

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 and 2016)

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:

Supervised Graduate Thesis/Dissertations – 6 current; 10 total

Current

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

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

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

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

Katie Kendrick (M.S. Biology, expected graduation May 2017). Tissue microarray analysis of a hepatocellular carcinoma aptamer.

Kelly Braddock (M.S. Biology, expected graduation May 2018). Detection of *S. mutans* bacteria and protease activity associated with formation of dental carries.

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.

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

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.

Supervised Graduate Non-Thesis Exit Exams – 0 current; 1 total

Priyanka Kodangi (M.S. Biology, May 2016)

Committee Member for Graduate Thesis/Dissertations – 5 current; 9 total

Current

Tugba Ozel (Ph.D. MSEC, T. Betancourt advisor, expected graduation May 2018). Targeted Polymer-based Nanocarriers for Image-guided Treatment of Breast Cancer.

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

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

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

Pedro Gonzalez (M.S. Biology, D. Garcia advisor; expected graduation Dec 2016). Optic Nerve Astrocytes of Zebrafish (*Danio rerio*) as a Model for Aging Studies Linked to Alzheimer's Disease in Humans.

Completed

Shobit Sharma (Ph.D. Biology, N. Ceballos advisor; May 2016). Influence of brain-derived neurotrophic factor and family history of alcohol dependence on alcohol consumption characteristics of healthy social drinkers.

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

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.

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. 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.

III. SCHOLARLY/CREATIVE

A. Works in Print

1. BOOKS

a. 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 2017)
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 Papers

1. Xiang, L., Yu, Q., Chen, Y. and Weigum, S.E. Flexible graphene biosensor platform for disease diagnostics. *IEEE Sensors* (submitted April 2016).
2. Xiang, L., Osta, E., Li, A., López, G. and Weigum, S.E. Functionalized hollow silica microspheres for density-dependent bioseparations. *J. Chromatography A* (submitted June 2016).
3. Weigum, S.E., McIvor, E., Munoz, C., Feng, R., Cantu, T., Walsh, K., and Betancourt, T. Targeted therapy of hepatocellular carcinoma with aptamer-functionalized biodegradable nanoparticles. *J. of Nanoparticle Research* (submitted July 2016).

Manuscripts in Preparation

1. 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. (in preparation for Lab-on-a-Chip)
2. Li, A., Osta, E., Xiang, L., Weigum, S., and López, G. Rapid separation and detection of CEA biomarker using low-density silica microspheres and thermally-responsive polymer system. (in preparation for Nano Letters)
3. Xiang, L., Lu, Z., and Weigum, S.E. Folded paper-based microfluidic system for separation and detection of *Cryptosporidium*. (in preparation for JOVE)

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)

4. PRESENTATION AND POSTER ABSTRACTS PRESENTED AT SCIENTIFIC MEETINGS:

([†] denotes graduate students advised; [‡] denotes undergraduate students advised; and presenter is underlined)

International, National or Regional Meetings

1. Lu, Z.[†], Ranjan, K.[†], Carrano, J., Schneider, R., Carrano, J., and Weigum, S. Paper-based Device for Gastroenteritis Detection Integrated with Sample Preparation Cartridge. Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, *scheduled Oct 5-8, 2016*.
2. Weigum, S., Xiang, L.[†], Osta, E.[‡], Li, L., and López, G. A New Approach to Rapid Pathogen Isolation using Molecular Buoys. BMES Annual Meeting, Minneapolis, MN, *scheduled Oct 5-8, 2016*.
3. Xiang, L.[†], Osta, E.[‡], Li, L., López, G.P, and Weigum, S. Hollow Silica Microspheres for Buoyancy-assisted Bioseparation. (poster) BMES Annual Meeting, Minneapolis, MN, *scheduled Oct 5-8, 2016*.

4. Betancourt, T., Cantu, T.[†], Özel, T.[†], Munoz, C.[†]; Irvin, J., Weigum, S., McIvor, E., Walsh, K.[‡]; Pattani, V., Tunnell, J. Exploring the Promise of Nanomedicine: Highly Specific Nano-Scaled Polymeric Biomaterials for Imaging and Treatment of Cancer. Bio-Related Polymers: Synthesis and Applications Session, 2015 Joint Southeast/Southwest Regional Meeting, American Chemical Society, Memphis, TN, November 4, 2015.
5. Osta, E.G.[‡], Li, A., Chilkoti, A., López, G.P., and Weigum, S.E. Hollow Microspheres for Density-based Bioseparation of CEA Tumor Biomarker. (poster) BMES Annual Meeting, Tampa, FL, Oct 10, 2015.
6. Weigum, S.E., Ranjan, K.[†], Lu, Z.[†], and Vaidyanathan, P. Paper Microfluidic Platform for Detection of Viral Gastroenteritis. (poster) BMES Annual Meeting, Tampa, FL, Oct 10, 2015.
7. Osta, E.G.[‡], Li, A., Chilkoti, A., López, G.P., Weigum, S.E. Hollow Microspheres For Density-based Bioseparation of CEA Tumor Biomarker. (poster) Research Triangle MRSEC/MIRT Research Symposium at Duke University, Durham, NC, July 23rd, 2015.
8. Sutton, M.[†], Barnes, E., Mitchell, S., Betancourt, T. and Weigum, S. Characterization of the *In Vitro* Interactions of a Liver Cancer-Specific Aptamer. (poster) BMES Annual Meeting, San Antonio, TX, Oct 23, 2014.
9. 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, Seattle, WA, April 8, 2013.
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. 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, San Francisco, CA, Feb 11-15, 2013.

