

TEXAS STATE VITA

I. ACADEMIC/PROFESSIONAL BACKGROUND

A. Name: Shannon Elise Weigum

Title: Assistant Professor

B. Educational Background

| <i>Degree</i> | <i>Year</i> | <i>University</i> | <i>Major</i> | <i>Thesis/Dissertation</i> |
|---------------|-------------|-------------------------------|----------------------------|---|
| Ph. D. | 2008 | University of Texas at Austin | Biochemistry | Development of a Cell-Based Lab-on-a-Chip Sensor for Detection of Oral Cancer Biomarkers |
| M. S. | 2002 | Texas State University | Biology | Developmental Appearance of Phosphorylated Intermediate Filaments in Nuclei of Glioma and Neuroblastoms Cells |
| B. A. | 1997 | Texas A&M University | Biology; Science Education | Research focus: Effects of melatonin on primary <i>in vitro</i> chick astrocytes |

C. University Experience

| <i>Position</i> | <i>University</i> | <i>Dates</i> |
|--------------------------------------|---|--------------|
| Assistant Professor | Texas State University, Biology and MSEC | 2011-Present |
| Postdoctoral Research Associate | Rice University, Bioengineering | 2009-2011 |
| Graduate Research/Teaching Assistant | University of Texas at Austin, Biochemistry | 2002-2008 |
| Graduate Research/Teaching Assistant | Texas State University, Biology | 2000-2002 |

D. Relevant Professional Experience

| <i>Position</i> | <i>Entity</i> | <i>Dates</i> |
|-----------------|---|--------------|
| Science Teacher | Pflugerville High School, Pflugerville TX | 1999-2000 |
| Science Teacher | Churchill High School, San Antonio TX | 1997-1999 |

E. Other Professional Credentials (licensure, certification, etc.)

Secondary Science Composite Teaching Certification, 1997

II. TEACHING

A. Teaching Honors and Awards:

Recognized as a “Favorite Professor” by the Alfred H. Nolle Chapter of the Alpha Chi National College Honor Society (Spring 2015)

Named in multiple student surveys as “a faculty member that they felt contributed significantly to their success and development throughout their first semester on campus” (2 during Fall 2012 semester; 1 following Fall 2013)

Invited Guest at Alpha Delta Pi Scholarship Banquet in recognition of dedication to teaching
(2011 and 2014)

Northeast Independent School District Superintendent Award 1998-1999

B. Courses Taught:

Undergraduate: BIO 1330 Functional Biology
BIO 4311 Cancer Biology
BIO 4299 Undergraduate Research

Graduate: BIO 5110 Seminar in Biosensors
BIO 5114/5214/5314 Research Experience
BIO 5311 Cancer Biology
BIO 5390 Problems in Biological Sciences
BIO 5399A/B M.S. Graduate Thesis
BIO 5481 Internship in Biotechnology
BIO 7102 Seminar in Aquatic Resources
MSEC 7340 Biomaterials and Biosensors

C. Graduate Theses/Dissertations, Honors Theses, or Exit Committees:

Supervisor for Graduate Thesis/Dissertations – 5 current; 8 total

Current

Zhenyuan Lu (M.S. Biology, expected graduation 2016). Integration of a lateral flow immunoassay panel for gastroenteritis with a swab-based sample preparation cartridge.

Elizabeth McIvor (M.S. Biochemistry, expected graduation 2016). Targeting liver cancer with a nucleic acid aptamer.

Katie Kendrick (M.S. Biology, expected graduation 2016). Tissue microarray analysis of a hepatocellular carcinoma aptamer.

Aditya Ranjan (Ph.D. Aquatic Resources, expected graduation 2018). Integration of low-cost sample preparation and diagnostic platforms for point-of-care detection of infectious disease pathogens.

Lichen Xiang (Ph.D. candidate MSEC, expected graduation 2016). Novel biosensor platforms for detection of disease pathogens and protein biomarkers.

Completed

Shalini Madadi (M.S. Biology, May 2015). Development of 2-D and 3-D paper-based microfluidic devices for the detection of *C. parvum* and *G. lambia*.

Amber Douglas (Ph.D. MSEC, G. Beall co-advisor, Dec 2014). Microbial reduction of graphenol via extracellular electron transfer.

Melissa Sutton (M.S. Biology, Dec 2014). Examination of a DNA aptamer (TLS11a) as a cancer-specific targeting agent within cultured MEAR liver cancer cells.

