With its fiscal year ending June 30, 2011, STC continues to show strong results across its commercialization and IP metrics for 2011.

STC’s metrics reflect what’s happening on the national level with technology transfer universities, hospitals and research institutions. In its recent summary of licensing activity, the Association of University Technology Managers reports that despite the struggling U.S. economy, technology transfer programs across the country saw increases in start-up formation, the number of licenses executed to start-ups, the number of active licenses, and issued patents (highest increase in 17 years). Universities launched 596 new start-up companies last year.

The number of new technologies disclosed by UNM researchers this year, 110, was just under last year’s total. STC filed patent applications on 81% of its patent disclosures, an increase of 7% over last year’s numbers. In addition, the number of first-time inventors who are lead inventors on UNM technologies disclosed this year represents 33% of lead inventors on disclosures in 2011, another 7% increase over last year. The number of U.S.-issued patents for STC technologies increased this year by 4 for a total of 30 issued patents.

STC generated $3,095,641 of license income in 2011. Adding in patent cost reimbursement income of $237,285 brings the total income for the year to $3,332,926. STC signed a total of 36 new license agreements in 2011, matching last year’s number.

The economic impact of commercializing STC technologies this year resulted in the formation of 5 start-up companies (4 located in New Mexico), equal to last year’s number. New STC start-ups created in 2011 include:

**Avisa Pharma, Inc.**
Product: Orphan diagnostic drug and test for rapid monitoring of lung infection in cystic fibrosis
New Mexico company

**AgilVax**
Product: Vaccine discovery and delivery using virus-like particle (VLP) based platforms
New Mexico company

**Magic Dragon Technologies, LLC**
Product: Next generation hardware security
California company

(continued on page 7)
New Membranes Engineer Solution for Better Water Purification Technology

Clean water is a global problem. It is one of the most important issues facing communities worldwide because it is critical to public health, agricultural and energy production. By 2025, clean water will be in severe shortage in places such as Africa, China, the Middle East, and India.

But a newly disclosed technology jointly developed by researchers at the University of New Mexico and Sandia National Labs promises to provide a more efficient and cost-effective process for cleaning brackish, or salty, water. Dr. Ying-Bing Jiang from the Department of Earth and Planetary Sciences, along with co-inventors Dr. Jeff Brinker from the Department of Chemical & Nuclear Engineering, Dr. Shaorong Yang from the Department of Earth and Planetary Sciences and colleagues from Sandia, have created a biomimetic membrane for use in water purification.

Using biomechanisms patterned after a living cell membrane, the inventors have engineered a solution to better water desalination technology by creating a novel nanoporous synthetic material that is an improvement over reverse osmosis (RO) membranes. Traditional polymeric RO membranes are expensive because they require such high pressures to drive the salty water through the filtration membrane. The challenge for the next generation of membranes is how to increase efficiency by designing materials that move water more quickly while maintaining a high level of salt and other mineral removal. Inspired by the molecular design principles of a living cell membrane whose protein channels provide a very efficient natural filtration system, the inventors have engineered nanochannels for desalination. The nanoporous material has twice the efficiency of an RO membrane because it has high salt rejection and improved water flux (the rate at which water permeates a membrane), even at pressures as low as 80 psi (pound per square inch). This breakthrough in material design means that it is possible to produce ultra low-pressure nano-filtration and RO water purification membranes that are highly efficient, representing a significant savings in energy costs. The potential markets for the new membrane include water purification, water supply and sewage treatment, energy and battery storage, nanoscience, medical devices, mining, agriculture, chemicals, and industrial technologies.

The biomimetic membrane technology recently received an R&D 100 Award for the year’s 100 top high-technology inventions in applied technologies. The invention competed against an international pool of technologies developed by industry, academia, private research firms and government labs. Winners were selected by the editors of R&D Magazine and an independent panel of judges. Called the “Oscars of invention,” the prestigious award often gives inventors the impetus they need to launch their emerging technologies into the marketplace.

Next Generation ‘Cheap’ Human Genome Sequencing

Jeremy S. Edwards, Associate Professor at the University of New Mexico’s Departments of Molecular Genetics & Microbiology and Chemical & Nuclear Engineering, along with a team of UNM scientists, has developed a breakthrough genome sequencing platform with capabilities enabling fast and cheap sequencing of entire genomes.

The Human Genome Project was initiated in 1990 and was completed in 2003. Under this project, teams of hundreds of scientists worked together to identify all of the genes in human DNA (approximately 20,000-25,000) and the sequences of the 3 billion chemical base pairs that made up the DNA. This massive amount of information was stored in databases and analyzed; in fact, this data is still being analyzed today.

Since the Human Genome Project, the major advance in genetic sequencing was accomplished by a move from traditional methods to new methods that include a focus on smaller DNA reactions where data is acquired in a parallel format and then analyzed using more sophisticated computational techniques. This shift in methods resulted in increased sequencing speeds and significant cost reduction.

For this to be even remotely feasible at the scale of the clinic, the costs must be reduced further, the sequencing speed must be increased even more and the quality of the sequencing must achieve a higher level.

