

# Stephanie J. Muga

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University of South Carolina – Aiken  
Dept. of Biology & Geology, Chemistry & Physics  
SBDG 208  
Aiken, SC 29801  
803.641.3371  
[stephaniem@usca.edu](mailto:stephaniem@usca.edu)

305 Fox Chapel Drive  
Irmo, SC 29063  
803.407.0577

[smuga@earthlink.net](mailto:smuga@earthlink.net)

## EDUCATION HISTORY

<u>Dates</u>	<u>University</u>	<u>Major</u>	<u>Degree</u>
1999-2000	MD Anderson Cancer Center Science Park-Research Division Smithville, Texas	Carcinogenesis	Research Associate
1996-1999	MD Anderson Cancer Center Science Park-Research Division Smithville, Texas	Carcinogenesis	Post-Doctoral Fellow
1995-1996	Univ. of Texas-Austin Austin, Texas	Nutritional Biochemistry	Post-Doctoral Fellow
1995	Univ. of Texas-Austin Austin, Texas	Biochemistry	PhD
1986	Univ. of North Carolina Chapel Hill Chapel Hill, NC	Biology	BS

## EMPLOYMENT HISTORY

<u>Dates</u>	<u>Institution</u>	<u>Rank/Position</u>
8/15/07 – present	USCA, Dept. of Biology. & Geology, Chemistry & Physics, Aiken, SC	-Instructor
2/15/07 – present	MUSC, Dept. of Pharmacology, Charleston, SC	-Visiting Research Assistant Professor
2003- 7/15/06	USC School of Medicine, Dept. of Path, Micro. & Immunology SC Cancer Center, Columbia, SC	-Research Assistant Professor
2000-2003	USC School of Medicine, Dept. of Dev. Biol. SC Cancer Center Columbia, SC	-Research Assistant Professor
1999-2000	MD Anderson Cancer Center Dept. of Carcinogenesis Smithville, Texas	-Research Associate
1996-1999	MD Anderson Cancer Center Dept. of Carcinogenesis Smithville, Texas	-Post-doctoral Fellow
1995-1996	Univ. of Texas-Austin, Dept. of Human Ecology Division of Nutrition Austin, Texas	-Post-doctoral Fellow
1989-1995	Univ. of Texas-Austin. Dept. of Chemistry & Biochemistry	-Research/Teaching Assistant

1987-1989	Austin, Texas Duke University Medical Center Dept. of Pathology Durham, NC	-Research Technician
1986	Univ. of North Carolina Dept. of Mathematical Sciences Chapel Hill, NC	-Mathematics Intern
Summer 1995	Univ. of North Carolina Institute of Marine Sciences Morehead City, NC	-Research Assistant
1982-1986	HKM Associates Durham, NC	-Computer Programmer

### HONORS AND AWARDS

- Sidney Kimmel Foundation for Cancer Research Nominee, 2002-2003.
- Most Distinguished Postdoctoral Fellow for Excellence in Teaching. Univ. of Texas MD Anderson Cancer Center, Science Park Research Division. Smithville, TX, 1998-2000
- Postdoctoral Fellowship: NIH/NCI Training Grant in Carcinogenesis and Mutagenesis, Univ. of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville, TX, 1996-1998
- AACR Molecular Biology and Pathology of Neoplasia Workshop Awardee, Keystone Resort, Keystone, CO., 1997
- Department of Education (GANN) Fellowship, University of Texas-Austin, Austin, TX, 1994-1995
- Mathematics Internship Awardee, Univ. of North Carolina, Chapel Hill, NC, 1986
- Research Assistantship Awardee, Univ. of North Carolina, Institute of Marine Sciences, Morehead City, NC, 1985

### PROFESSIONAL ORGANIZATIONS

- American Chemical Society: Member 1997-present
- American Association for Cancer Research (AACR): Associate Member 1998-present
- Women in Cancer Research (AACR): Member 1998-present
- Molecular Epidemiology Working Group (AACR): Member 2001-present
- South Carolina Cancer Alliance (SCCA) Member 2002-present
- South Carolina Alliance for Cancer Chemoprevention (SCACC): Member 2002-present

### EDITORIAL EXPERIENCE

- Reviewer *Carcinogenesis*; 2000-present  
*Cancer Research*; 2000-present  
*Molecular Carcinogenesis*; 2000-present  
*Molecular Cancer Therapeutics*, 2005-present

### OTHER PROFESSIONAL ACTIVITIES

- Grant Reviewer U.S. Civilian Research & Development Foundation (CRDF), *for the Independent States of the Former Soviet Union*, 2004-present.
- Ad Hoc* Grant Reviewer American Cancer Society, 2001-present

## FORMAL TEACHING EXPERIENCE

### University of Texas-Austin

1989-1991 Responsibilities: lectures and presentation of material, grading, tutorial exercises, formulation and administration of exams.

Courses:

**Biochemistry Laboratory: basic principles of biochemistry and molecular biology.** Techniques: Southern, Northern and Western Analysis, Protein Purification, Enzymatic Analysis and Kinetics, and PCR.

**General Chemistry Laboratory: basic principles/techniques for chemical analyses.** Techniques and Topics; Acid/Base Chemistry, Titration Analysis, Measurements and Weights, Calibration, Preparation of Buffers and Solutions.

