Op-ed: Obama’s ‘precision medicine initiative’ is a moon worth shooting for

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“We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard.” — President John F. Kennedy

Critics have questioned the wisdom of spending $215 million on President Barack Obama’s “moonshot” precision medicine initiative, arguing it’s bound to fall short of expectations. Human genetics and the underlying biology of stubborn diseases like cancer, they say, are too complex to solve with money and political will.

As CEO of University of Utah’s Huntsman Cancer Institute (HCI), I’m the last person to downplay the complexity of cancer. Cancer is a collection of more than 200 diseases, decidedly more complicated than scientists imagined when they launched a 13-year, $1 billion effort to sequence the human genome. But imagine where we’d be without taking that bold step.

Moonshot? Perhaps. But we sequenced the human genome, and we made it to the moon.

Medical breakthroughs take visionary leadership, courage and a willingness to push
the limits of human knowledge. It’s these very ingredients that gave rise to a unique resource critical to the early development of the concept of precision medicine: The Utah Population Database.

In the 1950s, a group of genetic pioneers had the foresight to harness the power of Utah’s well-kept pedigrees (family genealogies), and developed groundbreaking methods of investigating human inheritance. These innovations led to the formation of the Utah Population Database.

A repository that matches more than 7 million individuals with genealogical, demographic and medical records, the database works like a magnifying glass to hone in on genetic mutations that contribute to disease. Available to researchers around the globe, this national treasure has driven discovery of more than 30 genes responsible for colon cancer, breast cancer, atrial fibrillation and more. Parallel to the president’s vision, it’s also being used to speed discovery of precision medical treatments.

It’s easy to naysay and paint gene-targeted treatments as a long shot. But we’re already saving lives based on our understanding of the genetic basis of cancer.

Just ask Gregg Johnson. Gregg’s mother died when she was 47, and his grandmother died at 42. Colon cancer, the third leading cause of cancer-related deaths, killed them both, just like dozens of others on the branches of Johnson’s family tree.

But Gregg, now in his 50s, has a chance to outlive his family history, because, in 1987, with federal funding, Huntsman Cancer Institute researchers identified mutations in the APC gene as the underlying cause of an inherited colon cancer predisposition called familial adenomatous polyposis, or FAP. The lifetime risk of FAP for people with this inherited mutation is 100 percent.

Since then, scientists have determined that an acquired, or non-inherited, mutation of this gene is also found in 80 percent of other colon cancers; and further discoveries have led to drug trials that target the specific molecular pathway that is known to cause colon cancer. This is the hope for the future.

But more immediately, and more importantly for patients like Gregg, we are now able to identify individuals at risk for inherited colon cancer and bring them in for early screening, stopping cancer in its tracks.

Preventing cancer is no moonshot initiative. For some cancers, prevention and early detection are readily available tools in our healthcare toolbox. But why stop where we are today?

Astronaut Neil Armstrong was quoted as saying, “Science has not yet mastered prophecy. We predict too much for the next year and yet far too little for the next 10.”
President Obama, Francis S. Collins, M.D., Ph.D., director of the National Institutes of Health (NIH), and Harold Varmus, M.D., director of the National Cancer Institute, should be applauded for taking the long view, for refusing to be derailed by hardships — and for encouraging scientists to shoot for the moon.

Mary Beckerle, Ph.D., is CEO and director of Huntsman Cancer Institute at the University of Utah. She was one of the invited guests to the White House for President Obama’s announcement of the new $215 million Precision Medicine Initiative.