Dr. Edwards and his team at the UNM Health Sciences Center have developed a method to improve upon the shortfalls of the most promising next-generation sequencing methods, sequencing-by-ligation (SBL). SBL is one of the aforementioned methods for DNA sequencing that surpasses the traditional methods by leaps and bounds but, it is still quite time consuming and therefore still too expensive. The major problem with SBL is that it is only capable of short read lengths. To overcome this limitation, Dr. Edwards and his team have developed a novel process that extends the read lengths of SBL. This process is based on traditional methods but allows for reading DNA base pairs in both the 3’ – 5’ (upstream) direction as well as the 5’ – 3’ (downstream) direction; essentially doubling the read length of the sequencing technology. This innovation represents an advance in sequencing technology that improves sequencing coverage as well as the quality of the resulting data while increasing speed and reducing costs.

Dr. Edwards adds: “Our DNA sequencing technology, and sequencing technology in general, is revolutionizing all of biology. In the health sciences, the ability to cheaply and rapidly acquire whole genome sequences will be transformative and allow for a personalized treatment tailored for each individual based on the details of their genetic make-up.”

Reference Number: 2011-046
Scaffolding Technologies Provide Novel Method for Use in Tissue Engineering

Every year approximately eight million surgeries are performed in the U. S. to repair tissue damage. Because standard tissue repair treatments are limited due to the potential for disease transmission as well as an overall lack of donor tissue, providers are interested in finding better treatment methods. The emerging field of tissue engineering is focused on solving this problem by developing a variety of new technologies that can replace missing or damaged tissues with living, functional engineered tissues. These new engineered functional tissues (and organs) also provide an added benefit—they can serve as surrogate systems for researchers to study chemical and drug interactions and disease progressions as well as other cellular functions.

Tissue engineers use mammalian cells, signaling biomolecules, and biodegradable porous polymer scaffolds to grow living, functional tissue rather than using donor tissues and organs. The scaffold is essential for directing cell growth and differentiation for the generation of three-dimensional tissues. Many naturally occurring and synthetic polymers have been explored for use as scaffold materials. Biodegradable fumarate-based polymers such as poly(propylene fumarate) (PPF) and poly(butylene fumarate) (PBF) are attractive for tissue engineering as they can be chemically crosslinked to form scaffolds with better mechanical properties than most other biocompatible, biodegradable polymeric materials.

Recently, electrospinning has been used to fabricate three-dimensional scaffolds comprised of non-woven fibers on the nano and micrometer scale which mimic the structure of the natural cellular environment of the body. Many natural and synthetic polymers have successfully been electrospun; however, the class of synthetic polymers which have a low glass transition temperature (Tg) below room temperature, including PPF and PBF, have not been suitable for spinning under general spinning techniques. Development of an altered electrospinning setup allows researchers to successfully spin this previously “unspinnable” class of polymer, therefore expanding on possible polymers that can be investigated to construct tissue engineering scaffolds.

Researchers at the University of New Mexico, along with colleagues from Sandia National Laboratories, have jointly developed a group of technologies that address this issue. The technologies include a novel electrospinning technique for spinning low Tg polymers taking advantage of photo-crosslinkable groups. As well as a technique to study cellular environment conditions in vitro, developed here at UNM by Dr. Elizabeth Dirk from the Department of Chemical & Nuclear Engineering and the Center for Biomedical Engineering, this cellular environment consists of assembling various micro and nano-patterned material layers encased in an electrospun mesh comprised of a “water swellable” polymer. The method of assembly constructs a 3D scaffold with micro and nanopatterns that can be precisely positioned so that a variety of chemical and physical structures can be created within a single scaffold, providing a model that mimics the conditions of a whole, complex living tissue. The compact fibrous mats expand in an aqueous environment and generate a multifunctional construct that is engineered on the sub-micron to millimeter scales. Because the process can integrate a variety of materials with different chemical and physical properties, the multi-layered scaffolds can be adapted for specific applications.

The potential market for tissue engineering technologies is huge and STC has already received interest from potential licensees. The UNM technologies, with further refinement, will produce clinical grade surrogate tissue systems which can be used for tissue repair, basic science studies, drug screening, and non-tissue based material systems such as tires.

STC has filed patent applications on these exciting new technologies and is currently examining commercialization options. If you are interested in information about any of these technologies, please contact Cara Hajovsky at chajovsky@stc.unm.edu or 505-272-7297.
Respira Therapeutics Focuses on Bringing Its Innovative Dry Powder Inhaler to Those Suffering from Respiratory Diseases

For many people suffering from respiratory ailments such as asthma and chronic obstructive pulmonary disease, inhalers are essential in the treatment and management of their diseases. Respiratory diseases are responsible for 17% of deaths worldwide and represent a $52 billion market for inhaled therapeutics. As most of us know, inhalers administer the medicines that patients need for treatment and improved quality of life. But you may not know that conventional inhalers deliver less than 30% of medications into patients’ lungs. The reason for this poor performance lies in the way medication is dispersed from the inhaler device for transport into the lungs. Medications administered through inhalers must be broken down into tiny particles in order to get past the lungs’ natural filters. But when medication particles are this small, they adhere to one another, making it difficult to disperse the particles as a powder and requiring additives to the drug formulation to allow them to be delivered in powder form. Additionally, inhalers currently on the market are high resistance devices, requiring users to disperse medication through strong inhalation effort—a major problem for patients whose lungs are already compromised by disease.