Committee Member for Graduate Thesis/Dissertations – 4 current; 8 total

Current

Cally Moore (M.S. Biochemistry, T. Betancourt advisor; expected graduation 2017). Photo-induced delivery of doxorubicin with photo-responsive DNA-azobenzene micelles.

Christopher Munoz (M.S. Chemistry, T. Betancourt advisor; expected graduation 2016). Evaluation of targeting moiety synergism in nanoparticle drug delivery.

Priscilla Pham (Ph.D. Biology, R. McLean advisor; expected graduation 2016). Probiotic regulation of fat storage via Angiopoietin-like 4 (ANGPL-4).

Shobit Sharma (Ph.D. Biology, N. Ceballos advisor; expected graduation 2015). Influence of brain-derived neurotrophic factor and family history of alcohol dependence on alcohol consumption characteristics of healthy social drinkers.

Completed

Travis Cantu (Ph.D. MSEC, T. Betancourt advisor; Dec 2015). Organic nanoparticles for photothermal ablation of tumors.

Mark Riggs (M.S. Chemistry, G. Beall advisor; Aug 2014). Targeted reduction of gold onto magnetic iron nanoparticles to generate dual function core-shell structures.

Sarah Kane (M.S. Biology, J. Koke advisor; May 2012). Astrocyte reactivity characterized with monoclonal antibody J1-31: an evaluation of cAMP effectors.

Luis Neve (M.S. Biology, D. Garcia advisor; Dec 2011). Identification and characterization of reactive astrocytes following optic nerve injury in Zebrafish.

Supervised Undergraduate Honors Thesis Projects – 2 current; 5 total

Erica Osta (B.S. Microbiology, expected graduation 2017; SURF Award Recipient; NSF REU fellow at Duke University). Hollow silica microspheres for density-based separation of Carcinoembryonic Antigen (CEA) tumor biomarker.

Ashley Summers (B.S. Microbiology, expected graduation 2017). Multi-functional nanoparticles for lateral flow immunoassays.

Jacqueline Benner (B.S. Microbiology, May 2015; SURF Award Recipient). Development of a paper-based microfluidic device for the detection of noroviruses.

Michael Tarver (B.S. Microbiology; May 2015). Honors Independent Study

Casey Finch (B.S. Biology, May 2013). Signal amplification in a diagnostic point-of-care device.

D. Courses Prepared and Curriculum Development:

BIO 1330 Functional Biology

BIO 4311/5311 Cancer Biology

BIO 5110 Biosensors Seminar

MSEC 7340 Biomaterials and Biosensors

E. Funded External Teaching Grants and Contracts:

N/A

F. Submitted, but not Funded, External Teaching Grants and Contracts:

N/A

G. Funded Internal Teaching Grants and Contracts:

N/A

H. Submitted, but not Funded, Internal Teaching Grants and Contracts:

N/A

I. Other:***Supervised Undergraduate Research Projects***

Bianca Martinez (Summer 2014)

Laura Herman (Fall 2013)

Venitra Husain (Fall 2012 – Spring 2013)

Priya Dhagat (co-supervisor R. Rhode CLS Department; Summer 2012 – Fall 2012)

Melissa Sutton (Summer 2012 – Fall 2012)

Nathan Bullock (Summer 2012 – Fall 2012)

Erin Tilton (Spring 2012 - Summer 2012)

Michael Bitzer (Spring 2012)

Christina Henson (Spring 2012)

Joseph Whitt (Fall 2011-Spring 2012; H-LSAMP Scholar)

Guest Lectures

Microfluidic Sensors for Point-of-Care Diagnostics. Texas State University, Ingram School of Engineering, Micro-Electro-Mechanical Systems (EE4358). Nov 20, 2013.

Point-of-Care Diagnostic Platforms for Detection of Infectious Disease Pathogens. Texas State University, Department of Biology, Parasitology (BIO5413). Nov 15, 2013.

Cryptosporidium and Other Sporozoan Parasites. Texas State University, Department of Clinical Laboratory Sciences, Medical Parasitology (CLS4326). July 29, 2011.

Quantitative Image Analysis using Image J. Texas State University, Department of Biology, Cytology and Microtechnique (BIO4480/5480). October 2011.

