Testimony to the Maryland House Appropriations Committee

HB 1054

Higher Education – High Impact Economic Development Activities – Alterations

March 12, 2024

Letters Regarding Critical Importance of Faculty Inventors in Leadership Roles in Their Startup Companies

(Emphasizing the importance of amendment)

Ray Liu,
Formerly, University of Maryland College Park

Chris Monroe
Duke University,
Formerly, University of Maryland College Park

J. Marc Simard,
University of Maryland School of Medicine

Origin Wireless, Inc.
Suite 300
2600 Tower Oaks Blvd
Rockville, MD 20852

K. J. Ray Liu, Ph.D.
Founder, Chairman, and CTO

ray.liu@originwirelessai.com

February 15, 2025

Re: Concerns about Conflict of Interest policy restricting faculty inventors' involvement in startup companies that they launch

To whom it may concern,

I am the founder, former CEO, now Chairman and CTO of Origin AI that pioneers AI for wireless sensing and indoor tracking. The invention of wireless AI won three prestigious CES Innovation Awards, including CES Best of Innovation in 2021.

I was Distinguished University Professor, Distinguished Scholar-Teacher, and Christine Kim Eminent Professor of Information Technology at Electrical and Computer Engineering Department of the University of Maryland, College Park, from where I retired after over three decades of career in education. My research contributions encompass broad aspects of signal processing and communications with over 10 books, 900 referred publications and 200 patents. I have trained 76 doctoral/postdoctoral students, of which about 30 were faculty in major universities worldwide and 12 are now IEEE fellows. According to Mathematics Genealogy Project, I have had over 200 doctoral descendants.

I was elected and served as 2022 IEEE President and CEO. I am the recipient of two IEEE Technical Field Awards: the 2021 IEEE Fourier for Signal Processing and the 2016 IEEE Leon K. Kirchmayer Graduate Teaching Award. I also received IEEE Signal Processing Society 2014 Norbert Wiener Society Award and 2009 Claude Shannon-Harry Nyquist Technical Achievement Award.

Recognized as a Web of Science Highly Cited Researcher, I am a member of National Academy of Engineering, and a Fellow of IEEE, the American Association for the Advancement of Science (AAAS), and the National Academy of Inventors. At UMD, I was and perhaps still am the only faculty in the entire College of Engineering that has received all the annual college-wide outstanding research, teaching and service awards.

As a faculty member at UMD, we have constantly been called upon by university entrepreneurship officers if we had anything to commercialize. They said as a public university, our mission was not just to publish papers but to make a real impact on the State economy by creating jobs and prospects.

As such I founded Origin Wireless in 2013 at UMD's incubation center to develop a broadly applicable wireless sensing AI technology, using existing ambient WiFi radio

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waves to detect and monitor human activities without any wearables. I strictly followed all the advice from UMD staff, and administrators from department chair, dean, to the university president. All the university leadership knew of and even commended my award-winning company and my entrepreneurship.

However, somehow along the way, the university changed the Conflict-of-Interest (CoI) policy, making it more restrictive. Notably, this policy continued to be applied "flexibly;" in a double standard; a less successful researcher, with stronger ties to the administration, has been permitted to continue to lead his company. This same person, whose startup began in 2007 and still carried the title of President and CTO, chairing the CoI committee instructed me in 2021 to leave my leadership role at Origin, and was not permitted to participate at Origin as an officer or even as a board member. I asked him why he could, his answer was his company was small and not successful, but the university did not recognize my company as a startup anymore given its success in size and funding. But my company in 2021 was still recognized as a stage B startup in the industry and all the investment sites. There was no justification given on what basis could UMD unilaterally determine a well-recognized startup was not a startup anymore. He indicated that this was due to the State laws, there was no issue for a private university.

I asked for leave of absence but was told that was still not feasible. Given my responsibilities leading Origin, I decided to retire from the university in 2021. In 2021, Origin was still struggling in growth, with approximately 50 employees and having attracted $27M from investors. It still would be considered a typical startup. Today, it has attracted >$75M in investments, including from major companies, including Verizon, Alarm.com and Arlo. The future of Origin is very promising, and we have won many prestigious awards, including three CES Innovation Awards. When US Senator Paul Sarbanes heard our success story and wanted to learn out what our AI technology was, he went away commending that this was a great university incubated technology commercialization success story. What I didn't tell him was that we got screwed because of our seemingly success.

