1994

UA3/8/1 L.Y. Lancaster Professorship Report

WKU Ogden College of Science & Technology

Department of Biology
502-745-3696
FAX: 502-745-6471

WESTERN KENTUCKY UNIVERSITY

Western Kentucky University
1 Big Red Way
Bowling Green, KY 42101-3576

L.Y. LANCASTER PROFESSORSHIP

1993-1994 Report to the Ogden College Foundation
Board of Trustees

It has certainly been a very exciting year in the Biology Department in large part due to the generosity of the Ogden College Foundation. I, along with my colleagues, thank you for supporting our efforts to improve the instruction of our students. Accomplishments and benefits made possible with funds from the L.Y. Lancaster Professorship and the L.Y. Lancaster Technology Fund during the 1993-1994 academic year are summarized below.

Students continue to be involved in ongoing research projects (see attached summary) initiated with funds from other sources (*i.e.*, Faculty Research Grant - $1,000 from Western Kentucky University) and aided with Professorship money for student salaries ($343.20) and supplies ($212.38). The results of these studies will be presented at meetings by the student authors and/or published (see attached). Results of one study will make possible the submission of a research grant to the National Science Foundation (NSF).

Improving the quality of instruction remains a primary goal in the Department of Biology. We want to provide the highest quality instruction to all of our undergraduates, and in particular to our premedical students. With the implementation of KERA, the methods of instruction are changing through the use of new instructional technologies. We are acutely aware of the fact that future students will demand access to these technologies at Western and that they will need to know how to use them in order to succeed in graduate and professional schools. We are proud of the two newly renovated lecture rooms that possess multimedia presentation

capabilities made possible with funds mainly from the L.Y. Lancaster Technology Fund ($17,129.36) and matching money from Western Kentucky University ($15,412.64). An additional $1,877.98 came from the L.Y. Lancaster Professorship, some of which has been used to obtain additional equipment with matching money from the President's Special Grant Fund ($1,303.98). This project consumed much of my and other peoples efforts this year. The technical expertise of John Smith and Alonzo Alexander of the Ogden College Shop, Jeff Martin, Engineer with Western's Educational Television Services Department, and Tony Eaden of the Computer Services Department were tapped. Together they spent 5 hours on this project and improved its quality tremendously. The majority of technical and manual help came from Dr. Claire Rinehart, who spent well over 41 hours of his own time to help design and set up the multimedia system in both rooms. In addition, he helped construct the podium in each room and helped with remodeling. Dr. Jeff Kent also helped us remodel the front desk in room 224. I spent well over 83 hours of my own time on this project refurbishing or building furniture, designing and setting up the multimedia system, and assisting in the renovation of the rooms. Several faculty have made great use of these facilities and more will do so in the future. Already, the response of students is very positive. If faculty are to use these facilities appropriately for maximum instructional benefit, they and their students must have access to a room with computers compatible with those used for the mutlimedia platform. Dr. Prins and I have written a PRISM-UG grant (see attached) in an effort to obtain one such computer. In addition, three colleagues and I have written an NSF-Instructional Laboratory Improvement grant ($109,695.70, see attached) to set up a complete computer lab that can be used in our physiology, comparative anatomy and histology courses, as well as, serve as a computer lab in which faculty can produce and students can access multimedia presentations used in the classroom. I take this opportunity to thank Dr. Richard Grise for his untiring efforts to obtain funding for this project through HCA-Columbia. We intend to keep the momentum going on this project. I extend an open invitation for anyone on the Ogden College Foundation Board of Trustees to come and tour these facilities.

The IBM clone computer obtained with funds from the professorship (5 years ago) continues to make possible the analysis of morphological data using the Jandel PC3D program. Currently, two undergraduate students are working on research projects in which this program will be essential for analysis of their data. Also, other faculty have expressed interest in using this program to analyze research data.

Other research supported with L.Y. Lancaster funds involves the identification and quantification of selected neurotransmitters in the cockroach, a model system for studying circadian system function. Dr. Dahl, Dr. Riley and I resubmitted an NSF-Instructional Laboratory Improvement grant for $47,463.00 to purchase an HPLC system with a coulometric detector for the Biology Department in addition to other equipment for the Chemistry Department without success. Despite this setback we have, with the help of Dr. Dahl, been successful in identifying a temporal variation in a neurotransmitter (GABA). This finding will give us a biochemical tool needed to make progress in understanding the circadian system in this model organism and should improve our chances of obtaining outside funding.

Again, I thank the Board for their boost to morale and financial support of the science program and student education at Western Kentucky University.

Sincerely,

Blaine Ferrell

Blaine R. Ferrell

Student Activities for 1993-1994

Students	Dates	Project
Heidi Anderson[4]	1-94 to 5-94	The effect of melatonin on eye morphology in *Leucophaea maderae.*
Stan Martin[5]	8-93 to 5-94	Created computer images for Comparative Anatomy
Mary McNeal[5]	1-94 to 5-94	3D reconstruction project for Comparative Anatomy
Traci Smith[4]	8-94 to ----	Developing a neural mapping technique
Jeanette Gibson*[1,2,3]	8-93 to ----	HPLC-fluorometric
Julie McCay*[2,3]	1-94 to ----	determination of the daily
Tim Wingo*[3]	1-94 to 5-94	variation in brain GABA
Pat Jarvis[4]	1-94 to 5-94	levels in the cockroach
Kim Romero*,[3]	6-94 to 8-94	*Leucophaea maderae.*
Jennifer Wright[4]	8/94 to ----	
Robin Campbell	1-94 to 5-84	Weather and Tree Swallow (*Tachycineta bicolor*) nesting success.
Zhuming Zhang	8-93 to 12-93	Completed her thesis "Clock control of circadian ommatidial morphological changes in the cockroach, *Leucophaea maderae.*"
Channon Yule	1-90 to ---	Completed his thesis "*In vitro* and *invitro* effects of light on ommatidial morphology in the cockroach, *Leucophaea maderae.*"
Jon Newton[3]	8-92 to ---	Completing thesis "Daily Variation in Brain GABA levels in the cockroach, *Leucophaea maderae.*"

*Student received a stipend through the L.Y. Lancaster Professorship.

1 Research team leader responsible for coordinating the efforts of other students on the research team.
2 Research paper will be presented at the annual meeting of the Kentucky Academy of Science to be held at Paducah.
3 Research paper will be presented at the annual meeting of the American Society of Zoologists to be held at St. Louis, Missouri in January. Also, a paper will be submitted for publication in the *Journal of Insect Physiology.*
4 Incidental supplies were provided with funds from the L.Y. Lancaster Professorship to carry out their research.
5 The computer program used to develop a technique for reconstructing animals three-dimensionally in the computer was purchased and upgraded using funds from the L.Y. Lancaster Professorship.

Stan Martin, Mary McNeal and Pat Jarvis are currently first year medical students at the University of Louisville. Tim Wingo is attending the University of Tennessee Medical School at Memphis. Kim Romero is working in a research lab in Boston. Juli McCay has been accepted early decision at Vanderbilt University Medical School. Jon Newton is currently working on his Ph.D. degree at the University of Alabama, Birmingham. Jeannette Gibson plans to apply to graduate school.

I would like to acknowledge the considerable help of Dr. Darwin B. Dahl, an excellent analytical chemist in Western's Chemistry Department, in carrying out research involving the HPLC-EC technique and Dr. Claire Rinehart of the Biology Department in designing and building the multimedia console and assisting in the 3-D anatomy project. The expertise of both has been invaluable.