

WHO WE ARE

Located at Wright-Patterson Air Force Base, the 711th Human Performance Wing (HPW) and the Air Force Research Laboratory are unique organizations that bring together scientists, engineers, and aeromedical professionals to protect our #1 asset – **our Airmen and Guardians**.

WHAT WE DO

Our mission is to discover, demonstrate, and transition knowledge products and technology solutions from the full spectrum of bioscience, biotechnology, and aerospace medicine, to enable, enhance, sustain, and restore the health and performance of our multi-domain warfighters.

LEARN MORE ABOUT
'WHAT WE DO'...



WHAT IS BIOTECHNOLOGY?

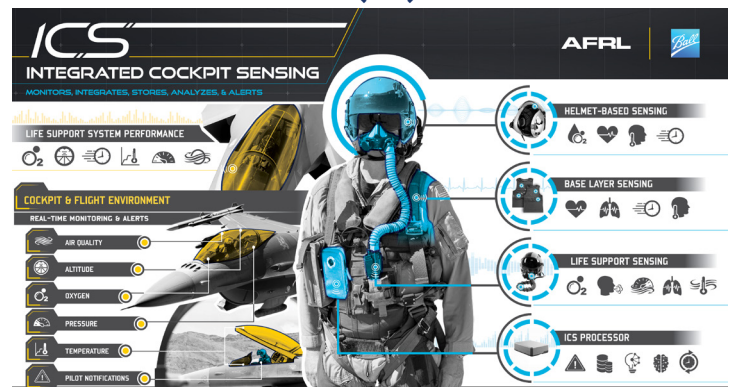
Biotechnology is an engineering discipline that works with living systems to produce a wide range of technologies and products. Much like artificial intelligence, this disruptive technology will have global economic, socio-political, and military impacts.

SOLUTIONS

for our Airmen and Guardians

- Expanding aeromedical capabilities in the Arctic, Space, and austere environments
- Improving autonomous aeromedical evacuation, en route care, and remote telemedicine, telementoring, and telemonitoring (TM3) capabilities
- Producing fundamental understanding of biological mechanisms and biomarkers indicative of physiological and cognitive states and their responses to operational stressors
- Delivering personalized predictions of response to stressors & optimized interventions
- Leveraging systems and synthetic biology to accelerate human adaptation
- Enabling personalized systems biology and neuroscience approaches
- Augmenting decision making via novel Artificial Intelligence and Machine Learning (AI/ML) paradigms
- Sustaining and enhancing the cognitive and physical performance in Airmen/Guardians in operational environments
- Improving human machine teaming with autonomous systems thru autonomies responding to changes in operator state
- Enabling brain-machine interfaces with autonomous weapons systems

INTEGRATED COCKPIT SENSING (ICS)



FOCUS



COGNITIVE STATE AUGMENTATION



ADAPTS



MULTIFACETED TECHNOLOGY with far-reaching impacts

Our solutions help save lives, reduce costs, and improve mission readiness and effectiveness. Read more on how these solutions not only address the immediate needs of our Airmen and Guardians but also deliver comprehensive tools that drive them into the future.



Synthetic Biology Enhances Airmen Resilience

AFRL is leveraging advances in synthetic biology to optimize Airmen performance and health, and to develop next-generation materials to provide an asymmetric advantage to our warfighters and weapon systems.



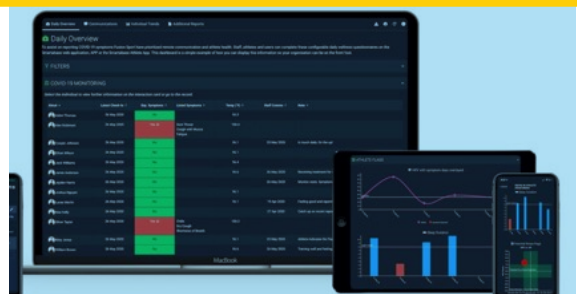
iNEURALS HELPS TRAIN PILOTS FASTER

The 711th HPW launched its individualized learning system (iNeuralS) in 2020. This effort will speed up pilot training by 20-40% through brain stimulation.



AIRCRAFT DECONTAMINATION

To ensure the health and safety of Airmen amid the pandemic, a team from the Air Force Research Laboratory evaluated various aircraft decontamination methods and identified the use of heat as the most promising technique.



COVID-19 EARLY WARNING WITH WEARABLES

The Air Force Research Laboratory with partners has launched an off the shelf cloud database and wearable device solution that provides early warning of infection with notification and dashboard monitoring to reduce pandemic impact on unit readiness.



Reducing Physiological Events

The Integrated Cockpit Sensing (ICS) system combines multiple sensing technologies to provide onboard alerting to pilots without adding workload. ICS measures pilot vital signs, air quality, cockpit environment, and respiratory function – reducing mishap probability. ICS also logs data to aid root-cause analysis and reduce aircraft grounding.