The Conflict of Interest restrictions were applied without justification and based on no evidence that I had behaved inappropriately or unethically during more than 10 years of leading Origin while I was at UMD. Every administrator knew and approved of what I had done; in fact, I took all the advice from the university staff. This decision has interfered with the careers not just of myself but also of my students. It is very unfortunate that UMD forced me to choose to retire from the university after more than three decades of outstanding and dedicated service to the school, its students and the State of Maryland. I considered this a betrayal to what we have been repeatedly told

ORIGIN™

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Rockville, MD 20852

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ray.liu@originwirelessai.com

that our bigger mission is to make an impact on society, not just writing papers. I should have been commended for all the hard work to pull out a technologically leading and successful company that brought pride to the State of Maryland.

Without founders to participate in building a company, there is no chance of success. In fact, the universities will see the loss of top and leading faculty and students to other places. In the end, it is a great loss for the State of Maryland.

Should you have any questions, please feel free to contact me.

Sincerely yours,

K. J. Ray Liu, Ph.D.
Founder, former CEO, now Chairman and CTO
Member, National Academy of Engineering

2022 IEEE President and CEO
President, IEEE Signal Processing Society (2012-13)

Distinguished University Professor (Ret.), and
Christine Kim Eminent Professor of Information Technology
University of Maryland, College Park

Duke Quantum Center

PRATT SCHOOL OF ENGINEERING

TRINITY COLLEGE OF ARTS & SCIENCES

Christopher Monroe
Gilhuly Family Presidential Distinguished Professor
Department of Electrical and Computer Engineering
Department of Physics
Duke University
701 W Main St, Durham, NC 27701

February 17, 2025

Dear Members of the Maryland State Legislature:

I write as former Distinguished Professor of Physics at the University of Maryland, College Park (UMD) from 2007-2021, and current (unpaid) UMD College Park Professor. My full-time position is now Presidential Distinguished Professor of Electrical Engineering and Physics at Duke University.

I am the founder of the company IonQ, which was spun-out from research I conducted at Maryland from 2007-2021, based on over $75 million of federal funding I brought to UMD. IonQ is now a public company [NYSE:IONQ] with a market capitalization of $7 billion, and has been a key element in propelling UMD to national leadership in quantum science and technology. IonQ notably established the UMD QLab as well as a joint project with UMD's Applied Research Laboratory for Intelligence and Security (ARLIS), amounting to over $20 million of additional funding into UMD. IonQ obviously played a critical role in Governor Moore's new $1 billion initiative in quantum science and technology. When I met gubernatorial candidate Wes Moore at a UMD event in February 2022, he told me that "Maryland needs more companies like IonQ!"

The establishment of IonQ was stimulated by the licensing of UMD-owned intellectual property. This agreement was essential in order launch the company by raising $82 million of Venture Capital between 2016-2020. With the IPO in 2021, we raised another $650 million to operate and grow the company. The 22 UMD-owned patents were licensed to IonQ in exchange for company equity instead of royalties.

Recent 2023-2024 sales of UMD equity in IonQ resulted in a $6 million windfall for the university, and UMD still holds approximately $7 million in IonQ stock. While 50% of these proceeds are nominally distributed to the inventors according to a prescribed formula, I was excluded from these proceeds, even as lead inventor in these patents. The reason given was that I also held external equity in the company. This was a slap in the face given what I had contributed to the university. I am sure future UMD inventors will think twice about forming a company based on UMD IP with such unique disincentives in place.

Now I understand there is a new bill in the Maryland Legislature that would further restrict faculty roles in innovative startup companies that they founded. This continued lack of support from UMD and the State of Maryland for faculty developing novel technologies will make it difficult to recruit innovative researchers, and may also encourage highly productive researchers at UMD to move to other institutions in other states that do not have such punishing policies, as I did myself. I urge you to remove this bill from consideration.

