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# Khosla Ventures Leads Seed Financing for Biotech Startup NextVivo

Company uses new technology for growing human tissue to develop disease treatments



NextVivo co-founder and Chief Executive Adam Margolin.

PHOTO: CLAUDIA PAUL

*By*

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Khosla Ventures is betting that a new means of replicating human biology in the lab will enable startup NextVivo Inc. to develop novel disease treatments.

Khosla has led a \$7.9 million seed investment in Palo Alto, Calif.-based NextVivo, which says its technology enables it to grow three-dimensional human tissue in the lab better than has been possible before. Initially, NextVivo intends to use it to develop immunotherapies for cancer.

NextVivo uses human cells to grow mini organs, or organoids, which are clusters of cells that replicate an organ or sample of disease tissue outside the body. Its organoid technologies originate from the labs of Stanford University professors Mark Davis and Calvin Kuo, both co-founders of NextVivo.

Because organoids faithfully represent biology inside patients, they can be used to test and develop disease treatments, according to NextVivo co-founder and Chief Executive Adam Margolin.

Growing organoids isn't a new idea, but NextVivo says its approach improves them. Previously, scientists have grown organoids by submerging cells in nutrient-rich media, Dr. Kuo said.

Epithelial cells, which make up organs or tissue, can grow in this environment, but connective tissue and immune cells don't grow well in this low-oxygen setting, according to Dr. Kuo.

NextVivo uses a new system called an air-liquid interface that lets nutrients from media permeate into cells from the bottom. This leaves the top exposed to air, enabling connective tissue and immune cells to also grow, Dr. Kuo said, adding that the approach also enables NextVivo to grow larger organoids and more accurately preserve tissue architecture.

NextVivo plans to apply this technology initially to develop a type of immune-cell therapy for cancer. Tumor biopsies have naturally occurring immune cells embedded in them called tumor-infiltrating lymphocytes. Using tumor cells from

patients, NextVivo intends to create organoids that re-create the tumor outside the body.

Because immune cells are preserved and can grow in the company's organoids, NextVivo intends to select tumor-infiltrating lymphocytes that recognize antigen markers on the patient's cancer. Using these immune cells, the company can create personalized cancer treatments, Dr. Margolin said.

NextVivo's organoids have other potential applications, such as testing new drugs to gauge how they could affect tissue in the body. This would provide researchers with another technique in addition to tools such as animal models of disease. Organoids could be a relatively low-cost technology that provides scientists with more confidence in the potential of a drug before it is tested in patients, Dr. Davis said.

Alexandria Venture Investments also participated in this seed financing.

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