

CRI-FHU NEWSLETTER

Volume 4, Issue 1
Spring 2003

DR. EMILY MCDUFFEE

We are all proud of what Emily has accomplished over the past two years at the Cancer Research Institute under the direction of her major professor, Dr. Jerry Thornthwaite. She has accomplished the development of the complementary test to our CARE Antibody test, i.e., the CARE Antigen Test. Furthermore, in collaboration with Dr. Grizzle in Pathology at the University of Alabama in Birmingham, she was able to determine the cell surface location of the CARE IgM epitope in ovarian, colon, breast and other cancers. In a study of 16 normal and 56 cancerous ovarian patients, 98% of the cancer patients

were positive for the CARE antigen, while only 4.5% of the normal ovarian tissues were positive. Our thanks go out to Dr. Pat Evans and Joe Deweese for the data analysis. Having received her Ph.D. in December, she will be



Emily with her major professor Dr. Jerry Thornthwaite.

promoted in May to Assistant Professor. Dr. McDuffee is continuing her research at the Institute, which is and will continue to be important in our understanding of the carcinogenic process.

Dr. Wu Ke and Mrs. Bonita Thornthwaite at the Thornthwaite residence.



DR. WU KE JOINS IN CRI RESEARCH

Dr. Wu Ke, or Kerry as he prefers to be called, is the Director of Research & Development of the Wuhan Institute of Biological Products and Vaccines in China. He invited Dr. Thornthwaite last summer to speak at his Institute. His field of research is in Tumor Immu-

nology. During the four months conducting research at the Cancer Research Institute, Dr. Wu assists in the study of how natural compounds stimulate the immune status in tumor-infiltrated lymphocytes. Furthermore, he is assisting in the DNA/Electronic cell

volume analysis of tumors. We are all honored that he has chosen our Institute to conduct research. Dr. Wu is also a fine chef. He is married, and has a nine-year-old son.

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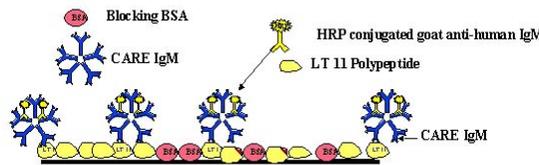
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Special points of interest:

- CARE Test Paper to be published in *Cancer Letters*.
- Dr. Thornthwaite reports on trip to India.
- CRIWT/CES News.

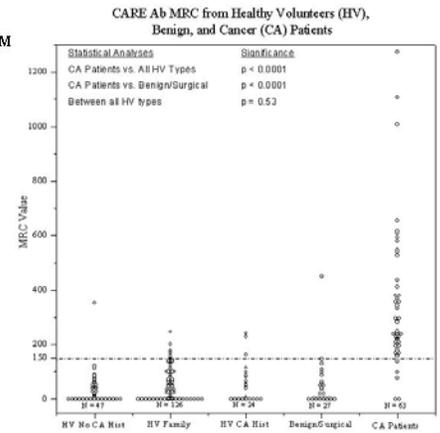
CANCER RECOGNITION TEST PAPER TO BE PUBLISHED

The Cancer Recognition (CARE) Antibody test study has been accepted for publication in Cancer Letters. The CARE Test is a serologic assay for a specific IgM that is elevated in cancer patients. The CARE Ab found in patients' sera, is data from patients undergoing post-operative cancer treatment show that decreasing Ab levels reveal patients negative for residual cancer or undergoing remission, while relapsing patients show an increase in Ab levels. The CARE Test paper is only the be-



A graphical depiction of the CARE Antibody Test using an enzyme-linked immunosorbent assay (ELISA).

ginning of a series of publications exploring the CARE Antibody and Antigen characterization.



The patient and volunteer data published in the paper.

STUDENT RESEARCH THIS SUMMER

The students at the Institute will each have plans for work and study this summer. Joe Deweese will be continuing his research at the Institute this summer. Joe, who lives with his wife in Henderson, has studied at the institute for almost two years. Robbie Nichols has a networking internship for the summer near his home in West Virginia. Robbie

maintains the computer systems at the Institute along with Daniel Simons. Daniel will be working this summer as a computer technician.

Stephanie Woodall and Melissa Ellis will be graduating and continuing on to professional schools. Stephanie has been accepted to nursing school at

Vanderbilt, and Melissa has been accepted to Virginia Tech School of Osteopathic Medicine. Stephanie and Melissa work with the cell cultures in the lab.

Marshall Hall is a student researcher and plans to take part in a summer research program at the Medical College of Ohio in Toledo.

