arizona's collaborative gene

By Michele Pino, CEcD and Paul Katsenes, CEcD

Mayo Clinic. One of the facilities that has close collaboration with TGen.

INTRODUCTION

Arizona's strategic efforts to become a national leader in bioscience and develop a world class research base are a result of using textbook economic development principles and practices, those of collaboration and stewardship. Five years later, many would agree one of the catalysts for Arizona's success in this endeavor occurred in 2002 when it launched an unprecedented community-based effort to form the Translational Genomics Research Institute (TGen) and attract the International Genomics Consortium (IGC) to Phoenix. Nearly every aspect of the state became involved including the governor's office, the city of Phoenix, academia, business, economic development, and the philanthropic community. This cooperation model has translated to successful partnership efforts throughout the state and in particular, downtown Phoenix, to create a center of bioscience excellence.

LAYING THE FOUNDATION

For years, the economic development and business community had diligently sought ways Arizona could be more competitive in bioscience, a fast-growing segment of the knowledge-based economy. For a decade, Arizona had been a leader in population growth and job creation, but despite its strong economic growth, a few cornerstone institutions, and previous attempts to coordinate efforts, there had been no formidable approach to growing the bioscience sector.

Beginning in 2000, however, new opportunities began to emerge. Arizona voters passed an initiative, the first of its kind, to give $1 billion over 20 years for state university research. This much needed funding would eventually help build research centers of excellence throughout the university system, such as the Biodesign Institute at Arizona State University and BIO5 at the University of Arizona, both of which would ultimately partner with TGen.

In 2001, a policy research paper authored by Arizona State University's Morrison Institute entitled "Five Shoes Waiting to Drop on Arizona's Future" helped public leaders take a sobering look at areas Arizona needed to improve in order to be competitive, which included areas such as clear leadership, the attraction of talent, and a defined economic identity (http://www.asu.edu/copp/morrison/APC01New.pdf). In that same year, the

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PARTNERSHIPS WHICH CHANGED THE COURSE OF THE BIOINDUSTRY IN ARIZONA

This article discusses the state's unified effort in 2002 to attract Translational Genomics, a world class research facility, to Phoenix, Arizona. It explores the historical context in Arizona that put it in a unique position to be successful. It also looks at practical economic development principles, those of stewardship and collaboration, that assisted the industry in this endeavor and Arizona's overall progress today in building its bioindustry assets.

Phoenix-based Flinn Foundation made a decision to devote its healthcare resources toward Arizona becoming a national leader in bioscience, and planned a comprehensive study of the state's biomedical assets and needs, a vital step for the state's needed stewardship efforts.

Arizona was positioned, therefore, to take action when it learned that Dr. Jeffrey Trent, one of the leading genome researchers at the National Institutes of Health, was looking to form a new private research center to call home.

Dr. Trent was on the team charged with mapping the human genome for the National Institutes of Health. In April 1, 2000, the team produced the detailed genome map for global scientific use. Dr. Trent had roots in Arizona, attending Arcadia High School in Phoenix and the University of Arizona. With the completion of the genome mapping, he began thinking about where he and several of his colleagues could continue their research in the private sector and put the map to widespread use to improve diagnosis and treatment of human disease.

About TGen

TGen is a nonprofit organization focused on developing earlier diagnostics and smarter treatments. Translational genomics research is a relatively new field employing innovative advances arising from the Human Genome Project and applying them to the development of diagnostics, prognostics, and therapies for cancer, neurological disorders, diabetes, and other complex diseases. (www.tgen.org)

THE COOPERATIVE EFFORT

The challenge for Arizona was the attraction of both Dr. Trent's conceptual research center and the International Genomics Consortium, a newly organized nonprofit with complementary ties to Dr. Trent and his vision, whose premise was to set up human tissue collection sites and analysis to provide a public database for use by major pharmaceutical companies in the treatment of disease. Despite Dr. Trent's roots in Arizona, attracting this top talent required putting forth a concerted effort and a substantive incentive package that would prove Arizona could compete with other states that offered considerably more institutional resources and financial support.

