SOCOM-125: Cold Blooded

SPONSORING ORGANIZATION
United States Special Operations Command (SOCOM)

Challenge
U.S. Army Medics need a solution to keep blood cool for extended periods to enhance shelf life and increase field survivability.

RELEVANT CONTEXT

- Readily available cool blood enables medics to provide critical care to injured soldiers, significantly increasing the chances of survival for those in need of blood transfusions.
- Currently, US Army medics use various cooler-like packages with icepacks and foam insulation for blood storage. These packages have cloth exteriors and are limited by the duration of cooling they can provide.
    - The smallest package stores a standard-sized bag of blood (550ml) and an icepack, keeping the blood viable for a maximum of 24 hours.
    - The medium-sized package stores three bags of blood, maintaining usability for up to 38 hours.
    - The largest container holds up to six bags of blood and can keep them cool indefinitely if connected to a power source.
- The small and medium packages are limited in cooling duration, only keeping blood usable for 24 and 36 hours, respectively. The large package, while offering indefinite cooling, has two major constraints: it requires an electrical power source and is not portable due to its size.
- The method of blood storage and transportation needs to be durable and portable, allowing for cool blood to be readily available in the field. Additionally, it must be "squish-proof" and indestructible. Portability includes lightweight construction and the ability to operate without an electrical power source.
- The most pressing challenge is keeping the blood cool for as long as possible without sacrificing efficiency and portability.

IMPACT
If advancements in blood preservation techniques are made, then battlefield medicine will be revolutionized, significantly increasing the number of lives saved across the DoD.

POTENTIAL BENEFICIARIES
Special Forces Medics, Broader Medical Field, Army Medics, Military Doctors

TEAM RECOMMENDED SKILL SETS
Engineers, Medical Students, 3D Printing, Chemical Engineering

RESOURCES

1. Please provide links to helpful resources in relation to the problem

PROBLEM SPONSOR

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