

UBC STAR is the Western Canada hub for applied R&D improving human performance in extreme environments.

Noteworthy successes since 2014 launch

\$41.2M applied R&D catalyzed

\$3.8M equipment and infrastructure investments made

110+ student research opportunities created

100+ private sector partners engaged

Expanding and diversifying research funding from non-Tri-Agency sources

90 funding proposals submitted **62%** proposal success rate

\$2.2M Department of National Defence-funded advanced materials network

\$7.2M Department of National Defence (IDEaS 1B) contracts

\$4.5M Industrial and Technological Benefits (ITB) investments

Catalyzing research opportunities that benefit Canadians

- Continuous dialogue with government funding agencies, including PacfiCan.
- Daily tracking of safety and security opportunities to match UBC researchers to R&D competitions.
- Technical support for prototyping, device and materials testing.
- Multi-disciplinary partnership development, project implementation and research development support.

Partnership-driven with 100+ private sector collaborations in B.C. and around the world

- Raytheon
- BAE Systems
- Lululemon
- Arcteryx
- PRE Labs
- Patriot One Technologies
- EPIC Ventures
- Beyond Aerospace
- TANKA
- TerraSense Analytics
- KF Aerospace
- L3Harris
- MDA
- Innovex Engineering
- Arc4dia
- DRDC Centre for Security Science
- DRDC Toronto, Valcartier, Suffield
- Textron
- Apparel Innovation Centre
- Patronus

Convener of research talent from across both UBC campuses and beyond

- UBC Faculty of Management
- UBC School of Engineering
- UBC Irving K. Barber Faculty of Science
- UBC Irving K. Barber Faculty of Arts and Social Sciences
- UBC Faculty of Creative and Critical Studies
- UBC Faculty of Forestry
- UBC College of Graduate Studies

Tailored support for all applied R&D disciplines, including high-impact social research

IDEAS	Proactive deterrence of 'grey' threats	\$294,574
IDEAS	Improving CAF veterans' returns to civilian life	\$200,000
CIMVHR	Understanding the financial wellbeing of survivors of veterans	\$225,769
MINDS	A digitalized community-based CAF recruitment and referral portal	\$31,530
MINDS	Grey zone conflict governance and organization	\$18,800



Researchers from three Western Canadian universities coming together to discuss the Comfort-Optimized Materials for Operational Resilience, Thermal-transport and Survivability (COMFORTS) network.

We detect hazards to human safety and security. We create protective materials for people, structures and vehicles. We provide decision-support to individuals, business and governments and engage with partners and researchers from all disciplines to create regional opportunities for R&D investment.

HAZARD SENSING

Improving public health

DR. SEPIDEH PAKPOUR, School of Engineering
IDEaS COVID-19 Challenge Competitive Project

Dr. Pakpour and her team are developing a wearable device providing real-time COVID-19 sensing using an integrated rPPG-based screening and sweat-based biosensing approach.

Sensing and tracking threats to national security

DR. ZHENG LIU, School of Engineering

Indigenous-owned partner firm TerraSense was incubated in UBC STAR facilities before expanding to nearby officers where it works with UBC researchers including Dr Jiang Liu. Together we have secured over \$4M in DND contract support for development of the Multimodal Input Surveillance and Tracking (MIST) system.

DECISION SUPPORT

Enhancing police training

DR. MEGAN SMITH, Faculty of Creative and Critical Studies

Dr. Smith is working in collaboration with the Royal Canadian Mounted Police to create augmented and virtual reality immersive training environments, increasing the realism of police training.

Helping Canadian Armed Forces Veterans find post-military careers

DR. ERIC LI, Faculty of Management

Dr. Li is working together with the UBC Vancouver campus's Institute for Veterans Education and Transition (IVET) to use AI techniques to match veterans with civilian occupations and help them transition to post-military careers.