**Biophysical Principles of Biochemistry.** Topics: applications of biophysical analyses (i.e. spectroscopy, chromatography, crystallography, etc.) in understanding biochemical processes and functions within a cell.

**Introduction to Biochemistry; basic principles of biochemistry for pharmacy students.** Topics: DNA/RNA structure and analysis, protein purification/analysis, enzyme kinetics, and introduction to genetic disorders in human disease.

**Biochemistry Laboratory for the Nursing Student: basic principles of biochemistry.** Topics: Acid/Base Chemistry, Preparation of Solutions, Weights and Measurements, Titration analysis, DNA/RNA analysis, protein analysis, and enzyme kinetics.

1990-1996 Supervision of undergraduate, graduate students, and technicians on various projects including folate metabolism in yeast, mechanisms of defective zinc transport in *acrodermatitis enteropathica*, message expression of the interleukin-1 family of proteins in mouse skin carcinogenesis, promoter walking/analysis of 8(S)-lipoxygenase.

### University of Texas-MD Anderson Cancer Center, Smithville, TX

1996-2000 Supervision of undergraduate, graduate students, and technicians on various projects including message expression of the interleukin-1 family of proteins in mouse skin carcinogenesis, promoter walking/analysis of 8(S)-lipoxygenase.

May-Aug. 1998 **Founder, Organizer, and Lecturer:** 1998 Summer Carcinogenesis Lecture Series. University of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville, Texas.

May-Aug. 1999 **Founder, Organizer, Lecturer:** 1999 Summer Carcinogenesis Lecture Series University of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville, Texas.

May-Aug. 2000 **Founder, Organizer, and Lecturer:** 2000 Summer Carcinogenesis Lecture Series University of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville, Texas

### University of South Carolina School of Medicine

Fall 2001 PHAR 735: Cancer Biochemistry and Pharmacology, University of South Carolina, College of Pharmacy. **Lecturer:** Cancer Chemoprevention.

Fall 2002 PATH 760/EPID 746: Topics in Pathobiology: Cancer Causes and Control and Cancer Epidemiology. University of South Carolina, School of Medicine and

- Arnold School of Public Health. **Lecturer:** Skin Cancer: Mechanisms and Prevention.
- Fall 2002 BMSC 702 General Cell Biology, University of South Carolina, School of Medicine. **Lecturer:** Apoptosis.
- Spring 2004 PATH 710: Cancer Biochemistry, University of South Carolina, School of Medicine. **Lecturer:** Cancer Chemoprevention.
- Fall 2004 PATH 760: Topics in Pathobiology: Cancer Causes and Control and Cancer Epidemiology. University of South Carolina, School of Medicine and Arnold School of Public Health. **Lecturer:** Skin Cancer: Mechanisms and Chemoprevention.
- Spring 2006 PATH 710 Neoplasia, University of South Carolina, University of South Carolina, School of Medicine. **Lecturer:** Skin Cancer, Mechanisms, Human Relevance and Prevention.

### **Supervisory Teaching**

#### **University of Texas-Austin**

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|------------------------------------|---|
| Graduate Students<br>(Mentor)      | Lisa Thurman Hotchkiss (PhD, withdrew: medical reasons)<br>Florence Vazquez (MS, 1996)<br>Yin F Lin (MS, 1996)<br>C Y. Chang (MS, 1996) |
| Undergraduate Research<br>(Mentor) | Hugo Flores<br>Laurie E. Littlepage   |

#### **University of Texas-MD Anderson Cancer Center**

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|------------------------------------|--|
| Graduate Students:<br>(Mentor)     | Shea Trimble (MS, 1997)<br>Eunhye La (PhD, 2002)<br>Eun-jung Kim (PhD, 2004)           |
| Undergraduate Research<br>(Mentor) | Carlos B. L. Cabrera (BS, 1997)<br>Askash Gajarr (BS, 1999, Baylor School of Medicine) |

#### **University of South Carolina, School of Medicine, SC Cancer Center**

- a) Advisory Committee (Supervisory Professor)
- |   |  |
|---|--|
| Graduate Students   | R. Scott Hudson (PhD, 2006)<br>Kathy Dozier (MS, education; research component, 2003)  |
| Undergraduate Students<br>Honors College Thesis           | Patrick Angelos (BS, 2002): Dept of Biology (former student of Trent Spencer)<br>Lee Mangiante (BS, 2004): graduate student at UNC-CH Dept. of Pathology, Robert H Wagner & Pogue Fellow (2004-present)<br>Jeffrey Kent (BS, 2007): Undergraduate Research Fellowship, Honors College \$3,000.<br>Scholarship: Barry M. Goldwater, \$7,500 |
| High School Students<br>Discovery Research Magnet Program | Karla Williams<br>Michelle Zhang   |

b) Advisory Committee (faculty member)  
Graduate Students Paul Meeh (MS, 2003)  
Kristen Baltgalvis (PhD 2006)  
Suresh Volate (PhD, 2006)

c) Mentor  
Graduate Students Destiny Mathews (PhD, 2003)  
Mary Zander (PhD, 2004)  
Guang Peng (PhD, 2005)  
Ala Issa (PhD, 2005)  
Undergraduate Students Hyllaerye Y. Ford (BS, 2003)  
Summer Intern Program Elizabeth Sutton (BS, 2005)

