



Most Innovative 3D Hydrogel System 2020: VitroGel

Drug discovery, cell therapy, and personalized medicine is a field that requires innovative work. Finding the new technologies needed for researchers to accelerate the processes involved is vital to the industry's continued success. The team behind VitroGel, from TheWell Bioscience, has the potential to revolutionize the sector, which is how they've achieved such success in the Healthcare and Pharmaceutical Awards 2020. We take a closer look to find out more.

Hydrogels are 3D network structures able to imbibe large amounts of water. They play a crucial role in drug delivery and tissue engineering, but current extracellular matrices are complex, unstable, and difficult to use; thus, limiting how this way of working can be commercialized. TheWell Bioscience delivers its own functional, xeno-free, and tunable hydrogel system in the form of VitroGel® and VitroINK®. These platforms open the door to run the drug screening on personalized 3D cell models for preclinical and clinical applications, which animal-based material cannot do.

The team at TheWell Bioscience therefore offers a number of exciting innovations to scientists from academia and in the medical industry. Their work allows them to establish 3D organoid models, increase the cell retention and viability for cell therapy, produce 3D bioprint tissue-engineered medical products, and scale-up the production of stem cells. Compared to the alternatives on the market, TheWell Bioscience can go beyond what is currently available and explore 3D cell culture for bio-printed tissue-engineered medical products, large scale stem cell production, and cell therapy applications.

This leap is significant indeed for the industry at large. Current drug discovery relies on 2D cell culture systems and animal models, which are inaccurate,

time-consuming, and expensive, so an in vitro 3D model system with patient-derived samples is needed for more accurate data and higher efficiency. 3D organoid models have attracted great attention for COVID-19 study, but all these organoid models are based on the animal-derived material, which hinders clinical applications. The advanced systems embraced by TheWell Bioscience could play a crucial role in moving forward for 3D Organoid platforms.

The advantages of choosing a solution from TheWell Bioscience are numerous. VitroGel® and its companion products are room temperature stable and ready-to-use, well-defined without undesired proteins while retaining an enviable degree of batch-to-batch consistency. The use of tunable and fully functional hydrogel can allow firms to mimic the natural micro-environment. The firm's products allow for easy cell harvesting for all downstream analysis, are injectable for potential preclinical/clinical applications, and most crucially of all, are lab automation friendly. This futureproofs the team's solutions significantly.

The nature of VitroGel® means that it comes in a variety of different versions to match the applicational needs of the scientific community. Most recently, the team developed VitroGel STEM, VitroGel MSC, and VitroGel HEK293. VitroGel STEM and VitroGel MSC enable large-scale stem cell expansion resulting in



high-quality 3D cell spheroids without using microcarriers. VitroGel HEK293 was designed to increase the productivity and quality of large-scale protein manufacture from HEK293 cells with a novel 3D culture method. Antibody, growth factors, and many medical protein productions are going to benefit from this product. Beyond the world of VitroGel® varieties, the team is working toward adapting their 3D platform for lab automation for high throughput screening.

Using advanced technologies obviously changes the playing

field, offering a way forward that used vastly different techniques. The potential of the methods used by TheWell Bioscience simply cannot be matched, working more quickly and efficiently than current setups. Unlike many firms, the team at TheWell Bioscience has already partnered with industry professionals in order to validate their concepts. As the business continues to look at ways in which hydrogels can be approved for clinical applications, it's easy to see how this firm represents a bold new step into an exciting future.

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