Attended Workshops and Professional Development Activities

- Allies Training for LGBTQIA inclusiveness across campus (2015)
- Research Commercialization Introductory Course (May 6 – June 17, 2014)
- Write Winning Grants by Grant Writers' Seminars and Workshops, LLC. (2011)
- Faculty Role in Guiding Graduate Students through the Thesis/Dissertation (2011)
- University Program for Excellence in Teaching and Learning Series (2011-2012)

III. SCHOLARLY/CREATIVE

A. Works in Print

1. BOOKS

a. Scholarly Monographs:

N/A

b. Textbooks:

N/A

c. Edited Books:

N/A

d. Chapters in Books:

1. Rohde, R.E., Weigum, S., and McGowin, C. Nucleic Acid-Based Analytic Methods for Microbial Identification and Characterization. *Bailey & Scott's Diagnostic Microbiology, 14th ed.* Ed. P. Tille, Elsevier Inc., Philadelphia, PA. (*in press, expected 2016*)
2. Floriano, P.N., Acosta, S., Christodoulides, N., Weigum, S. and McDevitt, J.T., Microchip-based Enumeration of Human White Blood Cells. *Microchip-Based Assay Systems: Methods and Applications, Methods in Molecular Biology*, Humana Press, Clifton, NJ, 2007. vol. 385.

2. ARTICLES

a. Refereed Journal Articles:***Published***

1. Pierce, M.C., Weigum, S.E., Jaslove, J.M., Richards-Kortum R., Tkaczyk, T.S. Optical systems for point-of-care diagnostic instrumentation: Analysis of imaging performance and cost. *Ann. Biomed. Eng.* 2014, 42(1):231-240.
2. Weigum, S.E., Castellanos-Gonzalez, A., White, A.C. Jr., and Richards-Kortum, R. Amplification-free detection of *Cryptosporidium* nucleic acids using DNA/RNA-directed gold nanoparticle assemblies. *J. Parasitology.* 2013, 99(5):923-926.
3. McDevitt, J.T., Floriano, P.N., Christodoulides, N. Weigum, S.E., Redding, S.W., Yeh, C., McGuff, H.S., Vigneswaran, N., Thornhill, M.H., and Williams, M.D. A new bio-nanochip sensor aids oral cancer detection. *SPIE News.* 2011, March 28.
4. Weigum, S.E., Floriano, P.N., Redding, S.W., Yeh, C., Westbrook, S.D., McGuff, H.S., Lin, A., Miller, F.R., Villarreal, F., Rowan, S.D., Vigneswaran, N., Williams, M.D., and McDevitt, J.T. Nano-bio-chip sensor platform for examination of oral exfoliative cytology. *Can. Prev. Res.* 2010, 3(4):518-28.
5. Yeh, C., Christodoulides, N.C., Floriano, P.N., Miller, C.S., Ebersole, J.L., Weigum, S.E., McDevitt, J.T., and Redding, S.W. Current developments in saliva/oral-fluid diagnostics. *Tex Dent J.* 2010, 127(7):651-61.
6. Javier, D.J., Castellanos-Gonzalez, A., Weigum, S.E., White, A.C. Jr., and Richards-Kortum, R. Oligonucleotide-gold nanoparticle networks for detection of *Cryptosporidium parvum* heat shock protein 70 mRNA. *J Clin Microbiol.* 2009, 47(12):4060-6.
7. Weigum, S.E., Floriano, P.N., Christodoulides, N., and McDevitt, J.T. Cell-based Sensor for Analysis of EGFR Biomarker Expression in Oral Cancer. *Lab-on-a-Chip.* 2007, 7(8):995-1003.

8. Christodoulides, N., Floriano, P.N., Acosta, S.A., Ballard, K.L., Weigum, S.E., Mohanty, S., Dharshan, P., Romanovicz, D., and McDevitt, J.T. Toward the Development of a Lab-on-a-Chip Dual-Function Leukocyte and C-Reactive Protein Analysis Method for the Assessment of Inflammation and Cardiac Risk. *Clin. Chem.* 2005, 51(12):2391-2395.
9. Weigum, S.E., Garcia, D.M., Raabe, T.D., Christodoulides, N.J., and Koke, J.R. Discrete Nuclear Structures in Actively Growing Neuroblastoma Cells are Revealed by Antibodies Raised Against Phosphorylated Neurofilament Proteins. *BMC Neuroscience* 2003, 4:6.
10. García D.M., Weigum S.E. and Koke J.R. GFAP and Nuclear Lamins Share an Epitope Recognized by Monoclonal Antibody J1-31. *Brain Research* 2003, 976(1):9-21. Featured on journal cover.
11. Adachi, A., A.K. Natesan, M. G. Whitfield-Rucker, S.E. Weigum and V.M. Cassone. Functional melatonin receptors and metabolic coupling in cultured chick astrocytes. *Glia* 2002, 39:268-278.

