



UNIVERSITY of  
**HOUSTON**

CICEP

INNOVATION AND ECONOMIC PROSPERITY UNIVERSITIES  
AWARDS PROGRAM

CASE  
STUDY  
2014

# **Leveraging Local Resources and Fostering New Partnerships to Develop Innovation Ecosystems**

In 2014, the U.S. still led the world in intellectual property (IP) creation. However, while we may still “invent” in the U.S. we do not necessarily “innovate”. To retain leadership in a global technology-driven market place there is a critical need to close this “innovation gap”. The University of Houston (UH) believes that creating an **innovation ecosystem** which draws on the rich academic, research and cultural diversity of the UH campus serves its overall academic and research mission. By creating and delivering transformative programs combining translational research, technology innovation and entrepreneurship, UH enhances the academic experiences available to our students while expanding the research base of our faculty. In doing so, UH adds to the “entrepreneurial density” critical to ensuring a sustainable innovation ecosystem in the Greater Houston area capable of translating new knowledge and technical “know-how” into the high value products, services and jobs essential to the future economic prosperity of the nation.

The **UH innovation strategy** combines internal resources (e.g. faculty, students, intellectual property, technology gap funding, entrepreneur-in-residence support, innovation and laboratory incubator facilities) with guidance and participation from the external community. This has galvanized the interest of the UH campus community in innovation and value creation while catalyzing rapid expansion in UH start-up formation. This infrastructure not only enables and drives commercialization of UH IP and but is leveraged for commercialization of technologies developed in the surrounding community. These efforts also create significant but less tangible “value-added” benefits for UH, including enhanced credibility with federal/state agencies requiring evidence of institutional support of technology transfer when making funding decisions and increased “comfort levels” for industry sponsors/investors who view the University as a “partner” in developing commercially valuable technologies.

The recent strategic partnership between UH and the Texas Collegiate Regional Center (TCRC) is one example of how UH continues to aggressively build an “externally networked” innovation ecosystem. TCRC is an immigrant investor/EB-5 organization which has agreed to co-invest with UH in mutually agreed upon technologies from the UH IP portfolio. An initial investment




**2014 DOE National Clean Energy Business Plan Competition**, 1<sup>st</sup> Place, also winning People’s Choice Award and Audience Inventor Choice Award.  **NATIONAL CLEAN ENERGY BUSINESS PLAN COMPETITION** U.S. DEPARTMENT OF ENERGY




 **2013 ETPN Nanomedicine Award Winner**, honoring the best international nanomedicine innovations. 



**2013 Goradia Innovation Prize**, for breakthrough technologies and groundbreaking products. **HOUSTON CHRONICLE** UH spinoff means business. **2013 COMS Young Technology Award**, for young company in micro/nanotechnology. 



**NSF I-Corps Graduate, 2014 Rice Alliance Clean Tech Award**, selected as a finalist for the **2014 DOE National Clean Energy Business Plan Competition**. 

*National and International Recognition for Technology Innovation at UH*

Industry Sector	2009	2010	2011	2012	2013
Arts & Human Enrichment	2	7	4	5	15
Bio-Med Sciences	281	247	213	211	205
Community Advancement	63	117	167	148	148
Complex Systems	21	47	39	59	79
Energy	168	187	182	166	147
Materials	21	28	31	39	54
<b>Total</b>	<b>556</b>	<b>633</b>	<b>636</b>	<b>628</b>	<b>648</b>

