

AUBURN UNIVERSITY

INNOVATION ADVANCEMENT & COMMERCIALIZATION

Preservation of Biological Materials at Room Temperature

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Reference: Biopolymer

Licensing Opportunities

- Any combination of these patents are available for immediate non-exclusive licensing through our customizable "Ready-To-Sign" licensing program.

Inventor

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Status

- Reversible extended protection of mammalian cells and bacteria (video of 2 week entrapment) has been well demonstrated.

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Overview

Auburn University is seeking licensees for technologies relating to the isolation and reversible preservation of a range of biological materials. Acacia gum, or gum arabic, is a natural sap that has been widely used since ancient times and is currently manufactured in multi-ton quantities for use in the food and allied industries. This entrapment process occurs at room temperature and can last for an extended period of time at room temperature with minimal damage to the specimen. The viable biomaterials are released from the polymer system by the application of water. This system is compatible with many biological samples including proteins, DNA, receptors, antibodies, antigens, bacteria, mammalian cells, cell surfaces, and tissues. Potential applications for this technology include:

- Preservation and shipment of bacterial cultures and bodily fluids (e.g., blood, semen)
- Medical application in surgery, wound healing and drug delivery
- Biodegradable packaging
- Forensics

Advantages

- Preservation process is simple and rapid, which lowers labor and costs
- Preservation can last for an extended period at room temperature, eliminating need for expensive cryogenic storage; longer preservation times achievable through refrigeration
- Entrapment can be reversed by dissolution in water
- Eliminates traditional preservation steps that can damage biological samples
- Suitable for use in the field
- Naturally occurring polymer that is biodegradable and non-toxic
- Resistant to almost all organic solvents and most acids

US Patent 7,022,514

Acacia Gum: Preservation of microorganisms

An aqueous solution of acacia gum is used to preserve microorganisms or semen in a dormant state and, later, the specimen is restored to the condition under which it was isolated by the addition of water and without the use of heat or irradiation. This method protects the specimens from environmental effects for extended periods of time without the need for refrigeration or other treatment. Refrigeration typically extends preservation time even further.

US Patent 7,473,550

Acacia Gum: Preserve and Isolate A Biological Receptor on a Biosensor

This method to preserve biological material without damage to the specimen is particularly useful in preserving biological samples on biosensors. The Acacia gum provides reversible techniques that maintain the integrity and viability of a biological specimen, such as a biorecognition element, even after prolonged storage at room temperature.

[Additional information on Biosensor Technologies](#)

US Patent 7,604,807

Pullulan: Preservation of microorganisms

Similarly to acacia gum solutions, protective natural polymers such as pullulan can be used to isolate and preserve microorganisms without damage to the specimen. Pullulan is natural, inexpensive, and inert. As an edible, pullulan has many commercial applications in the food, oral health, and related industries.