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REAL IMPACT THROUGH DISCOVERY

Discoveries that positively impact individuals, business, and communities are made possible by federal investments in research. Federal funding provides a proof of concept that attracts additional industry funding, venture capital, and grants – ensuring these innovations get to market. For taxpayers, federal grants are a high-return investment, de-risking early research and leading to commercialization, jobs, and local economic growth.



TOOL IDENTIFIES WHEN FRUIT IS READY TO HARVEST

Startup company XLSOR provides accurate fruit harvest predictions and quality management for farmers with a precision tool that better predicts and protects fruit yields. This innovation helps Colorado growers safeguard some of the state's most valuable and vulnerable crops.

Federal funding:

U.S. Department of Agriculture

***Additional funding:**

Colo. Fruit and Vegetable Growers Association; Colo. Office of Economic Development and International Trade

U.S. patent issued:

July 2025



LIQUID FOAM FOR WOUND CARE IN COMPLEX ENVIRONMENTS

Vital Foams develops liquid foam technology for rapid bleeding control, infection prevention, and drug delivery that can be quickly deployed in field or clinical settings. This innovation enhances emergency response and military readiness while supporting public health and rural care by improving survival and reducing complications from severe wounds. It can also help with veterinary trauma scenarios for companion animals and livestock.

Federal funding:

U.S. Department of Defense

***Additional funding:**

Colo. Office of Economic Development and International Trade

U.S. patent pending:

Application submitted August 2025



PREVENTING INFECTION AND HEALING SAFER AND FASTER

Metal-organic frameworks, or MOFs, release a helpful gas called nitric oxide, which the body naturally uses to fight germs and heal. When built into bandages or medical tubes, these MOFs help prevent infection, keep medical devices clean, and support faster, safer healing.

Federal funding:

National Institutes of Health, National Science Foundation

U.S. patent issued:

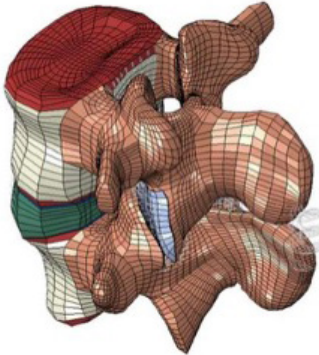
September 2019

*Additional support from CSU STRATA Lab to Life program, funded by the U.S. Department of Commerce.



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IMPLANT OFFERS A SOLUTION TO LOWER BACK PAIN AND DISABILITY



A tissue-engineered spinal implant promotes natural healing and regeneration within damaged discs, preventing recurring herniation and preserving spinal motion. This breakthrough offers a transformative alternative to traditional back surgeries, which reduces pain, recovery time, and long-term disability for millions affected by chronic lower back pain.

Federal funding:

National Institutes of Health, National Science Foundation

Additional funding:

CSU Orthopaedic Bioengineering Research Laboratory with academic and industry collaborators.

U.S. patent issued:

December 2024

AI TOOL PROVIDES RELIABLE HAZARDOUS MATERIALS INFORMATION



An AI tool automates the reading, organization, and validation of chemical safety data sheets, turning an outdated and error-prone system into a searchable, standardized, and intelligent database. With OSHA citing hazard communication failures as the nation's second most common safety violation – over 3,600 citations and nearly \$4.7 million in penalties in 2019 – this innovation meets a critical need, improving safety, compliance, and environmental protection while helping prevent thousands of illnesses and deaths linked to workplace chemical exposure each year.

Federal funding:

Technology developed in collaboration with the U.S. Air Force; currently used to support the Department of Defense Chemical Information Program

Additional funding:

CSU alumnus donor funding

U.S. patent issued:

August 2024; additional patent pending

TREATMENT TRAINS IMMUNE SYSTEM TO ATTACK OVARIAN CANCER



A new personalized immunotherapy for ovarian cancer patients involves removing tumor cells from a cancer patient, rendering the cells incapable of further multiplication after treatment with UV light and riboflavin, and then re-introducing the cells to the patient so the patient's immune system can mount a response. The therapy is creating a safer and more effective way to help people's bodies fight cancer on their own.

Federal funding:

National Cancer Institute

Additional funding:

Colo. Office of Economic Development and International Trade

U.S. patent issued:

April 2025; additional patent pending



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ADVANCING HEAT & STEAM EFFICIENCY & CLEAN AIR SOLUTIONS

AtmosZero’s modular electrified heat pump, Boiler 2.0, transforms ambient air into zero-carbon steam, replacing fossil-fueled industrial boilers without the need for waste heat. This plug-and-play technology helps breweries, food processors, chemical and pharmaceutical companies, and manufacturers in textiles, paper, and other industries – as well as colleges, schools, hospitals, cities, and commercial facilities – improve efficiency, reduce emissions, and deliver clean, reliable district heat and steam.

