

Testimony

By

Richard D. Gray

Vice President and Chief Financial Officer

Program Review and Investigations Committee Public Hearing

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Co-chairs and members of the Committee, I am Richard Gray, Vice President and Chief Financial Officer at the University, and I am glad to follow Dr. Bull today because I will not only address how the State's investment in UCONN contributes to the Connecticut economy, but will offer examples that further illuminate the critical link between Higher Education and the Economy.

In addition to the Committee's study, a recent business survey conducted by the Hartford Springfield Economic Partnership provided evidence of the fundamental relationship between higher education and the economy. HSEP found that:

- 86 percent of survey respondents believed that the presence of higher education in the region had a positive impact on the economy
- more companies added jobs requiring technical and advanced skills during the recession than eliminated them, and the same was reported for those firms requiring professional skills.

This last statement is of key importance to us because at UCONN we are focusing on educational programs that provide professional, technical and advanced skills. Seventy percent of our graduates remain in Connecticut – this alone is a critical economic necessity considering

that the state's population growth is flat. However, we must also assure that our graduates are prepared to build the industries and jobs of importance to our future. Our approach:

- ✓ Link performance to economic issues with a new academic plan that has goals and metrics aimed at supporting industry collaboration and technology transfer
- ✓ Support development of emerging technologies for example:
 - As a result of the State's investment provided through its 2006 Jobs for the 21st Century legislation, we are able to commit \$2 million annually to support eminent faculty conducting research, and working with industry, relating to sustainable energy. Modeled after the best practice program operated by the Georgia Research Alliance, the Eminent Faculty Program allows us to recruit scientists experienced at working with industry and with research interests that align with industry. In this case, we are working as partners with Northeast Utilities, Fuel Cell Energy and UTC Power who provide funding to match the State's support. Together we are developing leading edge technology, a workforce with advanced skills and new early stage companies entering this emerging field.
 - We continue to build expertise and facilities for Nanotechnology. The Connecticut Advisory Council on Nanotechnology said nanotechnology is "critical to the future competitiveness of Connecticut's diverse manufacturing sectors – from aerospace to advanced materials to fuel cells to pharmaceuticals and biotechnology." UCONN nanotechnology capabilities support development of new advanced materials and products for industry, and help not only to jumpstart Connecticut's current manufacturing industry, but to create new technology companies. The Institute of Material Sciences maintains specialized instrumentation and provides direct and convenient access to both faculty and industry for R & D efforts related to materials. IMS has recently established the

Nanobionics Device Fabrication Facility, geared to enable integration of emerging nanostructure materials with complex biological entities. This is specifically helpful to the biomedical industry.

- We are providing a key foundation for pioneering research in stem cells. UConn faculty have won more than \$20 million in state cell stem research funding with additional support coming from federal agencies. UCONN stem cell researchers have not only created two new human embryonic stem cell lines, we are in the process of filing a patent for a cartilage replacement technology that is a direct result of State stem cell funding, and is potentially the first of many commercial products to come from the State's investment.
- ✓ Support Entrepreneurship and Technology Transfer:
 - Also thanks to the State's investment in Jobs for the 21st Century, we are able to commit \$2 million annually to the operation of our School of Business, Center for Entrepreneurship and Innovation. The Center not only offers bachelors, masters and PhD programs that provide the talent and leadership necessary for Connecticut to move from an economy of corporate giants to one with vibrant entrepreneurial activity, but also operates an Innovation Accelerator which provides in depth support to emerging companies, and an Intellectual Property Law Clinic for start ups. CCEI helps dozens of companies each year, preparing them to access venture capital, enter new markets and generate revenue and jobs.
 - We are expanding our Technology Incubation Program (TIP), UCONN's business incubator, which already hosts 15 technology firms on three campuses including the UCONN Health Center. TIP will expand in 2010 with a new state-of-the-art incubator facility co-located with our Stem Cell Core Lab. This was a strategic move aimed at assuring that UConn will deliver on the commercial promise of the

State's investment in UConn stem cell research by providing resources to build new firms around our discoveries and recruit other stem cell companies to Connecticut. Thanks to grants from DECD and federal sources, a second TIP expansion at Avery Point is aimed at building new collaborations with maritime firms in Southeastern Connecticut to address the need to diversify from a defense economy.

