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The Beat Newsletter

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4-1999

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College of Medicine

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# The Beat



University of South Alabama  
College of Medicine

APRIL 1999

## DIETARY MUTAGENS AND BREAST CANCER: POTENT CARCINOGENS IN COOKED FOOD

Cooking processes such as broiling, frying and barbecuing, heat processing and pyrolysis of protein-rich foods induce the formation of potent mutagenic and carcinogenic heterocyclic amines (HCAs). DR. JAMES GAUBATZ, professor of biochemistry and molecular biology, has received a \$531,122 grant from the National Institute of Cancer to study dietary mutagens and breast cancer. This study will characterize the metabolic processing of cooked meat mutagens (heterocyclic amines) by human mammary epithelial cells. The ability of human breast cells to repair dietary damage to their genes will also be examined as well as the effects of dietary heterocyclic amines on human breast growth and differentiation. A mutation may cause impaired cell function, cell death or cell transformation into cancer cells. It is supposed that mutagenesis is a necessary step in carcinogenesis and tumor formation.

In the United States, breast cancer is the most common cause of cancer affecting women, the major cause of cancer deaths in women, and the major cause of death from any cause in women 35 to 54 years old. Breast cancer currently afflicts 1 of 8 women by the age of 85, accounting for an estimated 186,000 new cases and 46,000 deaths annually. Despite its high prevalence and enormous health impact, the causes of breast cancer are not well understood, but non-genetic factors appear to dominate the etiology of breast cancer. The question of diet and breast cancer has attracted extensive scientific and public attention because evidence is growing that dietary exposures may be contributing to the increasing rates and geographic variation in breast cancer incidence. In fact, it has been estimated that as many as half of all breast cancers in the United States might be related to diet. Mammary gland cancers are associated with diets rich in animal fats and meats, and the diet of our country typically includes a high caloric intake of cooked meats and fats. In the aggregate, however, studies indicate that dietary fat intake in adult life is not associated with breast cancer risk. Another dietary component that might influence the incidence of human breast cancer is a group of heterocyclic amines - commonly called cooked meat mutagens because they are formed through heating protein-rich foods. Heterocyclic amines have been shown to cause somatic cell mutations and induce tumors in animal models. Therefore,

individuals who consume cooked meats in their daily diets are continually exposed to mutagenic heterocyclic amines.

Strategies to control cancer should include primary prevention based on understanding the causes of breast cancer. Although many chemicals can induce breast cancer in experimental animals, heterocyclic amines are the only mammary carcinogens known to be present in everyday diets. Heterocyclic amines, however, require metabolic activation in order to damage DNA, cause mutations, and exert a carcinogenic effect. Metabolic activation involves multiple enzyme steps that convert the parent compound into a mutagen. The initiation of mammary cancer could be related to the ability of mammary gland cells to transport and metabolize heterocyclic amines. Dr. Gaubatz's laboratory is working to identify the enzymes responsible for metabolic activation of heterocyclic amines and to characterize carcinogen processing in mammary epithelial cells. These steps will help them to determine toxic effects of heterocyclic amines in target cells, and examine the ability of mammary gland cells to repair their damaged genes.

Since human breast cancer cells contain multiple genetic alterations and carcinogenesis requires a number of sequential steps, it is possible that dietary mutagens could play a role in one or more of these processes and thus, contribute to the incidence of human breast cancers. While changes in diet and limiting carcinogen exposure may someday alter breast cancer incidence, chemical intervention offers an attractive approach for more immediate results. Diet is complex, and there are many natural products that have the ability to block DNA damage or to inhibit some other step in carcinogenesis. Such chemicals are known collectively as anti-mutagens or anti-carcinogens. For example, resveratrol is a compound found in over 70 different plant species, many of which are components of the human diet. Resveratrol has been shown to have chemopreventive effects in the formation of rodent mammary tumors. Dr. Gaubatz's research team proposes to study the ability of resveratrol and other dietary anti-mutagens to prevent DNA damage and proliferative mammary cell growth induced by heterocyclic amines. An improved knowledge of associations between breast cancer and dietary factors could then provide practical ways for prevention.

