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2123 Rayburn HOB – John D. Dingell Room – Hybrid Webex

Good morning Chairman Pallone and members of the Committee and Subcommittee. My name is Dr. Paul Locke and I am an Associate Professor at the Johns Hopkins Bloomberg School of Public Health in the Department of Environmental Health and Engineering. I am both an attorney and environmental health scientist, and am submitting testimony today in support of H.R. 5585, The Advanced Research Project Agency – Health Act or the ARPA-H Act, introduced by Representative Eshoo (D-CA). As you know, the ARPA-H Act creates a new agency (ARPA-H), which is charged with (1) fostering the development of new, breakthrough capabilities, technologies, and systems to accelerate innovations in health and medicine; (2) revolutionizing diagnosis, mitigation, prevention, and treatment of diseases through transformative health technologies and high-need cures; (3) promoting high-risk, high-reward innovation to develop high-need cures; and (4) insuring that the United States maintains global leadership in science and innovation and the highest quality of life and health for its citizens.

I fully support the establishment of ARPA-H and concur with the ambitious goals that this bill lays out. The ARPA-H is one of the most exciting – and important – initiatives put forth during this legislative session. ARPA-H is to be modeled after the similarly named Defense Advanced Research Projects Agency (DARPA), which has proven successful in accelerating groundbreaking, out-of-the box technologies for the military. An agency like ARPA-H is sorely needed. The SARS-CoV2 crisis brought to light the need for innovative approaches to medical and public health research. Because of urgency, commitment, and creative solutions, three successful vaccines were developed in less than a year. As conceived in this bill, ARPA-H has the potential to spark additional public health breakthroughs, especially for chronic diseases such as cancer, for which additional treatments and therapies are crucial.

To reach its full potential, ARPA-H must be established as an independent agency within the Department of Health and Human Services (DHHS). As an independent agency, it would be able to act autonomously when making decisions regarding research, funding, and the best ways to meet its goals. ARPA-H should be encouraged to collaborate with the National Institutes of Health, as the current version of the bill suggests. To some, the idea of incorporating ARPA-H into the NIH bureaucracy might seem reasonable. However, I believe that the approach set out

in H.R. 5585 is a superior way to reach the ambitious goals that this bill contains for at least three reasons.

First, as an independent agency within DHHS, ARPA-H would be able to act quickly when it comes to decisions regarding cutting edge research and the best ways to fund breakthrough advances. Technologies such as human chip models, cognitive computing technologies, 3D printing of living human tissues and organoids, and virtual humans offer great promise in helping scientists understand the diseases that afflict us and find treatments for them. Much of their promise lies in the fact that these methods are based on human biology, rather than the biology of other species. They can be developed and deployed rapidly to address emerging problems. For example, one new technology has already contributed to President Biden’s goal of cutting the death rate of cancer by providing models that better describe the biology of cancer and can be used to develop more patient personalized anti-cancer therapy.¹

Second, to be successful in fulfilling its mandate, ARPA-H needs to supplement the current biomedical ecosystem by identifying and filling neglected and underserved scientific areas to meet its goals and spark innovation.² While medical advancement has made great strides over the past decades, hundreds of thousands of Americans still die each year from diseases, such as cancer, that have been under study for the past five decades. President Richard Nixon launched the “war on cancer” more than 50 years ago with the passage of the National Cancer Act,³ and now the Biden-Harris Administration has set the ambitious goal of reducing the cancer death rate by at least 50% within the next 25 years through a multi-front approach.⁴ That is the visionary goal behind ARPA-H and expressed in the bill that Representative Eshoo has introduced.

Third, under the ARPA-H Act, this new agency will have the freedom to act independently to meet its goals while still coordinating with NIH to “ensure that the programs of ARPA-H build on and are informed by scientific research supported by the NIH.”⁵ Establishing ARPA-H outside of NIH distinguishes its individual goals from the larger mission of NIH which will allow the agency to completely devote its resources and decision-making authority towards transformational innovation.

In summary, I fully support H.R. 5585, The ARPA-H Act. As a public health professional who has studied and analyzed the legal and scientific issues surrounding how to improve biomedical science by adopting and encouraging human-centric methodologies, I recognize the important role ARPA-H and this bill could play in solving the health problems associated with chronic diseases. If structured as an independent agency within DHHS, ARPA-H will be a springboard

¹ See Aaron Hudson, *Organ-Chips and Omics Advance Cancer Research*, GENETIC ENGINEERING & BIOTECHNOLOGY NEWS (Feb. 2, 2022); Han Fan, Utkan Demirci & Pu Chen, *Emerging organoid models: leaping forward in cancer research*, 142 J. HEMATOLOGY ONCOLOGY (2019).

² White House Office of Science and Technology Policy, *Advanced Research Project Agency for Health (ARPA-H): Concept Paper* (June 2021) (<https://www.whitehouse.gov/wp-content/uploads/2021/06/ARPA-H-Concept-Paper.pdf>).

³ Gabrielle Emanuel, *50 years ago, Nixon gave the U.S. a ‘Christmas present,’ launching the war on cancer*, NPR (DEC. 23, 2021).

⁴ Press Release, The White House, Fact Sheet: President Biden Reignites Cancer Moonshot to End Cancer as We Know It (Feb. 2, 2022), <https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/02/fact-sheet-president-biden-reignites-cancer-moonshot-to-end-cancer-as-we-know-it/>.

⁵ Advanced Research Project Agency-Health Act, H.R. 5585, 117th Cong. § 2 (c)(4)(E) (2021).

to a new way of conquering diseases that have so far eluded our public health and medical efforts.

Thank you for considering this testimony. The views expressed herein are my own, and do not necessarily reflect the official policy or position of the Johns Hopkins University or the Johns Hopkins Bloomberg School of Public Health.

Please feel free to contact me at plocke@jhu.edu if you need additional information.