We have many examples of how the University supports the needs of Connecticut industry, communities and entrepreneurs. Let me tell you about a few of our companies:

- UCONN start up IMCORP was listed in the just published Inc 5000 list for the fastest growing private companies. They ranked 1723 overall (out of 5000) and 24th within the Engineering industry category. IMCORP is based on technology created at UConn by its founder Emeritus Professor Matt Mashikian, and is the leading provider of underground power cable reliability enhancement solutions for utility companies globally. They have 25 employees and hope to expand in Storrs or a neighboring Community so they can continue the synergistic relationship they enjoy with the University.
- Just this week AllerQuest announced a distribution agreement for its product PRE-PEN®. The company's CTO, Professor Emeritus Charlotte Ressler of UCHC conducted product development and testing at our TIP incubator in Farmington where they were located for three years. AllerQuest will be the only supplier of this product globally and will manufacture PRE-PEN® in their new FDA approved production facility in Plainville. PRE-PEN® was a widely used skin testing product for over 30 years, but in 2004, PRE-PEN® was withdrawn from the marketplace. The loss of this product severely limited a physician's ability to test for life threatening penicillin allergies. In 2005, AllerQuest was formed to resurrect production of PRE-PEN® and it utilized the TIP to get started with critical laboratory work needed to win FDA approval.

- eGen was formed by UCONN alumnus and serial entrepreneur Joel Douglas and is located at our Avery Point TIP. The company has worked with the School of Engineering which provided support from students and faculty to design, construct and test the eGen technology for generation and storage of energy harvested from slow moving currents.
- Renzulli Learning, formed by UCONN R&D Corp to commercialize learning products based on the globally recognized research of Professors Joe Renzulli and Sally Reis of the School of Education reached over \$6 million in sales in FY 2008- a significant milestone - and currently has almost 80 full and part time employees. Renzulli Learning recently announced a partnership agreement with McGraw Hill.

How do companies take advantage of all that the University offers? We have a resource for that too. The UCONN Tech-Knowledge Portal, funded jointly by the University and the US Economic Development Administration, was developed to provide the access, direction and support necessary for industry and entrepreneurs to take full advantage of University resources from student talent, to faculty expertise, to special equipment and incubator space. A key role of this program is also to manage industry partnerships. To offer a few examples:

- OEM Controls, a Shelton manufacturer, utilized the Tech-Knowledge Portal program and business students to help launch a new product
- An entrepreneur in Middletown worked through the program to identify key regulations influencing their product sales and developed a marketing campaign aligning the interests of all parties and channels to the market
- Glacier Computer of New Milford utilized the Tech-Knowledge Portal program and IMS to analyze a technical problem

- Waterbury manufacturer Sidel worked with us to identify new product concepts and to analyze the potential market for them.

Of course the various school and colleges at UCONN have relationships directly with Connecticut's largest employers. Those corporations sponsor research, endowed chairs and educational programs critical to their changing needs. They include companies like Boehringer Ingelheim, Pfizer, Alstrom, United Technologies, and Aetna. And, while many of these companies are smaller today than they once were, the linkages they maintain with UConn support their competitiveness with the talent, research and innovations needed in today's economy.

Working with a state economist this past year we evaluated the University's overall impact on the Connecticut economy. A few key findings:

- Ongoing operations at UConn, including the UConn Health Center adds \$2.3 billion to Connecticut's gross domestic product on average each year.
- More than 29,000 jobs are generated in Connecticut by the University.
- In 2008 UConn received nearly \$200 million in sponsored research grants and awards, including more than \$92 million received for biomedical research at the UCONN Health Center. This funding is awarded competitively based on the credentials and research capacity of our faculty and acts as an economic driver.
- In 2008, UConn had 31 new patents issued and 85 active licenses with industry.
- At the School of Engineering, current and former faculty members have amassed more than 240 patents representing innovative tools and technologies that are changing the technological landscape.

What is next on the economic development horizon? The defense industry is being re-shaped, and the financial sector is undergoing a major restructuring. While important to our economy neither of these sectors offers great hope for the future. It will be some time before the financial services sector recovers and defense spending is likely to level off or decline in the years ahead. If the current recession has taught us anything, it's that we must diversify if we want to prosper over the long-term. We must identify new avenues of growth. To do so we offer the following recommendations:

- Create new funding pools for additional Eminent Faculty teams that will build Connecticut's commercial expertise in emerging technology areas of importance to Connecticut industry such as nanotechnology.
- Provide economic development agencies with funding that can be used to match federal grants and industry sponsored research so that the State can substantially increase the flow of competitive federal research dollars and industry R&D funds into Connecticut.
- Focus economic development programs on high value industries that are knowledge based, attract capital investment, generate revenue from outside of Connecticut and generate jobs to support a variety of skill levels, from PhD's to technicians and support staff. This could include a new risk profile and funding enacted in legislation to allow DECD and other funding agencies to help more companies cross the valley of death, with easy access to financial support for prototypes, proof of concept, and to sustain start ups until angel and venture funders will invest – which continues to move to later stages. DECD's Small Business Incubator Program is a good example of the kind of very early stage support needed.