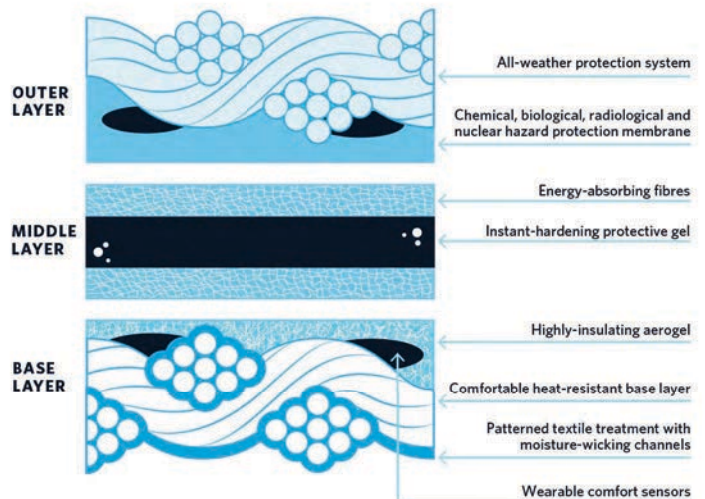
PROTECTIVE MATERIALS

Comfort-Optimized Materials for Operational Resilience, Thermal-transport and Survivability

DR. KEVIN GOLOVIN, School of Engineering

UBC STAR hosts the \$2.2M DND-funded COMFORTS micro-network in collaboration with colleagues at the Universities of Alberta and Victoria — part of UBC STAR's extended (STAR West) network of researchers working together on advanced materials innovation.

The COMFORTS interoperable dismantled soldier protection system



UBC STAR IMPACT RESEARCH FACILITY (SIRF)

WHAT IS SIRF?

UBC STAR's Impact Research Facility is the only Canadian university-based ballistic, blast, and penetration lab open to anyone wishing to conduct materials research or testing to NIJ, STANAG, and customized standards.

We offer fee-for-service testing for materials you provide, support your use of our facility, and connect you to researchers ready to undertake collaborative R&D.

BALLISTIC TESTING

UBC STAR BALLISTIC TESTING

UBC STAR offers timely ballistic materials testing. Send us a sample for testing against known standards, or to point of material failure, or visit us and work collaboratively in our facilities.

Our high-precision testing equipment includes calibrated clay blocks and a laser-measured Ballistic Torso Testing Rig. We can meet your need for speed in simulating challenges for your protective materials, including vehicle, body armor, helmets (sports and military), and a variety of other applications. We are experts in protective materials impact simulation: from ground debris through IED explosion and space debris, using conventional and unconventional custom projectiles, up to 0.50 caliber.

PRICING

Description	Price/Unit
Pricing Inquiries Please contact UBC STAR's Technician Ryan Mandau to obtain up-to-date pricing information. ryan.mandau@ubc.ca	

The above options (excluding Facility Rental) include a range technician, high speed camera, and all standard calibre consumables – regular bullets, powder, casings, etc. Special projectiles, such as 0.50 calibre, fragment simulator projectiles, sabots, and other uncommon or custom projectiles are subject to additional costs and availability.

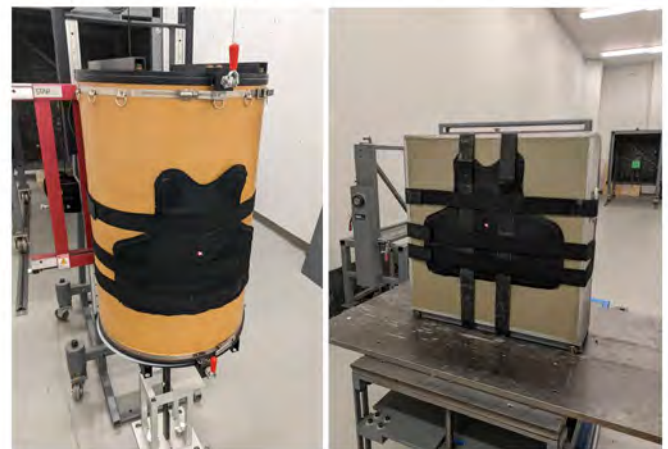
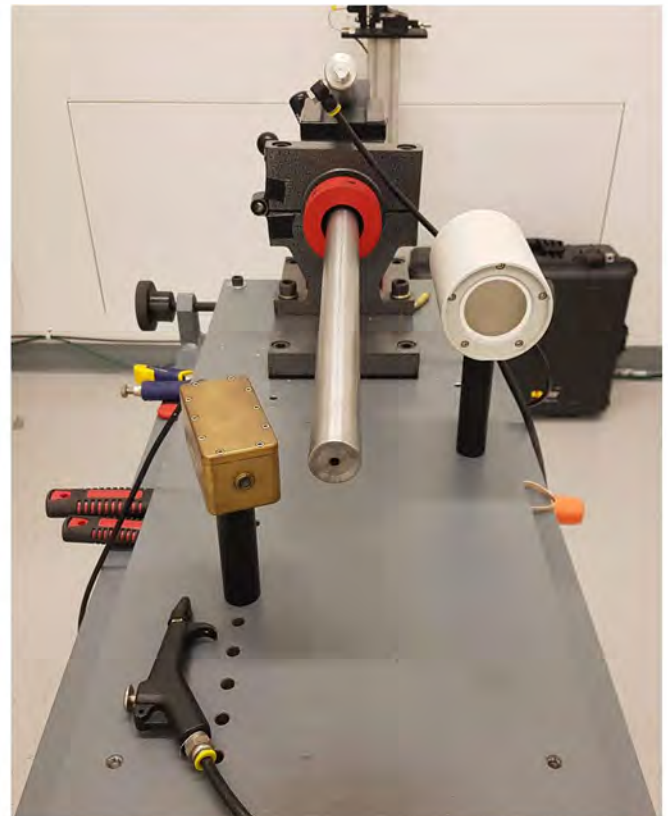
Facility Rental

