



U.S. PATENTS ISSUED IN 2022 FOR MIZZOU INVENTIONS

Patents protect intellectual property, such as inventions that result from MU research. Mizzou's intellectual property is the raw material that sparks commercial ventures. The Office of Technology Advancement manages this asset, which is transferred to industry through the negotiation and execution of license agreements. Patents are an important incentive for a commercial partner to invest in developing a new product or service.

Animal and Plant Biotechnology

Bacillus-based delivery system (Patent No. 11,401,498)

This bacterial platform for enzyme expression delivers enzymes for advances in agriculture, bioremediation, biofuel production and other applications.

- MU inventors: George C. Stewart and Brian M. Thompson

Self-assembling multicellular bodies and methods to produce 3D biological structure for tissue engineering (Patent No. 11,518,978)

Enables 3D printing of biological structures to create transplantable organs, including blood vessels.

- MU inventors: Gabor Forgacs, Francoise Marga and Cyrille Norotte

Devices and Tools

Knee flexion device (Patent No. 11,241,353)

A quantitative patient-controlled physical therapy device that can be used to treat pre- or post-surgery knee stiffness.

- MU inventors: James L. Cook, Cory Crecelius, Trent Guess, Kylee Rucinski and Jonathan Williams

Tissue preservation system (Patent No. 11,503,823)

This system more than doubles the storage time and increases the viability of orthopaedic grafts and tissues used in transplants.

- MU inventors: James L. Cook and Aaron M. Stoker

Diagnostics and Detection

Airy beam optical coherence tomography system (Patent No. 11,314,096)

A noninvasive optical imaging technology with increased resolution at greater depth captures soft tissues to diagnose and manage eye diseases, such as retinopathy and glaucoma.

- MU inventors: Ping Yu and Lixin Ma

Optical polarization tractography systems (Patent No. 11,287,623)

High-resolution 3D imaging visualizes early tissue fiber abnormalities at the cellular level to diagnose signs of heart attack and other pathologies.

- MU inventors: Gang Yao, Dongsheng Duan and Yuanbo Wang

Engineering Solutions

High-sensitivity impedance sensor (Patent No. 11,422,134)

This biosensor array enables rapid detection and quantification of bacteria and other analytes at low concentrations to detect toxins, prevent food-borne diseases and more.

- MU inventors: Mahmoud Almasri, Shibajyoti Ghosh Dastider, Shuping Zhang, Jiayu Liu, Nuh Sadi Yuksek and Ibrahim Jasim

Low-cost water production system (Patent No. 11,459,737)

This highly efficient dehumidifier reduces electricity consumption and produces less noise than current models.

- MU inventor: Hongbin (Bill) Ma

Low-defect nuclear transmutation doping in nitride-based semiconductor materials (Patent No. 11,515,161)

This nuclear radiation-induced isotope changes in gallium nitride to produce large-bandgap semiconductors for LEDs, lasers and radar.

- MU inventors: Jae W. Kwon, John Michel Gahl and John Douglas Brockman

Therapeutics and Treatments

Monovalent anti-CD3 adjuvants (Patent No. 11,426,462)

This antibody fragment can be used to amplify a patient's immune response to cancer and pathogens.

- MU inventors: Diana Gil Pagés and Adam G. Schrum

Peptides for molecular detection of the protein PD-L1 (Patent No. 11,447,550)

These peptide binders with improved sensitivity predict if a tumor will respond to a specific cancer therapy regimen.

- MU inventors: Raghuraman Kannan and Charles (Chuck) W. Caldwell Jr.

POSH inhibitor complex biomolecules and amphiphile micelles (Patent No. 11,286,489)

This therapeutic and delivery system targets a cell-signaling pathway to treat leukemia, breast cancer and other conditions.

- MU inventors: Bret Ulery, Mark Daniels, Josiah Smith, Leah Cardwell, Erin Newcomer, David Porciani, Kwaku Tawiah, Donald H. Burke-Aguero

Type 1 diabetes preventative and treatment (Patent No. 11,338,036)

This combination therapy made with an antibody and stem cell can prevent and treat Type 1 diabetes.

- MU inventor: Habib Zaghouani