With ties to Arizona, Dr. Trent was called on through the years to speak in Arizona. On an individual basis, several organizations, such as Arizona State University, the city of Phoenix, and Flinn, had learned of his desires and, as good economic developers, were trying to lure Dr. Trent back to Arizona with creative ideas, such as working with a proposed tri university collaborative that later became known as the Arizona Biomedical Collaborative (ABC, see sidebar). Dr. Trent had also been talking to other states that were offering more comprehensive packages. In hindsight, the collaborative learned that Arizona had little time to act and an individual approach would not have been as swift, extensive, or competitive as it needed to be.

On one occasion when Dr. Trent was in Arizona, the bioindustry representative for the Arizona Department of Commerce (ADOC) , Lauren Wright, hearing the buzz in the community and understanding its significance to the state, arranged for Dr. Trent to meet with Arizona's Governor, Jane Hull. It was this meeting that served as the catalyst to creating a statewide, collaborative approach. As a result, Governor Hull quickly gathered an overarching coalition of business leaders, foundations, economic and university leaders for their influence and input and tasked ADOC to coordinate the effort. With the number of different disciplines involved that were critical to the initiative, its success depended on continual input and coordination on a day to day level and the development of a meaningful incentive package that would include some of the individual efforts previously underway.

Arizona Biomedical Collaborative

The Arizona Biomedical Collaborative, located in downtown Phoenix, is an Arizona Board of Regents endorsed collaboration of the three state universities: the University of Arizona, Arizona State University, and Northern Arizona University. Its primary goal will be to provide a vehicle and venue for collaborative biomedical research, with an emphasis on translational research.

The coalition put in place a daily work group that kept the project on task comprised of Tim Lawless, commerce advisor from the governor's office; Margie Emmermann, the director of ADOC; Sheryl Sculley, the assistant city manager from the city of Phoenix; Mike Berens, a scientist at Barrow Neurological Institute, then chair of the Bioindustry cluster, and a friend of Dr. Trent; and Steve Roman, a public affairs professional who would assist in the fund raising efforts.

The work group understood early on the importance of support from government and industry leaders in this effort. At the behest of Mayor Skip Rimsza, the group, with delegates from the state legislature and industry, traveled to Bethesda, Maryland, to tour Dr. Trent's lab in order to gain an understanding of the future impact of genome research. This trip was critical to formalizing a plan that would take into account how Arizona could be a meaningful player in genomics research and later to winning success in the proposed legislative funding initiatives.

The task force coalition charged the work group with several objectives that had to be accomplished to put forth a credible package. Using ADOC funding from the Commerce and Economic Development Commission (CEDC), the group hired Gerry McDougall, a consultant with PricewaterhouseCoopers, who communicated daily with Trent to create a model of his vision and to prepare a business plan in support. The analysis considered not only what the new research facility would look like, but how it could support research efforts already in existence at the state's three universities and identification of revenue and grant sources to generate initial operating income both from state resources and research partners. In addition, the group relied on advice and support from the medical community such as Dr. Ray Woosley, former vice president for the University of Arizona Health Sciences Center (AHSC) and director of ABC (now president of the Critical Path Institute (C-Path) in Tucson), in assessing the impact of what a research center like TGen could mean for the state and how to package it.

The City of Phoenix Builds a Bio Campus – On a local level, a confluence of factors were taking place at the city of Phoenix that would allow Phoenix to provide the needed facilities and support to collaborate in the effort and build on it.

Needs identified — As early as 1999, Mayor Skip Rimsza and Phoenix Economic Development (ED) staff sought to improve their city's business conditions. On the heels of hosting a top software company in his conference room, the mayor was told that the technology company could not find enough engineers. Turning to the ED staff in the room he stated, "Get me a Harvard 'West' or an MIT 'West' campus downtown. Phoenix is the largest city in the United States without a downtown university. Please make this happen."

The push to create a downtown center of excellence had some important seeds already planted. ED staff quickly reconvened to determine the existing university presence in Phoenix and learned Northern Arizona University had a long history of both administrative and development offices already in downtown Phoenix.