*Sponsored Research Funds by Industry Sector at UH*

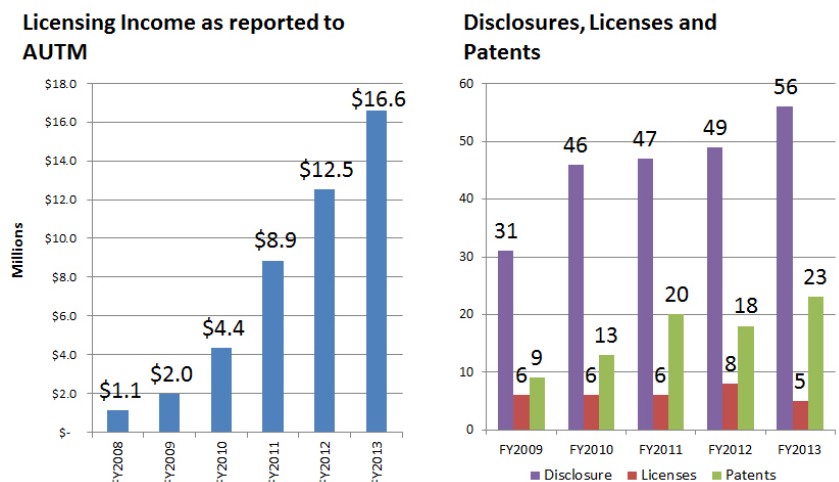
of \$25 million by TCRC will provide up to \$10 million of early-stage capital for UH technologies/start-up companies (matched by up to \$2 million from internal UH funds) over a five year investment window. The initial investment by TCRC will also partially fund construction of the Center for University Entrepreneurship (CUE) at the UH-Energy Research Park (UH-ERP) on a UH-provided ground lease where TCRC will also house and incubate its own start-up companies recruited from the external community. A comprehensive partnership agreement provides preferred access to the UH IP portfolio, standardized option/license agreements and a streamlined process for engaging UH faculty and students in sponsored research funded by TCRC portfolio companies. This partnership leverages UH strengths with those of TCRC in a highly complementary and mutually beneficial way to accelerate UH technologies to market.

The UH-TCRC partnership evolved due to an ongoing relationship with a local “angel investor” group, Houston Health Ventures (HHV), members of which also form the nucleus of the TCRC leadership. HHV principals initially served as external mentors in a joint entrepreneurial program between the Wolff Center for Entrepreneurship (WCE) in UH Bauer College of Business and UH’s Division of Research and Technology Transfer to develop entrepreneurial teams and business plans around “live” UH IP (described in Case Study 2). As follow-on to this successful collaboration, UH is partnering with HHV to deliver their new 10-week accelerator program (NextHIT) focused on health IT technologies where technology start-ups from around the nation are chosen by competitive application. The inaugural NextHIT program will be hosted at the UH-ERP Innovation Center beginning in October 2014. HHV plans for several start-ups which successfully graduate from NextHIT to receive next-stage funding from TCRC and transition into the planned CUE facility.

UH commercialization of pharmaceutical, life sciences and medical device related IP is especially important due to the proximity of the Texas Medical Center (TMC). The TMC, including UH as a full institutional member, is the largest medical treatment and education complex in the world with a combined operating budget of \$15 billion with \$3.4 billion research funding and employed 106,000 total personnel including 5,700 researchers.

Industry Sector	2009	2010	2011	2012	2013
Arts & Human Enrichment	25	1,317	98	84	339
Bio-Med Sciences	35,072	38,498	33,593	32,854	31,357
Community Advancement	8,906	17,125	19,995	22,457	22,353
Complex Systems	1,910	4,260	6,360	6,666	9,795
Energy	26,694	24,624	28,435	26,120	24,490
Materials	1,215	2,033	3,436	3,000	4,151
Total (\$ 000's)	73,822	87,857	91,916	91,182	92,485

Number of Sponsored Research Projects by Sector at UH



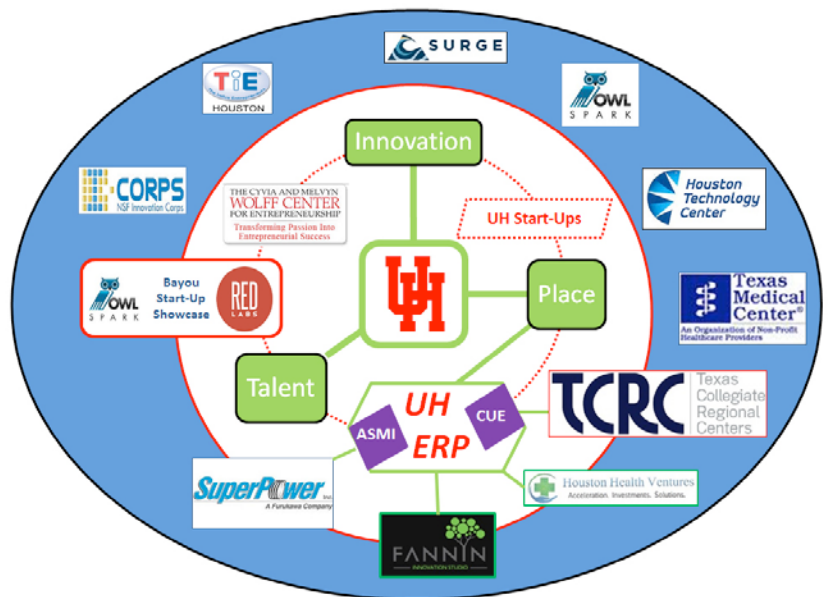
Royalty Revenue and Intellectual Property at UH.