Submitted or In Preparation

1. Xiang, L., Osta, E., Li, A., López, G. and Weigum, S.E. Functionalized hollow silica microspheres for density-dependent bioseparations. *Nature Biotechnology* (in preparation)
2. Weigum, S.E., Carrano, J.J., Schneider, R., Lu, Z., Ranjan, K., and Carrano, J.C. Fully integrated point-of-care test cartridge for detection of infectious pathogens associated with acute gastroenteritis. *Lab-on-a-Chip* (in preparation)
3. Xiang, L., Yu, Q., Chen, Y. and Weigum, S.E. Flexible graphene biosensor platform for disease diagnostics. *IEEE Sensors* (in preparation)
4. Munoz, C., McIvor, E., Sutton, M., Feng, R., Cantu, T., Betancourt, T., and Weigum, S.E. Targeted therapy of hepatocellular carcinoma with aptamer-functionalized biodegradable nanoparticles. *PLOS One* (in preparation)
5. Bruno, J.G., Richarte, A.M., Savage, A.A., García, D.M., Weigum, S.E., and Koke, J.R. Development and characterization of DNA aptamers which bind kinesins from *Leishmania promastigotes*. *J. Cell and Molec. Probes* (in preparation)

b. Non-refereed Articles:

N/A

3. CONFERENCE PROCEEDINGS

a. Refereed Conference Proceedings:

1. Weigum, S.E., Sutton, M., Barnes, E., Miller, S., and Betancourt, T. Targeting hepatocellular carcinoma with aptamer-functionalized PLA-PEG nanoparticles. (invited oral presentation and paper) *Proc. SPIE*. 9166, Biosensing and Nanomedicine IV, 916605 (Aug 27, 2014)

b. Non-refereed Conference Proceedings:

N/A

4. PRESENTATION AND POSTER ABSTRACTS PRESENTED AT SCIENTIFIC MEETINGS:

1. Osta, E.G., Li, A., Chilkoti, A., López, G.P., and Weigum, S.E. Hollow Microspheres for Density-based Bioseparation of CEA Tumor Biomarker. Biomedical Engineering Society (BMES) Annual Meeting, Oct 10, 2015, Tampa, FL.
2. Weigum, S.E., Ranjan, K., Lu, Z., and Vaidyanathan, P. Paper Microfluidic Platform for Detection of Viral Gastroenteritis. BMES Annual Meeting, Oct 10, 2015, Tampa, FL
3. Osta, E.G., Li, A., Chilkoti, A., López, G.P., Weigum, S.E. Hollow Microspheres for Density-based Bioseparation of CEA Tumor Biomarker. Partnership for Research and Education in Materials symposium at Texas State University, September 18, 2015, San Marcos, TX.
4. Osta, E.G., Li, A., Chilkoti, A., López, G.P., Weigum, S.E. Hollow Microspheres For Density-based Bioseparation of CEA Tumor Biomarker. Research Triangle MRSEC/MIRT Research Symposium at Duke University, July 23rd, 2015, Durham, NC
5. Munoz, C., McIvor, E., Sutton, M., Feng, R. Cantu, T., Weigum, S.E., and Betancourt, T. Targeted Therapy of Hepatocellular Carcinoma with Aptamer-functionalized Biodegradable Nanoparticles. Integrated Biomedical Sciences Symposium, University of Texas Health Science Center, July 28, 2015, San Antonio, TX.
6. Sutton, M., Barnes, E., Mitchell, S., Betancourt, T. and Weigum, S. Characterization of the In Vitro Interactions of a Liver Cancer-Specific Aptamer. BMES Annual Meeting, Oct 23, 2014, San Antonio, TX.
7. Douglas, A., Weigum, S., and Beall, G. Microbial Reduction of Humic Acid. Clay Minerals Society, May 2014, College Station, TX.
8. Sutton, M., Betancourt, T. and Weigum, S.E. Characterization of the *In vitro* Interactions of a Liver Cancer Specific Aptamer. 19th Annual Biology Student Colloquium, April 25, 2014, San Marcos, TX.
9. Madadi, S. and Weigum, S.E. Development of 2-D and 3-D Paper-based Microfluidics for the Detection of *C. parvum* and *G. lambia*. 19th Annual Biology Student Colloquium, April 25, 2014, San Marcos, TX.
10. Weigum, S.E. Paper Microfluidic Devices and other Nanomaterials for Pathogen Detection and Disease Diagnostics. (poster) Annual Meeting of the Western Regional Center for Excellence in Biodefense and Emerging Infectious Disease Research, Oct 22-23, 2013, UTMB Galveston, TX.
11. Douglas, A. Weigum, S., and Beall, G. Microbial Conversion of Humic Acid to Graphene: A Green Technique. (poster) Women in Science and Engineering Conference, Nov 21-22, 2013, Texas State University, San Marcos, TX.
12. Tilton, E., Samilpa, T.P., Riggs, M., Beall, G. and Weigum, S.E. Development of a paper microfluidic platform for detection of viral gastroenteritis. (poster) Ninth Annual Meeting of NIH/NIAID Regional Centers of Excellence for Biodefense and Emerging Infectious Disease Research, April 7-9, 2013, Seattle, WA.
13. Tilton, E. and Weigum, S.E. Development of a paper-microfluidic platform for detection of viral gastroenteritis. (oral presentation) 18th Annual Biology Student Colloquium, March 22, 2013, San Marcos, TX.