# INSIDE:

1999 Residency Selection  
Bennett Named Vice Dean

AHEC Appoints Deputy Director  
New Online Products

## COLLEGE OF MEDICINE RECEIVES AALAC ACCREDITATION

The Council on Accreditation of the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC International) has reviewed the report of the recent site visit to USA College of Medicine. The Council has announced that the program conforms with AAALAC International standards as set forth by the Guide of the Care and Use of Laboratory Animals, NCR 1996, therefore FULL ACCREDITATION has been awarded.

The management and staff of the College of Medicine were commended for providing a high quality facility and program for the care and use of laboratory animals. Notable features identified by the site visitors included well-designed and maintained physical facilities, a supportive administration, highly competent program leadership and professional personnel, and several progressive animal welfare policies.

## BASS APPOINTED CHAIR OF INTERNAL MEDICINE



John B. Bass, Jr., M.D., has been appointed Chair of the Department of Internal Medicine, effective February 24, 1999. Dr. Bass has served as Interim Chair of the department for the past two years while continuing to serve as Director of the Division of Pulmonary Diseases. Dr. Bass has served the College of Medicine in a variety of positions since

his initial appointment as Assistant Professor in the Department of Medicine in 1974.

Dr. Bass is triple-boarded in Internal Medicine, Pulmonary Diseases, and Critical Care Medicine. He has been listed in "Best Doctors of America" by Naifeh and Smith. He has an outstanding national reputation in the subdisciplines of pulmonary and critical care medicine.

*If you would like to submit an article for  
publication, please forward it to:*

Dusty Layton  
University of South Alabama  
College of Medicine  
CSAB 170

or

FAX (334) 460-6073

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## CONGRATULATIONS...

Joseph N. Benoit, Ph.D., *Professor of Physiology*, has been appointed to the Council for Accreditation of the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC). The appointment is for a four year period beginning July 1, 1999. The mission of AAALAC is to promote the humane treatment of animals in science through voluntary accreditation and assessment programs. For additional information regarding AAALAC visit their website at <http://www.aaalac.org>.

The Lymphedema Foundation, founded in 1998 and based in San Antonio, has awarded a research grant to Dr. Joseph N. Benoit. The foundation was established by Dr. Arnold Walder of San Antonio with the intended purpose of raising funds to support the investigation of lymphedema, a swelling of a limb due to low output failure of the lymphatic system. The swelling frequently begins after treatment of breast, prostate or pelvic malignancies because of the interruption of normal lymphatic flow channels.



Ms. Monica Williams-Murphy, a *sophomore medical student*, was invited to be a co-organizer of the Medicine Session at the Fifth Internet World Congress on Biomedical Sciences 1998. Over 1500 authors from 51 countries were involved in this meeting which took place completely over the Internet. Ms. Williams-Murphy also presented a WebPoster in the Medicine Session describing the results of a Summer Medical Student Research study. This cyberspace meeting is accessible via the URL <http://www.mcmaster.calinabis98>.

Ms. Williams-Murphy was also awarded the Young Clinical Investigator's Award at the Southern Society for Pediatric Research Meeting in New Orleans on February 19, 1999 for presentation of her summer research results relating to sickle cell disease and pregnancy outcome.



Mark S. Taylor, a *graduate student in the Department of Physiology*, has been selected as a recipient of the 1999 Procter & Gamble Professional Opportunity Award from the American Physiological Society. Mr. Taylor was selected for this award on the basis of his research on "Cyclic Nucleotides Dependent Alterations in Vascular Smooth Muscle Ca<sup>2+</sup>". Mr Taylor's dissertation research is directed by Dr. Joseph N. Benoit.