Finally, it is important to note that there are extraordinary opportunities for economic development and growth in the healthcare and bio sciences sectors. As we look to Connecticut's immediate and long-term future, it is clear from multiple sources, including the

Connecticut Academy of Science and Engineering (CASE) and the Connecticut Center for Economic Analysis (CCEA), that the healthcare sector, biomedical research, and UConn's Health Center have the potential to be not only a means to economic recovery in the short-term, but also the cornerstone of the state's economic future over the long-term. In and of themselves the Schools of Medicine and Dental Medicine are already economic drivers. Annually, they generate between \$90 and \$100 million in research grant funding, and this means new jobs for the Greater Hartford area. Indeed, a recent study showed that every \$1 million in NIH research funding generates approximately 18 jobs.

As you know during the 2009 legislative session, and following the recommendations of the CASE report commissioned by the General Assembly, the University submitted for consideration a proposal for a replacement hospital and proposed partnership with Hartford Health Care. The proposal would leverage private investment with state investment bringing the state's only public Academic Health Center to top-tier status. A world-class academic medical center may be the lifeboat for the perfect economic storm that we are in.

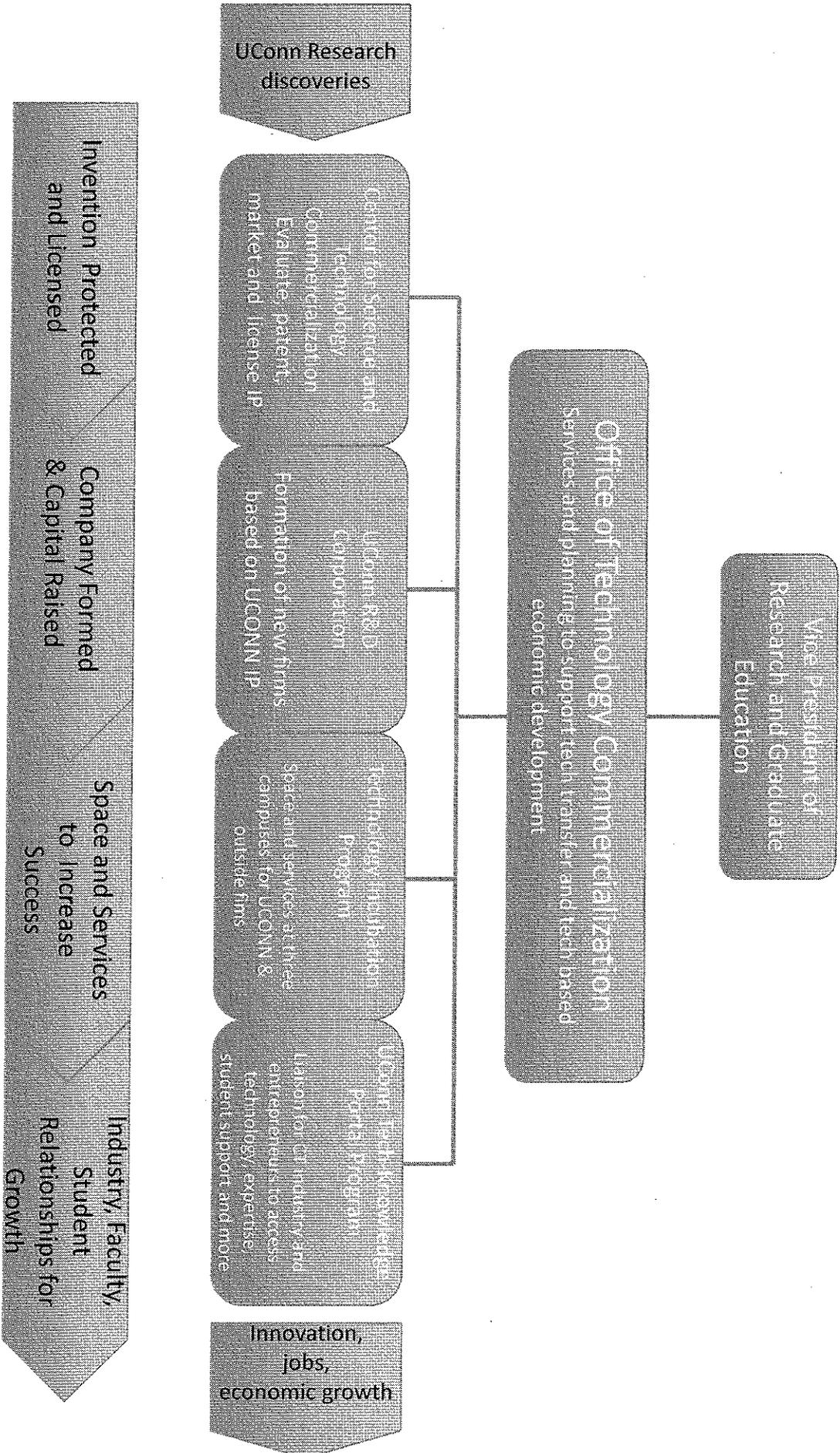
Currently, Connecticut is not realizing its potential in the health care and bio-sciences areas, although a path to this potential is clear. We can get there with a top-tier medical school; but achieving top-tier status requires a much larger clinical operation, seamlessly integrated with a larger academic center to support the training needs of tomorrow's healthcare professionals and a research enterprise at least three times larger than the UCONN Health Center's current portfolio.