14. Weigum S.E., Kane S.J., and Madadi, S. 2-D and 3-D Paper-based microfluidic devices for detection of intestinal pathogens. (poster) 20th International Molecular Medicine Tri-CON, Feb 11-15, 2013. San Francisco, CA.
15. Weigum S.E., Kane S.J., and Madadi, S. 2-D and 3-D Paper-based microfluidic devices for detection of intestinal pathogens. (poster) 2nd Annual Point-of-Care Diagnostics: Innovation for the Future of Personalized Healthcare Symposium, Feb 11-12, 2013. San Francisco, CA.
16. Weigum, S.E. Career Development Award Presentation: Point-of-need diagnostic tests for viral gastroenteritis. (invited oral presentation) Western Regional Center for Excellence in Biodefense and Emerging Infectious Disease Research 8th Annual Conference, October 4-6, 2012. Dallas, TX.
17. Weigum, S.E. Development of point-of-care diagnostic tools for detection of *C. parvum* oocysts. (oral presentation) James Steele Conference on Diseases in Nature Transmissible to Man, June 20, 2012. San Antonio, TX.
18. Weigum, S.E. Amplification-free molecular detection via optical gold nanoparticle assemblies. (oral presentation) Southwest Regional Meeting of the American Chemical Society, November 9, 2011. Austin, TX.
19. Weigum, S.E. Lab-on-a-chip sensor for analysis of cellular biomarkers in oral exfoliative cytology. (invited oral presentation) International Academy of Oral Oncology Meeting, April 2009. Toronto, CA.
20. Weigum, S.E. Cell-based biosensor for analysis of oral cancer biomarkers. (oral presentation) American Association of Dental Research Annual Meeting, April 2008. Dallas, TX.
21. Weigum, S., Floriano, P., and McDevitt, J.T. Membrane-based optical sensor method for multi-parameter detection of tumor biomarkers. (poster) Ninth World Congress on Biosensors, May 10-14, 2006, Toronto, Canada.
22. Floriano, P.N., Christodoulides, N., Acosta, S., Weigum, S., Michael-Ballard, K., and McDevitt, J.T. Towards the establishment of a point of care three-part white blood differential. (poster) Ninth World Congress on Biosensors, May 10-14, 2006, Toronto, Canada.
23. Christodoulides, N., Floriano, P., Michael-Ballard, K., Darshan, P., Mohanty, S., Weigum, S., and McDevitt, J.T. A lab-on-chip method for the determination of total and allergen-specific human immunoglobulin E. (poster) Ninth World Congress on Biosensors, May 10-14, 2006, Toronto, Canada.
24. Medley, D., Preiss, G., Weigum, S., and Koke, J. 2002. Connexin 43 Expression in Cultured Astrocytes. *Molecular Biology of the Cell* (supp.) 13:1203a. (published abstract and poster) 42nd annual meeting of the American Society for Cell Biology, San Francisco, CA
25. Weigum, S., Christodoulides, N., McDevitt, J. and Koke, J. 2001. Use of Cultured Glioma Cells as Sensors in Chip-Based Assay for Astrogliosis. *Molecular Biology of the Cell* (supp.) 12, 2834a. (published abstract and poster) 41st annual meeting of the American Society for Cell Biology, Washington D.C.