Richard Zweifler, M.D., *Director of the USA Stroke Center and Assistant Professor of Neurology*, was awarded a grant to compare the safety and effectiveness of warfarin with high dose aspirin as preventive therapy for ischemic stroke. The five year study is sponsored by the National Institute of Neurologic Disorders in Stroke and coordinated at Emory University.

## DEPUTY DIRECTOR APPOINTED TO ALABAMA AHEC PROGRAM



Richard W. Matens, M.Div., has been appointed to the position of Deputy Director, Alabama AHEC Program. Mr. Matens has 15 years experience in the field of health care management and human services. Prior to his appointment, Matens directed the Friends for Life: AIDS Resource Center in Baton Rouge, Louisiana.

He received his Bachelor's degree in Spanish and Philosophy from the University of St. Thomas and a Masters degree from Notre Dame School of Theology. Matens has developed and implemented community and university-based programs in the San Francisco Bay area and in southeastern Louisiana and served as Director of Rural Health at the Area Health Education Center of Southeast Louisiana from 1994-1997.

Mr. Matens will be responsible for coordinating the assessment of health needs and resources with AHEC centers as well as evaluating the quality of programs relative to their benefit to the local communities. His office will also negotiate contracts between the AHEC educators and health care professionals. Mr. Matens may be reached through the Office of Rural Health at 461-1531.

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## MARCIA GROVE RECOGNIZED BY NATIONAL CANCER RESEARCH GROUP

Marcia Grove-Conrad, RN, BSN, MSN, MPH, ONS, was selected for Chair of the Nurse Oncologist Committee of the Southwest Oncology Group (SWOG). This national clinical research group is the largest multi-institutional clinical research program supported by the National Cancer Institute. It organizes cancer treatment and cancer prevention trials in humans throughout the U.S. and Canada.

Marcia is an Oncology Nurse Research Data Manager at USA Cancer Center. In this position, her responsibilities include recruitment, meticulous data procurement and management, maintenance of experimental drugs and assurance that cancer treatment and prevention protocols are properly presented to and maintained with the Institutional Review Board.

Selection as the Chair of the Nurse Oncologist Committee of SWOG is particularly noteworthy because it is usually proffered to an oncology nurse from Universities with larger and more established cancer programs.

## HEALTH SCIENCE FELLOWSHIP GRANTED

The American Heart Association Southeast Affiliate approved funding for a Health Science Fellowship with Joseph N. Benoit, Ph.D., professor of physiology, as program director. The award is a two-year institutional award entitled "Advanced Cardiovascular Research for Medical Students." This program represents an outgrowth of the Summer Medical Research Program and is designed as a second stage of research training whereby sophomore, junior and senior medical students who have previously participated in the Summer Research Program are eligible for support. The overall objective of the program is to identify medical students who are interested in cardiovascular research and to foster their development as future physician/scientists.

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## INFERTILITY SPECIALIST TEAM SUCCESSFUL

USA's infertility specialist team, led by Botros Rizk, M.D., has announced that for the first time in the Gulf Coast Region, a pregnancy has been achieved by frozen embryo transfer in an infertile patient.

Human embryo freezing, and attempts to achieve pregnancy by using frozen embryos, is one of the latest treatment practices for infertility. At present, the success rate of this technique is low and only a few infertility clinics across the country are reporting a high successful pregnancy rate by this method.

The USA team that treated a 32-year old New Orleans woman, is comprised of two infertility specialists, Dr. Botros Rizk, M.D.; Daniel Duffy, M.D.; an assisted reproductive technology (ART) laboratory scientist, Amjad Hossain, Ph. D.; and the infertility nurse coordinator, Janet Dyer-Johnson. The patient stated, "The team at USA has been really wonderful and supportive. The whole experience has been awesome."