Respira Therapeutics, an STC startup formed in 2010 around dry powder inhaler (DPI) technologies developed at the University of New Mexico by former College of Pharmacy Professor Hugh Smyth, believes its DPI solves the deficiencies of existing inhalers by delivering more medicine into the diseased lungs, without a strong inhalation effort. The inhaler’s performance is so good that the percentage of medication that gets into the lungs from Respira’s DPI is in the range of 80%. The inhaler’s unique design allows for the delivery of several drugs at once that are combined at the point of delivery. No complex drug formulations or excipients (inert substances used as drug carriers) are necessary. The inhaler uses a single large bead coated with dry-powdered drugs that is contained within a dispersion chamber or cartridge. Upon inhalation, the drug-coated bead (drug engine) oscillates rapidly, dispersing the therapeutic drug for delivery into the lungs, much like the bead in a whistle. The device mechanism for dispersing medication is a boon for patients, particularly those suffering from moderate to severe COPD who have compromised lung function and cannot inhale with enough energy to take in sufficient medication. Because of its formula-free capabilities and highly efficient delivery into the deep lung, the inhaler shows promise for achieving rapid clinical translation and for the delivery of proteins and other drugs that are difficult to deliver in pill form or that are currently predominately delivered by needle to get quickly into the bloodstream. The inhaler’s other advantages—simple, low-cost design and flow-rate independence—add to the product’s potential for becoming an ideal DPI for respiratory disease markets.

The company recently announced the results of a clinical feasibility, or proof-of-concept, study conducted in early April, fully 6 months ahead of schedule, that demonstrated clinical superiority at 3–4 times the current performance of other inhalers and nebulization. In July, the company received a 2011 North American New Product Innovation Award in Respiratory Diseases from the technology marketing and consulting firm Frost & Sullivan.

Respira licensed the dry powder inhaler technologies, still owned by UNM, from the University’s technology transfer office, STC. UNM. Lisa Kuuttila, President & CEO, stated: “We had big pharmaceutical companies interested in this technology, but we went with a local startup so New Mexico could benefit.” Respira was formed with a seed investment of $1 million from the Cottonwood Technology Fund, a New Mexico/Texas venture capital firm dedicated to investing in and commercializing early stage technology created at the universities (UNM, UTEP, NM Tech, NM State), medical centers (UNMHCSC, Texas Tech University HSC at El Paso) and national labs (Los Alamos, Sandia) along the Rio Grande research corridor extending from Los Alamos to El Paso. The Fund was co-founded by serial entrepreneurs Dave Blivin and Beto Pallares who are also co-managing partners. “We continue to believe that this technology has the potential of disruptive impacts in the dry powder inhaler space, including enabling new compounds since traditional formulation approaches are not required and, for similar reasons, enabling much faster transition of new compounds by pharma to clinical trials and ultimately into the market. Initial data are consistent with these expectations,” said David Blivin, Managing Partner of the Cottonwood Technology Fund.

While Respira is a New Mexico startup headquartered in Santa Fe with plans to conduct clinical trials and manufacture the inhaler in the state, it has formed two partnerships with Emergent Technologies in Austin, Texas, for initial product development at its lab facilities, and with Enavail LLC to adapt medicines for use in the new inhaler. Emergent is an investment and management company focusing on early stage biotechnologies and Enavail is one of its portfolio companies that specializes in particle engineering for drug delivery. Mr. Blivin is acting as Respira’s interim CEO. The company’s management team also includes Dr. Jacques Pappo, President of Discovery and Clinical Development (a Harvard trained clinician scientist and large pharma vet), and Martin Donovan, Senior Scientist and co-inventor. The Respira board includes Tommy Harlan, CEO of Emergent, and Bob Curtis, a successful CEO and entrepreneur in prior respiratory organizations. In addition, company advisors include Bob Langer and John Dixon, well known and respected luminaries in respiratory medicine.

Next steps for Respira’s DPI technology include completing business relationships with initial pharma partners and validating the scalability and manufacturing approach for this technology. For more information about the company, visit http://www.respiratherapeutics.com.
Changes to STC.UNM Board of Directors

Long-time Chair of the STC UNM Board of Directors, Dean Emeritus of the UNM School of Engineering, and Professor of Nuclear and Chemical Engineering Joseph L. Cecchi recently announced to the Board that he will be stepping down as Chair and member of the Board to accept the position of Provost and Professor of Engineering at the Masdar Institute of Science and Technology in Abu Dhabi, UAE. Masdar is a three-year-old graduate, research-driven university in partnership with MIT, concentrating on sustainable energy systems.

Dr. Cecchi has served as a member of STC’s Board of Directors since 2001 and as Chair since 2004. Under his leadership, STC has experienced significant growth and recognition as an innovative technology transfer program and contributor to economic development in New Mexico.

He joined the University of New Mexico in 1994 as Professor of Chemical and Nuclear Engineering and Chair of the Department of Chemical and Nuclear Engineering. In 2001, Dr. Cecchi was appointed Dean of the School of Engineering and served until 2009. His tenure as Dean was the second longest in the School of Engineering’s history; he oversaw the funding, planning and construction of the $43 million Centennial Engineering Center and the creation of three new strategic research centers and several interdisciplinary degree programs. As Dean, Dr. Cecchi was also responsible for increasing contacts between the School of Engineering and the business community and helped to recruit high technology companies to New Mexico.

In recognition of Dr. Cecchi’s longtime service to STC and the Board, a resolution was unanimously passed at the July 29th Board of Director’s meeting to rename the LoboVentureLab the Joseph L. Cecchi VentureLab.