5. REPORTS:

N/A

6. BOOK REVIEWS:

N/A

7. OTHER:

Intellectual Property Disclosures and Patents

1. Detecting Tumor Biomarkers in Oral Cancer; U.S. Application No. 11/746,965

B. Works not in Print

1. INVITED TALKS, LECTURES, AND PRESENTATIONS:

- Hollow silica microspheres for density-based bioseparations*
Research Triangle MRSEC, Duke University April 2016
- Paper-based microfluidic devices for detection of intestinal pathogens*
Texas Children's Hospital and Baylor College of Medicine December 2015
- Novel approach for bioseparation: PREM-Seed proposal overview*
PREM Workshop, Duke University, Department of Bioengineering September 2014
- Optical biosensor and nanomaterials lab overview and interests*
PREM Seminar, Texas State University, Department of Chemistry April 2014
- Update on point-of-need diagnostic tests for viral gastroenteritis.*
WRCE Diagnostics Teleconference March 2014
- Novel platforms and innovative materials for designing advanced diagnostic tools*
Kapplex, Inc., Toronto, CA December 2014
- Update on point-of-need diagnostic tests for viral gastroenteritis.*
WRCE Diagnostics Teleconference September 2013
- Point-of-care sensing platforms for infectious disease diagnostics.*
Texas State University, Department of Chemistry Seminar Series November 2012
- Microfluidic Sensors for diagnosing disease at the point-of-care.*
Texas State University, MSEC Commercialization Forum March 2012
- Biosensors and nanomaterials for diagnosing disease at the point-of-care.*
Texas State University, Clinical Laboratory Sciences Society November 2011
- Paths are created by walking: women in science who are leading the way.*
Texas State University, Second Annual WISE Conference April 2011
- Point-of-care diagnostic tests for intestinal protozoa.*
University of Texas Medical Branch, Galveston, TX. December 2010

Detection of oral cancer biomarkers using a lab-on-a-chip sensor.
 UTHSC at San Antonio, Dental Branch

June 2008

3. CONSULTANCIES:

N/A

4. WORKSHOPS:

C. difficile Gulf Coast Collaborative Meeting, Institute of Biosciences and Technology at Texas A&M Health Sciences Center, December 2015, Houston, TX

Materials Research Day at UTHSC, August 24, 2015, San Antonio, TX

PREM Workshop to meet and explore potential research collaboration with MRSEC faculty at Duke, NCSU, and NC State, Sept 2014. Raleigh-Durham, NC.

Texas SBIR/STTR Summit & Conference, June 2013, Austin, TX

Microfluidics 2.0 – Capillary-based Microfluidics for Bioanalysis. Sponsored by the University of Washington and PATH, October 2011, Seattle, WA

Diagnostics Development. Sponsored by the Western Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research, January 2011, Galveston National Laboratory, Galveston, TX.

Transitioning Technologies from Labs to Least Developed Countries. Sponsored by Rice 360^o Institute for Global Health Technologies, November 2009, Rice University, Houston, TX.

Early Disease Detection: From Biomarker Discovery to Clinical Application. Sponsored by the Gulf Coast Consortia; Served as a moderator of round-table discussion on tissue analysis, September 2009, Rice University, Houston, TX.

5. OTHER:

C. Grants and Contracts

1. FUNDED EXTERNAL GRANTS AND CONTRACTS:

NSF (DMR-1205670)

PREM: Center on Interfaces in Materials; A Partnership with Research Triangle MRSEC

PI: W. Brittain

Role: Research Project PI collaborating with G. López (RT-MRSEC, Duke Bioengineering)

6/1/2012 – 5/31/2017

Total award funded \$3,129,001; Project funding \$10,000-15,000/yr.

