



# Medical Readiness, Warfighter Performance and Rapid Return to Duty

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# Non-Endorsement Disclaimer



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# Portfolio Directions and Emphasis

**Injury Prevention &  
Treatment**

**Optimized Cognition &  
Physiological Health**

**Psychological Health &  
Resilience**

**Performance in Extreme  
Environments**

## **Priority Projects:**

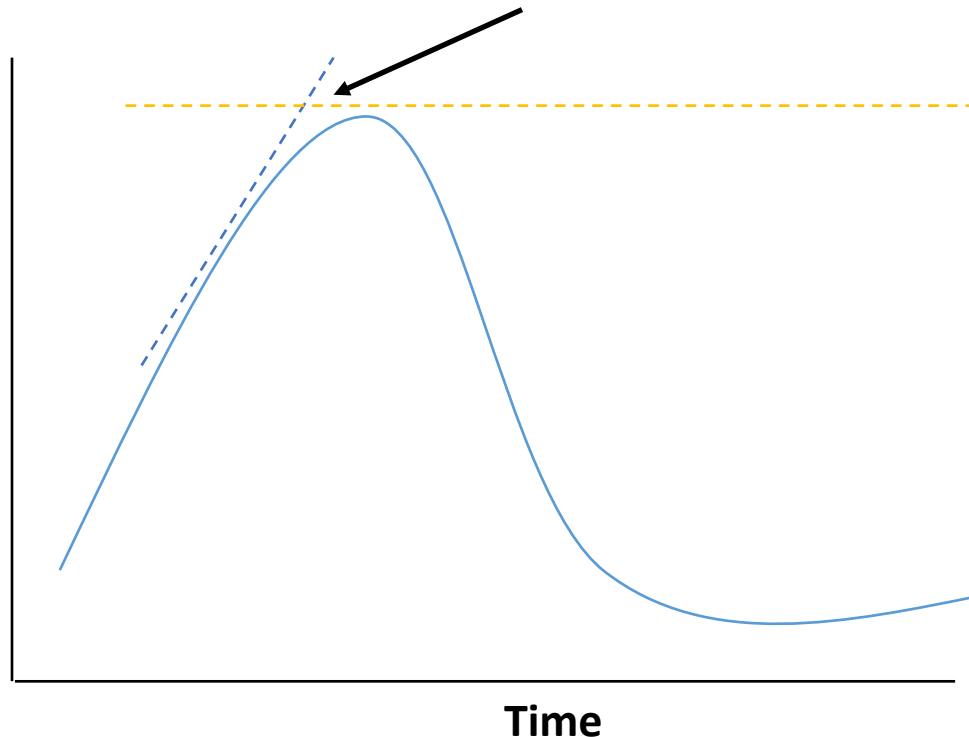
- **Medical Contributions to Lethality–Protection and Survivability**
  - Validated Blunt/Blast/DE Monitoring
  - Improving Joint Medical Planning Tools/Injury Modeling
- **Novel Brain Health Initiatives and TBI prevention**
  - Glymphatic Monitoring and Manipulation...drive standards and TBI linkages
- **Digital Phenotyping for Behavioral Health & Performance | 62K-person Yr-long data sets**
  - Crew Readiness Endurance and Watchstanding (CREW, Navy)
  - Optimizing the Human Weapons System (OHWS, Army)
- **Advanced behavioral health management (Acute Stress Response)**
- **Neurosensory/Musculoskeletal Detection and Far-forward treatments**
- **Sustained Performance and Biomedical Performance Enhancement**
  - Heat/Cold/Altitude monitoring and predictions....Enabling of AI/ML for preventive actions
  - Maintain/Outpace peer competition in novel pharmaceuticals, brain stimulation efforts



# Translations of AI/ML Capabilities...

## How do we proceed with momentum WRT performance?

Activation/Action of AI Relevant Predictors:  
How do we transition at the right stage?



