Biomedical Sciences Instrumentation

Volume 39

Presented at:
Biloxi, Mississippi
10–13 April 2003

Technical Papers
Composing the Proceedings of the
40th Annual Rocky Mountain Bioengineering Symposium
&
40th International ISA Biomedical Sciences Instrumentation Symposium

ISA Volume 437

ISA
Research Triangle Park, North Carolina
Edited by: Hamed Benghuzzi, Ph.D. and Michelle Tucci, Ph.D.
# TABLE OF CONTENTS

## LASERS IN MEDICINE

<table>
<thead>
<tr>
<th>Paper #</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-001</td>
<td>THE STUDY OF A LIGHT-ACTIVATED ALBUMIN PROTEIN SOLDER TO BOND LAYERS OF PORCINE SMALL INTESTINAL SUBMUCOSA. Mark H. Ware, Christine A. Buckley. Rose-Hulman Institute of Technology, Terre Haute, IN</td>
<td>1</td>
</tr>
<tr>
<td>2003-005</td>
<td>INCORPORATING CYTOCHROME P450 3A4 GENOTYPE EXPRESSION AND FT-IR/RAMAN SPECTROSCOPY DATA AS MEANS OF IDENTIFICATION OF BREAST TUMORS. Spencer O. Miller, Gideon Ewing, Carol Howard, Hiroyasu Tachikawa, Steven Bigler, W. Henry Barber, Michael Angel and D. Olga McDaniel.</td>
<td>24</td>
</tr>
</tbody>
</table>

## COMPUTER APPLICATIONS AND NEURAL NETWORKS

<table>
<thead>
<tr>
<th>Paper #</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-007</td>
<td>INTERNET BASED EXPERT SYSTEM FOR THE MANAGEMENT OF GALLSTONES, RENAL, URTERIC AND BLADDER CALCULI. S. Sridhar and N. Kumaravel. Anna University, Chennai, India</td>
<td>36</td>
</tr>
<tr>
<td>ID</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2003-008</td>
<td>LOW COST, HIGHLY EFFECTIVE PARALLEL COMPUTING ACHIEVED THROUGH A BEOWULF CLUSTER.</td>
<td>Marc Bitner and Gordon Skelton. University of Mississippi, Jackson, MS.</td>
</tr>
<tr>
<td>2003-009</td>
<td>SIMULATION OF INTRALUMINAL IMPEDANCE.</td>
<td>A. Al-Zaben and V. Chandrasekar. Colorado State University, Fort Collins, CO.</td>
</tr>
<tr>
<td>2003-011</td>
<td>HEAD MODEL EXTENSION FOR THE STUDY OF BIOELECTRIC PHENOMENA.</td>
<td>Paolo Bruno, Federica Vatta, Mininel Stefano, Paolo Inchingolo. University of Trieste, Trieste, Italy.</td>
</tr>
<tr>
<td>2003-012</td>
<td>MEASURING INFORMATION FLOW IN NONLINEAR SYSTEMS - A MODELING APPROACH IN THE STATE SPACE.</td>
<td>Balaji Veeramani, Awadhesh Prasad, K. Narayanan, A. Spanias, L. D. Iasemidis. Arizona State University, Tempe, AZ</td>
</tr>
<tr>
<td>2003-014</td>
<td>A THREE DIMENSIONAL (3-D) PHYSICAL MODEL OF RIBOSOME MOVEMENT IN PROTEIN SYNTHESIS</td>
<td>Kang Cheng and Chang-Hua Zou. Edison, NJ</td>
</tr>
<tr>
<td>2003-015</td>
<td>A THREE DIMENSIONAL (3-D) PHYSICAL MODEL OF DNA POLYMERASE MOVEMENT IN DNA REPLICATION.</td>
<td>Kang Cheng and Chang-Hua Zou. Edison, NJ</td>
</tr>
<tr>
<td>2003-016</td>
<td>YADCLAN: YET ANOTHER DIGITALLY-CONTROLLED LINEAR ARTIFICIAL NEURON.</td>
<td>Paul Frenger. A Working Hypothesis, Houston, TX</td>
</tr>
<tr>
<td>2003-017</td>
<td>A CEREBELLAR NEURAL NETWORK MODEL FOR ADAPTATIVE CONTROL OF SACCADES IMPLEMENTED WITH MATLAB.</td>
<td>Francisco A. Rodriguez Campos, John Enderle. University of Connecticut, Storrs, CT</td>
</tr>
</tbody>
</table>
VISION AND OPTICS