The staff also knew that the University of Arizona's College of Medicine had offices in Phoenix in order to arrange with local hospitals for their medical residents to finish their residencies. At that time, Tucson, Arizona, housed the state's only medical school. The Phoenix city team began meeting with College of Medicine faculty to determine how best to meet their needs for further expansion in Phoenix and to host "Sneaker Tours" to better acquaint university executives with Phoenix' downtown and surrounding medical community. Numerous conversations continued within the medical community to communicate the outlines of a new medical school approach to education and service to the community.

Finally, Arizona State University, located in Tempe, also had a downtown Phoenix degree presence which focused on the Master of Public Administration. At this time, however, the universities were not actively collaborating.

The beginnings of collaboration — In November 2002, the incoming president of Arizona State University, Dr. Michael Crow, personally asked Dr. Peter Likins, then president of the University of Arizona, to be the keynote speaker at his inauguration, signaling a new relationship of cooperation between the two universities. This, coupled with diminishing state revenues needed to fund three state university programs and budgets in 2002, made it clear to the university presidents that these cuts were probably not temporary. The presidents began intensive collaboration leading to "deregulating the three universities." The "deregulation" they proposed was first based on "there isn't enough money to duplicate all programs" and secondly, each of the universities had developed over time unique centers of excellence compared to each other.

Phoenix raises money — In November 2000, the citizens of Maricopa County approved the Arizona Sports and Tourism Authority new Hotel Bed Tax of one percent and the Rental Car Tax of 3.25 percent. These new funds were projected to create up to $1 billion which were directed to build a new football stadium for Arizona's NFL team currently housed at Arizona State University and looking for a new home. Working with the Downtown Phoenix Partnership and Phoenix Community Alliance, Phoenix economic development staff and city management identified a former Phoenix Union High School site with three historic buildings remaining as a potential place for the new stadium. In the spring of 2002, however, the city of Glendale won the stadium. Later, the Phoenix Team would offer this site and funds to complete a proposal for a new home (headquarters office and research lab) for Dr. Trent.

The plan comes together — In April 2002, the task force presented the completed proposal to Dr. Trent to build a new research laboratory at the former Phoenix Union High School site with funds previously allocated in support of the NFL Football Stadium. The proposal also outlined using the three historic high school buildings for the proposed expansion of the University of Arizona, College of Medicine. In addition, the universities were now working together to create what would be called the Arizona Biomedical Collaborative (ABC).

Biodesign Institute at Arizona State University in Tempe.

By April of 2002, in only a few months, the task force had raised $80 million: $15 million from the Flinn Foundation, $5 million from the Virginia G. Piper Charitable Trust, and donations from health care providers such as Banner, private contributors, local corporations as well the universities and colleges that pledged faculty and resources.

There followed the relatively smooth bipartisan passage of two legislative initiatives due to the backing of numerous key parties that included health care lobbyists, the governor, Senator Sue Gerard, and House Speaker Jim Weiers, who had been a delegate on the trip to Maryland to visit Dr. Trent's lab. The first initiative, Senate Bill 1270 signed in May, by Governor Hull, provided for $5 million over 10 years for genomic research. It proposed dedicating some of the funding from tobacco money identified within the Arizona Disease Control Research Commission. While not of the magnitude of the later budget appropriation, it was significant because it was contingent on matching funds from the private sector and a first state backed milestone toward the $120 million goal. Later that month, the governor signed a second bill providing $25 million over five years from the state budget.

These appropriations would have oversight through the Arizona Disease Control Research Commission and would not have been possible without the daily attention from the workgroup identifying avenues for funding, constant communication with the legislature from the governor's office, and the support of the coalition. In addition, the timing was right. Proponents of the bill presented information from a report authored by Ernst & Young in 2000 stating that the bioindustry had gone from an $8 billion industry in 1999 to a $20 billion industry and that this was needed funding for Arizona as an economic development initiative.

The final contribution came in June when the Salt River Pima-Maricopa Indian Community pledged $5 million after identifying a potential link between their health interests and the work of TGen in the treatment of diabetes. This brought the total funding for the project to over $100 million.

