



The Health Advanced Research Projects Agency (HARPA)

There are more than 9,000 known diseases, yet there are approved treatments for only 500. Despite medical innovation over the last century, millions of Americans with deadly and debilitating conditions have seen no progress. Basic research alone, while essential, is not going to cure the thousands of diseases that impair or take millions of lives every year. Take the sobering fact that nine out of ten pancreatic cancer patients die from the disease- a mortality rate that has not improved in more than forty years. Pancreatic cancer is just one example of the limitations of the federal research system to address deadly diseases with urgency. The current path from basic science to applied research to commercial viability is too slow. Research is not getting to patients.

Through the creation of HARPA, a Health Advanced Research Projects Agency, President Trump has a unique and historic opportunity to lead the development of new capabilities in biomedical research. Modeled after DARPA, within the Department of Defense, HARPA would leverage federal research assets and private sector technologies to build life-saving capabilities for diseases that have not benefited from the current system.

DARPA is the gold-standard for innovation and accountability. In 1958, President Eisenhower established DARPA to make pivotal investments in breakthrough technologies for national security. Its transformational developments include the Internet, GPS navigation, night vision, robotic prostheses, and stealth technology. The DARPA model has been replicated in the intelligence, homeland security, bioterrorism, and energy fields. The U.S. spends more than \$3.4T on healthcare annually. Remarkably, this results-driven framework does not yet exist for federal biomedical and health research.

DARPA's success proves there is an effective government model for translating foundational science to product. HARPA's identical operating principles would advance federal scientific research "from bench to bedside". High-impact investments would be made on a contract—not grant—basis. Every program would have performance milestones with strict accountability. Each program manager would serve a limited term. A flat, nimble structure would ensure efficiency. With an autonomous structure, it would be singularly focused on rapid translation of existing biomedical opportunities into patient-care capabilities.

HARPA would exist within Health and Human Services (HHS), and would work synergistically with the NIH, FDA, CDC, and CMS. The HARPA ecosystem would include the commercial market; biotech and healthcare companies; venture capital and philanthropy; academic institutions; and government and regulatory agencies. Private sector partners and federal regulatory agencies would be integral to the program planning process from the outset, rather than brought in at the end.

Priority projects would include:

- 1) A next-generation MRI machine that allows imaging and detection at a microscopic level. Portable and affordable, it would make high-quality detection accessible in combat and rural areas.
- 2) A cortical eye prosthesis that communicates directly with the brain— just like DARPA's robotic LUKE arm—to improve the lives of 7 million blind Americans, including 160,000 vision-impaired veterans.
- 3) Battling the opioid crisis on two fronts: 1. developing a technological infrastructure that could house a national database that tracks provider and distributor practices to curb abuse; 2. developing a non-addictive, non-euphoric analgesic alternative to opioids to prevent addiction and save lives.

With HARPA, advancements in biotechnology, supercomputing, big data, and A.I. would be put to work to save lives.

HARPA: Ecosystem