2003-018 DIGITAL IMAGE PROCESSING FOR PRE-COMPENSATION OF HIGH-ORDER ABERRATIONS OF THE HUMAN EYE.
Miguel Alonso and Armando Barreto. Florida International University, Miami, FL.

2003-019 DO WEAK ADAPTING BACKGROUNDS UNCOVER MULTIPLE COMPONENTS IN THE ELECTRORETINOGRAM OF THE HORSESHOE CRAB?

Steven F. Barrett¹, Mike Wilcox². University of Wyoming, Laramie, WY and United States Air Force Academy, Colorado, Springs, CO.

2003-021 SEGMENTATION AND 3D RECONSTRUCTION OF BIOLOGICAL CELLS FROM SERIAL SLICE IMAGES.
Jeffrey Anderson¹, Paul Wade¹, Michael Wilcox² and Steve Barrett¹. University of Wyoming, Laramie, WY and United States Air Force Academy, Colorado, Springs, CO.

BIOSIGNAL PROCESSING

2003-022 A NEW APPROACH TOWARDS PREDICTABILITY OF EPILEPTIC SEIZURES: KLT DIMENSION.
Rajeshkumar Venugopal¹, K. Narayanan², Awadhesh Prasad¹, A. Spanias¹, J. C. Sackellares², and L.D. Iasemidis¹. Arizona State University, Tempe, AZ and University of Florida, Gainesville, FL

2003-023 PREDICTABILITY OF EPILEPTIC SEIZURES: A COMPARATIVE STUDY USING LYAPUNOV EXPONENT AND ENTROPY BASED MEASURES.
Shivkumar Sabesan¹, K. Narayanan¹, Awadhesh Prasad¹, A. Spanias¹, J.C.Sackellares² and L. D. Iasemidis¹. Arizona State University, Tempe, AZ and University of Florida, Gainesville, FL

2003-024 DETECTION OF SPEAKING WITH A NEW RESPIRATORY INDUCTIVE PLETHYSMOGRAPHY SYSTEM.
Frank H. Wilhelm, Eva M. Handke, Walton T. Roth. Stanford University School of Medicine, Stanford, CA 94305, and VA Palo Alto Health Care System, Palo Alto, CA
2003-025  WIGNER-VILLE DISTRIBUTION AND GABOR TRANSFORM IN DOPPLER ULTRASOUND SIGNAL PROCESSING.
S. Ghofrani, A. Ayatollahi and M.B. Shamsollahi, University of Science and Technology, Tehran, Iran, Islamic Azad University, Tehran, Iran, and Sharif University of Technology, Tehran, Iran.

2003-026  USING THE DISCRETE GABOR EXPANSION FOR THE DOPPLER ULTRASOUND SIGNAL PROCESSING.
S. Ghofrani, A. Ayatollahi and M.B. Shamsollahi, University of Science and Technology, Tehran, Iran, Islamic Azad University, Tehran, Iran, and Sharif University of Technology, Tehran, Iran.

2003-027  A WAVELET COEFFICIENT SMOOTHENED RLS ADAPTIVE DENOISING MODEL FOR ECG.
S. Poornachandra and N. Kumaravel, Anna University, Chennai, India.

2003-028  THE MAXIMUM A POSTERIORI APPROACH TO THE INVERSE PROBLEM OF ELECTROCARDIOGRAPHY.
G. Bu, R. Throne, L. Olson and J. Windle. Rose Hulman Institute of Technology, Terre Haute, IN and University of Nebraska.