STC President & CEO Lisa Kuuttila summed up the Board’s feelings on hearing the news of Dr. Cecchi’s appointment: “While I am sorry to be losing Joe as Board Chair, I am excited about the contributions he will be making to Masdar Institute. He has been a source of leadership to the STC Board at a critical period in STC’s growth and development, providing invaluable contributions in developing policies and long-range plans for the organization.”

Secretary and Treasurer Sandra Begay-Campbell has been appointed by the Board to replace Dr. Cecchi as Chair. Ms. Begay-Campbell has been a board member since 2004. She is a Principal Member of the Technical Staff in the Tribal Energy Program at Sandia National Laboratories and is a former University of New Mexico Regent and Executive Director of the American Indian Science and Engineering Society. Ms. Begay-Campbell is the recipient of the UNM School of Engineering Distinguished Engineering Alumnae Award and the Stanford University Multicultural Alumni of the Year Award.

Dr. John H. Stichman has been appointed to replace Ms. Begay-Campbell as the new Secretary and Treasurer of the STC Board. He has been a board member since 2007. Dr. Stichman recently retired as the Executive Vice President & Deputy Laboratory Director at Sandia National Laboratories. He was responsible for overseeing lab operations, staff and facilities and for developing and implementing policy at the Labs. Dr. Stichman is a Life Senior Member of the Institute of Electrical and Electronics Engineers and the recipient of the “Award for Exemplary Civilian Services” from the Department of the Air Force and the Gold Medal for services to the National Nuclear Security Administration.

The STC Board also reappointed Terri Cole as Vice-Chair. Ms. Cole has been a board member since 2004. She is the President & CEO of the Greater Albuquerque Chamber of Commerce and has served the organization since 1978, becoming its head in 1983. Ms. Cole is one of only 250 chamber executives in the U. S. to receive certification. Under her leadership, the Chamber has grown to be the largest business organization in New Mexico and a national model for other chambers of commerce. In 1995, Ms. Cole became the first woman to serve as Chairperson of the American Chamber of Commerce Executive Association.

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STC.UNM Launches New Website and Logo

Since the beginning of summer, STC staff have been hard at work on redesigning our website and logo. We felt that we needed not only a fresh, new look but a more user friendly format for our constituents. The site has been redesigned with a new logo and tag line.

The logo was designed by STC’s Information Systems Architect Minh Tran to represent where STC is located—in the beautiful state of New Mexico. Since STC is the place where the University of New Mexico’s technologies are introduced to the marketplace, the door represents the threshold to all the opportunities that these technologies have to offer. The purple mountains in the background represent the Sandia Mountains (home to Albuquerque), and the turquoise grassland represents New Mexico’s culture.

The new website has been redesigned to include many new features. Once you have directed your browser to the site, you will find an exciting new format that is clear and easy to use. STC’s new website now provides:

- Log-in feature for Sophia, STC’s new data management system, available on every page for inventors and other constituents
- Updated inventor section with detailed information on our commercialization process
- Featured technology highlights
- Search functionality
- Social networking tools
- Links to recently issued patents
- Flintbox, the innovation networking platform that displays STC’s technology portfolio
- Entrepreneur section featuring information for entrepreneurial faculty or staff
- Capability to sign up for Technology Scout Alerts
- Valuable resources through the entrepreneur section and Joseph L. Cecchi VentureLab member log-in

Please visit our website at [http://www.stc.unm.edu](http://www.stc.unm.edu)
8th Annual Creative Awards Reception Honors 37 UNM Inventors and 2011 Innovation Fellow

The Rotunda at the UNM Science & Technology Park was filled to capacity on the evening of April 21st with attendees who were present to honor 37 UNM faculty, staff and students at STC’s 8th Annual Creative Awards Reception. The honorees received a creative award in recognition of the issued patents and disclosed copyrights they have received this year for their innovative technologies. Those present also honored Dr. Larry Sklar as the recipient of the 2011 Innovation Fellow Award, given to a top UNM inventor whose body of technologies has generated significant commercialization activities. The keynote speaker for the event was Eugene Quinn, Founder of the intellectual property website, IPWatchdog.com. Mr. Quinn, who is also a patent attorney, spoke about the importance of patents in sustaining and increasing innovation in America. Mr. Quinn provided an incisive analysis of the “symbiotic relationship” that exists between a strong patent system and a high level of innovation—particularly “paradigm-shifting, disruptive innovation”—that leads to the creation of start-up companies and job growth. For a full viewing of his presentation, go to the STC website at http://www.stc.unm.edu.

Dr. Sklar, who was recognized as STC’s 2011 Innovation Fellow, has disclosed more than 50 technologies and received 19 U.S. patents and copyrights since 1995 in the areas of signal transduction, cell adhesion, leukocyte biology and high throughput technologies for molecular assembly and drug discovery. Lisa Kuuttila, President & CEO of STC, observed: “This award recognizes the social and economic impact of the recipient’s work to the public. Larry Sklar’s entrepreneurial energy draws collaborations and whole teams of New Mexico researchers developing new methods for diagnosing and treating disease.” Dr. Sklar’s and co-inventor Bruce Edwards’ HyperCyt® System sample handling technology formed the basis of STC start-up Intellicyt Corporation. The technology allows flow cytometers to screen samples faster and with greater accuracy and cost efficiency than conventional cytometers. The start-up is selling its products to pharmaceutical and biotechnology companies and research institutes around the world.