The CCEA Economic Impact Analysis shows that with a replacement hospital and the partnership, by 2040 over 18,000 new jobs will be created, generating over \$3-billion annually in new personal income with the partnership. In addition, activities of the partnership will generate over \$1.3 billion in new spending each year and over \$1.9 billion in new tax revenue by 2035.

The Association of University Technology Managers uses a benchmark of 1 new discovery per million dollars of research. Clearly not every discovery results in a commercial product, but many do. If the Health Center could generate \$300 million annually in grant revenue, at \$300 million and 18 jobs per million, that activity alone will create over 3,500 additional jobs in our region. Similarly, the region could see 150 new biomedical discoveries each year to feed our biomedical industry.

As our legacy industries, such as defense and finance, struggle to maintain their job base, the University can be the source of the State's next wave of economic growth and employment. We encourage you to consider the health and bio-sciences, as well as other high technology sectors as a major driver in your work. We are available to assist in partnering with you in this very important endeavor.

In closing, I too would like to commend the Committee staff for their great work in putting this report together. Also, I thank the Committee for giving me this opportunity to testify and for its long-standing support of the University. I would be happy to answer any questions.



A continuum of services from the lab to the Connecticut economy

Examples of Licensees

<u>Large Cap</u>	<u>Small/Medium Cap</u>	<u>Start-ups</u>
Boston Scientific	ImCorp	OPEL
Air Products	Halozyme Therapeutics	MakScientific
Syngenta	Wellstat Therapeutics	Focal Point Microsystems
FMC Corp	Wolfram Research	UConn R&D Corporation

University of Connecticut Start-Up Companies

Started without R&D Corp	Year Formed
Molecular Technologies*	1988
ImCorp	1997
Inframmat	1997
Yukon Resteel*	1997
Image Content Technologies	1998
Nourheart	1999
MaksScientific	2001
Hepaticus*	2001
Ionomem*	2001
Evergen	2001
Opel	2003
Molecular Tissue Technologies	2003
E-P Therapeutics	2004
Rosewood Instruments*	2004
Aerogel Composite*	2004
Advanced Trauma Solutions	2008
AquaSeNT	2008
MC10	2008
AdhereTx	2009

Started by R&D Corp	Year Formed
BioPolymers*	1985
Targetech*	1990
Xicon Technologies*	1993
Renzulli Learning	2005
New Ortho Polymers	2005
Vestaron	2006
Advanced Trauma Solutions*	2007
Synaptic Dynamics	2007
Active Toy Technologies*	2007
Landavision	2009
Cornovus Pharmaceuticals	2009

This list represents companies formed with UCONN licensed technology. Others companies affiliated with the University exist, but have not been tracked. They typically offer consulting expertise in technical areas.

* Companies no longer operating

Legislative Program Review and Investigations Committee
Room 506, Capitol Building
Hartford, CT 06106



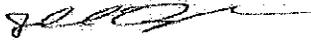
Dear Committee Chairs Kissel, Mushinsky and Members of the Committee:

I understand that your committee has conducted a study recently concerning industry clusters and economic development strategies. As a UConn alumnus, a member of the University of Connecticut Technology Incubation Program (TIP), and a supporter of the School of Engineering, I am pleased to offer an example of the critical role UConn plays to support Connecticut industry.

I came back to Connecticut from California about five years ago and was pleased to learn that UConn offered the kind of assistance to start ups that I was able to access in my prior business endeavors on the west coast. I currently hold 76 US patents and have successfully launched a number of new products and companies. I know firsthand how important it is for early stage technology firms and large corporate partners to work with academia. UConn's ability to be flexible and responsive to industry has been a key reason for my success in Connecticut. Being able to work with talented faculty and top students at UConn's Engineering School has been extremely important for my latest start up eGen. For example I have been able to test and design a new clean energy system with key support from School of Engineering faculty and students under a sponsored research agreement. I am operating the company with a significant investment from an out of state company, young engineers hired through UConn and leased space at Avery Point provided through the TIP. I can name a variety of other examples of recent collaborations that I have been involved in at UConn these past few years from activities at the UConn Health Center to the Connecticut Global Fuel Cell Center.

UCONN is already playing a key role in Connecticut's economic development. I urge you to find ways for that role to continue and grow as Connecticut industry struggles to be competitive.

Sincerely

A handwritten signature in black ink, appearing to read "Joel Douglas", with a long horizontal flourish extending to the right.

Joel Douglas