### **Claflin University**

Advisory Committee (Supervisory Professor)  
Undergraduate Students Lakisha T. Moore (BS, 2005)  
Honors Thesis

### **UNIVERSITY SERVICE**

Faculty Advisor  
SC Cancer Center

#### **SAFETY COMMITTEE**

Oversee safety committee members; monitor general safety procedures; maintain Chemical Hygiene Safety Manual & MSDS Manuals

#### **RADIATION COMMITTEE**

Maintain USC policy for proper use, disposal, and cleanup of radioactive cmpds for the floor

### **RESEARCH SUPPORT**

#### **ONGOING**

##### **Center for Colon Cancer Research**

Franklin G. Berger, PhD (Overall PI) 10/1/02 – 9/30/07  
Stephanie J. Muga, PhD (PI): 40% (until 3/1/06) Total Costs: \$10,932,643  
NIH Direct Costs: \$7,714,834

The major goal is to increase the number of NIH funded biomedical researchers in the State of South Carolina via formation of a multidisciplinary research group (senior researchers/mentors, junior/target faculty, core facilities, etc.) dedicated to studying colorectal cancer, its therapy, and its prevention.

##### **R21-CA107138**

Michael J. Wargovich, PhD (PI) 12/1/05 – 11/30/07  
Stephanie J. Muga, PhD (Co-PI): 5% Total Costs: \$359,240  
NIH Direct Costs \$201,870

Cancer Prevention by Traditional Medicinal Plants from West Africa

The major goal of this project is to discover novel anti-inflammatory compounds from medicinal plants used in West Africa. Compounds from these plants may provide new strategies for use in chemoprevention in the treatment of colon cancer. It is widely known that long-term use of anti-inflammatory agents (i.e. non-steroidal anti-inflammatory drugs, NSAIDs), significantly decreases risk for onset of colon cancer. Many of these native West African plants are used in

traditional medicine for a wide variety of ailments and illnesses. Therefore, this grant will explore which compounds within these plants are responsible for inhibition of inflammatory processes.

### **PENDING**

#### **R21 None Assigned**

Yanqing Deng (PI)

1/1/07 – 12/31/08

Stephanie J. Muga (Co-PI), 15%

Annual Direct Costs: \$125,00

NCI

Total Direct Costs: \$250,000

Terahertz Imaging: A New Diagnostic Tool for Cancer

This proposal is focused on developing a novel *in vivo* cancer imaging technologies in response to the NIH RFA PA-04-045. The objective of the proposal is to explore and develop a sub-terahertz and terahertz imaging system for prognostication and treatment of melanoma, colon cancer, and breast cancer. The sub-terahertz and terahertz imaging system utilizes electromagnetic waves at sub-terahertz and terahertz frequency range that is sandwiched between microwave and infrared light to obtain biomedical images of cancer tumors. The findings and outcome of the proposed research will facilitate surgeons and physicians in diagnosing and treating melanoma, colon cancer, and breast cancer, three of the most prevalent cancers in the United States. The proposed research will illuminate a new direction for biomedical imaging, which is supplement to X-rays and ultrasound.

### **COMPLETED**

#### **None Assigned**

James A. Carson, PhD (PI)

8/1/04 – 7/31/05

Stephanie J. Muga, PhD (Co-PI): 2%

Direct Costs \$20,000

South Carolina Nutrition Research Consortium (SCNRC)

Interactive Effects of Nutraceutical and Physical Activity Treatments on APC Mouse Intestinal Polyp Formation and Growth

The overall objective of this proposal is to determine if nutraceutical supplementation (curcumin, green tea, and quercetin) in combination with a physical activity intervention can decrease the effective dose of both treatments needed for chemoprevention of colon cancer progression, and determine if gender affects this response.

#### **Supplement to COBRE Grant (P20 RR01 7698)**

Frank Berger, PhD (overall PI)

10/1/03 – 9/30/04

Stephanie J. Muga, PhD, Co-PI

Total Costs: \$500,000

NIH

Muga Equipment Costs: \$29,222

The goal of this supplemental grant was to obtain funds to purchase an *in situ* PCR hybridization machine so that we can co-localize message and protein levels simultaneously within the same tissue.

#### **01B097-REV2**

Michael J. Wargovich, PhD (PI)

1/31/02 - 12/30/03

Stephanie J. Muga, PhD (Co-PI):

10%

AICR

Total Costs: \$164,947

Herbal Supplements and Prevention of Colon Cancer

The major goals of this project are to determine if certain herbal dietary supplements act like NSAIDs and have the ability to regulate cyclooxygenase, thus preventing colon cancer in a rat model.

### **Do the Effects of Exercise on Breast Cancer Prevention Vary with Environment?**

Jane Teas, PhD (PI)

1/01/01 - 12/31/02

Stephanie J. Muga, PhD (Collaborator):

5%

Agency: Department of Defense, US Army

Total Costs: \$50,000

The major goals of this project are to determine those factors, which regulate incidence or recurrence of breast cancer. Does exercise have a significant impact on regulating VEGF and HIF-A1 (hypoxia inducible factor 1 alpha) levels and does this contribute to the preventive effects of vitamin D metabolism on breast tumor development?