The UBC STAR Ballistic Testing facility is available to be rented out to approved teams who require additional layers of discretion. Please contact us for further details.

RESULTS AND REPORTING

UBC STAR will provide reporting to satisfy any requirements.

We will provide your team with a complete dataset and our technician is available to assist in translating data gathered into a specific standard or into a preferred reporting format.



CONTACT

UBC STAR | Survive and Thrive Applied Research

Dr. Keith Culver, Professor and Director
250-317-6326 | keith.culver@ubc.ca

Ryan Mandau, UBC STAR Research Technician
250-575-1095 | ryan.mandau@ubc.ca
Technical and pricing inquiries



UBC STAR IMPACT RESEARCH FACILITY (SIRF)

WHAT IS SIRF?

UBC STAR's Impact Research Facility is the only Canadian university-based ballistic, blast, and penetration lab open to anyone wishing to conduct materials research or testing to NIJ, STANAG, and customized standards.

We offer fee-for-service testing for materials you provide, support your use of our facility, and connect you to researchers ready to undertake collaborative R&D.

BLAST TESTING

UBC STAR BLAST TESTING

UBC STAR offers multi-purpose blast simulation testing, from undervehicle improvised explosive devices to aircraft and hard landing seat impacts.

This three ton, custom-designed blast rig is the only equipment of its kind available to university sector researchers and private and public sector organizations.

At approximately 1/3 of maximum power, the simulator accelerates a 10 kilogram titanium piston to over 1,000G. The piston is driven by compressed gas breaking a shear pin to release the piston. Blast force simulation is easily controlled by choice of shear pin diameter and material. Effects are observed via high-speed camera and on-board instrumentation.

The impact rig is adaptable to any configuration dependent on the partners requirements.

PRICING

Description	Price/Unit
Pricing Inquiries Please contact UBC STAR's Technician Ryan Mandau to obtain up-to-date pricing information. ryan.mandau@ubc.ca	