2003-029  DIGITAL SIGNAL PROCESSING METHODS FOR THE EVALUATION OF BLOOD VOLUME PULSE (BVP) WAVEFORM CHANGES DUE TO EXERCISE.
Chao Li, Jing Zhai and Armando Barreto. Florida International University, Miami, FL.

BIOINSTRUMENTATION

2003-030  ISSUES IN USING DATABASES OF PRE-RECORDED PHYSIOLOGICAL SIGNALS TO TEST MEDICAL DEVICES.
Charles Ho and Steven Kurtzman. FDA and U.S. Department of Health and Human Services, Rockville, MD.

2003-031  KNOWLEDGE MANAGEMENT SYSTEM FOR BENCHMARKING PERFORMANCE INDICATORS USING STATISTICAL PROCESS CONTROL (SPC) AND VIRTUAL INSTRUMENTATION (VI).
Satheesh Parachoor, Eric Rosow and John Enderle. University of Connecticut, Storrs, CT.

2003-032  A NEW MICROCOMPUTER BASED SAFETY AND LIFE SUPPORT SYSTEM FOR SOLITARY LIVING ELDERLY PEOPLE.
Kosuke Miyauchi, Yoshiharu Yonezawa, Hiromichi Maki, Hidekuni Ogawa, Allen Hahn and W. Morton Caldwell. Hiroshima Institute of Technology, Hiroshima, Japan, International Trinity College, Hiroshima, Japan, University of Missouri-Columbia, Columbia, MO and Caldwell Biomedical Electronics, Hurricane, WV.
2003-033  A WRIST MOUNTED ARTERIAL PULSE INTERVAL AND MOVEMENT RECORDING SYSTEM.
Fumiteru Sakyou, Yoshiharu Yonezawa, Hiromichi Maki, Hidekuni Ogawa, Allen Hahn and W. Morton Caldwell. Hiroshima Institute of Technology, Hiroshima, Japan, International Trinity College, Hiroshima, Japan, University of Missouri-Columbia, Columbia, MO and Caldwell Biomedical Electronics, Hurricane, WV.

2003-034  THE SYNTHESIS OF EMG SIGNALS BASED ON CONSIDERATIONS OF SIGNAL SPECTRA.
P. Gammans, S.F. Qin, and D. K. Wright. Brunel University, Egham, Surrey, UK.

2003-035  RELATIONSHIPS AMONG SPECTRAL MEASURES OF BAROFLEX SENSITIVITY AND INDICES OF CARDIAC VAGAL CONTROL.
Marcellus Merritt, John Sollers III, Michael Evans, Alan Zonderman and Julian Thayer. National Institute on Aging, Baltimore, MD.

2003-036  A WEB-BASED HOME WELFARE AND CARE SERVICE SUPPORT SYSTEM USING A PEN TYPE IMAGE SENSOR.
Hidekuni Ogawa, Yoshiharu Yonezawa, Hiromichi Maki, Haruhiko Sato, Allen Hahn and W. Morton Caldwell. Hiroshima Institute of Technology, Hiroshima, Japan, International Trinity College, Hiroshima, Japan, University of Missouri-Columbia, Columbia, MO and Caldwell Biomedical Electronics, Hurricane, WV.

2003-037  A COMPACT ECG R-R INTERVAL, RESPIRATION AND ACTIVITY RECORDING SYSTEM.
Takahiro Yoshimura, Yoshiharu Yonezawa, Hiromichi Maki, Hidekuni Ogawa, Allen Hahn, Julian Thayer, and Morton Caldwell. Hiroshima Institute of Technology, Hiroshima, Japan, International Trinity College, Hiroshima, Japan, University of Missouri-Columbia, Columbia, MO, National Institute of Aging, Baltimore, MD and Caldwell Biomedical Electronics, Hurricane, WV.

2003-038  THE EYE TRACKER SYSTEM-A SYSTEM TO MEASURE AND RECORD SACCADIC EYE MOVEMENTS.

