Creare LLC.

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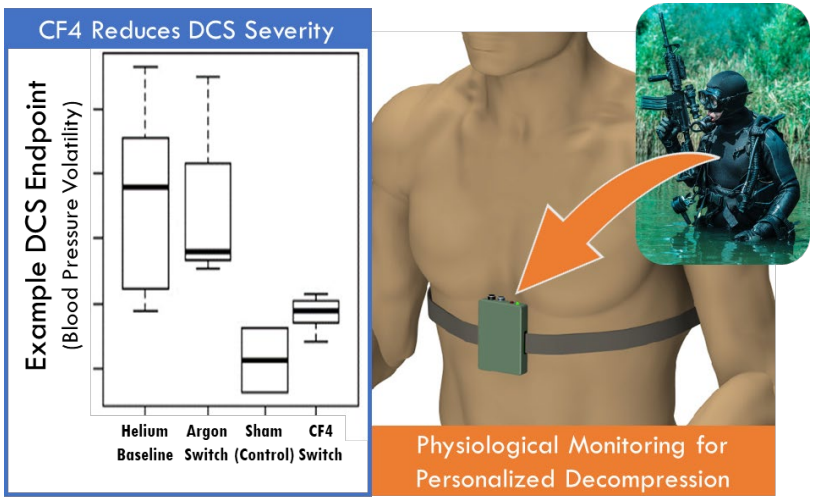
SINCE ITS FOUNDING IN
1961

>160 Employees
>1,250 Jobs Created from SBIR/STTR
>440 Phase II SBIR/STTR Awards
>100 Patents from SBIR/STTR



Solicitation:

Integrated Microsystems to Sense and Control Warfighter Physiology

DARPA/BTO SBIR Sponsor
SB131-004 Topic Number
Improved Performance Primary Innovation
Survivability Secondary Innovation

Advanced Technologies for Reducing Decompression Obligation and Risk

Decompression sickness (DCS) remains a mission-limiting factor in the design and execution of military diving operations. While decompressing, divers are limited in vertical mobility, making them susceptible to detection and threatening their survivability.

Creare demonstrated the effectiveness of a gas switching strategy where divers breathing a light gas (helium) switch to a heavy gas (carbon tetrafluoride, CF4) with low solubility and diffusivity prior to decompression. The primary objective of their effort was to collect toxicity data in support of an investigation new drug (IND) application to the Food and Drug Administration. The secondary objective was to further advance development of a physiological monitor that provides divers with real-time feedback on their DCS status and risk. Ultimately, they expect the monitor to be integrated with a dive computer and to individually tailor decompression schedules based on real physiological data.

IMPACT TO THE MISSION

This work will provide DARPA and the U.S. military with the means to significantly and safely reduce decompression obligation following diving missions. These profiles will, in turn, improve the diver's survivability and increase the chances of mission success. The technologies are also relevant to other military diving scenarios, such as salvage, explosive ordnance disposal, and disabled submarine rescue. Finally, they could improve the safety, efficiency, and capability of commercial and civilian technical diving.

BEYOND PHASE II

Creare's collaborators at Duke University received NAVSEA funding, approximately $890k, to investigate the potential of CF4 over a wider range of dive profiles with additional mission-relevant endpoints. Creare was recently awarded a Phase I STTR from ONR to refine and improve the physiological monitor into a mission-relevant diver-wearable package. Creare has received 13 Licensing Agreements, 3 Spinoff Companies, and over $5.4B in Commercialization from SBIR/STTR efforts.

This research was developed with funding from the Defense Advanced Research Projects Agency (DARPA). The views, opinions and/or findings expressed are those of the author(s) and should not be interpreted as representing the official views or policies of the Department of Defense or the U.S. Government." (Approved for Public Release. Distribution Unlimited 07/01/21)