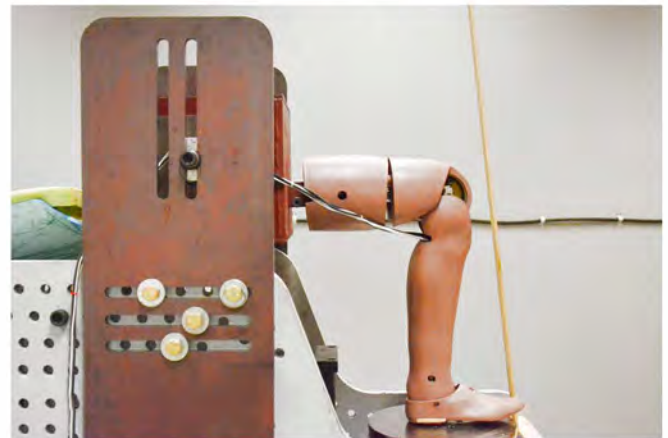
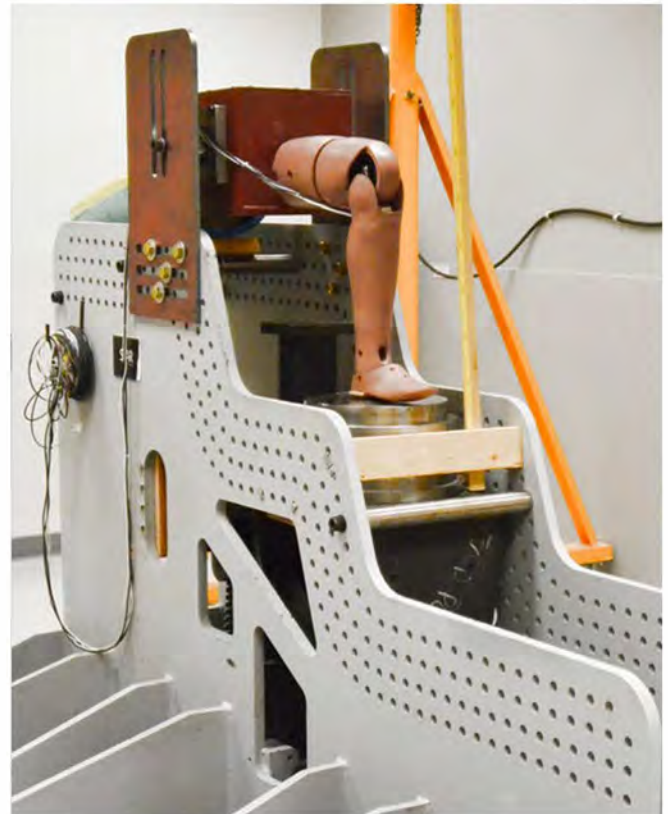
Facility Rental

The UBC STAR Blast Testing facility is available to be rented out to approved teams who require additional layers of discretion. Please contact us for further details.

RESULTS AND REPORTING

UBC STAR will provide reporting to satisfy any requirements.

We will provide your team with a complete dataset and our technician is available to assist in translating data gathered into a specific standard or into a preferred reporting format.



CONTACT

UBC STAR | Survive and Thrive Applied Research

Dr. Keith Culver, Professor and Director
250-317-6326 | keith.culver@ubc.ca

Ryan Mandau, UBC STAR Research Technician
250-575-1095 | ryan.mandau@ubc.ca
Technical and pricing inquiries



UBC STAR IMPACT RESEARCH FACILITY (SIRF)

WHAT IS SIRF?

UBC STAR's Impact Research Facility is the only Canadian university-based ballistic, blast, and penetration lab open to anyone wishing to conduct materials research or testing to NIJ, STANAG, and customized standards.

We offer fee-for-service testing for materials you provide, support your use of our facility, and connect you to researchers ready to undertake collaborative R&D.

DROP TOWER PENETRATION TESTING

UBC STAR DROP TOWER

The UBC STAR drop tower was custom designed and certified to meet NIJ standards.

With up to 4.5 metres of drop length, the UBC STAR drop tower can achieve a velocity of up to 9 m/s, and with the NIJ-style sabot, it delivers an impact of approximately 80 Joules of energy.

The drop tower is primarily designed around the NIJ 0.115.00 standard, and designed to hold the specified S1, P1, and spikes listed for this standard. The sabot can be easily refitted with a heavier mass and/or any shape or type of impactor, such as a ceramic paring knife. It is adaptable to meet future needs in a variety of impact testing scenarios.

PRICING

Description	Price/Unit
Pricing Inquiries Please contact UBC STAR's Technician Ryan Mandau to obtain up-to-date pricing information. ryan.mandau@ubc.ca	

RESULTS AND REPORTING

UBC STAR will provide reporting to satisfy any requirements.

UBC STAR will provide your team with a complete dataset, is available to assist in translating data gathered into a specific standard or preferred reporting form.



BEFORE

AFTER

CONTACT

UBC STAR | Survive and Thrive Applied Research

Dr. Keith Culver, Professor and Director
250-317-6326 | keith.culver@ubc.ca

Ryan Mandau, UBC STAR Research Technician
250-575-1095 | ryan.mandau@ubc.ca
Technical and pricing inquiries



THE UNIVERSITY OF BRITISH COLUMBIA
Survive and Thrive Applied Research (STAR)