2003-039  AMBULATORY MONITORING OF CARDIOVASCULAR RESPONSES DURING MODIFICATION OF AN AGGRESSIVE DOG.
Nancy Williams, Peter Borchelt, John Sollers III, Peter Gasper, and Julian Thayer. National Institute of Aging, Baltimore, MD.
A MICROCOMPUTER BASED DAILY LIVING ACTIVITY RECORDING SYSTEM.

BIOMECHANICS

BIOMECHANICAL ANALYSIS OF MOTOR VEHICLE SEAT BELT BUCKLES.

MOTOR VEHICLE SEAT BELT RESTRAINT SYSTEM ANALYSIS DURING ROLLOVER.
Steven Meyer, David Hock, Stephan Forrest, Brian Herbst, Anthony Sances, Jr., Srirangam Kumaresan. SAFE, Goleta, CA and University of California, Santa Barbara, CA.

BIOMECHANICAL INJURY EVALUATION OF LAMINATED SIDE DOOR WINDOWS AND SUNROOF DURING ROLLOVER ACCIDENTS.
Anthony Sances, Jr., Srirangam Kumaresan, Fred Carlin, Keith Friedman and Steve Meyer. University of California, Santa Barbara, CA, Friedman Research Corporation, Goleta, CA and SAFE, Goleta, CA

KINETICS OF THE HEAD-NECK COMPLEX IN LOW SPEED REAR IMPACT.
Brian Stemper, Narayan Yoganandan and Frank Pintar. Medical College of Wisconsin and Marquette University, Milwaukee, WI.

INVERTED DROP TESTING AND NECK INJURY POTENTIAL.
Stephen Forrest, Brian Herbst, Steve Meyer, Anthony Sances, Jr., and Srirangam Kumaresan. SAFE, Goleta, CA and University of California, Santa Barbara, CA.
2003-046 EXPERIMENTAL INJURY STUDY OF CHILDREN SEATED BEHIND COLLAPSING FRONT SEATS IN REAR IMPACTS. Kenneth Saczalski, Anthony Sances, Jr., Srirangam Kumaresan, Joseph Burton and Paul Lewis, Environmental Research and Safety Technologists, Inc., Newport Beach, CA, University of California, Santa Barbara, CA, and Burton and Associates, Alpharetta, GA.


2003-048 CARPAL BONE KINEMATICS IN COMBINED WRIST JOINT MOTIONS MAY DIFFER FROM THE BONE KINEMATICS DURING SIMPLE WRIST MOTIONS. Mohammed Upal. Rhode Island Hospital, Providence, RI

2003-049 PLATING OF RAT FEMORAL SHAFT OSTEOTOMIES: REPORT OF A TECHNIQUE AND PRELIMINARY RESULTS. Joseph Conflitti, Matthew Graves, George Russell, Michelle Tucci, and Hamed Benghuzzi. University of Mississippi Medical Center, Jackson, MS.

2003-050 BONE SPARING SURGICAL OPTIONS FOR TOTAL HIP REPLACEMENT. Audrey Tsao, Tracy Pesut, Charity Peacock, Michelle Tucci and Ruth Ann Buckhalter. University of Mississippi Medical Center, Jackson, MS.

2003-051 DORSAL ROOT IMPLANT OF LESIONED SPINAL CORD MORPHOLOGIC FINDINGS OF REGENERATION OF SYNAPES IN THE MAMMALIAN SPINAL CORD-REPAIR AND RECOVERY. C.C. Turbes, Creighton University.

2003-052 SIMULATION OF FUNCTIONAL NEUROMUSCULAR STIMULATION ASSISTED SIT-TO-STAND MOVEMENTS. Jason Gillette and Eric Hartman, Iowa State University, Ames, IA and customKYnetics, Inc., Versilles, KY