### **R00-U21**

Michael J. Wargovich, PhD (PI)

1/01/01 - 6/30/02

Joan E. Cunningham, PhD (Co-PI)

Total Costs: \$115,000

Stephanie J. Muga, PhD (Co-PI): 5%

SC Research Initiative Grants

Cancer Prevention Drug Discovery for Breast and Colon Cancer

The major goal of this project is to establish an academic research drug discovery group at the University of South Carolina.

### **Can Hyperbaric Oxygen Therapy Reduce Breast Cancer Treatment Related Lymphedema?**

Dick Clark, CHT (PI)

9/1/2000 - 8/31/02

Stephanie J. Muga, PhD (Consultant/Collaborator):

0%

Palmetto Health Alliance Foundation

Total Costs: \$10,600

The major goal of this pilot study is to investigate therapeutic potential and associated angiogenic and lymphagiogenic responses, of hyperbaric oxygen therapy in lymphedema.

### **PPAR activators as chemopreventive agents of UV-induced skin carcinogenesis.**

Stephanie J. Muga, PhD (PI): 20%

1/15/00 – 1/15/01

Cancer Research Foundation of America

Direct Costs: \$35,000

The major goal of this project was to test the effectiveness of topical application of peroxisome proliferator activated receptor ligands and retinoic acid to prevent skin tumor formation following UV-exposure.

## **PUBLICATIONS**

### **PEER REVIEWED PUBLICATIONS**

1. Baltgalvis KA, Berger FG, Pena MM, Davis JM, **Muga SJ**, Carson JA (2008). Interleukin-6 and cachexia in ApcMin/+ mice. *American Journal of Physiology Regulatory Integrative Comparative Physiology*. 294:R393-R401.
2. Issa AY, Volate S, **Muga SJ**, Nicheva D, Smith T, Wargovich MJ (2007) Green tea selectively targets initial stages of intestinal carcinogenesis in the AOM-ApcMin mouse model. *Carcinogenesis* 28(9): 1978-1984.
3. Androulakis XM, **Muga SJ**, Chen F, Koita Y, Toure B, Wargovich MJ (2006) Chemopreventive effects of Khaya senegalensis bark extract on human colorectal cancer. *Anticancer Res.* 26 (3B): 2397-405.

4. Peng G, Dixon D, **Muga SJ**, Wargovich MJ (2006) Green tea polyphenol (-)-epigallocatechin-3-gallate inhibits cyclooxygenase-2 expression in colon carcinogenesis. *Molecular Carcinogenesis*, 45(5): 309-319.
5. Meeh PF, King M, O'brien RL, **Muga S**, Buckhalts P, Neuberg R, Lamb LS Jr. Characterization of the gammadelta T cell response to acute leukemia. (2005) *Cancer Immunol Immunother.* 23:1-9.
6. He G, **Muga S**, Thuillier P, Lubet RA, Fischer SM. The effect of PPAR $\gamma$  ligands on UV-or chemically-induced carcinogenesis in mouse skin. (2005), *Molecular Carcinogenesis*, 43(4): 198-206.
7. The PPAR $\gamma$  Pro12Ala Polymorphism and risk for incident sporadic colorectal adenomas. Gong, Z., Xie, D., Deng, Z., Bostick, RM, **Muga, SJ**, Hurley, TJ, Hebert, JR., (2005) *Carcinogenesis*, 26(3):579-85.
8. Modulation of Aberrant Crypt Foci and Apoptosis by Dietary Herbal Supplements (Quercetin, Curcumin, Silymarin, Ginseng and Rutin). Volate, S, Davenport, DM, **Muga, SJ**, Wargovich, MJ. (2005), *Carcinogenesis*, 26(8): 1450-6.
9. Identification and characterization of a phorbol ester responsive element in the murine 8S-lipoxygenase gene. Kim, E, **Muga, SJ**, Fischer, SM. (2004) *J. Biol. Chem*, 279(12): 11188-97.
10. Characterization of the rat cytoplasmic C1-tetrahydrofolate synthase gene and analysis of its expression in liver regeneration and fetal development. Howard, KM, **Muga SJ**, Zhang, L, Thigpen, AE, Appling, DR. (2003) *Gene* 319:85-97.
11. Bol, D. K., Rowley, R. Bruce, Ho, C.-P., Pilz, B., Dell, J., Swerdel, M., Kiguchi, K., **Muga, S.**, Klein, R., and Fischer, S.M. (2002) COX-2 overexpression in the skin of transgenic mice results in suppression of tumor development. *Cancer Res.*, 62: 2516-2521.
12. Thuillier, P., Anchiraico, G. J., Nickel, K. P., Maldve, R. E., Giminez-Conti, I., **Muga, S. J.**, Liu, Kai-Li, Fischer, S. M., and Belury, M. A. (2000) Peroxisome proliferator activated receptor (PPAR) alpha activators inhibit mouse skin tumor promotion. *Molecular Carcinogenesis*, 29: 134-142.
13. Kleymenova, E., **Muga, S. J.**, Fischer, S. M., and Walker, C. L. (2000) Application of HPLC-based DNA Fragment Analysis (HADP) to Molecular Carcinogenesis. *Molecular Carcinogenesis*, Oct. 29(2): 51-58.
14. **Muga, S. J.**, Thuillier, P., Pavone, A., Rundhaug, J. E., Jisaka, M., Boeglin, W., Brash, A. R., and Fischer, S. M. (2000) 8S-lipoxygenase products activate PPAR $\alpha$  and induce differentiation in murine keratinocytes. *Cell Growth and Differentiation*, 11: 447-454.
15. Maldve, R. E., Kim, Y., **Muga, S. J.**, and Fischer, S. M. (2000) Prostaglandin E<sub>2</sub> regulation of cyclooxygenase expression in keratinocytes is mediated via cyclic nucleotide-linked prostaglandin receptors. *J. of Lipid Research*, Jun; 41(6): 873-81.
16. La, E., **Muga, S. J.**, Fischer, S. M., and Lochniskar, M. F. (1999) The altered expression of Interleukin-1 receptor antagonist in different stages of mouse skin carcinogenesis. *Molecular Carcinogenesis*, 24(4): 276-86.
17. **Muga, S. J.**, and Grider, A. (1999) Partial characterization of a human zinc-deficiency syndrome by differential display. *Biological Trace Elements*. Apr; 68(1): 1-12.
18. Chang, C., **Muga, S. J.**, and Grider, A. (1998) Zinc uptake into fibroblasts is inhibited by probenecid. *Biochem. Biophys. Acta* 1368: 1-6.
19. Grider, A., Lin, Y., and **Muga, S. J.** (1998) Differences in the cellular zinc content and 5' nucleotidase activity of normal and *Acrodermatitis enteropathica* fibroblasts following treatment with medium containing different zinc concentrations. *Biol. Trace Elem. Res.* 61: 1-8.

