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I'm There for You, Baby

## BODY OF WORK COULD LEAD TO HEALTH CARE BREAKTHROUGH

Larry Smarr will never be confused with Raquel Welch, but the movie "Fantastic Voyage" is now a reality for Larry and may turn out to be his personal bid for Hollywood stardom.

Smarr, 63, the founding director of the California Institute for Telecommunications and Information Technology, a UC San Diego/UC Irvine partnership, has made his own body the intense focus of study using digital tools that will likely be affordable and available to all of us in the near future because of research and development being done at Calit2 and numerous other institutes and companies in

San Diego.

His project started in 2000 when Smarr, 6 feet 1 inch tall and then weighing 205 pounds, moved to San Diego from Illinois, which he calls the "epicenter of the obesity epidemic." Immersed in the Southern California healthy-body culture, Smarr decided to lose weight. He recently detailed his "10-Year Detective Story of Digitally Enabled Genomic Medicine" in an article for The Strategic News Service, and he talked with us about his journey, but not in a shrunken submarine.

Over four years, Smarr lost 20 pounds through regular exer-

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cise and adherence to the "Zone," a balanced diet of carbohydrates, proteins and fats. He weighed himself every day and entered the data on a chart. Next he did something that few of us probably would do. He measured each ingredient,

using the U.S. Department of Agriculture website, by total calories and grams of individual nutrients.

"At first my wife, Janet, asked me what was she supposed to cook," said Smarr, who admits that there was a period of adjustment with

his family. "What you learn is not feeling bad about the things you no longer eat but you enjoy going on a voyage of discovery with the wonderful things that you never ate before."

Smarr, who has a Ph.D. in physics, clearly loves numbers. He wears the BodyMedia device that measures a number of bodily functions and converts the data into calories burned per minute. You plug the device into your computer's USB port and upload everything to their website, where you get a beautiful graph of your physical

progression each day. Even when he's asleep, Smarr's body is being measured. The Zeo consumer device, a headband wirelessly connected to an alarm clock-like device, creates another chart showing his sleep pattern, and it calculates his "ZQ"—a score of the quantity and quality of sleep.

The next step for Smarr was quantifying his blood chemicals. He has blood tests four to eight times per year and naturally puts all of the data into a spreadsheet so he can spot changes. He

became immersed in an alphabet soup of chemicals such as HDL, LDL, VLDL, Omega 3, DHA, ALA, GLA, and the ratio of AA to EPA.

As Smarr looked beyond common measurements, he discovered that his body was chronically inflamed. When he showed the graphs to his doctors, they told him to come back when he had a symptom. A few weeks later (in September 2008), he experienced a "sudden, severe pain in my left abdomen, perhaps the worst persistent pain I have ever known." It turned out to be acute diverticulitis, and later,

Smarr found out that he had late-stage Crohn's disease.

"What I've learned over the last 11 years is that the ultimate unknown is the insides of our body," said Smarr. "With inexpensive sensors, your cellphone will be able to report back to a doctor so you can get continuous health care data, and this can be provided for the entire economic strata of our society."

His story is not just about weight loss or discovery. It is about the massive power of

data translated into usable information for each of us, and that is clearly going to be the health care story for the next several decades.

Smarr loves what he does. "At Calit2, we live in the future and write back about how life has changed," he says.

Neil Senturia and Barbara Bry, serial entrepreneurs who invest in early-stage technology companies, write this weekly column about entrepreneurship in San Diego. Please email ideas to Barbara at [bbry@blackbirdv.com](mailto:bbry@blackbirdv.com).