Award Recipients

Ganesh Balakrishnan, Ph.D.
Cristian-George Bologa, Ph.D.
C. Jeffrey Brinker, Ph.D.
Steven R. J. Brueck, Ph.D.
Hitendra S. Chand, Ph.D.
Daniel F. Cimino, M.S.
Laurence A. Cole, Ph.D.
Abhaya K. Datye, Ph.D.
L. Ralph Dawson, Ph.D.
Vojo P. Deretic, Ph.D.
Bruce S. Edwards, Ph.D.
Andrew Fraugenglass
Mikhail I. Fuks, Ph.D.
Sang M. Han, Ph.D.
Linnea K. Ista, M.S.
Ravinder Jain, Ph.D.
Xingmao Jiang, Ph.D.
Courtney R. Johnson, M.D.
Walter Kisiel, Ph.D.
Xuejun Liu, Ph.D.
Tudor I. Oprea, M.D., Ph.D.
Hien Pham, Ph.D.
Svetlana Poroseva, Ph.D.
Sarita Prasad
Eric R. Prossnitz, Ph.D.
Alexander K. Raub, Ph.D.
Tamara Roitbak, Ph.D.
Elsa Romero
Wolfgang G. Rudolph, Ph.D.
Edl Schamiloglu, Ph.D.
Peter C. Simons, Ph.D.
Larry A. Sklar, Ph.D.
James L. Thomas, Ph.D.
Graham Timmins, Ph.D.
Angela Wandinger-Ness, Ph.D.
Timothy L. Ward, Ph.D.
W. Gill Woodall, Ph.D.

From the STC.UNM Board of Directors:

Ms. Sandra Begay-Campbell
Mr. Douglas M. Brown
Dr. Joseph L. Cecchi
Ms. Terri L. Cole
Dr. James D. Cramer
Dr. Robert H. Fisher
Dr. Julia E. Fulghum
Mr. Gene Gallegos
Ms. Maria Griego-Raby
Mr. David W. Harris
Ms. Lisa Kuuttila
Dr. Richard S. Larson
Ms. Diana MacArthur
Dr. Gregg L. Mayer
Ms. Cindy McGill
Mr. Fred Mondragon
Dr. Pope L. Moseley
Dr. Suzanne Ortega
Dr. Paul B. Roth
Dr. David J. Schmidt
Dr. John H. Stichman
Mr. Pedro F. Suarez
Mr. Gary Tonjes
Mr. Charles Wellborn
Dr. Albert R. C. Westwood

Congratulations to
STC.UNM Innovation Fellow
Dr. Larry Sklar
The 16 companies based in New Mexico surveyed have generated an $18 million impact on the New Mexico economy, $7 million in revenue, $8.5 million in salaries and benefits, and 162 new high-paying jobs. As more UNM start-ups are created, the impact becomes greater, having a multiplying effect over time.

Finally, I would like to note our new look. STC’s logo, colors and web site are all updated. We would like you to check out the web site (http://www.stc.unm.edu), which has many more features than ever before.

Lisa Kuuttila
President & CEO
kuuttila@stc.unm.edu
505-272-7905
Charles I. Wellborn  
Member, Board of Directors, STC.UNM  
Former President, Science & Technology Corporation @ UNM (STC), Retired

At STC we can count on board members who have valuable skills and a breadth of professional experience that help the organization make the right decisions and collaborate with the right people and organizations. There’s one person who’s been here from virtually the very beginning of our existence as a nonprofit in 1993. As STC’s first President and CEO from 1995 to 2000, he took on the challenge of technology commercialization by creating the tech transfer program at the University of New Mexico. In fact, he was absolutely essential to the mission of helping UNM commercialize more of its technologies, a requirement of the Bayh-Dole Act, the federal law passed in 1980 that gave universities, small businesses and nonprofits the ability to retain title, or ownership, of inventions arising out of research funded by the federal government. Starting with just a staff of two (himself and his assistant, Gerri Marousek), within five years Charles (Chuck) Wellborn had laid the groundwork for generating start-ups, licensing income, increasing patent protection, and serving our university inventors that is the foundation of STC’s success today.

Mr. Wellborn continues to serve STC as a member of the board for the past sixteen years—one of the longest tenures of any member—and as a member of many STC committees past and present, including the Executive, Finance & Compensation, Endowment Fund, Cecchi VentureLab, and Real Estate committees.

He grew up in Albuquerque, received a B.A. in Economics from UNM, a J.D. from the UNM School of Law and a L.L.M. in Corporate Law from New York University. He practiced corporate law for nearly 30 years primarily as a partner with the Albuquerque law firm, Modrall Sperling. He has served the legal community well as President of the Albuquerque Bar Association in 1978 and the State Bar of New Mexico in 1982 and was a member of the American Bar Association’s House of Delegates for many years. His areas of expertise in corporate finance and securities law led to an interest in venture capital financing and tech start-up companies, which became another area of expertise as he provided legal counsel to a number of start-ups starting in the early 1980s.