The city of Phoenix, a main participant in the task force and the daily work group from the start, played an integral (if not synchronistic) role in pledging facilities and funding to construct office and lab space that would eventually be Dr. Trent's lab and the beginnings of a bioscience center in downtown Phoenix (see sidebar).

In June 2002, in only five short months, Dr. Trent accepted the state's proposal of a new home for his research center in Arizona. Today, the $46 million, 28-acre, Phoenix Biomedical Campus has a 170,000-square-foot, six-story research laboratory facility which is home to TGen and the International Genomics Consortium as well as Phoenix Molecular Biology Laboratories of the NIH, National Institute of Diabetes and Digestive & Kidney Diseases, and the Molecular Profiling Institute. Additional tenants include Catholic Healthcare West – St. Joseph's Hospital and Medical Center, the University of Arizona College of Medicine in collaboration with Arizona State University, and ABC.

THE COLLABORATIVE WEIGHS IN

For the first time in the state's history, industry leaders, economic developers, foundations, and academia came together for a single cause. They made it their priority to stay the course to attract this prospect, putting aside parochialism and earlier paradigms that raising money, particularly from state sources, was not possible. There follows some of their thoughts on this endeavor and what it meant for Arizona.

"With no precedent, it seemed unfathomable that state leaders could come together and accomplish what they did over a few months," said Margie Emmermann, the former director of ADOC (now director of the Arizona Department of Tourism). "Many pieces of the puzzle had to work in tandem, a good plan, intense lobbying and fundraising

TGen facility in Phoenix.

efforts, and most importantly the collaboration of multiple public sector disciplines. At any given time if one of them collapsed, the effort would fail. I believe it worked because everyone knew that this project would make or break our entree as serious players in the bio world. The time was right to join forces in light of past experiences and now we have the recipe that works."

"The effort to recruit TGen/IGC was unprecedented in Arizona," said Saundra Johnson, the Flinn Foundation's vice president for Strategic Development and Communications. "Top officials from across the public and private sectors quickly gathered around the same table, hammered out a solid plan, and raised $100 million at the eleventh hour. It demonstrated the power of unselfish collaboration and sparked the beginning of what's become known as the 'collaborative gene' in Arizona."

"Collaboration continues to be the key ingredient that has carried forward the Flinn Foundation's study, launched in 2002 by Battelle," says Johnson. "Much more than a point-in-time assessment, the effort outlined a 10-year plan to fast-track Arizona to success in the biosciences. The initiative, known as Arizona's Bioscience Roadmap, is now in its fifth year of implementation and is driven by nearly 20 committees of 300 statewide experts from science, business, academia, government, education, and philanthropy."

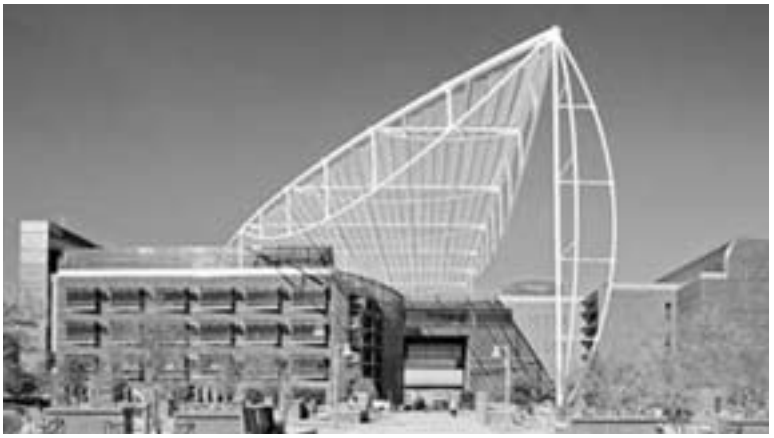
"We were charting new territory here," says Sheryl Sculley, the second in command of the city of Phoenix's workforce of 14,000 people and 25 city departments (now the city manager in San Antonio, Texas). "Certainly there are biomedical science clusters around the country, mostly on the coasts. We studied some of those models in terms of putting together a consortium to be able to attract and fund IGC and TGen here in Arizona." The former mayor of the city of Phoenix, Skip Rimsza, agrees. "The terrific progress in bio-medical development in partnership with the governor and state staff is my highest economic development accomplishment as mayor."

