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A Genetic Entrepreneur Sets His Sights on Aging and Death

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J. Craig Venter is the latest wealthy entrepreneur to think he can cheat aging and death. And he hopes to do so by resorting to his first love: sequencing genomes.

On Tuesday, Dr. Venter announced that he was starting a new company, Human Longevity, which will focus on figuring out how people can live longer and healthier lives.

To do that, the company will build what Dr. Venter says will be the largest human DNA sequencing operation in the world, capable of processing 40,000 human genomes a year.

The huge amount of DNA data will be combined with huge amounts of other data on the health and body composition of the people whose DNA is sequenced, in the hope of gleaning insights into the molecular causes of aging and age-related illnesses like cancer and heart disease.

Slowing aging, if it can be done, could be a way to prevent many diseases, an alternative to treating one disease a time.

“Your age is your No. 1 risk factor for almost every disease, but it’s not a disease itself,” Dr. Venter said in an interview. Still, his company will also work on treating individual diseases of aging.

Human Longevity said it had raised $70 million, most of it from wealthy individuals, some of whom have backed his existing company, Synthetic Genomics. Dr. Venter said the largest of those investors is K. T. Lim, a Malaysian billionaire who runs Genting Berhad, a gambling conglomerate.

A “not insignificant” part of the funding comes from Illumina, the dominant manufacturer of DNA sequencing machines, Dr. Venter said. Human Longevity has ordered two of Illumina’s new top-of-the-line HiSeq X Ten systems, each of which has a list price of $10 million.

Dr. Venter is known most for having run a privately funded effort to sequence the first human genome, racing to a tie against the publicly funded Human Genome Project in 2000. More recently Dr. Venter has laid claim to creating what some have called the first synthetic cell.

Last year, Google’s chief executive, Larry Page, announced that his company was creating an anti-aging company, Calico, which is being run by Arthur D. Levinson, the former chief executive of Genentech. Oracle’s chief executive, Lawrence J. Ellison, has financed anti-aging research through his foundation.

With the cost of sequencing falling rapidly, other groups are also undertaking large sequencing efforts aimed at finding clues to diseases. Regeneron Pharmaceuticals and announced an effort to sequence 100,000 human genomes in January.

Just this week, scientists reported that a genetic study of 150,000 people revealed a mutation that reduces the risk of developing Type 2 diabetes.

Illumina says that with its new X Ten system, the cost to sequence one human genome will be below $1,000.

Dr. Venter said his company planned to sequence the genomes of people who are healthy and sick, from infants to centenarians. The company will also sequence the people's microbiomes — the microbes living on and in them. And it has signed a contract with another company, Metabolon, which can measure chemicals in their blood.

Some outside scientists praised the effort.

"I feel strongly that is a wonderful scientific thing to do," said Dr. Thomas Perls, a professor at Boston University School of Medicine who has been studying the genetics of centenarians. "He's looking at throwing a lot of money at this to do a lot of science quickly."

Dr. Perls said most people should be able to live to their late 80s, and if they don't it is probably because of unhealthy lifestyles, not genetics. But the ability to live to 105 or longer is strongly driven by genetics, he said. These people seem to have genetic variations that protect them from the diseases of aging.

Still, it is not clear how quickly, if at all, this data sifting will yield usable insights and how Human Longevity will make money. The company said it planned to sell data to pharmaceutical companies and eventually to benefit from drugs and diagnostic tests derived from its findings. It is also considering offering stem cell therapy.

Dr. Eric J. Topol, director of the Scripps Translational Science Institute, said that while the new company might well expand knowledge, "translating that to meaningful drug therapies is likely a long ways off." He added, "We have no way of knowing whether longevity will be favorably influenced."

While Dr. Venter is known for groundbreaking science — and for his flair for publicizing his efforts — his track record in business is mixed. Although his previous company, Celera Genomics, succeeded in sequencing one of the first human genomes, it failed to make a business of selling its data to pharmaceutical companies because data from the rival Human Genome Project was available free.

Maintaining a proprietary edge could be a problem for Human Longevity as well, since many other companies and academic institutions are doing genomic studies.

While Dr. Venter may be correct in saying his new company's human genome sequencing capacity will be greater than that of others, it does not appear to be that much greater. The Broad Institute in Cambridge, Mass., for instance, recently bought the equivalent of 1.4 Illumina X Ten systems.

Dr. Venter said his company hoped to increase its capacity to 100,000 genomes a year. But even at $1,000 per genome, that would mean the company would be spending $100 million a year just on sequencing, not counting all the other studies it wants to do. That is a large expense to offset, and it means that the $70 million it has raised so far will not go very far.

Obtaining the genomes to sample could also take time. Human Longevity said it would collaborate with the Moores Cancer Center at the University of California, San Diego and offer to sequence the DNA of the tumors of all patients, as well as the DNA from healthy cells. At first, patients would not be charged for this; eventually, the company hopes to sell such a service.

Many cancer centers are already testing selected genes in tumors, looking for mutations that could suggest which treatments would be best for patients. It is not yet clear how much more would be gained by sequencing the entire genome of the tumor cells.

Human Longevity will be based in San Diego, also the location of Synthetic Genomics, which is trying to use sophisticated genetic engineering techniques to create organisms that can produce fuel, chemicals and medicines. The J. Craig Venter Institute, a nonprofit research center, also has a branch there.

Dr. Venter will be chairman and chief executive of Human Longevity. His co-founders, who will be vice chairmen, are Dr. Peter H. Diamandis, chairman of the X Prize Foundation, and Dr. Robert Hariri, founder and chief scientific officer of cell therapy operations at the biotechnology company Celgene.

Dr. Diamandis said the goal was not to make people live forever, but rather to make "100 years old the next 60."

Dr. Venter, who is 67, sounds as if he might not need the company to succeed. "I feel like I have at least 20 or 30 years left in my career," he said.