President’s Corner

Perhaps you heard that I left STC? It is true that I was gone for a brief 6 weeks, working with another university. As someone said upon my return, “I am glad you came to your senses!” After returning in mid-June, I have developed a renewed appreciation for the strengths of STC and UNM. While we still have a young and growing program, our management of technology transfer is among the best in terms of its structure and effectiveness. An advantage in leaving for a while is the opportunity to take a fresh look at our operation and make some adjustments. So you may see some fine tuning going on in the coming months as we work to improve STC.UNM even more.

Fiscal year 2007, ending June 30, 2007, was a strong year for STC. New disclosures numbered 85 and we completed 25 license and option agreements in FY2007. Total income was near the $1 million mark and included equity acquisitions in several new companies. The number of start-up companies licensing STC technologies was a record eight new companies in FY2007. For a complete listing of STC’s historical metrics, please see the STC web site at www.stc.unm.edu/about/metrics.php.

STC honored its inventors and creators with issued patents and copyright at its 4th Annual Creative Awards event held in April 2007. We are grateful to UNM’s creative community for its contributions of discoveries and creative works. See page 6 for a list of recipients of awards.

STC began its new Gap Fund @ UNM initiative last year and funded two projects. The McCune Foundation contributed to this effort with a grant to STC. The second round of awards will be made this fall. We are excited that STC can help to bridge this gap, sometimes referred to as the “valley of death” in the technology transfer world. Many more technologies can reach the market if assisted by this type of funding, which is usually beyond the point where federal agencies will support the work, but still too early for corporate or other types of investment. See page 5 for the new call for proposals.

The STC seminar series continues with a new line-up of speakers on a range of commercialization topics. Please take advantage of these resources to learn more about issues of interest to you.

(continued on page 3)
**Tuberculosis Test a First for Active Infections**

STC recently received a new and exciting tuberculosis (TB) technology disclosure from Dr. Graham Timmins, Department of Pharmacy. The importance of this new disclosure is underscored by a recent surge in TB outbreaks coupled with a rise in drug-resistant varieties.

TB is caused by mycobacterium tuberculosis infections and results in two million deaths every year. It is highly contagious and latently persists in over a billion individuals worldwide. There is currently no method available to unambiguously and rapidly determine whether a person is infected with active TB.

The current skin tuberculin testing with purified protein derivative (PPD) uses an immuno-response to screen for potential exposure to TB, but does not differentiate between prior exposure and currently active infection. Chest x-rays have the same problem because they only identify advanced lung lesions. The smear test is highly reliable but has low sensitivity since many TB patients do not present as smear positive. While a sputum culture is a definitive test, it is time consuming due to the slow-growing TB bacteria. Because of the limits on these current tests, vaccination of the general population does not occur. Use of the Timmins test will allow a population to achieve optimal protection from TB by allowing personnel to be vaccinated against TB.

Other advantages of this technology include:

- **Speed:** results can be read in minutes, not days as is required with the PPD test (no patient recall needed)
- **Simplicity:** an expert is not required to interpret the results
- **Treatment evaluation:** the test can be used to assess the effectiveness of new TB treatments

STC is hoping to partner with an industrial party who will fund the needed clinical testing and ultimately take the product into the marketplace. Our development plan for this technology opportunity will have the product ready for market in as little as 24 months. We envision that this test will not only be helpful in developing nations, but also highly valuable in the United States as a required test for all health-care professionals, returning military personnel and all incoming foreign nationals.

**Solid State Lighting with Gallium Nitride**

Commercial lighting and personal electronics such as cellular phones are fueling the rapid market growth in the LED (Light Emitting Diode) industry. Companies are now faced with the challenge of creating more effective manufacturing techniques that yield more efficient devices that also have a tighter control of properties. Specifically, there is growing interest in gallium nitride (GaN), which is the material base for many next generation devices including ultra-high efficiency UV, blue and green LEDs. The GaN-based device market is expected to hit $7.2 billion by 2009.

The challenges for GaN have been device reliability and volume manufacturing. Current technology produces wafers with defects in the range of 106-1010/cm2. Processes that provide the lowest defect density and the best device performance are low yield and have high manufacturing costs. Many new commercial devices that use GaN components are being sold at a loss.

This unique technology allows the growth of massive and extremely uniform arrays of high quality GaN nanowires through pulsed MOCVD growth techniques. Unlike previous GaN nanowire approaches, this technology does not use metal catalysts or self assembly. For the first time, the nanowire geometry and orientation can be controlled with precision which translates into manufacturability. The resulting nanowires are virtually defect free and have many potential applications in revolutionary new optoelectronic and electronic devices.