"I think we're on a trajectory to have a world-class academic medical center in Phoenix that will be integrated with Arizona State University, University of Arizona, and Northern Arizona University – an approach to healthcare education that will be a model for the rest of the nation. The opportunity to develop innovative collaborative programs for the AHSC in Phoenix is one the reasons I came to Arizona in early 2002," said Dr. Ray Woosley, putting into context the value of the university collaborative effort and TGen.

"Instead of creating programs as traditional departments, we want to have interdisciplinary teams of clinician scientists and basic scientists bringing a broad range of expertise to problems like melanoma, Alzheimer's, Parkinson's, cancer, and heart disease," Woosley said. "We want to grow the faculty based on teams. It's an opportunity to teach medicine, nursing, and pharmacy students in the same environment so that everyone appreciates each discipline's unique contributions and works more effectively as team members. The presence of TGen on the campus will give the students an appreciation for how to incorporate contemporary science into their clinical practice and to establish a clear reason for life-long learning."

RESULTS THAT CONTINUE

Putting aside university competition, institutional proprietary agendas, and competing economic agendas, this collaborative effort generated over $100 million in five months from a number of sources, such as the Indian Community, which would directly benefit from TGen's initial core research areas. Not only did the state attract a new research center but other partnerships, such as with the three universities, were evolving which would later only build on this endeavor.



BIO5 at the University of Arizona in Tucson.

In December 2006, four years after the start of operations, TGen released results from an independent economic impact study prepared by Tripp Umbach, a nationally known economic forecaster. The study showed that TGen returns more than $21 million of its total operational expenses to the state, or four dollars for every one dollar invested. In addition, TGen has generated 220 jobs and $1.9 million in total tax revenue. Its future is even more promising. In 2010, it is expected that TGen will generate 889 jobs and $6 million in total tax revenue. The analysis projects the impact of the research commercialization up to 2025, which will remain strong.

The Flinn Foundation continues to steward the statewide process and the ongoing partnerships.

Major Arizona Bioindustry Achievements

2000	• Arizona voters pass Proposition 301, in part providing $1 billion over 20 years for science and technology at the state's universities
2002	• TGen formed and International Genomics Consortium moves to Arizona • Arizona's Bioscience Roadmap launched
2003	• Legislation authorizes $440 million for construction of university research facilities
2004	• Arizona State University and University of Arizona agree to partner on an expansion of the UA medical school in Phoenix • Voters approve $100 million for bioscience and healthcare training and facilities at Maricopa Community Colleges
2005	• University of Arizona, Federal Drug Administration and Stanford Research Institute, International found The Critical Path Institute in Tucson with a $10 million community funding commitment over five years
2006	• $50 million committed for Piper Chairs in personalized medicine • Science Foundation Arizona Launched - to use public and philanthropic funds for investments that are intended to deepen Arizona's scientific, engineering, and medical infrastructure • Legislature creates Arizona 21st Century Fund, to be administered by Science Foundation Arizona

Without its formalized approach, the momentum would have been lost. By commissioning Battelle to facilitate, monitor, and report on the Bioscience Roadmap, the participants throughout the state have the chance to see tangible results. The Roadmap is on track to meet most of its ambitious goals to boost research grants, talent, firms, and other bio assets which continue to strengthen as a result of this early work. (www.flinn.org)

Other partnerships and collaborations have developed and continue. These include the formation of Science Foundation Arizona (SFAz) in 2006, the Critical Path Institute in 2005, TD2, TGen's drug development partnership with Mayo formed in 2005, a more organized and formal Arizona BioIndustry Association, and enhanced university research institutions (ABC, Biodesign Institute, C-Path, BIO5, and others) that partner with private industry. Many of the Arizona cities where some of these institutions are located such as Chandler, Flagstaff, Tempe, Tucson, and Scottsdale are growing their bioscience centers of excellence with this collaborative mentality and synergistic approach, furthering evidence that in Arizona partnerships are the way to get things done.