BIOMATERIALS

2003-053 EVALUATION OF NOVEL BIODEGRADABLE CYCLIC CARBONATE POLYESTER COPOLYMERS FOR CYTOCOMPATIBILITY USING MRC-5 CELLS. J. Longino, B. Mullen, H. Benghuzzi, M. Tucci, C. Tang, R. Storey R., and A. Puckett. University of Mississippi Medical Center and University of Southern Mississippi, Hattiesburg, MS
2003-054 SCAFFOLD-ENHANCED ALBUMIN AND N-BUTYL-CYANOACRYLATE ADHESIVES FOR TISSUE REPAIR: EX VIVO EVALUATION IN A PORCINE MODEL.
Karen McNally-Heintzelman, Jill Riley, and Douglas Heintzelman. Rose Hulman Institute of Technology, Terre Haute, IN

2003-055 FACTORS AFFECTING THE PARTICLE SIZE AND IN VITRO RELEASE OF BOVINE SERUM ALBUMIN FROM POLYETHYLENE GLYCOL MICROPARTICLES.
Abhinaya Thummala, J. Kent Leach and Edgar O’Rear. University of Oklahoma, Norman, OK.

2003-056 SUSTAINED DELIVERY OF HER-2/NEU ANTIBODY BY TCPL DELIVERY DEVICE USING ADULT MALE RATS AS A MODEL.
Jack Brinkley, Lynn Copeland, Charles Streckfus, Michelle Tucci and Hamed Benghuzzi. University of Mississippi Medical Center, Jackson, MS.

2003-057 GROWTH FACTOR EXPRESSION IN EARLY STAGES OF BENIGN PROSTATIC HYPERPLASIA UPON EXPOSURE TO SUSTAINED DELIVERY OF ANDROGENS.
Melanie Pollan, Hamed Benghuzzi and Michelle Tucci, University of Mississippi Medical Center, Jackson, MS.

2003-058 THE EFFECTS OF SUSTAINED DELIVERY OF DIOSGENIN ON THE ADRENAL GLAND OF FEMALE RATS.
Hamed Benghuzzi, Michelle Tucci, Rebecca Eckie, and James Hughes. University of Mississippi Medical Center, Jackson, MS.

2003-059 STRUCTURAL CHANGES IN THE KIDNEY ASSOCIATED WITH OVARIECTOMY AND DIOSGENIN REPLACEMENT THERAPY IN ADULT FEMALE RATS.
Michelle Tucci and Hamed Benghuzzi. University of Mississippi Medical Center, Jackson, MS.

2003-060 THE EFFECTS OF SUSTAINED DELIVERY OF GLUCOCORTICOIDS AND ANTIOXIDANTS ON THE ADRENAL GLANDS OF MALE RATS.
Jeffrey Graham, Anita Winfield, Michelle Tucci, Hamed Benghuzzi, Elgenaid Hamadain and Joseph Cameron. Jackson State University and University of Mississippi Medical Center, Jackson, MS.

2003-061 THE ROLE OF SUSTAINED DELIVERY OF CORTICOSTERONE ALONE OR IN COMBINATION WITH ANTIOXIDANTS ON THE CARDIOVASCULAR SYSTEM OF ADULT FEMALE RATS.
Anita Winfield, Jeff Graham, Hamed Benghuzzi, Michelle Tucci and Joseph Cameron. Jackson State and University of Mississippi Medical Center, Jackson, MS.
CANCER

2003-062 EFFECT OF NIGELLA SATIVA (N. SATIVA L.) AND OXIDATIVE STRESS ON THE SURVIVAL PATTERN OF MCF-7 BREAST CANCER CELLS.
Ibrahim O. Farah and Rowshan A. Begum. Jackson State University, Jackson, MS

2003-063 DELAYED APOPTOSIS UPON THE TREATMENT OF HEP-2 CELLS WITH BLACK SEED.
Charla Corder*, Hamed Benghuzzi, Michelle Tucci, and Zelma Cason. University of Mississippi Medical Center, Jackson, MS

2003-064 THE ROLE OF BLACK SEED IN THE PROLIFERATION AND BIOCHEMICAL MARKER LEVELS OF HEP-2 CELLS.
Jeffrey T. Hansen*, Hamed Benghuzzi, Michelle Tucci, Zelma Cason. The University of Mississippi Medical Center, Jackson, MS.

