

Re: Testimony in SUPPORT of S.B. 560, Animal Testing and Research - Human-Relevant Research Funding and Animal Testing and Research Licensure

Dear Chair Griffith, Vice-Chair Klausmeier, and members of the Senate Finance Committee,

Thank you for this opportunity to submit written testimony in support of S.B. 560, which would establish a fund for human-relevant non-animal testing and research methods under the administration of the Maryland Technology Development Corporation. Our organization, the Alternatives Research & Development Foundation (ARDF), is a non-profit funding organization that supports the development of non-animal research methods and models. Through our grant programs and sponsorship of scientific conferences, ARDF supports rigorous and innovative research to advance the development of human-relevant methods and replace the use of animals in research, education, and testing. Non-animal, human-relevant research methods show great promise to advance human health and reduce animal suffering, however, considerable research investment is needed to fully realize this potential. We are writing to enthusiastically urge a favorable report of S.B. 560.

The Funding Needs for Human-Relevant Non-Animal Methods are Significant

ARDF's flagship grant program is our Annual Open grant program, which funds investigator-initiated, one-year projects up to \$40,000.¹ Established in 1993, this grant program is one of the longest-running programs of its kind. All applications are reviewed by external experts from across academia, industry, and government, who provide assessments based on our program's review criteria. Due to our budget constraints, we are currently only able to fund approximately six research projects each year, even though we generally receive at least 30 applications. Of these 30 applications, usually at least ten are scored as highly meritorious and "fundable" by our expert reviewers. However, we have no doubt that, each year, innovative and promising proposals are left unfunded due to our own budget limitations. Additional funding targeted to non-animal methods could help close this gap and ensure that we are able to benefit from the most promising research.

Putting Maryland at the Forefront of Biomedical Research

Some of the most promising human-relevant non-animal methods—microphysiological systems (MPS) such as organoids and "organs-on-a-chip", and bioprinting—also happen to currently be some of the most cutting-edge areas in biomedical science.^{2,3,4} Researchers have made astounding progress developing these technologies in recent years and we are just beginning to reap some of the exciting scientific rewards. For example, recognizing the promise of MPS for drug development, the National Institutes of Health (NIH) recently announced funding to establish research centers to accelerate the

¹ <https://www.ardf-online.org/ardf-grants.html>

² Low LA, Mummery C, Berridge BR, Austin CP, Tagle DA. Organs-on-chips: into the next decade. *Nat Rev Drug Discov.* 2021 May;20(5):345-361. doi: 10.1038/s41573-020-0079-3. Epub 2020 Sep 10. PMID: 32913334.

³ Anderson WA, Bosak A, Hogberg HT, Hartung T, Moore MJ. Advances in 3D neuronal microphysiological systems: towards a functional nervous system on a chip. *In Vitro Cell Dev Biol Anim.* 2021 Feb;57(2):191-206. doi: 10.1007/s11626-020-00532-8. Epub 2021 Jan 12. PMID: 33438114; PMCID: PMC7802613.

⁴ Ingber DE. Human organs-on-chips for disease modelling, drug development and personalized medicine. *Nat Rev Genet.* 2022 Aug;23(8):467-491. doi: 10.1038/s41576-022-00466-9. Epub 2022 Mar 25. PMID: 35338360; PMCID: PMC8951665.

translational use of this new technology.⁵ Additionally, recent federal legislation has cleared the way for the Food and Drug Administration (FDA) to consider new drug applications without requiring animal testing, relying instead on human-relevant, non-animal methods, which again indicates the accelerating importance of these technologies.⁶

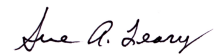
It is clear this sector is poised to rapidly expand, and Maryland should benefit from this growth. Investing in human-relevant research technologies would build on the state's already-excellent reputation as a biotechnology hub and center of excellence for biomedical research.

Leverage and Augment Current Resources

As the home of NIH and Johns Hopkins University, Maryland residents include some of the most successful and innovative biomedical researchers in the country. The many biomedical companies along the I-270 biotechnology corridor are a testament to the creativity and entrepreneurial spirit of Maryland's diverse and highly-educated workforce. Many of these companies grew out of prior investments the state of Maryland made to leverage the resources and human capital available due to NIH and Johns Hopkins. The Johns Hopkins University Center for Alternatives to Animal Testing (CAAT) is home to some of the most successful and highly recognized researchers in this sector and could help position the state as a leader in the world.⁷ Dedicated, targeted funding focused on human-relevant, non-animal technologies would allow the state to capitalize on these resources and benefit from this new technology sector.

Maryland has an impressive track record of recognizing the importance of new technologies and benefiting from wise investments in these areas. By supporting S.B. 560, Maryland could once again demonstrate its foresight and create a welcoming environment for cutting-edge research.

Sincerely,



Sue A. Leary
President
Alternatives Research & Development Foundation
Jenkintown, Pennsylvania
www.ardf-online.org

⁵ <https://grants.nih.gov/grants/guide/rfa-files/RFA-TR-23-001.html>

⁶ Wadman, M. FDA no longer has to require animal testing for new drugs. Science. 2023 Jan 13; 379(6628):127-128. <https://doi.org/10.1126/science.adg6276>

⁷ <https://publichealth.jhu.edu/2021/caat-director-thomas-hartung-honored-with-eurotox-merit-award>