Sincerely,

Christopher Monroe
Gilhuly Family Presidential Distinguished Professor
Director, Duke Quantum Center
Department of Electrical and Computer Engineering and Physics
Duke University

UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE

J. MARC SIMARD, MD, PhD
The Dr. Bizhan Aarabi Professor of Neurosurgery, Pathology, and Physiology
Distinguished University Professor
Chief of Neurosurgery, Baltimore VA Medical Center

22 South Greene St., Suite S-12-D
Baltimore, MD 21201
410-328-6148 | 410-328-0756 FAX
msimard@som.umaryland.edu

February 16, 2025

To whom it may concern

Dear Sirs and Madams,

I am a neurosurgeon, professor of Neurosurgery, Pathology and Physiology, The Bizhan Aarabi Professor of Neurotrauma, and Distinguished University Professor at the University of Maryland School of Medicine, and Chief of Neurosurgery at the Baltimore Veterans Affairs Hospital. I also served for 2 years, until August 2024, as interim Chair, Department of Physiology. I have practiced neurosurgery for more than 30 years at the University of Maryland Medical Center, at Shock Trauma, and at the Baltimore Veterans Affairs Hospital. For over 30 years, as a neurosurgeon scientist, I have led the Neurosurgery Research laboratories focused on acute and chronic CNS pathology.

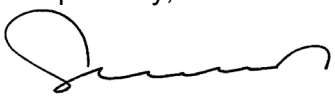
In our Neurosurgery Research laboratory, we made the original discovery of the SUR1-TRPM4 channel, and we developed the basic science and preclinical research showing involvement of the channel in numerous acute and chronic diseases of the central nervous system. I hold 33 US and international patents related to this work. A company called Remedy Pharmaceuticals was formed around my intellectual property (IP) for the purpose of reformulating and commercializing a drug called Cirara to block the channel for the treatment of stroke and traumatic brain injury. After the initial formulation development and completion of a Phase 2 clinical trial in stroke, Remedy sold the Cirara program for $120M to the pharmaceutical giant Biogen, who subsequently sponsored a large international Phase 3 trial of Cirara in stroke. After enrolling more than 400 patients world-wide, Biogen ended the trial prematurely due to logistical reasons related in part to covid-19 (unrelated to the efficacy of Cirara). After having expended well over $200M, Biogen returned the entire Cirara program to Remedy. Remedy subsequently analyzed the available data from the Phase 3 trial, revealing exciting, highly promising data that were announced at the recent meeting of the American Heart Association-sponsored International Stroke Conference in Los Angeles (February 2025). Remedy is currently preparing to initiate a new Phase 3 trial with the goal of Cirara becoming the first pharmaceutical to gain FDA approval for stroke since 1996 when the clot-buster tPA was approved.

After its founding, I became directly involved with advancing the mission of Remedy Pharmaceuticals. I was initially a member of the Scientific Advisory Board and later became a member of the Board of Directors. In these positions, I participated regularly in leadership decisions, and I actively met with potential investors. Because of the credibility that I brought as a clinical neurosurgeon, as a scientist and as an inventor, my direct and extensive involvement played a crucial role in advancing the company's success. Working closely with leadership at Remedy, I was the best positioned to explain the science to potential investors, both venture capital and individual angel investors. I have no doubt that my direct and repeated involvement played a crucial role in securing the funding that was necessary for the eventual success of Cirara and of Remedy.

It is important to note that all my activities with Remedy since its founding have been properly disclosed to University officials in yearly disclosures of conflicts of interest and were approved by the University President and by my Department Chairperson. Procedures are in place to assure proper disclosure to my trainees and to audiences to whom I lecture. All my patents are held in concert with the University and with the Department of Veterans Affairs.

My experience is that my direct involvement with our startup company was highly important to its success. I expect that other University of Maryland faculty would have similar experiences. Potential investors invariably want not only the “inside scoop” on the new technology, but they want access to the inventors responsible for bringing that new technology to the market. Potential investors need to be sold, and no one is better positioned to do that than the person(s) responsible for the discovery. Direct involvement of the faculty in the startup companies that they found is essential for effective leadership of the companies and for attracting outside funding. In my view, this direct involvement by faculty inventors can be accomplished with transparency and without sacrificing rigorous ethical standards.

Respectfully,



J. Marc Simard, MD,PhD
Professor