- Data at Scale
- False +/-
- What is the bottleneck?
- Value of novel teams for AI
- Criticism of novel teams for AI
- How to enact improvements?
- How to be adequately critical of new approaches/new teams?
- Deep learning and brittle AI for operational context? Black box solutions will be un-assessable
- What advances in AI are needed to enable progress? DoD Standards/Good Practices

**'Approach to transition' necessitates open partnerships, data at scale**





# Strategic External Factors...

1. AI
2. Quantum
3. Integrated Circuits/Semiconductors
4. Brain Science
5. Genomics and Biotechnology
6. Clinical Medicine and health
7. Deep Space, deep earth deep sea and polar research

DoD/US Govt....

Strong Medical Investments

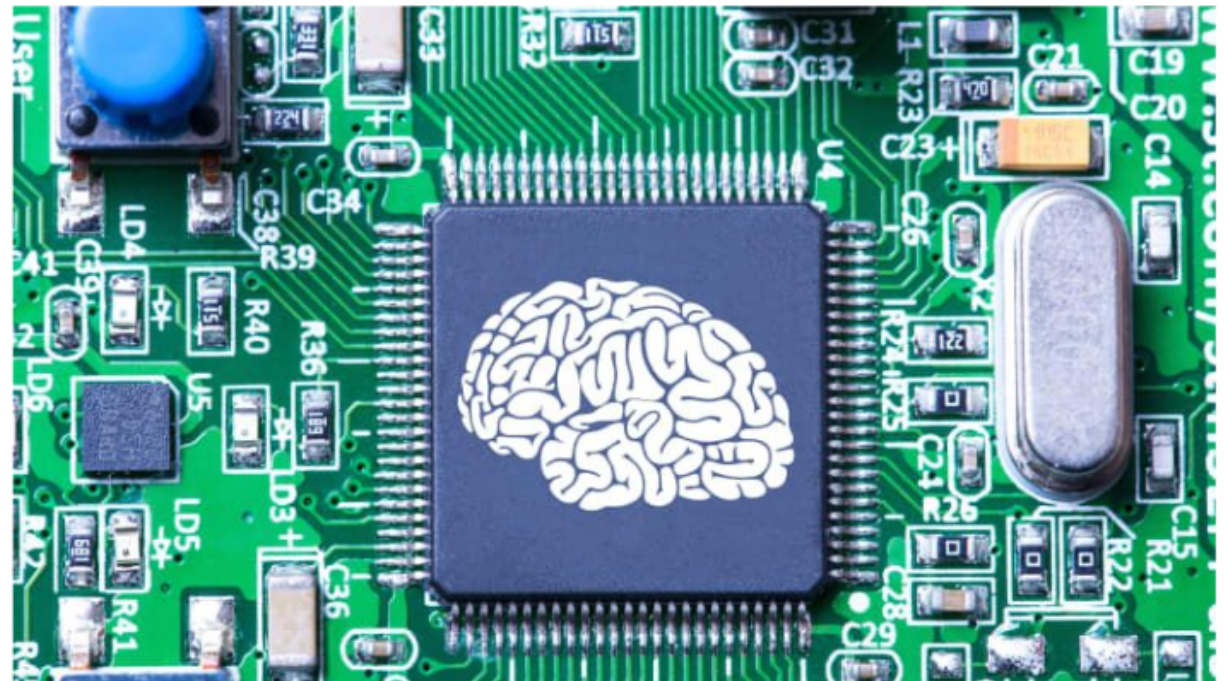
Supportive Medical Investments

Marginal Medical Investments

TECH

**In battle with U.S., China to focus on 7 'frontier' technologies from chips to brain-computer fusion**

5 YR Plan



China laid out seven "frontier" technologies in its 14th Five Year Plan. These are areas that China will focus research on and include semiconductors and brain-computer fusion.

**What will our posture be when these areas fuse in 10 yrs?**