The inherent properties of GaN and its related semiconductor alloys make it an ideal material for several applications such as LEDs for solid-state lighting or BlueRay DVD’s, high-power RF transistors, Bio-MEMS structures, and high-quality GaN bulk material.

Specific advantages that this technology provides include:

- **Defect reduction**
- **Revolutionary nanowire device opportunities**
- **Precise control – manufacturability**
- **Scalable to wafer size – volume manufacturing**
- **High market demand**

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**Sensitivity Test for Infection of Tuberculosis**

Reference number STC-LS-0346

Graham Timmins, Ph.D.
Department of Pharmacy
Health Sciences Center
University of New Mexico

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**Pulsed Growth of Catalyst-Free Growth of GaN Nanowires and Application in Group III Nitride Semiconductor Bulk Material**

Reference number STC-PS-0752

Steven Hersee, Ph.D.
Center of High Technology Materials
University of New Mexico
We are pleased to welcome two new employees to STC. Mary Ann Copas has joined as Intellectual Property Coordinator and Cara Hajovsky as Administrative Assistant. More information about these new STC staff members and new STC board members is in this issue.

As always, we are eager to learn about your discoveries and welcome the opportunity to work with you. Please contact me or anyone else at STC if you have ideas that may have commercial potential.

Lisa Kuuttila
President & CEO
kuuttila@stc.unm.edu
505-272-7905

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**UNM and Albuquerque VA Lupus Treatment Forms Basis of New Tuttle Start-Up**

STC.UNM has recently completed an option to license a promising therapy for some of the worst effects of systemic lupus erythematosus (better known as SLE, or lupus) to a newly formed company, Azano Pharmaceuticals. Lupus is a chronic autoimmune disease that is potentially debilitating and sometimes fatal as the immune system attacks the body’s cells and tissue. More than two million people suffer from lupus in the United States alone. The disease is characterized by recurring flairs of symptoms which affect various parts of the body. In the later stages of the disease, patients often experience lupus nephritis, a serious inflammation, and sometimes failure of the kidneys. UNM HSC and Veteran’s Administration researchers Dr. Terry Duclos and Dr. Carolyn Mold have developed a possible treatment for lupus nephritis which uses C-reactive protein (CRP), present in all of our bodies, to reduce the inflammation of the kidneys. Of the roughly 2 million systemic lupus patients in the U.S., about half experience kidney inflammation, and about 200,000 of those face severe inflammation requiring chemotherapy. If successful, a drug eventually produced by Azano could significantly improve the quality of life and life-span for these patients.

Azano was formed by veteran New Mexico entrepreneur Dr. Waneta Tuttle, founder of Exagen Diagnostics and several other life sciences firms. Tuttle has partnered with two pharmaceutical executives—Bill Brown and Dr. John McDonald—to take Azano forward. Brown and McDonald were formerly executives from MGI Pharma Inc., a publicly-traded, biopharmaceutical company based in Minneapolis. Along with other senior executives from the company, they helped build MGI into a publicly traded entity worth $1.8 billion. “Puente Partners founded Azano as its first start-up company,” Dr. Tuttle said. “There will be lots of rifts and hurdles ahead, but we have the experience and skills needed to move forward with what we think will be a great new product.”

The technology has, so far, been tested only on mice, using the naturally produced human CRP to reduce the inflammation of the kidneys. Of the roughly 2 million systemic lupus patients in the U.S., about half experience kidney inflammation, and about 200,000 of those face severe inflammation requiring chemotherapy. If successful, a drug eventually produced by Azano could significantly improve the quality of life and life-span for these patients.

Azano is now in the process of raising funds for their new venture in order to further develop the technology, and to take this new drug through the FDA’s clinical trials process. The clinical trials will gauge the drug’s effectiveness and safety and provide the necessary approvals to get the product to market. This is a multi-year process and requires a significant investment. “We estimate $16 million would get us to the point where we have enough initial human clinical data to attract much bigger investors,” Brown says. “We’re looking for ‘Series A’ financing from local and national firms,” Tuttle says. “It could take some time. We’re just getting started.”