NIH/NIAID (5U54AI057156-08; CD007 sub-award)

Western Regional Center for Excellence for Biodefense and Emerging Infectious Disease Research – Career Development Award

Development of a Paper Microfluidic Platform for Detection of Viral Gastroenteritis

PI: S. Weigum

Collaborators/Mentors: R. Atmar (Baylor College of Medicine), G. Beall (TSU Chemistry), and D. García (TSU Biology)

9/1/2012 – 2/28/2014
Funded \$344,275

2. SUBMITTED, BUT NOT FUNDED, EXTERNAL GRANTS AND CONTRACTS:

NSF (15-504)
 MRI Acquisition of a Microchip-based Cell Sorter for Multi-disciplinary Research
 PI: S. Weigum
 Co-PI(s): T. Betancourt, A. Kornienko, R. Rohde, and M. Lane
Submitted: 1/22/2015
 \$351,287

DTRA (HDTRA1-14; Topic CBA-03)
 Portable Field Analytical Platform for the Detection/Diagnosis of Protein Biomarkers Linked to Infectious Pathogens
 PI: J. Carrano (Paratus Diagnostics, Austin TX)
 Role: co-PI
White paper submitted: 12/20/2014
Full proposal submitted: 3/12/2014
 \$1,660,000

AFRL (BAA-RQKM-2015-0006)
 Warfighter Personal Sensor to Monitor Physiological Indicators and Diagnose Infectious Diseases
 PI: J. Carrano (Paratus Diagnostics, Austin TX)
 Role: Sub-contractor
White paper Submitted: 12/17/2014
 \$795,000

THECB Norman Hackerman Advanced Research Program (pre-proposal)
 Trauma-related Reactive Astrogliosis in a Paper-Supported 3-D Cell Culture Model
 PI: S. Weigum
Submitted: 10/31/2013
 \$100,000

NSF (13-560) Pre-proposal
 Center for BioEngineered Delivery Systems
 Multi-institutional center for collaborative research organized at University of Washington
 PI: P. Stayton (UW)
Submitted: August, 2013

NSF (12-532)
 Trans-Texas Climate Array – Ecology, Evolution, Economics
 PI: M. Huston
 Co-PI(s): M. Forstner, W. Nowlin, and J. Veech
 Role: Collaborator
Submitted: 04/01/2013

NSF (11-533)

IGERT: Interdisciplinary Entrepreneurial Educational Experience in Materials Science and Engineering

PI: G. Beall

Co-PIs: T. Betancourt, R. Tally, N. Theodoropoulou, and S. Weigum

Submitted: July, 2012

\$2,233,420

Texas Parks and Wildlife

Effects on the South Texas Herpetofauna from the Oil and Gas Industry

PI: M. Forstner

Co-PI(s): R. Simpson, S. Weigum, J. Veech, C. Gabor, M. Huston, B. Weckerly, D. Hahn, D. Foley (Sul Ross State Univ.), and J. Dixon (Texas A&M)

Submitted: March, 2012

\$337,456

NSF (11-503) – Major Research Instrumentation

Acquisition of a Stand-Alone, Dedicated Multiphoton Excitation Microscopy System.

PI: DM Garcia

Co-PI: N Dharmasiri and S Weigum.

Submitted: January, 2011

\$858,034

3. FUNDED INTERNAL GRANTS AND CONTRACTS:

Texas State University Multi-disciplinary Internal Research Grant (MIRG)

Flexible, Disposable and Highly Sensitive Biosensor Based on Graphene Field Effect Transistor

PI: Y. Chen

Co-PIs: Q. Yu and S. Weigum

6/1/2013 – 6/1/2014

Funded \$25,000

Texas State University Research Enhancement Program (REP)

2-D and 3-D Paper-based Microfluidic Devices for Detection of Intestinal Pathogens.

PI: S. Weigum

3/1/2011 – 3/1/2012

Funded \$8,000

4. SUBMITTED, BUT NOT FUNDED, INTERNAL GRANTS AND CONTRACTS:

Texas State University Research Enhancement Program (REP)

Targeting Liver Cancer with a Nucleic Acid Aptamer.