2003-065 ENHANCED HEAT-INDUCED CELLULAR LEAKAGE AND DEATH OF STAPHYLOCOCCUS AUREUS AND SALMONELLA TYPHIMURIUM BY 2,3 BUTANEDIONE.
Ibrahim O. Farah, Jackson State University, Jackson, MS

2003-066 HEP-2 CELLS EXPOSED TO GLUCOCORTICOIDS AND LPS UNDERGO ORGANELLE DAMAGE AND APOPTOSIS.
Barbara Willis¹, Hamed Benghuzzi ², Natesia White¹, Michelle Tucci² and Joseph Cameron¹. Jackson State University and ² University of Mississippi Medical Center, Jackson, MS

2003-067 CYP1A1, HSP70, P53, AND C-FOS EXPRESSION IN HUMAN LIVER CARCINOMA CELLS (HEPG₂) EXPOSED TO PENTACHLOROPHENOL.
Waneene C. Dorsey And Paul B. Tchounwou. Jackson State University, Jackson, MS.

2003-068 ASSOCIATION OF PESTICIDE EXPOSURE AND RISK OF BREAST CANCER MORTALITY IN MISSISSIPPI.
Mohamed H. Abdalla¹, Mary Lou Gutierrez-Mohamed², Ibrahim O. Farah¹. Jackson State University, Jackson, MS

2003-069 THE SYNERGISTIC EFFECT OF CONVENTIONAL AND SUSTAINED DELIVERY OF ANTIOXIDANTS ON LNCAP PROSTATE CANCER CELL LINE.
La'Toya Ross Richards, Hamed Benghuzzi, Michelle Tucci and James Hughes. University of Mississippi Medical Center, Jackson, MS

xii
2003-070 A COMPARATIVE STUDY OF FOUR SEROLOGICAL TUMOR MARKERS FOR THE DETECTION OF BREAST CANCER. Shawn R. Clinton, Kevin L. Beason, Sabrina Bryant, James T. Johnson, Margaret Jackson, Cynthia Wilson, Kay Holifield, Charlton Vincent, and Margot Hall¹. University of Southern Mississippi, Hattiesburg, MS, University of Mississippi Medical Center, Jackson, MS, and Laurel Clinic for Women, Laurel, MS

2003-071 MORPHOMETRIC ANALYSIS OF MRC-5 FIBROBLAST LIKE CELLS EXPOSED TO INTERMITTENT UV RADIATION. Pamala Jones*, Hamed Benghuzzi, Michelle Tucci, and Felicia Tardy. University of Mississippi Medical Center, Jackson, MS

2003-072 A LABORATORY OBSERVATION OF SOME TOXIC EFFECTS OF COMMERCIALY AVAILABLE IMPLANT POLYURETHANES ON HL-60 CANCER CELLS. Joseph Daka. Ottawa, Canada, ON

BIOCHEMISTRY/BIOPHYSICS

2003-073 THE USE OF DIGITAL IMAGING TECHNOLOGY TO ASSESS THE PATHOGENESIS OF CORONARY ATHEROSCLEROSIS: THE ROLE OF ELASTIN. Adel Mohamed and Hamed Benghuzzi. College of Medicine, University of Saskatchewan, Saskatoon, SK, Canada and University of Mississippi Medical Center, Jackson, MS, USA

2003-074 MORPHOMETRIC EVALUATION OF OVARIAN TISSUE EXPOSED TO PCB CONVENTIONALLY AND IN A SUSTAINED MANNER. Alisa Nixon*, Hamed Benghuzzi and Zelma Cason. University of Mississippi Medical Center, Jackson, MS

2003-075 IMPROVEMENT OF EXPERIMENTAL ALLERGIC ENCEPHALOMYELITIS (EAE) BY THYMOQUINONE; AN OXIDATIVE STRESS INHIBITOR. A. Mohamed*, A. Shoker**, F. Bendjelloul**, A. Mare**, M. Alzrigh*, H. Benghuzzi*** and T. Desin**, College of Medicine, University of Saskatchewan, Saskatoon, SK, Canada and University of Mississippi Medical Center, Jackson, MS, USA

2003-077 EFFECTS OF STATIC ELECTROMAGNETIC FIELDS ON CHARACTERISTICS OF MG-63 OSTEOBLASTS GROWN IN CULTURE.
Hari H.P. Cohly, Ph.D., George E. Abraham III, B.A., Kenneth Ndebele, John J. Jenkins, James Thompson, and Michael F. Angel. University of Mississippi Medical Center, Jackson, MS.