Mr. Wellborn has been an important promoter of venture capital investment and economic development in New Mexico for a long time. He has served as Chair of the Economic Forum of Albuquerque, an organization of major businesses and governmental and educational organizations in Albuquerque as well as on the boards of the Association of Commerce & Industry and the Mind Research Network, a nonprofit neurodiscovery center at UNM. He also served on the state’s Venture Capital Investment Advisory Committee from 1991-1997. The Advisory Committee has been responsible for bringing several venture capital firms to New Mexico. For several years, he was an independent contractor for the McCune Charitable Foundation in Santa Fe, a grant making nonprofit promoting economic development in rural and low-income areas, and while there, helped to create a home-grown venture capital fund called New Mexico Community Capital (NMCC). NMCC is a community development venture capital fund that invests in New Mexico companies in underserved areas of the state. The fund seeks to have not only financial but social returns on its investments so that while some companies may have lower rates of return on investment, they have significant potential to benefit local communities through job creation. In 2006, Mr. Wellborn was instrumental in helping STC to obtain a $50,000 grant from the McCune Foundation, which contributed to the establishment of the Gap Fund @ UNM. The Fund provides funding for early stage UNM technologies. More recently his work for McCune was focused on promoting locally grown food where he now helps as a volunteer, having retired at the end of last year.

In 2002, he formed the New Mexico Tax Research Institute as a permanent public policy organization devoted to the study and dissemination of research and commentary on New Mexico tax policies. He served as Chair of the organization for three years and continues to serve on its Board. In 2003, Mr. Wellborn was appointed to the board of the New Mexico Small Business Investment Company. The corporation was created by the state of New Mexico, funded through the state’s Severance Tax Permanent Fund, and charged with providing investment capital to new and small businesses in New Mexico. In 2004, he became Chair and presided over the statutory reorganization of the corporation that enabled it to make over $30 million available during his three-year tenure in loans and investments to intermediary organizations such as ACCION, The Verge Fund and Flywheel Investments that serve all kinds of small businesses, from micro-enterprises to technology startups.

Mr. Wellborn’s efforts to create strong start-up activity in New Mexico through development of business incubators are no less impressive. In 2001, he wrote...
a report, Business Incubation in New Mexico, for the New Mexico Economic Development Department that provided a comprehensive review and analysis of business incubators in New Mexico and was a valuable resource for STC when its own incubator was created in 2004, and also for the WESST Enterprise Center whose 37,000 square foot incubator recently opened in Albuquerque. In 2009, he was honored with a “Who’s Who in Technology” award from New Mexico Business Weekly for his efforts as a facilitator of technology development in the state of New Mexico. In 2010, he received the Zia Award from the UNM Alumni Foundation for distinguished service in the areas of philanthropy, service to the University and community, volunteerism and professional accomplishments.

Chuck Wellborn knows so much about the issues that are important to STC. His contributions to economic development have had a significant and lasting impact on the organization and the state of New Mexico. He has genuine vision and humility. He doesn’t give himself nearly enough credit but we think he’s pretty special.

You were appointed President & CEO of STC.UNM in April 1995, back when the organization was called the UNM Technology Development Corporation. Can you tell us how you came to know about the organization, who were some of the people involved in STC’s creation, and why you agreed to serve as STC’s first president?

From my work with startup companies I knew UNM was trying to create a tech transfer organization but having trouble finding someone to take the job of President. So one day I thought maybe 30 years practicing law was enough and maybe I should see if they would be interested in hiring me. I was frustrated there were not more start-up companies in NM and thought maybe I could help the effort to foster more such companies. I didn’t know much about science or engineering but I knew a lot about start-up companies and licensing. So I met with a number of board members and within a few weeks I was winding up my law practice and moving to UNM. David McKinney, VP of Finance, was spearheading the STC effort for UNM and Ken Johns (a former regent), Waneta Tuttle, Bill Miller (highly experienced private equity investor who lives in Santa Fe) and Bob Taber (who headed the tech transfer effort at Duke) were prominent members of the STC board along with long-time member Gregg Mayer.

STC was created as a nonprofit by the UNM Regents in 1993. In 1995, the organization’s name was changed to the Science & Technology Corporation @ UNM. Can you talk about why the organization was created as a nonprofit—the importance of that status—and why the name was changed?

The organization was created as a nonprofit so it could be managed by a board of directors composed mainly of non-UNM representatives. This was to ensure that there was strong private sector influence on STC. Time has proven that this was a crucial factor in STC’s success and what mainly distinguishes it from the other technology-transfer organizations in the state. The original name, UNM Technology Development Corporation, was changed because TVC had chosen a name similar to our “TDC” and confusion was inevitable. The UNM representatives on the board also indicated their desire for a reference to the science and technology capabilities of UNM. Thus: Science & Technology Corporation @ UNM.

In 1997, STC had 150 patents and patent applications and had 7 licenses agreements in place. Today, metrics for disclosures, patents, licenses and start-up companies have significantly increased. What do you think are the contributing factors and influences in STC’s growth? What do you think has changed over the past 16 years to maintain STC’s continued growth pattern?