PI: S. Weigum

Submitted 10/06/2015

\$8,000

Texas State University Multi-disciplinary Internal Research Grant (MIRG)

Bacterial Biosensors Synthesized by Microbial-reduced Graphene Oxide

PI: S. Weigum
 Co-PI: G. Beall
Submitted: 2/25/2013
 \$25,000

5. PENDING EXTERNAL AND INTERNAL GRANTS AND CONTRACTS:

DOD SBIR Phase I (CBD152-005)
 Integrated Sample-prep and Immunoassay Array Platform for High-Sensitivity, Low-Complexity Multiplexed POC Diagnostics
 PI: J. Carrano, (Paratus Diagnostics, Austin TX)
 Role: co-PI
 \$150,000

Paratus Diagnostics, Inc.
 Assay Development and Antibody Screening for Infectious Disease Panel
 PI: S. Weigum
 1/1/2016 – 12/31/2016

NSF MRI: Acquisition of an Aerosol Jet 3D Printing System for Flexible Electronic Circuits, Additive Manufacturing and Material Development
 PI: Y. Chen
 Role: Co-PI
Submitted 1/5/2016
 \$264,128

NSF MRI: Acquisition of Atomic Force Microscope to Advance Texas State University Materials Research
 PI: W. Brittain
 Role: Senior Personnel
Submitted 1/5/2016
 \$104,476

DOD (BAA-W911NF-15-R-0025)
 Aerosol Jet Printing System for Additive Manufacturing and Material Development
 PI: Y. Chen
 Role: Senior Personnel
Submitted: 12/11/2015
 \$393,003

D. Fellowships, Awards, Honors:

CHI Poster Competition Winner at the Molecular Medicine Tri-Conference, 2013
 Literary Award, Texas section of the International College of Dentists, 2011
 Sensor system for oral cancer diagnosis featured in NIH Director's Report to NIDCR, 2010
 University of Texas at Austin Continuing Fellowship, 2006
 R.B. and Margaret Lewis Endowed Presidential Fellowship in Biochemistry, 2004 and 2006
 College of Natural Sciences, Dean's Excellence Fund Fellowship, 2003
 Colene Drace Cell Biology Award, 2002

Northeast Independent School District Superintendent Award, 1998-1999

IV. SERVICE

A. University:

Committee Service

College of Science and Engineering Safety Committee, 2014 – present

MSEC Admissions Committee, 2011 – present

MSEC Organizing Committee encompassing curriculum, recruitment, DIA distribution, and course scheduling, 2013 – present

MSEC Website Development Team, 2011 - present

Other

Panel chair, 7th International Research Conference for Graduate Students, Texas State University, Nov 2015

Assisted in new life sciences lab construction and design at STAR Park, Summer 2014

H-LSAMP Mentor, Fall 2011 – Spring 2012

H-LSAMP Science Café Book Club (*invited participant*), 2011

B. Departmental:

Committee Service

Microbiology Assistant Professor Search Committee, 2013 – present

Strategic Hiring Plan Committee, 2013 - present

Homer E. Prince Professor of Microbiology Selection Committee, 2013 – present

Colene Drace Award for Outstanding Research in Cell and Molecular Biology Selection Committee Chair, 2011- present

Other

Texas State 1st Annual Three Minute Thesis Competition, Judge, Feb 28, 2014

Biology representative at Texas State Science and Engineering Industry Day, Nov 22, 2013

C. Community:

Panelist at UT College of Natural Sciences, Graduate Student/Postdoc Professional Development Seminar. *The academic job search: Characteristics of competitive applications*. July 21, 2015, Austin, TX.

Hosted, STEM Open House Tour of research lab for San Marcos high school and middle school students, May 1, 2015

D. Professional:

Advisory Boards

Austin Community College Biotechnology Program Advisory Board Member, 2014 – present

Conference Organizer or Session Chair

Invited to chair session on “Cells Tissues and Organs on Chip II” during the Biomedical Engineering Society Annual Meeting, Oct 25, 2014. San Antonio, TX.

Manuscript Reviewer

BMC Research Notes

Clinical and Vaccine Immunology
PLOS One

Abstract Reviewer

BMES Annual Meeting- 2015
BMES Annual Meeting - 2014

Other

Judge at Fifth Annual National Undergraduate Global Health Technologies Design Competition, March 27, 2015. Houston, TX.
Participant at the Texas Healthcare and Bioscience Summit held Feb 4-5, 2015 at the Texas Capitol, Austin, TX.
Judge at Fourth Annual National Undergraduate Global Health Technologies Design Competition, March 28, 2014. Houston, TX.

E. Organization Memberships:

1. HONORARY:
N/A

2. PROFESSIONAL:
Biomedical Engineering Society (BMES); 2011-present
American Chemical Society (ACS); 2008-present
BioAustin; 2012-present
Women in Science and Engineering
Women in Chemistry
Iota Sigma Pi Honor Society
American Society of Cell Biology