The SLE treatment developed by Drs. Duclos and Mold represents one of several potential drug therapies developed at UNM’s Health Sciences Center. “Previously, New Mexico entrepreneurs and investors would not have considered developing a therapeutic drug here in the state, but with the growth in venture capital here, and the increased amount and quality of this type of research at UNM, and increased collaboration between researchers and clinicians, we will begin to see more of this type of firm in New Mexico,” said Peter Rachor, Director of Venture Development at STC.UNM. STC will have an equity stake in Azano and will earn royalties once the technology goes to market, Rachor added.
Protect Your Research—STC.UNM Primer

Who
University of New Mexico faculty, staff, students, and UNM community

What
An invention may be any type of discovery or creation that is novel, useful, and non-obvious:
- Novel - Different from what has been previously published, patented, or practiced
- Useful - Serves some purpose
- Non-obvious - Would not be obvious to someone with skill in the field

Where
To disclose technology to STC, visit www.stc.unm.edu and submit your disclosure online through your “My Technologies” account. Inventors new to STC may sign up for an account here as well. Once you have an account, you may simply log-in to your account on the STC website and submit invention and copyright disclosures at your convenience.

When
The ideal time to disclose an invention to STC is after it has been reduced to practice and before it has been published or publicly disclosed. Even if your invention is not reduced to practice, you should disclose it before publication or public presentation.

Why
STC exists to serve UNM faculty and inventors by:
- Encouraging invention and innovation
- Encouraging publication and helping to prepare for publication by securing intellectual property (IP)
- Protecting the IP rights of UNM inventors by patent, copyright, trademark, or other means
- Transferring the results of UNM research to the community by bringing researchers and the business community together in a relationship of mutual benefit
- Generating support for future research and education
- Contributing to local, state, regional, and national economic development

Visit our website or call us today!

Maximizing Commercial Value

As highlighted in the nanowire technology article on page 2, the GaN nanowire technology from Professor Hersee’s research group provides high quality GaN material and rapid progress is being made towards devices.

The market for such material and devices is expected to be $7.2 billion in two years.

The market size alone is reason to believe that there may be a strong commercial demand for this type of technology. In addition to the large market size, this technology provides a cost effective process, virtually defect-free material (increased yield), and has the capability to scale up for volume manufacturing.

It is not surprise then, that STC has licensed this technology. In fact, in order to maximize the commercial value and ensure that the technology is exploited as broadly as possible, STC has entered into limited exclusive agreements with three companies. One of the companies, Nano-crystal, is a New Mexico-based start-up focusing on developing high-quality GaN wafers. The other two companies, who cannot be named due to confidentiality constraints, are device companies focusing on developing GaN devices directly from the nanowires.

To ensure successful transition of knowledge from the lab to a product, the companies are working both with Professor Hersee and independently to demonstrate devices and scale up to commercial manufacturing.
In October of 2006, STC.UNM posted a story on its website reporting that the corporation had joined as a party to an amicus brief filed in the Supreme Court by the Wisconsin Alumni Research Foundation (WARF) and others in the case of KSR v. Teleflex. This particular case asked the Court to rethink “obviousness” with regard to patentability.

The obviousness issue plays a role in nearly every patent application and is much more subjective than some of the other standards that must be met en route to obtaining a patent for an invention. 35 USC 103(a) states that “A patent may not be obtained...if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” In practice, an examiner rejects an applicant’s claim for obviousness based on the contents of multiple pieces of prior art or on the contents of prior art in view of the knowledge of a person having ordinary skill in the art.

For the past forty years, obviousness—in part—has been tested by the courts and the Patent Office by a standard first set forth in the case, Graham v. John Deere (1966), known as TSM, or teaching/suggestion/motivation. During this time, the PTO has borne the burden of proving that the combination of multiple references of prior art teach/suggest/motivate that the inventions be combined in order to establish a prima facie case of obviousness in support of their rejection.

However, on April 30, 2007, the Supreme Court changed this with their decision in the KSR v. Teleflex case. In short, the Court held that the TSM standard in Graham had been applied too rigorously in KSR and that an examiner could be more flexible in its application. On its face, it appears as if the PTO and the courts now have greater discretion and a lesser burden when rejecting claims for obviousness.

Critics of the decision are concerned that this new approach will fail to safeguard against obviousness rejections based upon improper hindsight. As a result, the PTO has issued preliminary obviousness examination instructions in the wake of KSR. The instructions noted that examiners must continue to provide reasons for combining prior art in an obviousness rejection and that while a rigid application of the TSM test has been rejected, the Court did not reject its total use.

In view of this decision, it will be interesting to see how obviousness issues will play out for STC and for the university community’s inventors in the future. Stay tuned!

“Obviousness... plays a role in nearly every patent application.”

2nd Annual Call for Gap Funding Proposals

Last year, STC.UNM introduced a new initiative to help break down the barriers to industry adoption of UNM technologies: a technology-to-market gap fund.