20. Houck, K. A., Zarnegar, R., **Muga, S. J.**, and Michalopoulos, G. (1990) Acidic fibroblast growth factor (HBGF-1) stimulates DNA synthesis in primary rat hepatocytes. *Journal of Cellular Physiology*, **143**, 129-132.
21. Zarnegar, R., **Muga, S. J.**, Rahija, R., and Michalopoulos, G. (1990) Tissue distribution of Hepatopoietin A: A heparin binding growth factor for hepatocytes. *Proceedings of the National Academy of Sciences*, **87**: 1252-1256.
22. Zarnegar, R., **Muga, S. J.**, Enghild, J., and Michalopoulos, G. (1989) Amino-terminal amino acid sequence of rabbit Hepatopoietin A, a heparin-binding polypeptide growth factor for hepatocytes. *Biochemical and Biophysical Research Communications*, **163(3)**: 1370-1376.
23. Cruise, J. L., **Muga, S. J.**, Lee, Y. S., and Michalopolulos, G. (1989) Regulation of hepatocyte growth: alpha-1 adrenergic receptor and *ras* p21 changes in liver regeneration. *Journal of Cellular Physiology*, **140**: 195-201.

#### ABSTRACTS

##### AACR

1. Zhang Q, Ford HY, Hudson RS, **Muga SJ** (2005) The effect of conjugated linoleic acid on 5-fluorouracil mediated apoptosis in HT-29 colon cancer cells
2. Hudson RS, **Muga SJ** (2005) Conjugated linoleic acid modulates eicosanoid signaling and ERK1/2 phosphorylation in HCA-7 Cells
3. Volate SR Issa AY, **Muga SJ**, Wargovich MJ. (2005) Oncostatic Effects of Melatonin on MCF-7 (ER+) and MDA-MB-231 (ER-) Breast Cancer Cell
4. Issa A, Volate S, **Muga SJ**, Wargovich MJ (2005) Green tea inhibits the formation of new intestinal adenomas but not established tumors in the AOM-MIN mouse model
5. Androulakis XO, **Muga SJ**, Chen F, Koita Y, Toure B, and Wargovich MJ (2005) *Khaya senegalensis* inhibits proliferation and induces apoptosis in colon cancer cell lines.
6. **Muga SJ**, Thuillier P, Zhang Q, Husdon RS, Martin P, McCauley E, Mangiante L (2004) Effect of Dietary Conjugated Linoleic Acid on Apoptosis and Gene Expression in Colon. Orlando, FL.
7. Meeh PF, **Muga SJ**, O'Brien R, March JC, Wofford C, Neuberger R, and Lamb Jr LS (2004) Gamma delta T cells from acute leukemia patients show restricted CDR3 rearrangements suggestive of a directed immune response. Orlando, FL.
8. Hudson RS, Mangiante L, Crook TM, Zhang JW, Wargovich MJ, and **Muga SJ** (2003) Expression of Cyclooxygenase-2 in Mammary Glands and Tumors of Wnt-1 Transgenic Mice.
9. **Muga, S. J.**, Brame, R. (2002) The role of 15-lipoxygenase-2 in human keratinocyte differentiation and skin carcinogenesis. AACR Annual Meeting, San Francisco, CA.
10. Cohen J., Woods, CJ, **Muga, S. J.**, Chapman, J, and Wargovich MJ (2002) Rosiglitazone, an anti-diabetic ligand of peroxisome proliferator activated receptor gamma, promotes the development of aberrant crypt foci in F344 rats. AACR Annual Meeting, San Francisco, CA.
11. Thuillier, P., Belury, M. A., **Muga, S. J.**, Klein, R., and Fischer, S. M. (2001) Activators of PPAR $\alpha$  partially inhibit mouse skin tumor promotion and stimulate keratinocyte differentiation. AACR Annual Meeting, New Orleans, LA.
12. Bol, D. K., Rowley, B., Ho, C-p., Dell, J., Pilz, B., Swerdel, M., **Muga, S.** and Fischer, S. M. (2001) Cox-2 overexpression in the skin of Transgenic Mice Results in Reversible