2003-078 MORPHOLOGICAL EVALUATION OF MRC-5 FIBROBLASTS AFTER STIMULATION WITH STATIC MAGNETIC FIELD AND PULSATING ELECTROMAGNETIC FIELD.
Kimberly Pate*, Hamed Benghuzzi, Michelle Tucci, and Zelma Cason. University of Mississippi Medical Center, Jackson, MS

2003-079 AUTORADIOGRAPHIC EVALUATION OF ELECTROMAGNETIC FIELD EFFECTS ON SEROTONIN (5-HT\textsubscript{1A}) RECEPTORS IN RAT BRAIN.
Mary T. Johnson, Jane McCullough, Gabi Nindl, Jack K. Chamberlain. Indiana University School of Medicine, Terre Haute, IN

2003-080 LDL OXIDATION BY ANDROGEN EXPOSURE USING MRC-5 CELL LINE AS A MODEL.
Felicia Magee Tardy, Hamed Benghuzzi, Michelle Tucci, and Pamala Jones. University of Mississippi Medical Center, Jackson, MS

2003-081 CYTOPATHOLOGICAL CHANGES ASSOCIATED WITH CONTINUOUS AND INTERMITTENT EXPOSURE TO GLUCOCORTICOIDS USING RAW CELL LINE AS A MODEL.
Audwin Fletcher, Hamed Benghuzzi, and Michelle Tucci. University of Mississippi Medical Center, Jackson, MS

2003-082 HISTOMORPHOMETRIC EVALUATION OF RENAL GLOMERULI EXPOSED TO SUSTAINED DELIVERY OF ESTROGEN USING ADULT OVARIECTOMIZED RATS.
Naiel A. Hafez, Hamed Benghuzzi, and Michelle Tucci. University of Mississippi Medical Center, Jackson, MS

2003-083 USE OF PROTEOMICS METHODOLOGY TO EVALUATE INFLAMMATORY PROTEIN EXPRESSION IN TENDINITIS.
Ryan D. Harris, Gabi Nindl, Walter X. Balcavage, William Weiner, Mary T. Johnson. Rose-Hulman Institute of Technology, Terre Haute, IN Indiana University School of Medicine, Terre Haute, IN

2003-084 CULTURED KERATINOCYTES AND DERMAL FIBROBLASTS ON A DOUBLE-LAYER SCAFFOLD WITH BI-MEDIUM CULTURE SYSTEM.
Yi-Chau Huang, Tzu-Wei Wang, Jui-Sheng Sun, Feng-Huei Lin. National Taiwan University, Taipei, Taiwan
2003-085  DOWN REGULATION OF CD14 EXPRESSION THROUGH PRETREATMENT WITH GLUCOCORTICOIDS. Randee K. Ivy, Michelle Tucci, Hamed Benghuzzi, and Zelma Cason. University of Mississippi Medical Center, Jackson, MS

2003-086  THE ANALYSIS OF THE DORSAL AORTA AND RENAL VESSELS EXPOSED TO SUSTAINED DELIVERY OF AED, T, AND DHT USING A RAT MODEL. Shontell L. Credit, Hamed A. Benghuzzi, Michelle Tucci, Ibrahim Farah and Joseph A. Cameron. Jackson State University and University of Mississippi Medical Center, Jackson, MS

2003-087  PRIMARY RABBIT EPITHELIAL CELLS EXPOSED TO ADRENAL, GONADAL, AND PITUITARY HORMONES IN CULTURE. Stacy Hull Vance, Hamed Benghuzzi, and Michelle Tucci. University of Mississippi Medical Center, Jackson, MS

