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Life Sciences in the Metaverse: A New Forum

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The life sciences and pharmaceutical industry is investigating potential applications in the Metaverse to reduce costs, increase efficiency, and develop novel functionalities. The Metaverse is becoming a new forum for scientists and engineers in the life sciences industry to meet, share ideas, and collaborate. There is even a movement in the Metaverse called Decentralized Science, known as DeSci, that allows researchers to more freely engage directly with peer reviewers, thereby allowing scientists broader participation and funding sources when approaching scientific challenges. Our Life Sciences Industry Group looks at the Metaverse's role as a new fully immersive 3D virtual forum for researchers, the issues and potential pitfalls to be mindful of when working together in the Metaverse, and possible solutions to address these issues.

The New Virtual Forum

The Metaverse is a digital environment implementing virtual (VR) and augmented (AR) reality where users can interact with one another, run experiments, and transition between the physical world and the virtual realm. The Metaverse breaks the barrier of geography, physical space, and even language with the use of built-in translation tools to allow researchers from any part of the world to come together and share knowledge, review data, test simulations, and broaden their horizons all in real-time. With the rise of employees working from home, the Metaverse will provide opportunities for researchers to effectively collaborate with their colleagues remotely without stepping into a laboratory.

Potential Legal Pitfalls: Protecting Confidential Information

With the unique benefits of the Metaverse comes several legal issues that Metaverse users need to understand and keep in mind.

Company Proprietary Information: As company personnel who are privy to valuable company-proprietary information and potential intellectual property, scientists and engineers need to be cautious not to disclose confidential information when attending events where people outside the company may be present. Pharma and life sciences companies invest enormous sums in R&D. To ensure valuable ideas from R&D stay protected, pharmaceutical companies turn to intellectual

property (IP) law, such as trade secrets or patents for life-cycle management, and further invest significant resources in pursuing and enforcing their IP against competitors.

When researchers enter the Metaverse to exchange ideas and knowledge in a fully immersive environment, there is an increased likelihood that they may inadvertently neglect their duty to keep business-proprietary information confidential. As a result, sensitive information may be disclosed and the company may lose the opportunity to obtain IP protection on a novel idea. Disclosure to a single person in the Metaverse can result in a public disclosure and bar the company from applying for a patent. The company may also risk losing valuable trade secret protection.

Patient Data: Not only should Metaverse users be mindful of company-proprietary information but they should also be cautious with respect to clinical trial patients' personal data that are used in research. Pharmaceutical companies are able to gather and store more clinical trial patient data, especially now that clinical trial patients may have the option to participate remotely, from their homes or another location that is not the typical trial site, and use apps and biometrics that can collect and store their personal data via wearables (e.g., haptic gloves, smart lenses, smart watches, and VR headsets). When researchers collaborate in the Metaverse, they should have a clear understanding of the type of data that can be disclosed relating to clinical trials.

Big Benefits: Collaboration

Despite the potential pitfalls, participation in the Metaverse will likely yield significant benefits that should not be ignored. Since the Metaverse is a fully immersive experience in real-time, scientists and engineers may run experiments and learn information from each other much more quickly than in the physical world. For example, they may share information on new molecules or *in vitro* or animal studies data. They could also discuss hurdles they face in their research with scientists across the company or an industry consortium in real-time. This collaboration will allow researchers to develop new solutions and therapies more quickly than companies that prohibit their researchers from sharing information in the Metaverse out of fear of the potential pitfalls. Naturally, research through the Metaverse will also be more cost-effective and time-efficient as researchers will not be required to travel to collaborate. Language barriers can be overcome as the Metaverse would offer real-time interpretation. With access to more information being shared with scientists around the world, researchers can also use the Metaverse to track experiments, store data, and keep track of their research—like an electronic lab notebook.

On balance, companies utilizing the Metaverse will likely maintain a competitive edge, so long as they can effectively address the legal and security issues with the Metaverse.

Possible Solutions to Legal Pitfalls

To prevent inadvertent disclosures while encouraging scientists and engineers to share ideas and further develop their knowledge through the Metaverse, businesses, not just in life sciences but in general, need to have a plan to secure their business-proprietary information. Here are some tools businesses can consider to help keep confidential information from being disclosed:

Prior Agreement: Before entering the Metaverse where competitors or other third parties may be present, researchers should be asked to sign appropriate agreements, such as non-disclosure agreements (NDAs). These agreements should outline what type of material is confidential, the duration for which the confidential information needs to be kept secret, and the consequences of disclosing the confidential material. Signing such agreements will not only help employees be mindful

of not disclosing sensitive information, but they also provide potential recourse in the event of such disclosure. With respect to IP, the exchange of information under an appropriate NDA could also prevent a disclosure from being considered a “public disclosure” that could bar patentability.

Regulating Meetings: As the Metaverse is in early development, many meetings, conferences, seminars, presentations, and the like may not be managed and hosted with all of the precautions that are in place in the physical world. Without a clear protocol on how attendees are invited and screened, it would be unclear whether all the participants have the requisite connection to the life sciences industry or a specific company to attend the meeting. For example, a competitor could log in under the guise of an authorized company scientist to gather information on the latest drug, molecule, or other confidential research developments by a pharma company. Thus, it is imperative that life science companies that host space or meetings in the Metaverse have strict security protocols to prevent hacking or unauthorized persons from attending. This may also require using bio-informatics to ensure that the person in the virtual world is not an imposter or a bot. Life science companies should have a policy regarding the types of meetings their researchers can attend in the Metaverse and use strict security protocols for any intra-company collaborations in the Metaverse. Some businesses may prefer their scientists and engineers to limit their attendance to intra-company spaces and academic conferences to prevent potential disclosure of company-proprietary information to others, especially competitors. Companies should also provide conspicuous warnings, either on the log-in page or immediately prior to entrance onto the Metaverse platform, about the guidelines and confidentiality requirements regarding participation in the Metaverse forum to prevent inadvertent disclosure.

Training: Training will be very important for participation in the Metaverse. Businesses should provide training to their employees on proper protocols, procedures, and behaviors before they are allowed to enter the Metaverse. Topics may include how to interact with others and what discussions are appropriate or not in the Metaverse. Specifically, employees should be trained on what constitutes confidential information of the company and what information is prohibited from disclosure under applicable laws, such as disclosure of private personal data. For external Metaverse conferences or virtual simulations, employees should be notified of the types of information the host may collect from the entrants. For example, if a scientist at a small pharma company needs to use a state-of-the-art virtual lab hosted on the Metaverse to run experiments, there should be appropriate security mechanisms to safely secure the data and the experiment and prevent others, including the host, from accessing such information.

Conclusion

The Metaverse has great potential for the pharma and life science industry as it provides a virtual forum for scientists and researchers worldwide to come together and share their ideas to create and advance potential treatments more quickly. Naturally, entering this new digital space will bring up numerous challenges requiring expert guidance.

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