14:58:51 OCA PAD AMENDMENT - PROJECT HEADER INFORMATION 01/21/97

Active

Project #: G-33-E84 Cost share #: Rev #: 4
Center # : 10/24-6-R8434-0A0 Center shr #: OCA file #:
Work type : RES
Contract#: AGMT DTD 950207 Mod #: LTR DTD 1/03/97 Document : SUBCONT
Prime #: Contract entity: GTRC

Subprojects ? : N CFDA: NA
Main project #: PE #: NA

Project unit: CHEMISTRY Unit code: 02.010.136
Project director(s):
BOTTOMLEY L A CHEMISTRY (404)894-4014

Sponsor/division names: EMORY UNIVERSITY / ATLANTA, GA
Sponsor/division codes: 400 / 012

Award period: 941201 to 970831 (performance) 970831 (reports)

Sponsor amount	New this change	Total to date
Contract value	2,691.00	7,176.00
Funded	2,691.00	7,176.00
Cost sharing amount		0.00

Does subcontracting plan apply ?: N

Title: BIOMOLECULAR MATERIALS FOR ENGINEERED CELLULAR GROWTH

PROJECT ADMINISTRATION DATA

OCA contact: Ina R. Lashley 894-4820

Sponsor technical contact

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(404)727-8413

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Sponsor issuing office

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(404)727-2503

EMORY UNIVERSITY
OFFICE OF SPONSORED PROGRAMS
1784 N. DECATUR RD., SUITE 510
ATLANTA, GA 30322

Security class (U,C,S,TS) : U ONR resident rep. is ACO (Y/N): N
Defense priority rating : NA NA supplemental sheet
Equipment title vests with: Sponsor X GIT

Administrative comments -
EMORY LTR DTD 1/3/97 AUTHORIZES 2ND YEAR FUNDING.

Closeout Notice Date 07-NOV-1997

Project Number G-33-E84 Doch Id 45881

Center Number 10/24-6-R8434-0A0

Project Director BOTTOMLEY, LAWRENCE

Project Unit CHEMISTRY

Sponsor EMORY UNIVERSITY/ATLANTA, GA

Division Id 5779

Contract Number AGMT DTD 950207 Contract Entity GTRC

Prime Contract Number

Title BIOMOLECULAR MATERIALS FOR ENGINEERED CELLULAR GROWTH

Effective Completion Date 31-AUG-1997 (Performance) 31-AUG-1997 (Reports)

Closeout Action:	Y/N	Date Submitted
Final Invoice or Copy of Final Invoice	Y	
Final Report of Inventions and/or Subcontracts	Y	
Government Property Inventory and Related Certificate	N	
Classified Material Certificate	N	
Release and Assignment	N	
Other	N	

Comments

-

Distribution Required:	
Project Director/Principal Investigator	Y
Research Administrative Network	Y
Accounting	Y
Research Security Department	N
Reports Coordinator	Y
Research Property Team	Y
Supply Services Department/Procurement	Y
Georgia Tech Research Corporation	Y
Project File	Y

NOTE: Final Patent Questionnaire sent to PDPI

G-33-E84
#1

Technical Report

Grant No.: G-33-E84
Title: Biomolecular Materials for Engineered Cellular Growth
Sponsor: Emory University
Author: L. A. Bottomley
Date: October 29, 1997

This project was a subcontract to a project directed by Dr. Elliott Chaikov of the Department of Surgery, Emory Medical School. Its purpose was to provide Mr. Theo Winger, a graduate student working under the direction of Dr. Chaikov, with access to an atomic force microscope and expertise in interpreting the data acquired with it. Over the past two years, Mr. Winger has made extensive use of this equipment. A summary of his research achievements follows:

Biomembrane-mimetic systems may provide a useful strategy in tissue engineering for the design of blood-contacting surfaces which support endothelial cell growth. The model system investigated by T. Winger consists of a substrate-supported self-assembled monomolecular layer of zwitterionic phospholipids and phospholipidated bioactive molecules. The self assembled monolayer (SAM) is formed by fusion of extruded or dialyzed vesicles (200 nm in dia.) onto very smooth hydrophobic borosilicate glass. SAMs of dipalmitoyl-, dimyristoyl-, and dilaurylphosphatidylcholine were constructed in this manner in the presence or absence of cholesterol. In the absence of cholesterol, the topography of the self-assembled system proved to be very smooth by atomic force microscopy under buffer. Atomic force microscopic depth measurements of small holes found in these SAMs revealed values of 22 Å for dipalmitoyl- and 13 Å for dilauryl-phosphatidylcholine, respectively. These values are in close agreement with the expected monolayer thicknesses. In the presence of cholesterol, no holes were detected in the SAMs. Future studies will utilize these well-defined systems to examine the potentially complementary interactions of integrins and cell surface heparan sulfates in controlling the motile behavior of endothelial cells.