Aligned with this goal, UH has also entered into an agreement with Fannin Innovation Studio (FIS), a Houston-based pre-venture health-care investment group to commercialize several medical technologies. By partnering with FIS, UH secures not only investment funding but more importantly access to a seasoned management team with a wealth of experience in guiding faculty inventors/start-ups through the significant FDA regulatory hurdles associated with biomedical product development. To date, this partnership has yielded a UH-FIS joint venture to commercialize a real-time MRI guided robotic surgery technology (MIROS/ARMS), to which FIS and UH have jointly committed \$500,000 in funding during the first two years. Discussions are underway to create a similar joint venture around “smart” operating room technologies jointly developed by the NSF-funded Cyber-Physical System for the Hospital Operating Room (CyBHOR) industry consortium at UH and the Methodist Hospital’s Institute for Technology Innovation and Education (MITIE) in the Texas Medical Center (TMC).

UH’s strategy is to capitalize on the wealth of innovation and entrepreneurial experience represented within the local community. By combining existing entrepreneurial programming and innovation infrastructure at UH with external mentors, technologies and infrastructure drawn from a range of local entities, including the Houston Technology Center (HTC), the SURGE Accelerator, The Indus Entrepreneurs (TIE), Fannin Innovation Studio (FIS), Houston Health Ventures (HHV) and the Texas Collegiate Regional Center (TCRC). Exemplifying this approach is UH’s recent application to become to become an NSF Innovation Corps (I-Corps) Site. As a measure of support for this strategy, all six entities have committed a founding board member to the UH I-Corps Site

START-UP COMPANY	INNOVATION/ENTREPRENEURIAL RESOURCES	FOUNDERS	FUNDING SOURCES
C-Voltaics, Inc.	UH IP, WCE Program, UH-ERP Facilities	Faculty	Grants , Contracts, Series A funding
REECycle, Inc.	UH IP, WCE Program, UH-ERP Facilities	Faculty, Graduate and WCE Students	Grants, B-Plan Prize Monies
Wavve Stream, Inc.	UH IP, WCE Program, UH-ERP Facilities	Faculty, STEM Graduate students and WCE Students	Grants, B-Plan Prize Monies
Luminostics, Inc.	UH IP, STEM-B, RED Labs, I-CORPS	STEM Graduate Students	Grants, I-CORPS, SBIR
Metabocentric Technologies, Inc.	UH-IP	Faculty	Grants, SBIR
Cyrosensors, Inc.	UH-IP, Technology Gap Fund, UH-ERP Facilities	Faculty	Grants, UH
PowerIN, Inc.	UH-IP, I-CORPS	Faculty/UH Staff	Angel
CyberSurg, Inc.	UH-IP, I-CORPS	Faculty/STEM Graduate Students	Grants, I-CORPS, SBIR
MIROS/ARMS, Inc.	UH IP, WCE Program, UH-ERP Facilities	Faculty, UH, FIS	UH-FIS Joint Venture
Halcyon Biomedical, Inc.	UH-ERP Facilities	Faculty	Grants, STTR, SBIR
Unlimiters, Inc	WCE Program, UH-ERP Facilities	WCE Student	Angel
Kandy Kruisers	RED Labs, UH-ERP Facilities	WCE Student	Angel

Start-Up companies formed at UH since 2012. To view start-ups formed prior to 2012 please [click here](#).



Creating Connections and “Entrepreneurial Density” in the Larger Innovation and Entrepreneurial Ecosystem.

Advisory Board and are actively promoting involvement of their respective members in I-Corps Site operations.

In summary, by creating a sustainable, “networked” innovation ecosystem fully integrated with the rapidly expanding entrepreneurial and investment community in Greater Houston area, UH is helping develop the “entrepreneurial density” critical for generating a sustainable Greater Houston innovation ecosystem which has national and international impact.