BIOMEDICINE

‘Scientific wellness’ study divides researchers
Famed biologist’s spinoff company sells personalized health monitoring and coaching

By Ryan Cross

Leroy “Lee” Hood is one of biology’s living legends. Now 78 years old, he played an influential role in the development of the first automated DNA sequencer, pioneered systems biology, and still leads an institute devoted to it in Seattle, Washington. But his latest venture may not burnish his reputation: a company promoting “scientific wellness,” the notion that intensive, costly monitoring and coaching of apparently healthy people can head off disease.

In a pilot study of the concept, Hood and colleagues compiled what he calls “personal, dense, dynamic data clouds” for 108 people: full genome sequences; blood, saliva, urine, and stool samples taken three times at 3-month intervals and analyzed for 643 metabolites and 262 proteins; and physical activity and sleep monitoring. The team reports in the August issue of *Nature Biotechnology* that dozens of the participants turned out to have undiscovered health risks, including prediabetes and low vitamin D, which the coaching helped them address.

Hood says the findings justify commercializing the monitoring, in a service costing thousands of dollars a year. But some colleagues disagree. The effort takes health monitoring “to new heights, or depths, depending on how you look at it,” says Eric Topol, director of the Scripps Translational Science Institute in San Diego, California.

Atul Butte, a computational biologist and director of the Institute of Computational Health Sciences at the University of California, San Francisco, notes a “lack of sparking findings” in the study. “All of these tests cost a lot of money, and it’s not exactly clear what we are getting out of them yet,” he says. And many of the problems the monitoring uncovered could be detected with simpler and cheaper tests, he adds.

The new venture grew out of Hood’s proposed 100K Wellness Project, for which he hopes to recruit 100,000 people by 2020. Hood says that tracking these individuals for several decades would create billions of data points for teasing out measurable markers for incipient diseases, and thus guide future preventative medicine efforts.

Data collected in the pilot study showed that nearly every participant had something to worry about: Ninety-five had low vitamin D levels, 81 had high mercury levels, and 52 were considered prediabetic. One person had high blood levels of the iron-containing protein ferritin and a genetic risk for developing hemochromatosis, a condition in which high iron levels can damage cartilage in joints. In monthly coaching sessions, subjects received advice about steps to improve their health indicators, from changing their diet to exercising to visiting a doctor.

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They pay a first-year $3499 subscription fee for tracking and analysis similar to the pilot study, and nearly all have opted to let their data be used in research by Hood’s Institute of Systems Biology.

Jennifer Lovejoy, Arivale’s chief translational science officer, describes the company as a “bridge to the medical community” that specializes in analyzing the data so that the personal coaches—all registered dieticians, certified nutritionists, or registered nurses—can create lifestyle and wellness recommendations. “Our coaches do not diagnose or treat. We are not providing medical care,” she says. As such, the company has not asked the Food and Drug Administration to review or regulate its offerings.

But the commercial bid bothers some fans of the 100K Wellness Project. Jonathan Berg, a physician scientist who studies cancer and genetics at the University of North Carolina School of Medicine in Chapel Hill, considered that project “thrilling.” But, he adds, “when you link it to companies offering this as a service, that is where we start getting into trouble.”

The problem, Berg says, is that “we don’t have any idea at all how this information should be used clinically.” Topol agrees, noting that he had comparable concerns about a similar barrage of tests on presumably healthy people, including genome sequencing and a full-body MRI scan, from a company launched by another genome legend, J. Craig Venter.

Such comments don’t deter Hood. He concedes that for many of the variables his study measures, “we don’t quite understand if they play important roles” in wellness. He also agrees that some of the tests in the study can be done during a standard doctor’s visit, but that the personal coaches are a “real winner for getting people to change their behavior.”

Hood says the value of the approach will increase with time as more data from Arivale’s customers and future 100K Wellness Project participants reveal new signposts for forecasting disease. “I think scientific wellness is here to stay.”

Entrepreneur Clayton Lewis (left) and biologist Leroy Hood (right) offer a data-heavy approach to health monitoring through their company, Arivale.

PHOTO: ARIVALE

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