DR. AND MRS. THORNTHWAITE GO TO INDIA

During January, Dr. Thornthwaite and his wife, Bonita, traveled to India where he presented his cancer research at three cancer meetings in Delhi, Mumbai (Bombay) and Bangalore, literally the length of India. Dr. Thakur

of the Batra Hospital in Delhi was a most gracious host. In Mumbai, Dr. Thornthwaite presented two seminars, where the six top Oncologists of Mumbai attended. In Bangalore, he presented at the National Holistic Medicine Conference. His seminar followed Dr. Depak Shapur's presentation. From India, a seminar was given at the Kings College Hospital of Obstetrics and Gynecology. The protocol to run the CARE Test on ovarian cancer patients was approved and serums are being sent with paraffinated tumor samples for analysis to the Cancer Research Institute. Furthermore, ovarian tumor samples are being analyzed. In the U.S. ovarian cancer is a relatively rare tumor, and multiple centers are needed to accumulate enough samples

in a timely manner. Finally, ovarian cancer is the "silent killer." When pain or bleeding manifests itself, the cancer is usually too far advanced for successful treatment. Early diagnosis is our ultimate goal.



CRIWT-CES News

THE DEPARTMENT OF CHEMISTRY AND ENGINEERING SCIENCES

The Department of Chemistry and Engineering Sciences (CES) is the title of the former Department of Physical Sciences at Freed-Hardeman. Currently, there are 30 chemistry/biochemistry majors in the department, a 10% increase from 2002.

Incoming freshman chemistry majors are as promising as ever. The 14 incoming students have an average high school GPA of 3.8. The average ACT from twelve students is 27.8.

The department is just as proud of its graduates. The average GPA of those

graduating and/or leaving for a professional school is 3.47. Some of the school's recent graduates or transferring students went to programs including graduate research, pharmacy, medical, dental, and optometry schools. Not one student from Freed-Hardeman has failed professional school in over 20 years.

PCAT (pharmacy) scores are well above average for our pre-pharmacy students, and scores in chemistry are the highest of all the sections.



Joe Deweese instructs chemistry student Lacy Rupe on how to use the 3-D molecular imaging computer.

80 ELEMENTS DETECTED BY X-RAY

The Department of Chemistry and Engineering Sciences recently purchased an X-ray Fluorescence Spectrometer. The instrument is a Minipal made by Philips Analytical. The spectrometer will enable students to analyze compounds and determine what elements are found and in what proportions.

This will offer students from all of the department's chemistry courses a great benefit by giving training in another area of chemistry technology. General chemistry, organic, analytical, environmental, and physical chemistry students

will all benefit from the elemental analysis features of the spectrometer. Each of the classes will be able to utilize the spectrometer to identify the composition of compounds and search for traces of metals or other elements of interest.

The spectrometer also offers potential therapeutic research benefits for CRIWT. The detection of Iron and Copper will be quantitated in tumors and serums for research in cancer therapies.



CES is proud of the new MiniPal X-Ray Fluorescence Spectrometer. Shown here chemistry major Allison Price.

CES HOPES TO GET HPLC/MS

Yet another valuable addition to CES could be the HP HPLC/Finnegan MS. The equipment will enable students to learn high-performance liquid chromatography and mass spectrometry on a high-tech system. The advantages of liquid chromatography and mass spectrometry include compound identification and characterization. Biochemistry courses will especially benefit from the ability to work with proteins. Thus far, biochemistry students have only been able to learn about techniques of protein characterization in the classroom. Hopefully, that experience will extend to the laboratory.

This technology will also aid in the laboratories of other chemistry courses as well. With the completion of the Brown-Kopel Business Center, space will be cleared in the Associates Science Center for the development of a biochemistry lab. This equipment will make a wonderful addition to the lab and offer a great learning opportunity for the students in research, biochemistry, environmental, organic, physical, and analytical chemistry courses.



The Finnegan mass spectrometer will be an extremely valuable addition to the department.

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From Research to Therapeutic Application



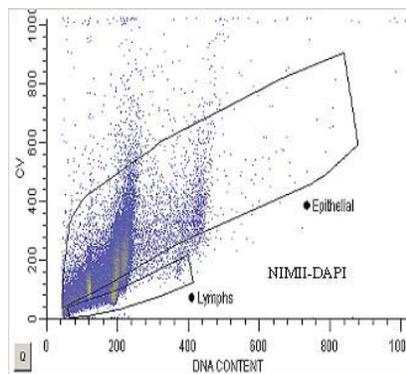
DIAGNOSIS AND PROGNOSIS OF CANCER

One of the ongoing areas of research is the use of DNA analysis in the identification and characterization of tumor tissues. Mr. Rick Thomas and Dr. Thornthwaite developed the DNA Analyzer now known as the Quanta Analyzer.

Dr. Wu Ke conducting DNA quantitation in ovarian cancer.



Drs. Thornthwaite and Wu with Joe Deweese and Marshall Hall will be concentrating on using the cytometer to analyze human tissue samples to diagnose and accomplish prognosis of cancer.



A graphical readout of a DNA analysis.

FUNDRAISER FOR CRIWT

CRIWT would like to give a special thank you to Sigma Rho for their donation of the funds raised in the “Bricks for Cancer” fundraiser. The funds will go toward new equipment for the lab.



Dr. Thornthwaite poses with members of Sigma Rho for the check presentation.



Rita McCain, lab technician and manager, outside enjoying the beautiful flowers.

We at CRIWT owe thanks to Patty O'Neil and family for planting the beautiful flowers outside our building. We are so thankful for their work and appreciate the effort they put forth to accomplish this task.