



Novel Biodegradable Hydrogel for Controlled Drug Delivery

The Technology

In recent years, there has been an increased focus on the delivery of drugs over prolonged periods of time in a controlled manner. One method for accomplishing controlled drug delivery is by combining a polymer with a therapeutic agent to be delivered to a specified target. The use of polymers to provide such long term controlled drug delivery is a rapidly emerging field in the market for therapeutic drugs. The current U.S. drug delivery market approaches \$90 billion and is projected to increase by 10% by 2012, according to a report by the Freedonia Group.

Researchers at the University of Tennessee have designed and developed a novel biodegradable hydrogel for controlled-release drug delivery that can be engineered to accommodate different types of therapeutic molecules, making it useful in many different clinical applications. This drug delivery system consists of a polymeric hydrogel that can be loaded with a therapeutic agent and injected directly into the target tissue. In addition, the degradation and release kinetics of the hydrogel can be tailored to meet the specifications of the application. Potential applications of the hydrogel drug delivery system include wound healing, hormone therapy and cancer treatment. Current studies are underway to test *in vitro* drug release kinetics of many model therapeutic agents including small molecules, antibodies and permissive glycans. *In vivo* testing of this drug delivery system to deliver chemotherapy to a solid tumor in an animal model will begin soon.

Benefits

- Ability to expand the market using one drug delivery system that is adaptable to many clinical applications
- Less stress on patients by eliminating multiple treatments
- Less of the drug is required for treatment due to a more efficient method of drug delivery

The Inventors

Dr. George Wood is a Professor of Pharmaceutical Sciences and the Associate Dean of Academic Affairs in the College of Pharmacy at the University of Tennessee Health Science Center. His research interests are in the development of novel biotechnology based dosage forms and he has lead dozens of pharmacokinetic studies on behalf of private sector sponsors.

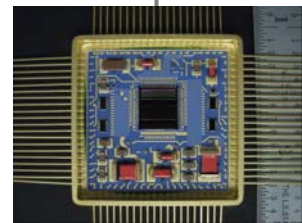
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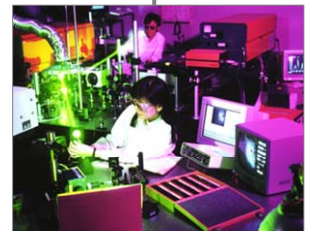
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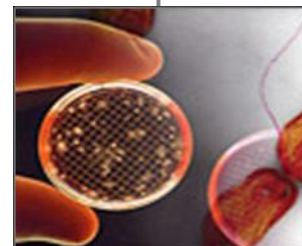
ENGINEERING



MATERIALS



MEDICINE





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Elizabeth Barker is a second year doctoral student in the Department of Pharmaceutical sciences under the supervision of Dr. George Wood at the University of Tennessee. She obtained a Masters Degree from the University of Tennessee where her research focused on hydrogel for biomedical applications.

Patents

U.S. provisional application in process.

Contact

The University of Tennessee Research Foundation (UTRF) is a non-profit corporation responsible for commercializing University of Tennessee technologies and for supporting University research. UTRF is seeking parties interested in learning more about this technology and in exploring possible research and/or commercialization arrangements.

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