AtmosZero has raised a \$21 million in Series A round of funding, co-led by Engine Ventures and 2150.

Federal funding:
U.S. Department of Energy’s Industrial Efficiency and Decarbonization Office

***Additional funding:**
Constellation Technology Ventures, Energy Impact Partners, Starlight Ventures, AENU

U.S. patent issued:
October 2025; additional patent pending



HERBICIDE-RESISTANT WHEAT SPARES CROPS & ELIMINATES WEEDS

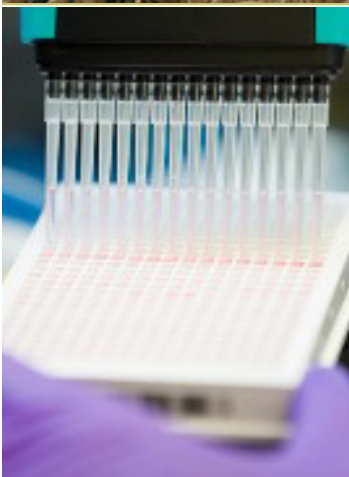
An herbicide resistance trait in wheat enables farmers to use targeted herbicides that eliminate weeds while leaving wheat crops unharmed. This advancement improves crop yields, reduces production costs, and supports more sustainable and efficient weed management in wheat farming worldwide.

The research and development of these wheat varieties have been supported by a partnership with the Colorado Wheat Administrative Committee and the Colorado Wheat Research Foundation since the 1960s and 1990s, respectively.

Federal funding:
U.S. Department of Agriculture

Additional funding:
CoAXium Wheat Production System partners include the Colo. Wheat Research Foundation, Albaugh, LLC, and Limagrain Cereal Seeds.

U.S. patent issued:
Various patents, 2017–2024



ADVANCING CANCER RESEARCH, DRUG DISCOVERY, AND IVF

The Smart Well Device and Multimodal System allows scientists to watch how living cells use energy and respond to their environment in real time. By using tiny sensors and built-in imaging inside each well, the system can help improve cancer treatments, speed up drug discovery, and make embryo testing in IVF more accurate – all while being affordable and easy to use.

Federal funding:
National Science Foundation

***Additional funding:**
Colo. Office of Economic Development and International Trade

U.S. patent issued:
August 2024; additional patent pending



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NON-INVASIVE DETECTION OF INTESTINAL DISEASES

A technology developed by Quandary Diagnostics offers a non-invasive diagnostic tool for gastrointestinal diseases using only stool samples. This is a significant advancement as it can avoid the need for a colonoscopy in both dogs and cats, and potentially humans.

Funding:

CSU STRATA Lab to Life program, funded by the U.S. Department of Commerce

Additional funding:

Colo. Office of Economic Development and International Trade

U.S. patent pending:

Application submitted May 2024



TURNING INDUSTRY WASTE INTO REVENUE

Fluent Renewables transforms organic, hard-to-recycle waste into clean liquid fuels and compost. This innovation modernizes waste processing, helping agriculturalists, ranchers and industry partners turn waste into revenue while advancing renewable energy, reducing emissions, and supporting a more sustainable circular economy. Fluent Renewables and NREL are innovating a related technology that turns leftover food and farm waste into useful products like clean fuel and oils by using special bacteria to break it down.

Federal funding:

U.S. Department of Energy, Alliance for Sustainable Energy, LLC

Additional funding:

U.S. Department of Commerce's Economic Development Administration; Colo. Office of Economic Development and International Trade

U.S. patent issued:

November 2014, April 2025; additional patent pending.



INSTANT-CURE 3D MATERIAL BOOSTS SPEED, STRENGTH, EFFICIENCY

Curable Composites uses 3D printing to create high-strength, low-weight composite parts for industries such as aerospace, energy, and transportation. The technology uses an instant curing process, which enhances manufacturing speed and efficiency while reducing supply chain delays. The technology has the potential to produce lighter parts for drones, which can extend flight duration, improve agility, and increase payload capacity.

Federal funding:

National Science Foundation

*Additional funding:

Colo. Office of Economic Development and International Trade

U.S. patent issued:

May 2024, February 2025; four patents pending