According to Dr. Hossain, the director of ART laboratory services at USA, the success of modern treatment of infertility is based, in large extent, on accurate laboratory procedures. Dr. Rizk said the ART laboratory at USA is making significant contributions in assisting him in infertility diagnosis and treatment strategies.

The USA infertility treatment program, established in 1987, is administered by the Department of Obstetrics and Gynecology, which is chaired by Ian H. Thorneycroft, Ph.D., M.D. The department treats about 250 patients annually for infertility.

## BENNETT NAMED VICE-DEAN FOR STUDENT AFFAIRS AND MEDICAL EDUCATION



Betsy D. Bennett, M.D., Ph.D., has been appointed Vice-Dean for Student Affairs and Medical Education. Dr. Bennett completed her undergraduate degree at Vanderbilt University with a B.A. in biology. She received her Ph.D. in pathology and Doctor of Medicine degrees from Vanderbilt University.

Dr. Bennett began her academic career at USA in 1981 as Assistant Professor of Pathology and Director of Clinical Chemistry and Director of Autopsy Service. In 1983, Dr. Bennett served as Assistant Dean for Student Affairs. She has served in numerous positions for both the College of Medicine administration and USA Hospitals and clinics. Before accepting her appointment as Vice-Dean, Dr. Bennett served as University Distinguished Professor and Vice-Chair of Pathology and Director of Clinical Laboratories for USA Medical Center and USA Knollwood Park Hospital.

Dr. Bennett has served on numerous hospital, university and national committees including the United States Medical Licensing Examination (USMLE) Step 1 Anatomy Test Committee; Board of Governors of the College of American Pathologists; National Board of Medical Examiners as a Test Committee Representative; American Society of Clinical Pathologists Advisory Council and Liaison Committee for Medical Education.

## COLLEGE OF MEDICINE CHAIRS OF PATHOLOGY AND PHYSIOLOGY RECOGNIZED BY DISCIPLINES

Dr. William A. Gardner, *professor and chair of pathology*, received the F.K. Mostofi Distinguished Service Award at the 88<sup>th</sup> Annual Meeting of the United States and Canadian Academy of Pathology. The F.K. Mostofi Distinguished Service Award was established as a tribute to the long and dedicated service given by Dr. Mostofi to the International Academy of Pathology. This Award is presented to a member of the United States and Canadian Academy of Pathology who has rendered outstanding service to the International Academy of Pathology and its United States - Canadian Division.

Dr. Aubery E. Taylor, *professor and chair of physiology*, was chosen to present the Walter B. Cannon Memorial Award Lecture for Experimental Biology 1999 in Washington, D.C. Dr. Taylor's lecture was entitled "*Starlings Hypothesis of Transcapillary Fluid Exchange: Then, Now and the Future.*"

Dr. Cannon was the Professor and Chairman in Physiology at Harvard Medical School and is best known for his concept of "Wisdom of the Body, GI and the Autonomic Effect System." The Walter B. Cannon Memorial Lecture was established in 1987 and is sponsored the Grass Foundation, a leading manufacturer of scientific instruments. The lecture each year is given by an outstanding physiologist on a subject that addresses some aspect of the concept of homeostasis as enunciated by Cannon's seminal work.

## NEW ELECTRONIC PRODUCTS AVAILABLE FROM BIOMEDICAL LIBRARY

Two new online products are available from any computer using a University IP number. Go to <http://southmed.usouthal.edu/com/new.htm> to access the resources.

Harrison's Online, the online version of Harrison's Principles of Internal Medicine, makes the updated 14<sup>th</sup> edition of Harrison's Principles of Internal Medicine completely searchable.

Important features in Harrison's Online are:

- full search capabilities of the new 14<sup>th</sup> edition of Harrison's Principles of Internal Medicine
- new and revised content from the Harrison's editors and contributors
- updated regularly
- late-breaking clinical trial data
- updated therapy
- new references
- links to related web sites
- added illustrations

- self-assessment questions
- section of 823 multiple-choice questions to help prepare for the boards

If you've heard about Evidence Based Medicine, try out the Cochrane Library. The Cochrane Library prepares, maintains and promotes the accessibility of systematic reviews of the effects of healthcare interventions.