In 1995, there had effectively been no technology-transfer effort at UNM beyond what former Anderson School Dean Ray Radosevich was able to accomplish with a few start-ups he was able to launch under the Anderson School auspices. Few patents had been issued and the effort had little credibility with the faculty. It took time for STC to convince most faculty to devote the time and effort required to pursue a patent. Also with my lack of experience in leading such an effort, I was on a steep learning curve myself though I was given lots of help and guidance by former staff of the technology-transfer program at the University of Chicago because their related ARCH Ventures venture capital fund had come to New Mexico. I also got valuable advice and assistance from Joyce Brinton, former head of Harvard’s Technology and Trademark Licensing Office, and Lita Nelsen, Director of MIT’s Technology Licensing Office, who were also generous with their time and advice. I quickly learned that UNM had some really outstanding research faculty, far better than I had realized previously as a volunteer on UNM boards and search committees. So there was plenty of opportunity. The staff and I just had to figure out how to put together an effective program for getting their inventions and discoveries patented or copyrighted and marketed. It was a challenge with just one staff person to cover all of the medical school inventors and one to cover the main campus inventors. The numbers of disclosures, patents, licenses and start-ups grew over time for several reasons: (1) there was a learning curve for STC and its staff as it learned how to become effective; (2) UNM inventors began to see the advantages of technology commercialization to themselves and their research programs and, as they learned what they needed to do, their participation with STC grew; (3) there have been very large increases in the research budgets at Health Sciences since the mid-1990s with correspondingly more inventions and discoveries; (4) UNM administrators, deans, and department chairs began to see the benefits of technology commercialization and their cooperation with STC and encouragement to STC and to the research faculty has been crucial; and (5) the biggest reason that STC has done better over the years is that Lisa has the university technology-transfer experience and capabilities I wish I had had when I was running STC. It’s been great as a board member to see how she has built an effective organization that serves the inventors and the university very well.

What do you believe are the challenges still ahead for STC? In a 2002 Albuquerque Journal article you talked about the importance of having an entrepreneurial culture, a thriving investment community and well-developed business incubator programs for the commercialization of university technology. Do you still think these factors are central to STC’s future growth?

Yes, these are the crucial ingredients and I believe we are doing very well in the first two areas, though the economic downturn has been a major challenge. Before and after I came to STC I had spent a lot of time examining tech incubators and talked a lot with George Kosmetsky who was the primary force behind the Austin Technology Incubator at the University of Texas. I was sure that such an incubator would make a huge difference. But it takes a big financial commitment and I was not successful in gaining support for the idea. STC is now moving in that direction with its Cecchi VentureLab but we have limited resources and we’ll have to grow it as resources permit. But maybe someone will come along and be our George Kosmetsky.

Chuck Wellborn remains almost as busy in retirement as he ever was in his professional life. In addition to his efforts in promoting locally grown food, he is studying jazz guitar and working on his golf game. His goal is to shoot his age in golf. We have no doubt that he will.
New Board Members

STC would like to welcome two new members of the Board of Directors:
Dr. Chaouki T. Abdallah and Dr. Mansoor Sheik-Bahae.

Dr. Abdallah is the Interim Provost and Executive Vice President for Academic Affairs at the University of New Mexico and a Professor in the Department of Electrical & Computer Engineering. Dr. Abdallah started his college education at the Ecole Supérieure d’Ingénieurs de Beyrouth—Université Saint-Joseph in Beirut, Lebanon, but finished his undergraduate studies at Youngstown State University, with a Bachelors of Engineering in Electrical Engineering in 1981. He then obtained his M.S. and Ph.D. in Electrical Engineering from the Georgia Institute of Technology in 1982, and 1988 respectively. He joined the Electrical and Computer Engineering Department at the University of New Mexico where he is currently a Professor.

Dr. Abdallah conducts research and teaches courses in the general area of systems theory with focus on control and communications systems. His research has been funded by national funding agencies, national laboratories, and by various companies. He has also been active in designing and implementing various international graduate programs with Latin American and European countries. He was a co-founder in 1990 of the ISTEC consortium, which currently includes more than 150 universities in the U.S., Spain, and Latin America. He has published 7 books, and more than 300 peer-reviewed papers. His Ph.D. students hold academic positions in the U.S. and in Europe, and senior technical positions in various U.S. national laboratories.

Dr. Abdallah is a senior member of the Institute of Electrical and Electronics Engineers (IEEE) and a recipient of the IEEE Millennium medal. He is also active in the IEEE Control Systems Society, most recently serving as the General Chair of the 2008 Conference of Decision and Control CDC 2008.

Dr. Sheik-Bahae joined the faculty in the Department of Physics & Astronomy at the University of New Mexico in 1994 and is currently a Professor in both the Department of Physics & Astronomy and the Department of Electrical and Computer Engineering. Prior to his arrival at UNM, Dr. Sheik-Bahae served as an Associate Research Professor at the Center for Research and Education in Optics and Lasers (CREOL) at the University of Central Florida in Orlando, Florida. He received his B.S. in Electrical Engineering, summa cum laude, and his M.S. in Electrical Engineering from Catholic University of America and his Ph.D. in Electrical Engineering (electro-Physics) from the state University of New York (SUNY) at Buffalo. Dr. Sheik-Bahae’s current research activities are focused in the areas of laser cooling in solids, ultrafast phenomena, nonlinear optics, and optically pumped VECSELS.

Dr. Sheik-Bahae has made key theoretical and experimental contributions to the field of solid state laser cooling. In 2009, Dr. Sheik-Bahae and his team reported the first laser cooling in solids to cryogenic temperatures. In 2011, he received gap funding from STC for this technology. The research results, demonstrating optical refrigeration as the only current solid-state cooling technology with clear advantages over existing cooling technologies, were published in the prestigious journal Nature Photonics. The UNM results were hailed as a breakthrough for presenting the first demonstration of an all-solid-state cryocooler. Other scientific contributions include invention of the Z-scan technique to measure optical nonlinearities of materials and the development of a quantum mechanical theory for predicting ultrafast electronic optical nonlinear coefficients of semiconductors. Dr. Sheik-Bahae has 3 issued and 6 pending patents.

