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Marc Rioult, PhD/MBA, is the Managing Director of 3-D Matrix Medical technology. He has developed for over twelve years technologies, startups, and companies in the biomedical field but also in nanotechnology, software, chemicals, and microfluidics. Before joining 3-D Matrix, Dr. Rioult has worked at MIT as a Technology Licensing Officer, for two consulting firms engaged in IP and technology transactions for clients ranging from startups to Fortune 500 companies, and co-managed a software company after leaving academic research in neuroscience. He serves on the boards of several domestic and foreign companies and academic institutions.

Synthetic peptides matrices for 3D bioprinting

Conventional 3D printing creates complex solid structures for rapid prototyping and for manufacturing ranging from industrial plastic components, to decorative figurines, artwork, and architectural models, to complete prefabricated products, to cookies and pizza in the food industry, and to complete houses printed overnight with massive truck-based concrete printers. In 3D Bioprinting, the same basic 3D printing technology is combined with cells embedded in ECM-mimicking matrices to create tissue replacements and organ parts for patients or organotypic high-throughput drug screening devices. This technology is rapidly advancing on several fronts – printers, cells, post-printing cell culture environment – yet the choices for embedding the printed cells in adequate ECM-like structures for organotypic stabilization and development, are still limited. It has been suggested earlier that engineered synthetic peptide matrices are ideally suited for this purpose. They organize the printed cells structurally into tissues and can be loaded for controlled release of factors conducive to growth and organization of the bioprinted tissue. This contribution will describe bioprinting efforts aimed at creating new tissues and advancing the development of adequate synthetic peptide matrices.