- Alopecia and Suppression of Tumor Formation. AACR Annual Meeting, New Orleans, LA.
13. Hollis, D., **Muga, S.**, and Wargovich, M. (2001) Structure-Activity Relationships of Garlic Compounds and the Inhibition of Hepatic CYP2E1. AACR Annual Meeting, New Orleans, LA.
  14. **Muga, S. J.**, Kim, E., and Fischer, S. M. 8S-lipoxygenase regulation in mouse skin. *Proceedings of the American Association for Cancer Research*, **41**, 84. AACR 2000, San Francisco, CA.
  15. Thuillier, P., **Muga, S. J.**, and Fischer, S. M. Peroxisome proliferator activated receptor  $\alpha$  (PPAR $\alpha$ ) and lipoxygenase products activate keratinocyte differentiation. *Proceedings of the American Association for Cancer Research*, **41**, 11. AACR 2000, San Francisco, CA.
  16. Rundhaug, J. R., **Muga, S. J.**, Walker, A. B., Gimenez-Conti, I., and Fischer, S. M. Characterization of transgenic mice with dominant negative type I transforming growth factor receptor- $\beta$  targeted to the epidermis. *Proceedings of the American Association for Cancer Research*, **41**, 387 AACR 2000, San Francisco, CA.
  17. **Muga, S. J.**, Thuillier, P., Pavone, A., Rundhaug, J. E., Jisaka, M., Brash, A. R., and Fischer, S. M. The function and mechanism of action of the products of 8(S)-lipoxygenase products in skin. *Proceedings of the American Association for Cancer Research*, **40**, 368. AACR 1999, Philadelphia, PA.
  18. Thuillier, P., Maldve, R. E., **Muga, S. J.**, Belury, M. A., and Fischer, S. M. Peroxisome proliferator activated receptor (PPAR) expression is elevated in murine skin tumors. *Proceedings of the American Association for Cancer Research*, **40**, 130. AACR 1999, Philadelphia, PA.
  19. **Muga, S. J.**, Pavone, A., Brash, A. R., and Fischer, S. M. (1998) Differential expression of the 8(S)-lipoxygenase gene in SENCAR and C57BL/6J mice in response to phorbol esters. *Proceedings of the American Association for Cancer Research* **39**, 484; AACR 1998, New Orleans, LA.
  20. **Muga, S. J.**, Trimble, S., La, E., Lau, C., Fischer, S. M., and Locniskar, M. F. (1997) Message Expression of Members of the Interleukin-1 Family in Mouse Skin after Treatment with Various Tumor Promoters. Molecular Biology and Pathology of Neoplasia Workshop, AACR, Keystone Resort, Keystone, CO.

#### **South Carolina Alliance for Cancer Chemoprevention**

21. Ford, HY, Hudson RS, Zhang Q, Mangiante L, and **Muga SJ** (2005) CLA Modulates Cell Growth and 5-FU Mediated Apoptosis. **2<sup>nd</sup> Place Winner for Best Scientific Poster (\$100.00).**
22. Androulakis XQ, **Muga SJ**, Chen F, Koita Y, Toure B, Wargovich MJ (2005) Chemopreventive Effects of Khaya snegalis bark extract on Colorectal Carcinoma Cells.
23. Zhang Q, Ford HY, Hudson RS, and **Muga SJ** (2005) The effect of CLA on 5-flurouracil-mediated apoptosis in colon cancer cell lines.
24. Hudson RS, Wargovich MJ, and **Muga SJ** (2005) Conjugated Linoleic Acid modulates prostaglandin signaling, ERK1/2 phosphorylation, and apoptosis in HCA-7 human colon cancer cells.

#### **SC Nutrition Research Consortium Annual Meeting**

25. Hudson RS, **Muga SJ** (2004) CLA Modulates Eicosanoid Signaling and ERK1/2 Phosphorylation in HCA-7 Cells. **1<sup>st</sup> Prize Winner for Best Scientific Poster (\$75.00).**

26. Zhang Q, Mangiante L, **Muga SJ** (2004) The effect of CLA on apoptosis and COX-2 expression in the HT-29 cell line.
27. Ford HY, Hudson RS, Zhang Q, Mangiante L, and **Muga SJ** (2004) CLA Modulates Cell Growth and 5-FU-mediated apoptosis in Colon Cancer Cell Lines.