Dr. Sheik-Bahae’s awards include recognition in 2007 by the IEEE-LEOS for authoring the most cited paper (for Z-scan) in the history of the IEEE-JQE journals, becoming an OSA Fellow in 2000, and receiving an Engineer of the Year Award from IEEE/LEOS in 1990. His professional service includes serving as General Chair of the Optical Science and Engineering Program at UNM from 2003-2009; as current Director of the Consortium for Laser Cooling in Solids; and as current Topical Editor for the Journal of Optical Society of America, among his many other professional appointments.

New Staff Members

STC would like to introduce our newest staff members: Eri Hoshi and Lindsay Stanich.

Eri Hoshi joined STC.UNM in 2008 as a Student Administration Assistant and is currently the Intellectual Property Coordinator. She works with outside patent counsel, inventors, and office staff to coordinate legal matters related to the prosecution and maintenance of STC’s patent, trademark and copyright portfolios. Hailing from Tokyo, Japan, Eri graduated from the University of Gakushuin with a B.A. in Economics. She moved to New Mexico in 2008 to pursue her Master’s in Public Administration at the University of New Mexico, which she received in May 2011.

Lindsay Stanich joined STC.UNM in March, 2011 as the Documents Assistant and is now the Disclosures Coordinator. Lindsay works closely with inventors and staff from the University of New Mexico receiving and processing invention and copyright disclosures. Additionally, she reports disclosures and related activities in iEdison to comply with the Bayh-Dole Act. Lindsay serves as the initial contact for questions regarding online invention/copyright disclosure forms.

Welcome aboard, Eri and Lindsay!
Paulina San Milan  
Technology Transfer Student Intern

In this edition of the newsletter, we’d like to introduce our readers to an STC intern who has been with us for nearly two years. In that time, Paulina San Millan has honed her market research and analysis skills thanks to the many opportunities she’s had at STC to satisfy her two central passions: helping others—whether they be people or companies—and investigating the best ways to do that.

Paulina was born and raised in Mexico City. The middle child of three daughters, she has always been an achiever. Fluent in English thanks to an excellent language immersion program that started in kindergarten and academically accomplished with many accelerated and advanced placement courses her to credit, Paulina had received scholarship offers to several universities in Mexico City.

But after high school, she was ready for a change. As she says: “I've always had an interest in international issues and was thinking maybe I wanted to go overseas to college. My cousin took me to a university fair where I met a University of New Mexico recruiter. I applied for and received the International Amigo Scholarship at UNM.” Paulina arrived at UNM in 2005 and graduated with a B.A. in Economics, with honors, in 2008.

While at UNM, she was hired to work in the Student Affairs office as a resident advisor for 40 ethnically diverse undergraduate students and as a technical specialist working in international admissions. “I especially like mentoring students, particularly the international students as I can understand the challenges they face as new college students,” she stated. In her senior year, Paulina was hired by the City of Albuquerque Economic Development Department as an intern and then trade specialist where she learned all about international trade by conducting market research and analysis for high tech companies in Albuquerque. During this time, Paulina took on quite a bit of responsibility, performing duties that included marketing New Mexico as a high tech location for renewable energy investment to companies in Mexico and Spain, developing business plans and presentations and creating marketing databases. She also participated in trade missions to Sonora and Chihuahua, Mexico.

When Paulina graduated with her B.A., she decided that she would continue her education at UNM by pursing an M.B.A. at the Anderson School of Management, and that is when STC was very fortunate to hire her as a student intern. She actually learned about STC from a former intern. Paulina explained her reasons for applying at STC: “While I had a good deal of marketing experience and had gained knowledge about renewable energy technology, I wanted to learn more about other technology areas and I really have at STC. The marketing process at STC is much more structured than it is at other places where I’ve worked. It starts with researching a particular disclosed technology and preparing an NCS. NCS’s are non-confidential summaries that provide basic information and business application information to individuals and companies who may become interested in licensing the technology. Then the process of researching and identifying the right companies to market begins. I really enjoy this part because it requires that one become a detective to find the right company contact person. This involves analyzing databases, websites and response rates to our marketing emails to make sure we are reaching the right contact.”

Some of the projects Paulina has worked on while at STC include business plans and market research for STC startups SK Infrared, Avanca, Vision Quest and Lotus Leaf Coatings. Asked what she likes best about working at STC, Paulina replied that she loved the teamwork approach because “no one person can be an expert in all areas. I also like STC’s professionalism and efficiency and meeting with inventors to really get a deeper understanding of their technologies.”

Paulina hopes to graduate with her M.B.A. in December of 2012. She will continue work as a graduate assistant in the MBA program but will leave STC to accept a position as an international trade consultant with the U.S. Small Business Administration’s Small Business Development Centers (SBDC) program. The centers are partnerships primarily between the government and colleges/universities to provide educational services to small business owners and aspiring entrepreneurs. Paulina would ultimately like to become an independent economic development consultant to state, federal or non-profit entities. Given her track record at STC, we know Paulina’s desire to serve future clients with the highest degree of skill and commitment is certain.

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ABOUT STC.UNM and THE INNOVATION DOOR

STC.UNM strives to support the University of New Mexico and its partners as the source for innovation management and commercial development. Additionally, STC.UNM desires to play a vital role in New Mexico economic development and to be an innovator in commercialization worldwide.

To learn more about STC.UNM and our activities, please visit us on the web at http://www.stc.unm.edu.

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