2003-088  ORGANOTYPIC KERATINOCYTE-FIBROBLAST COCULTURES ON A BILAYER GELATIN SCAFFOLD AS A MODEL OF SKIN EQUIVALENT. Tzu-Wei Wang, Yi-Chau Huang, Ju-Sheng Sun, Feng-Huei Lin. National Taiwan University, Taipei, Taiwan

2003-089  TCPL DELIVERY SYSTEM AS A MODEL FOR E+P REPLACEMENT THERAPY IN POST-OVARIECTOMIZED ADULT RATS MIMICKING A POSTMENOPAUSAL CONDITION. Zelma Cason*, Hamed Benghuzzi, Michelle Tucci and Barry England. University of Mississippi Medical Center, Jackson MS and University of Michigan, Ann Arbor, MI.

2003-090  MORPHOMETRIC ANALYSIS OF THE HORMONAL EFFECT ON TISSUE IMPLANT RESPONSE ASSOCIATED WITH TCP BIOCERAMICS IMPLANTS. Kenneth Butler and Hamed Benghuzzi, University of Mississippi Medical Center, Jackson, MS.

2003-091  IMMUNOHISTOCHEMICAL DETECTION OF CYTOKINE EXPRESSION IN TISSUE-IMPLANT RESPONSE ASSOCIATED WITH TCP BIOCERAMIC IMPLANTS LOADED WITH STEROID HORMONES. Kenneth Butler and Hamed Benghuzzi, University of Mississippi Medical Center, Jackson, MS.

CHARACTERIZATION OF A REAL TIME H$_2$O$_2$ MONITOR FOR THE USE IN STUDIES ON H$_2$O$_2$ PRODUCTION BY ANTIBODIES AND CELLS.
Harish Sharma, Walter Balcavage, Lee Waite, Mary Johnson and Gabi Nindl. Indiana University School of Medicine, Terre Haute and Rose-Hulman Institute of Technology, Terre Haute, IN

CALMODULIN ACTIVITY IN AGING RAT HEART.
Shaun Logan$^{1,2}$, Joseph A Cameron$^2$ and Parminder J S Vig$^1$. University of Mississippi and Jackson State University, Jackson, MS

HUMAN EMBRYONIC STEM CELL RESEARCH: AN ETHICAL CONTROVERSY IN THE US & GERMANY.
Lee Waite, Gabi Nindl. Rose-Hulman Institute of Technology and Indiana University School of Medicine, Terre Haute, IN

ETHICAL CONSIDERATIONS IN BIOENGINEERING RESEARCH.
Nicolas Naurato and Thomas J. Smith. University of Mississippi Medical Center, Jackson, MS

VALIDITY OF SELF-ASSESSMENT OUTCOME QUESTIONNAIRES: PATIENT-PHYSICIAN DISCREPANCY IN OUTCOME INTERPRETATION.
Ashraf A. Ragab. University of Mississippi Medical Center, Jackson, MS

LIFE'S A SWITCH. EXPERIENCES IN NSF UNDERGRADUATE DESIGN PROJECTS.
Stephanie A. Popp, Jennifer R. Barnes, Steven F. Barrett, Kathy M. Laurin. University of Wyoming, Laramie, WY

UNIVERSITY OF WYOMING, COLLEGE OF ENGINEERING, UNDERGRADUATE DESIGN PROJECT: STAR TRACER.
Jennifer R. Barnes, Stephanie A. Popp, Steven F. Barrett. University of Wyoming, Laramie, WY

UNIVERSITY OF WYOMING, COLLEGE OF ENGINEERING, UNDERGRADUATE DESIGN PROJECTS TO AID WYOMING PERSONS WITH DISABILITIES
Steven F. Barrett, Kathy M. Laurin, Janet K. Chidester Bloom. University of Wyoming, Laramie, WY

ADVANCED CLINICAL ENGINEERING WORKSHOPS IN CENTRAL AMERICA
Matthew F. Baretich. Baretich Engineering, Inc, Fort Collins, CO

Author Index

Peer Review of RMBS Submission