#### **AICR (American Institute for Cancer Research) Annual Meeting**

28. Ford HY, Hudson RS, Zhang Q, Mangiante L, **Muga SJ** (2004) Modulation of Chemotherapy by Dietary Conjugated Linoleic Acid. Washington DC.

#### **Keystone Symposium**

29. Thuillier, P., **Muga, S. J.**, Maldve, R. E., Belury, M., Brash, A. R., and Fischer, S. M. 8(S)-lipoxygenase products activate PPAR $\alpha$  and induce differentiation in murine keratinocytes. (1999) Keystone Symposia on Molecular & Cellular Biology. The PPARs: Transcriptional Links to Obesity, Diabetes, and Cardiovascular Disease. Keystone Resort, Keystone CO.
30. Thuillier, P., Belury, M. A., **Muga, S. J.**, Klein, R., and Fischer, S. M. (2001) Activators of PPAR $\alpha$  partially inhibit mouse skin tumor promotion and stimulate keratinocyte differentiation. AACR Keystone Symposia, The PPARs: A Transcription Odyssey, Keystone Resort, Keystone, CO.

#### **International Skin Carcinogenesis Conference**

31. Thuillier, P., Belury, M. A., **Muga, S. J.**, Klein, R., and Fischer, S. M. (2000) Activators of PPAR $\alpha$  partially inhibit mouse skin tumor promotion and stimulate keratinocyte differentiation. International Skin Carcinogenesis Conference, Tucson, AZ.
32. Rundhaug, J. E., **Muga, S. J.**, Lee, M., Gimenez-Conti, I., and Fischer, S. M. (2000) Expression of a truncated type I transforming growth factor- $\beta$  (TGF- $\beta$ ) receptor in the skin of transgenic mice interferes with normal tail development. International Skin Carcinogenesis Conference, Tucson, AZ.
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34. **Muga, S. J.**, Thuillier, P., Pavone, A., Boeglin, W. R., Brash, A. R., and Fischer, S. M. 8S-lipoxygenase products activate PPAR $\alpha$ , induce differentiation, and enhance skin tumor development. Eicosanoid & Other Bioactive Lipids in Cancer, Inflammation, and Related Diseases. 6<sup>th</sup> International Conference, Boston, MA (1999)
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36. **Muga, S. J.**, Trimble, S., La, E., Lau, C., Fischer, S. M., and Locniskar, M. F. (1997) Message Expression of Members of the Interleukin-1 Family in Mouse Skin after Treatment with Various Tumor Promoters. *The FASEB Journal: Abstracts*, **11**(3), A193; Experimental Biology 97, New Orleans, LA.

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38. **Muga, S. J.**, Trimble, S., La, E., Lau, C., Fischer, S. M., and Locniskar, M. F. (1996) The Interleukin-1 System in Carcinogenesis: A Molecular Approach. International Skin Carcinogenesis Conference, Univ. of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville-Bastrop, TX.
39. **Muga, S. J.**, and Grider, A. (1996) Characterization of the *Acrodermatitis Enteropathica* (AE) Mutation in Fibroblasts by Differential Display. *The FASEB Journal: Abstracts*, **10**(3), A529; Experimental Biology 96 Meetings, Washington, D. C.
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41. Zarnegar, R, **Muga, S. J.**, and Michalopoulos, G. (1989) Hepatopoietin A: Isolation and biological Properties. *Proceedings of the American Association for Cancer Research*. **30**: 75.
42. Cruise, J. L., **Muga, S. J.**, and Michalopoulos, G. (1988) Alpha-1 Adrenergic Receptors and Phosphoinositide Turnover in Liver Regeneration. *FASEB Proceedings Journal*, **2**(4), A387.

#### **MD Anderson Cancer Symposium**

43. Hotchkiss, L. T., **Muga, S. J.**, Sanders, B. G., and Kline, K. (1996) Differential Display Analysis of VES effects on Signal Transduction in C4#1 Cells. MD Anderson Cancer Symposium, Houston, TX.

#### **Other**

44. Cruise, J. L., **Muga, S. J.**, Fleischacker, D., and Michalopoulos, G (1990) Early Alterations in *ras* p21 proteins in membranes of Regenerating Rat Liver. *Journal of Cellular Biochemistry: Abstracts*, **14C**: 160.
45. Cruise, J. L., **Muga, S. J.**, Houck, K. A., and Michalopoulos, G. (1989) Uncoupling of Adrenergic Receptors and changes in *ras* p21 levels during liver regeneration. *ASCB/ASBMB meetings: poster*.

