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San Diego biotech raises $46 million

Ideaya Biosciences, of La Jolla and South San Francisco, focuses on cancer therapy

By Bradley J. Fikes | 8:26 a.m. May 5, 2016

Ideaya Biosciences, a La Jolla and South San Francisco biomedical startup, has raised $46 million to develop cancer therapeutics.

The financing will help Ideaya develop drugs to selectively kill cancers by targeting vulnerable mutations. In addition, Ideaya is also researching drugs to improve response to cancer immunotherapy.

Investors include 5AM Ventures, Canaan Partners, Celgene, WuXi Healthcare Ventures, Novartis Institute of Biomedical Research, and Alexandria Real Estate, Ideaya said in its Tuesday announcement.

Privately held Ideaya also appointed a number of prominent researchers to its scientific advisory board. These include Trey Ideker of UC San Diego, who studies cancer genetic networks, and Bruce Beutler of UT Southwestern, a Nobel laureaute formerly of The Scripps Research Institute. Another member, biotech executive Laura Shawver, founded the Clearity Foundation, to help women with relapsed ovarian cancer find the best personalized treatments.

Ideaya was co-founded by chief executive Yujiro S. Hata, who works in the South San Francisco office, and Jeffrey Hager, senior vice president and head of biology who works in the La Jolla office. The company started last August, although the concept had been incubated from a year before that time, Hata said.

Hager had previously been vice president of biology at Seragon Pharmaceuticals, which was purchased in 2014 by the Genentech unit of Roche for up to $1.7 billion.

Hata said he had joined after being recruited by 5AM Ventures. He had become familiar with the company's therapeutic approach as an executive with cancer therapeutics companies and found the individualized medicine concept appealing.

Ideaya targets genes mutated in certain cancers with an approach called "synthetic lethality". The concept applies to pairs of genes, of which one must be functional for the cell to survive. If both genes are inactivated, the cells die.

In cancers where one of these gene pairs is mutated, a drug that inactivates the other gene should kill only the cancerous cells. Normal cells, which have two functional genes, can survive having one gene inactivated. This can only be determined by examining the individual cancer's genetics, which is part of the drive toward personalized medicine with precisely targeted therapies.

Synthetic lethality is widespread throughout life. Scientists led by J. Craig Venter encountered it when they developed a bacterium with a smaller genome than any other organism. The scientists discovered that the bacterium could survive when one gene in the pair was deleted, but deleting both proved fatal.

Hager said synthetic lethality was first observed about a century ago, in fruit flies, then yeast, and then more recently in human tumor biology. In human cancers, the effect of synthetic lethality is to trigger a process called apoptosis, or programmed cell death, a self-destruct mechanism that causes affected cells to die.

"If gene B is mutant in a tumor cell and you inhibit gene A, you get a synthetic lethal factor that leads to cell death," Hager said. "If gene B is not mutated in a normal cell, this implies a high therapeutic index, the potential for a very safe and effective therapy."

To do this, biomarkers indicating synthetic lethality must be identified in a cancer, so a matching drug can be applied. This is where individualized medicine steps in.

"We won't go blindly and treat lung cancer, breast cancer or prostate cancer," Hager said. "We'll take the DNA of a particular tumor, sequence it and identify the particular mutations that we're looking for. It's a very focused, modern-day molecular diagnostics approach to treating cancer."