM LEHMANN: You mentioned costs in there a couple of times and certainly right now in our industry, depending on who does the math, the development of a drug could cost upwards of $2.6 billion to bring it to market. Considering that the cost of failure is such a huge part of the R&D process and could take more than a decade. So you could certainly see how this could be a significant opportunity to not only reduce the cost, as you mentioned, but also to reduce that timeline and just, frankly, get you a better outcome.