One of the major challenges is for university technology to be taken beyond the traditional boundary of a publication or research result. It is widely recognized that there is a prototype funding gap—the void between early stage research and development and a technology ready to commercialize. It is not unusual for university research to evolve to a point where obtaining basic research federal funding is difficult because the work is too applied. Obtaining industrial or venture capital support can also be problematic because the work is considered too risky.

STC.UNM provides small amounts of funding to UNM faculty to advance technologies. The goal is to provide proof of concept to attract corporate/investment capital for development of the technology to get a product to market. In order to be eligible for this gap funding, faculty should prepare a short proposal based on a UNM invention or copyright disclosure. Proposals will be reviewed by an oversight committee. Projects are anticipated to be one year in duration. Please see http://www.stc.unm.edu/inventors/gapfunding.php for more details.
CONGRATULATIONS TO OUR
2007 CREATIVE AWARDS RECIPIENTS

PATENTS • TIONE BURANDA • DANIEL F. CIMINO
CHRISTIE G. ENKE, PH.D. • MAJEED M. HAYAT, PH.D.
WILLIAM J. KROENKE, PH.D. • ROBERT T. PAIN, JR., PH.D.
ERIC R. PROSSNITZ, PH.D. • BRADLEY M. RATLIFF, PH.D.
WILMER L. SIBBTT, JR., M.D. • PETER C. SIMONS • LARRY A. SKLAR, PH.D.

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LARRY A. SKLAR, PH.D. • WILLIAM (BILL) K. SZAROLETTA, P.E.

New Board Members

Mr. Don Chalmers
President, Don Chalmers Ford in Rio Rancho
Regent, UNM Board of Regents

Mr. Chalmers has been a successful businessman owning and operating numerous automobile dealerships in New Mexico, Washington state and Texas. He is the owner and President of Don Chalmers Ford in Rio Rancho, Don Chalmers Cadillac Saab and Don Chalmers Capitol Ford Lincoln Mercury in Santa Fe, and Thrifty Car Sales in Albuquerque. Mr. Chalmers is also very active in the New Mexico community in the areas of education, healthcare, economic development and community service. He is currently a Board member of the UNM Board of Regents and a past board member of the UNM Foundation. He holds a BS in Marketing from Oklahoma State University.

Dr. John A. Pieper
Vice President for Research, UNM Health Sciences Center and Dean of UNM College of Pharmacy

Dr. Pieper joined the UNM Health Sciences Center as the Dean of the UNM College of Pharmacy in November 2002 and was appointed Vice President for Research at HSC in June 2005. He is a board certified pharmacotherapy specialist and has added qualifications in cardiovascular pharmacotherpay. He holds a BA in Biology from the University of Wyoming, a BS in Pharmacy from the University of Wyoming, a Pharm.D in Pharmacy at the State University of New York at Buffalo and was a Post-Doctoral Fellow in Pharmacy at the State University of New York at Buffalo.

Dr. David J. Schmidly
President, University of New Mexico

Dr. Schmidly joined UNM in June 2007 as President of the University. He brings a wealth of knowledge and experience to the UNM community, having led Oklahoma State University as its system CEO and President since November 2002. Dr. Schmidly is an internationally respected researcher and scientific author and has been inducted into the Texas Hall of Fame for Science, Mathematics, and Technology, which recognizes Texans who have played a major role in significant scientific accomplishments. He holds a BS and MS in Zoology from Texas Tech University and a Ph.D. in Zoology from the University of Illinois.

Dr. Viola E. Florez
Interim Provost and Executive Vice President for Academic Affairs and Dean of the UNM College of Education

Dr. Florez has served as Dean of UNM’s College of Education since 1997 and was appointed Interim Provost and Executive Vice President for Academic Affairs in June 2007. At UNM, Dr. Florez has focused on diversity, faculty investment, improvement of undergraduate and graduate education, and P-20 education as her major priorities. She holds a BA in Liberal Arts and Humanities from Fort Lewis College, an MA in Education from the University of Colorado and a Ph.D. in Education from Texas A&M University at Kingsville.

In Memoriam:
Dr. William E. Schuler (1931-2007)

Dr. Schuler, Vice Chair of the STC Board of Directors, was one of the longest-serving members of the STC Board, having been appointed in 1994 and serving continuously until his death in June 2007. He brought great enthusiasm and dedication to his board duties and to the mission and vision of STC. He received his Ph.D. from Purdue University and had a long and distinguished career in several technology companies, most recently serving as Corporate Vice President of BDM International. A graduate of the Naval Academy and retired Colonel in the Air Force, Dr. Schuler served two tours of duty in Vietnam and received the Purple Heart and Distinguished Flying Cross.

