

Testimony to the Maryland House Appropriations Committee

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HB 1054

Higher Education – High Impact Economic Development Activities – Alterations

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FAVORABLE WITH AMMENDMENT

Maryland is remarkably deficient in developing innovative, high-impact tech companies. As Co-chair of the CUSF Research Committee, for the past two years, I have attempted to understand the weakness in the pipeline by which research discoveries at USM lead to successful commercialization. (see Figure for comparisons among national biotech regions)

This testimony is offered from my individual perspective as a senior professor, rather than as a representative of the University of Maryland School of Medicine or of CUSF.

Two factors that discourage the founding of startups at the University of Maryland have been mentioned repeatedly by faculty:

- restrictions against faculty research innovators holding leadership positions in the startup companies that they found;
- additional firewalls that restrict startup companies from benefiting from the expertise and technology associated with the research groups at the university that are led by the faculty innovators.

These Maryland restrictions are made even more discouraging for faculty researchers who are contemplating a startup to commercialize their discoveries because the waiving of conflict of interest (COI) rules requires approval from administrators. Unfortunately, this approval is granted inconsistently, in the absence of clear guidelines, suggesting favoritism. Administrators do not usually understand the core technologies being commercialized, which makes them unreliable judges of which interactions are fiscally appropriate.

Surveying several public universities in North Carolina, California and Washington, we learned that the COI restrictions at USM are not typical. Other states have policies that encourage commercialization efforts, rather than burying them in bureaucratic obstacles.

Surprisingly since its initiation in 2015, the HIEDA mechanism has been used to enable university administrators to spin off private companies that perform routine academic functions; these suspicious ventures are prone to fraud. **HIEDA has apparently never been used to facilitate commercialization of innovative discoveries from USM faculty.** Indeed, most faculty have been unaware of HIEDA – that is until the unfortunate misuse of HIEDA at UMGC.

The important potential benefit of HIEDA for the Maryland economy is the creation of companies that commercialize transformative technologies and discoveries developed by highly innovative researchers at University of Maryland. **The three companies highlighted below have each raised >\$70M**, either from investors or from sales of patents. The most successful one - IonQ - now has a **market cap of \$7bn**.

Success of startups based on discoveries by faculty depend on the direct involvement of these faculty inventors who hold the patents. I have heard this message repeatedly from USM researchers concerned about obstacles to effective commercialization of their promising discoveries. As Ray Liu explained passionately, it is essential that the faculty investigator who develops a new technology or a novel therapeutic plays a visible role in their startup company if the company is going to attract substantial venture capital. Indeed, in these three recent examples below of successful startup companies at USM, faculty patent holders had key leadership positions.

Unfortunately, in the past 5-8 years, COI regulations that limit involvement of faculty in startups have been applied more strictly. In the case of two of the three examples below, the founding faculty were told that their positions violated COI rules. Both faculty left UMCP.

This bill (HB 1054) represents an important effort to prevent the corrupt misuse of the HIEDA mechanism. These corrupt HIEDA businesses have been launched by university leadership – not by committed scientists. Serious faculty researchers are deeply committed to the intellectual and technical advances that they create. There is little or no history of faculty inventors who lead startup companies in Maryland or nationally engaging in unethical or illegal COI. Of 55 articles about COI issues in academia and medicine from 2016-2024, none concerned faculty leading a tech or biomedical startup company. †

If Maryland is going to expand the development of transformative technologies and medical therapies, and ensure that these advances benefit the state economy, the faculty who discover these major advances must be encouraged, rather than undermined. The initiative must come from the Legislature and the Governor. Given the disappointing history, the university administration can not supply this energized vision.

With the anticipated reductions in federal support for research, startup companies will play more essential roles in promoting innovative research.

Preventing fraud by university administrators is critical, and therefore this bill (SB0439/HB1054) is extremely important. However, this bill should not have the unintended effect of discouraging startups or preventing university inventor scientists from having leading roles in the companies they launch.

We are submitting a proposed amendment to HB 1054.

Examples of successful USM startup companies:

Origin – founded in 2013 by Professor Ray Liu, from Electrical Engineering at UMCP, to develop a broadly applicable wireless sensing AI technology, using Microwave Time Reversal Focusing. At Origin, Professor Liu has been CEO from the outset at the UMCP incubation center. He diligently followed all of the guidance from the UMCP administration. Moreover, the UMCP leadership, including the university president, commended his award-winning company and his entrepreneurship. However, somehow along the way, the university changed the Conflict of Interest policy, making it more restrictive. Notably, this policy continued to be applied “flexibly;” following a double standard, a less successful researcher, with stronger ties to the administration, has been permitted to continue to lead his company. Professor Liu was instructed in 2021 to leave his leadership role at Origin, and was not permitted to participate at Origin even as a board member. Given his responsibilities leading Origin, Professor Liu retired from the university in 2021. In 2021, Origin was still in an early growth phase, with approximately 50 employees and having attracted \$27M from investors. It still would be considered a startup company by normal standards.

IonQ - co-founded founded by Professor Chris Monroe from the UMCP Physics Department in 2015. From the onset (until 2023), Professor Monroe served as Chief Scientist and board member. Beginning in 2018, he served as CEO for a 9 month interim period. After UMCP changed its COI policy in 2021, Professor Monroe moved to Duke University, where he is the founding director of the Duke Quantum Center. IonQ specializes in full stack quantum computing, based on trapped atomic ion technology pioneered by Professor Monroe. In the first five years, IonQ attracted >\$70M in investments, and it now is publicly traded with a market cap of >\$7bn. In 2024, IonQ opened what it terms “the first quantum computing factory in the United States” in Bothell WA.

Remedy Pharmaceuticals - founded by UMB Neurosurgery Professor J. Marc Simard, to develop the drug CIRARA for treatment of stroke patients. CIRARA has achieved promising results in a series of clinical trials, which are still ongoing. In 2017, Remedy sold the CIRARA program to Biogen, based in

Cambridge MA, for \$120M upfront. Last year, Biogen transferred control of CIRARA back to Remedy, as this major biotech company moved away from investment in stroke therapies.

† <https://coi.research.uiowa.edu/about/news>

Of 55 articles identified on Conflicts of Interest in academia and medicine from an eight year period, just over half involved undisclosed relationships of US-based researchers with China and 30% involved compensation from industry paid to clinicians or authors. None involved faculty with leadership roles in startups devoted to commercialization of their discoveries.

