DEFENSE ADVANCED
RESEARCH PROJECTS AGENCY

Autonomous Diagnostics to Enable Prevention and Therapeutics (ADEPT)

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The Autonomous Diagnostics to Enable Prevention and Therapeutics (ADEPT) program supports individual troop readiness and total force health protection by developing technologies to rapidly identify and respond to threats posed by natural and engineered diseases and toxins. A subset of ADEPT technologies specifically support use by personnel with minimal medical training, delivering centralized laboratory capabilities even in the low-resource environments typical of many military operations. The program is part of a portfolio of DARPA-funded research aimed at providing options for preempting or mitigating constantly evolving infectious disease threats.

The ADEPT program's four thrusts cover simple-to-use, on-demand diagnostics for medical decision-making and accurate threat-tracking; novel methods for rapidly manufacturing new types of vaccines with increased potency; novel tools to engineer mammalian cells for targeted drug delivery and in vivo diagnostics; and novel methods to impart near-immediate immunity to an individual using antibodies.

ADEPT has pioneered use of nucleic-acid-based anti-infective technologies, valuable for their efficacy and adaptability. These tools—primarily coded genetic instructions to the body on how to produce its own protective antibodies against a specific threat—have the advantages of being easily manufactured at scale using largely synthetic processes, transported and stored without many of the cold-chain logistics required by traditional medical countermeasures, delivered with near-immediate efficacy, and safely expressed in the body for only a limited duration, causing no permanent alteration to the genome.