#### **INVITED SEMINARS AND COMPETITIVELY SELECTED ABSTRACTS**

- |            |  |
|------------|--|
| 02/24/2006 | Invited Talk, Ohio State University, College of Human Ecology, Dept. of Human Nutrition, OSU Comprehensive Cancer Center. Columbus, Ohio. <i>Conjugated Linoleic Acid: Anti-tumorigenic Mechanisms and Role in Modulating Colorectal Cancer Chemotherapy.</i>          |
| 09/20/2005 | Invited Talk, US CLA Network Meeting. <i>Modulation of Chemotherapy by Conjugated Linoleic Acid.</i> Sponsored by Loders-Crocklaan and Cognis, Inc. Indian Lakes Resort, Bloomingdale, IL.   |
| 05/2005    | Ford, HY, Hudson RS, Zhang Q, Mangiante L, and Muga SJ (2005) CLA Modulates Cell Growth and 5-FU Mediated Apoptosis. South Carolina Alliance for Cancer Chemoprevention, Clemson University. <b>2<sup>nd</sup> Place Winner for Best Scientific Poster (\$100.00).</b> |

- 10/2004 Hudson RS, **Muga SJ** (2004) CLA Modulates Eicosanoid Signaling and ERK1/2 Phosphorylation in HCA-7 Cells. SC Nutrition Research Consrotium Research Summit, Columbia, SC. **1<sup>st</sup> Prize Winner for Best Scientific Poster (\$75.00).**
- 02/2001 Invited Talk and Round Table Discussion: *The PPARs and Eicosanoids in Skin Tumor Development*, USC Dept. of Populations Studies and Epidemiology. Host: Dr. Roberd Bostick, University of South Carolina School of Medicine, SC Cancer Center, Columbia, South Carolina.
- 10/1999 Invited Talk: *8S-lipoxygenase products activate PPAR $\alpha$ , induce differentiation, and enhance tumor development in mouse skin*. University of South Carolina at Columbia, School and Medicine and the South Carolina Cancer Center, Columbia, South Carolina.  
Hosts: Dr. Michael J. Wargovich, University of South Carolina at Columbia, School of Medicine and the South Carolina Cancer Center, Columbia, South Carolina.
- Summer 1999 Summer Carcinogenesis Lecture Series, University of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville, Texas.  
Co-organizers: Philippe Thuillier and Stephanie J. Muga  
Faculty Sponsors: David Johnson, Ph.D. and Don Cook  
Lecture: Introduction to Cellular and Molecular Biology
- 11/5/1998 Invited Talk: *The function and mechanism of action of the products of 8(S)-lipoxygenase in skin*. Experimental Skin Carcinogenesis Conference 1998, University of Texas, M. D. Anderson Cancer Center, Science Park-Research Division, Bastrop-Smithville, Texas.  
Hosts: Dr. Susan M. Fischer and Dr. Claudio Conti, University of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville, Texas.
- 09/1998 Invited Talk: *The role of 8(S)-lipoxygenase metabolic products in mouse skin carcinogenesis*. University of Georgia, Athens, Georgia. Honorarium. Hosts: Dr. Roy Martin, Chairman and Director, Department of Foods and Nutrition, Dr. Arthur Grider, Assistant Professor, Department of Foods and Nutrition
- Summer 1998 1998 Summer Carcinogenesis Lecture Series, University of Texas, MD Anderson Cancer Center, Science Park-Research Division, Smithville, Texas.  
Co-organizers: Philippe Thuillier and Stephanie J. Muga  
Faculty Sponsors: David Johnson, Ph.D. and Don Cook  
Lecture: Animal and Transgenic Animal Models in Carcinogenesis
- 10/1996 Invited Talk: *Interleukin-1: A Molecular Approach in Carcinogenesis*. Molecular Biology Retreat, University of Texas, Institute of Cellular and Molecular Biology, Department of Microbiology, Bandera, Texas.
- 07/1996 Professional and Technical Consultation on Surgical Technique and Project Formulation and Experimentation. Hosts: Dr. Merle Olsen and Dr. Katherine

M. Howard, Department of Biochemistry, University of Texas at San Antonio,  
Health Science Center, San Antonio, Texas.

07/1996

Invited Talk: *The Acrodermatitis enteropathica Mutation: A Model for  
Abnormal Zinc Transport*. Host: Dr. Susan M. Fischer, Department of  
Carcinogenesis, University of Texas, MD Anderson Cancer Center, Science  
Park-Research Division, Smithville, Texas.

## REFERENCES

### **DR. MICHAEL J. WARGOVICH, PHD**

Director, Chemoprevention Program  
SC Cancer Center  
Professor, Department of Pathology, Microbiology & Immunology  
University of South Carolina, School of Medicine  
14 Medical Park, Suite 500  
Columbia, SC 29202  
Ph: 803.434.3925  
FAX: 803.434.4359  
Email: [mwargovich@gw.mp.sc.edu](mailto:mwargovich@gw.mp.sc.edu)

### **DR. LUCIA PIRISI-CREEK, MD**

Interim Deputy Director for Research and Education  
South Carolina Cancer Center  
Senior Faculty Associate for Biomedical Research  
USC Office of Research and Health Sciences  
South Carolina Cancer Center Research Laboratories  
14 Medical Park, Suite 500  
Columbia, SC 29203-6877  
Ph; .803.434.4278  
Cell Phone: 803.269.8631  
Fax: 803.434.3795  
e-mail: [Pirisi@med.sc.edu](mailto:Pirisi@med.sc.edu)

### **DR. SUSAN M. FISCHER, PHD**

Professor  
Department of Carcinogenesis  
University of Texas-MD Anderson Cancer Center  
Science Park-Research Division  
P.O. Box 389, 1808 Park Rd. 1C  
Smithville, TX 78957  
Ph: 512.237.9482  
FAX: 512.237.9566  
e-mail: [smfischer@mdanderson.org](mailto:smfischer@mdanderson.org)