

Article from **Policy Perspectives**

(http://www.imakenews.com/cppa/e_article000522488.cfm?x=b6Gdd3k,b30DNQvw,w)

January 30, 2006

USTAR: Catalyst For High-paying Jobs & Business Creation

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The Utah Science, Technology and Research (USTAR) Economic Development Initiative is a proposal from Utah's business community to dramatically accelerate the amount of research and development conducted at Utah's research universities in targeted disciplines with high potential for commercialization and business creation.



Top business leaders, academics and futurists agree that the successful economies of the future will be driven by innovation -- by breakthroughs in science and technology. Entire new industries and businesses are being created in the field of genetics, personalized medicine, nanotechnology and other fields. That is why Utah's economic competitors, including neighboring states and international competitors, are investing billions of dollars in basic scientific research.

Utah must not be left behind. Our economy is growing rapidly, but we need more jobs with high salaries that can support families and generate taxes to sustain our heavy education burden.

The USTAR initiative proposes that the Legislature appropriate funds to build and attract world-class research teams to accelerate R&D at the University of Utah and Utah State University, and support the commercialization of technology into business spinoffs.

The request is for \$175 million for two research facilities, one at each university, and \$25 million in annual funding to support the research teams. This is a significant investment in Utah's future. A couple of important questions naturally follow: How risky is this investment? And is there any track record that demonstrates the effectiveness of the USTAR concept?

The answer is that USTAR is not a high-risk proposition because it simply proposes to dramatically accelerate what is already happening—but in a manner that is much more focused, organized and effective. Utah's two research institutions have excellent track records on technology commercialization. Patterns and models of transferring university research from the halls of academia into profitable and competitive commercial businesses are well-established and encouraged. That is why Utah's business community has united behind USTAR as the most important economic development initiative in a generation.

At least 120 businesses have been directly spun out of university research over the last 20 years, with dozens more second and third generation businesses (some of them enormous successes) evolving from the originals. USTAR will significantly boost the scale of R&D and business commercialization by building, recruiting and funding world-class research teams targeting disciplines where multi-billion dollar markets exist and where Utah already has distinct competitive advantages.

Under USTAR, the commercialization of basic R&D will be greatly improved and accelerated, both in targeting technologies with high commercial potential, and in providing the nurturing entrepreneurial environment organized specifically for technology commercialization.

Even without USTAR's optimum environment, Utah has many examples of successful businesses spun out of university research. USU discoveries and technologies have formed the basis of more than 60 new companies, including well-known firms such as Hyclone Laboratories,

Campbell Scientific, and Sorenson Communications. In the last two years, seven new companies have been formed, a period in which licenses and startups have increased by more than 500 percent and related revenues have quadrupled. Among the recent business creations are Andigen, CastleRock Engineering, Gemini Life Sciences, Kuchera Defense, LiveWire Test Labs, RappidMapper, and SP Communications.

The December 2, 2005 edition of the Chronicle of Higher Education (page A25) ranked the U. of U. 16th in the nation in 2004 for licensing revenue and patent activity, putting the U. ahead of numerous prestigious research universities (164 institutions were surveyed). The high ranking will not be a surprise to people familiar with the success of the U.'s research commercialization efforts, which have produced such top firms as Myriad Genetics, Evans & Sutherland, NPS Pharmaceuticals, ARUP, Sonic Innovations, Cephalon, and Watson Laboratories. In all, more than 60 firms have emerged out of research at the U., with 44 currently housed at Research Park. These "park" companies have added more than 4,700 jobs to the state's economy and the annual economic contribution exceeds \$600 million. Other business spinoffs include: Sentrx Surgical, Echelon Bioscience, Bunnell, Inc., Attensity, BioCentrex, Ceramatec, Cimarron Software, Cognetix, Cyberkinetics, Darbick Instructional Software, DataChem Labs, Diacor, Engineering Geometry Systems, Erqoweb, Expression Genetics, Femtoscan, Fiore Automation, Genta, Idaho Technology, Parvus, and Sarcos.

Utah has an economic Mount St. Helens waiting to go off in its research universities. Whole new industries will arise in the next few years in the field of genetics and Utah has the opportunity to be in the middle of it. Genetics will impact nearly every other industry, including manufacturing, agriculture, pharmacology, health care, homeland security, and so forth.

The foundation of the genetics industry is The Human Genome Project, which took 13 years and cost \$300 million. A whole new world became possible with the publishing of the human genome in Science and Nature magazines in April 2003. Three Utah scientists were among the five scientists who launched the mapping of the human genome, one of the most ambitious scientific projects of all time.

Scientists worldwide are racing to take advantage of the human genome mapping, but Utah has a resource that no one else has, the Utah Population Database.

To understand the genetic basis of disease, a scientist needs to know the genetics of a lot of people who have the disease and are related, which means the disease is in the family's genetic code. The Utah Population Database is built on Utah's medical and death records merged with The Church of Jesus Christ of Latter-day Saints' genealogical database, which allows scientists to find genetic patterns of disease by comparing families with the disease and families who do not have the disease. That is how Myriad Genetics discovered the genetic-link with breast cancer, and now it is possible for entire families to know their susceptibility and get diagnostic tests and early treatment to avoid the cancer that is in their genetic code. The Utah Population Database, with 11 million people, is the genetic map to the future, and it exists only in Utah. The closest thing to it is a genetic database in Iceland, with only several hundred thousand individuals.

To take advantage of Utah's tremendous assets and become a genetics industry center, Utah must recruit dozens of world-class research teams to develop the myriad opportunities that exist and spin off the businesses and high-paying jobs that will follow.

Even without USTAR, Utah's population and economy will continue to grow. But the growth won't necessarily bring high-paying jobs that support a family. Utah's average wage has declined from 96% of the U.S. average in 1981 to only 82% in 2004. This decline has occurred at the same time Utah's technology employment has fallen from 67,000 jobs in 2000 to 56,000 in 2004. The trends in both salary levels and technology jobs must be reversed to ensure a

strong economic future.

USTAR is Utah's moonshot. It is a Big Idea that will keep Utah in the center of scientific advancement and the associated commercial benefits that will make Utah a high-wage state.

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