We will certainly miss Dr. Schuler’s warm personality and generous spirit.
New Staff Members

Mary Ann Copas  
Intellectual Property Coordinator

Mary Ann joined STC on July 31, 2007 as Intellectual Property Coordinator. She will work 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. Mary Ann has several years of experience as an intellectual property paralegal, as well as many years of contract administration experience.

Cara Hajovsky  
Administrative Assistant

Cara joined STC as a student employee in May 2006. Over the past year Cara has served the roles of Office Assistant and Interim IP Coordinator. She has recently been promoted to Administrative Assistant, a regular part-time staff position. Cara is currently pursuing dual degrees at UNM, majoring in Psychology and Sociology.

Promotions

Shannon Sheehan has been promoted from Associate Director, Life Sciences to Director, Life Sciences.

Jovan Heusser has been promoted from Commercialization Specialist, Life Sciences to Commercialization Manager, Life Sciences.

Cara Hajovsky, temporary student employee, has been promoted to Administrative Assistant, a regular staff position.

Issued Patents (January 1 - June 30, 2007)

Bead-Based Detection of Ligand-GPCR-G Protein Complexes  
Patent no. 7,189,519 issued March 13, 2007 to Tione Buranda; Daniel Cimino; T. Alex Key; Rick Neubig; Eric R. Prossnitz; Mei Shi; Peter C. Simons; Larry A. Sklar

Non-Aqueous Borate Routes to Porous Boron Nitride  
Patent no. 7,192,644 issued March 20, 2007 to Robert T. Paine; Gary L. Wood

Surface Corrugation on Internal Reflection Infrared Waveguide for Enhanced Detection Sensitivity and Selectivity  
Patent no. 7,200,311 issued April 3, 2007 to Sang M. Han

Detector with Tunable Spectral Response  
Patent no. 7,217,951 issued May 15, 2007 to Majeed M. Hayat; Sanjay Krishna; Sunil Raghavan; Ural Sakoglu; J. Scott Tyo

Methods and Kits for the Detection of Erythrocytes  
Patent no. 7,223,604 issued May 29, 2007 to Kel Jain Jim Liu; Shimin Liu

Use of C-Reactive Protein to Treat Immune Complex-Mediated Renal Disease  
Patent no. 7,226,995 issued June 5, 2007 to Terry W. DuClos; Carolyn Mold

Multiplex Analysis for High Throughput Discrimination of GPCR Agonists and Antagonists  
Patent no. 7,232,659 issued June 19, 2007 to Sean Biggs; Daniel Cimino; Eric Prossnitz; Peter Simons; Larry Sklar; Anna Waller
Spring 2007 Seminars & Events

STC Gap Funding: Small Molecule Discovery in Drug Libraries for Multiple Biological Targets
Presented by Dr. Larry A. Sklar, Ph.D.
Professor, Department of Pathology, Health Sciences Center
October 4, 2007, 12:00pm to 1:00pm
Fred Harvey Room 307, Basic Medical Sciences Building (BMSB), University of New Mexico Health Sciences Campus

Conflict of Interest in the University Setting
Presented by Dr. Rick Lyons
Professor, Department of Internal Medicine, Division of Hematology/Oncology, Health Sciences Center
October 17, 2007, 12:00pm to 1:00pm
Room 2112, Domenici Center for Health Sciences Education, University of New Mexico Health Sciences Campus

Protecting Digital Media, Maybe
Presented by Chuck Valauskas
Valauskas & Pine, LLC
October 18, 2007, 12:00pm to 1:00pm
Cherry/Silver Room, Student Union Building (SUB), University of New Mexico Main Campus

Unique Challenges in Commercializing Technology in the Life Sciences
Presented by Dr. Waneta Tuttle
Puente Partners, LLC
October 30, 2007, 12:00pm to 1:00pm
Fred Harvey Room 307, Basic Medical Sciences Building (BMSB), University of New Mexico Health Sciences Campus

The Commercialization of GaN Nanowires
Presented by Dr. Stephen D. Hersee
Professor, Department of Electrical and Computer Engineering
Professor, Center for High Technology Materials
November 15, 2007, 12:00pm to 1:00pm
Cherry/Silver Room, Student Union Building (SUB), University of New Mexico Main Campus

Boxed lunches will be served to registered attendees.
Please visit the STC.UNM website for the most current information and to register for any of these events at www.stc.unm.edu/news/events.php

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Albuquerque, NM 87106

Connecting the marketplace and the University of New Mexico