Cochrane Library databases contain Systematic Reviews, Abstracts of Reviews of Effectiveness, Controlled Trials Register and Review of Methodology Database. Access Cochrane from the College of Medicine homepage by clicking "New" from a campus computer.

The aim of the database is to "help reviewers make good decisions about the methods they use relative to the specific healthcare problems they address, rather than dictate arbitrary standards. The guidelines provided here are intended to help reviewers to be systematic and explicit about the questions they pose and how they derive answers to those questions. These guidelines are not a substitute for good judgment."

*Source: USA Biomedical Library*

## 1999 RESIDENCY SELECTION

According to data received from the National Resident Matching Program (NRMP), 13,707 (or 93.8%) of all U.S. medical school seniors who participated in the 1999 match, received a first-year residency training position. As part of the annual Match Day event, held on March 18, 1999, medical school seniors learned which residency program they will enter. Participation in the 1999 Match was slightly higher nationally than last year, increasing from 26,360 to 26,462. A total of 20,453 first-year residency positions were offered in this year's Match.

This year 80.5 percent of U.S. seniors matched to one of their first three choices for first and second year programs. Approximately 57 percent matched to their first choice, 15 percent to their second choice and 8 percent received their third choice. The percentage of U.S. seniors receiving one of their top three choices is up slightly from 78.9 percent in 1998.

Seven specialities had 100 percent fill rates, as compared with only one speciality in 1998. A total of 7,377 (or 54%) graduating seniors matched to a first year position in one of the generalist disciplines, defined as internal medicine, family practice and pediatrics. A comparison of Match Day results for the past several years for University of South Alabama graduating seniors is shown in the table below.

### MATCH DAY "RESULTS" University of South Alabama Seniors — RESIDENCIES RECEIVED BY DISCIPLINE —

	Class of 1995		Class of 1996		Class of 1997		Class of 1998		Class of 1999	
PRIMARY CARE:	36	60%	47	73%	427	65%	41	65%	33	55%
Internal Medicine	14	23%	26	41%	12	18%	16	25%	12	20%
Family Medicine	16	27%	15	23%	22	34%	12	19%	9	15%
Pediatrics	5	8%	4	6%	7	11%	8	13%	8	13%
Med/Peds	1	2%	2	3%	1	2%	5	8%	4	7%
Anesthesiology	3		2		3		1		2	
Dermatology	0		0		0		0		1	
Emergency Medicine	1		2		2		0		1	
Neurological Surgery	2		0		0		1		0	
Ob/Gyn	2		4		5		5		5	
Ophthalmology	2		1		1		2		3	
Orthopedics	1		0		0		3		3	
Otolaryngology (ENT)	0		0		1		0		1	
Pathology	4		2		4		0		3	
Psychiatry	1		4		0		1		0	
Radiology	2		2		1		2		2	
Residency Deferred	0		0		0		0		1	
Surgery	2		0		5		6		5	
Transitional	2		0		0		0		0	
Urology	1		0		1		0		3	

## 4<sup>th</sup> ANNUAL PRIMATE ULTRASOUND/IMAGING SYMPOSIUM

The University of South Alabama, Department of Comparative Medicine hosted the 4th Nonhuman Primate Ultrasound/Imaging Symposium March 17 to 19, 1999. Over 40 participants from the United States, Canada and Europe attended the event, which featured presentations and laboratory exercises on ultrasound theory and equipment, echocardiography, and ultrasound-guided sampling. The Symposium included presentations by College of Medicine faculty members Dr. Jeffrey Brandon and Dr. Michael Harpen (Department of Radiology) and Dr. Clara Massey (Department of Internal Medicine).

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