❖ *Winner of 1st place CHI Poster Competition*
12. 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, San Francisco, CA, Feb 11-12, 2013.
13. 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, Dallas, TX, October 4-6, 2012.
14. Weigum, S.E. Amplification-free molecular detection via optical gold nanoparticle assemblies. Southwest Regional Meeting of the American Chemical Society, Austin, TX, November 9, 2011.
15. 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, Toronto, CA, April 2009.

16. Weigum, S.E. Cell-based biosensor for analysis of oral cancer biomarkers. American Association of Dental Research Annual Meeting, Dallas, TX, April 2008.
17. 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, Toronto, Canada, May 10-14, 2006.
18. 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, Toronto, Canada, May 10-14, 2006.
19. 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, Toronto, Canada, May 10-14, 2006.
20. Medley, D., Preiss, G., Weigum, S., and Koke, J. Connexin 43 Expression in Cultured Astrocytes. *Molecular Biology of the Cell* (supp.) 13:1203a. (poster) 42nd annual meeting of the American Society for Cell Biology, San Francisco, CA. 2002.
21. 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.

State and Local Meetings

1. Xiang, L.[†] and Weigum, S.E. Hollow silica microspheres for density-based bioseparation. Texas PREM Student Summer Conference, June 28, 2016, Texas State University, San Marcos, TX.
 - ❖ *Winner “Best Oral Presentation”*
2. Xiang, L.[†] and Weigum, S.E. Hollow silica microspheres for density-based bioseparation. 20th Annual Biology Student Colloquium, February 26, 2016, Texas State University, San Marcos, TX.
 - ❖ *Voted “Best Presentation by a Ph.D. Student”*
3. Lu, Z.[†], Ranjan, K.[†], Carrano, J.C., and Weigum, S.E. Integration of a lateral flow immunoassay panel for gastroenteritis with a swab-based sample preparation cartridge. 20th Annual Biology Student Colloquium, Texas State University, San Marcos, TX, February 25, 2016.
4. Kendrick, K.[†] and Weigum, S.E. Specificity of TLS11a aptamer towards hepatocellular carcinoma as a means of detection and targeted drug delivery. 20th Annual Biology Student Colloquium, Texas State University, San Marcos, TX, February 25, 2016.
5. Osta, E.G.[‡], Li, A., Chilkoti, A., López, G.P., Weigum, S.E. Hollow Microspheres for Density-based Bioseparation of CEA Tumor Biomarker. (poster) Partnership for Research and Education in Materials symposium at Texas State University, San Marcos, TX, September 18, 2015.

6. 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. (poster) Integrated Biomedical Sciences Symposium, University of Texas Health Science Center, San Antonio, TX, July 28, 2015.
 7. Douglas, A.[†], Weigum, S., and Beall, G. Microbial Reduction of Humic Acid. (poster) Clay Minerals Society, College Station, TX, May 2014.
 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, San Marcos, TX, April 25, 2014.
 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*. (poster) 19th Annual Biology Student Colloquium, San Marcos, TX, April 25, 2014.
 10. Douglas, A.[†], Weigum, S., and Beall, G. Microbial Conversion of Humic Acid to Graphene: A Green Technique. (poster) Women in Science and Engineering Conference, Texas State University, San Marcos, TX, Nov 21-22, 2013.
 11. Tilton, E.[†] and Weigum, S.E. Development of a paper-microfluidic platform for detection of viral gastroenteritis. 18th Annual Biology Student Colloquium, San Marcos, TX, March 22, 2013.
 12. Weigum, S.E. Development of point-of-care diagnostic tools for detection of *C. parvum* oocysts. James Steele Conference on Diseases in Nature Transmissible to Man, San Antonio, TX, June 20, 2012.
5. OTHER:
- Intellectual Property Disclosures and Patents***
1. Weigum, S.E. and Xiang, L. Functionalized hollow silica microspheres for density-based bioseparations. *Submitted* 10/2/2015
 2. Detecting Tumor Biomarkers in Oral Cancer; U.S. Application No. 11/746,965

B. Works not in Print

1. INVITED TALKS, LECTURES, AND PRESENTATIONS:

<i>Hollow silica microspheres for density-based bioseparations</i> Research Triangle MRSEC, Duke University	April 2016
<i>Paper-based microfluidic devices for detection of intestinal pathogens</i> Texas Children's Hospital and Baylor College of Medicine	December 2015
<i>Novel approach for bioseparation: PREM-Seed proposal overview</i> PREM Workshop, Duke University, Department of Bioengineering	September 2014
<i>Optical biosensor and nanomaterials lab overview and interests</i> PREM Seminar, Texas State University, Department of Chemistry	April 2014
<i>Update on point-of-need diagnostic tests for viral gastroenteritis.</i>	

WRCE Diagnostics Teleconference	March 2014
<i>Novel platforms and innovative materials for designing advanced diagnostic tools</i> Kapplex, Inc., Toronto, CA	December 2014
<i>Update on point-of-need diagnostic tests for viral gastroenteritis.</i> WRCE Diagnostics Teleconference	September 2013
<i>Point-of-care sensing platforms for infectious disease diagnostics.</i> Texas State University, Department of Chemistry Seminar Series	November 2012
<i>Microfluidic Sensors for diagnosing disease at the point-of-care.</i> Texas State University, MSEC Commercialization Forum	March 2012
<i>Biosensors and nanomaterials for diagnosing disease at the point-of-care.</i> Texas State University, Clinical Laboratory Sciences Society	November 2011
<i>Paths are created by walking: women in science who are leading the way.</i> Texas State University, Second Annual WISE Conference	April 2011
<i>Point-of-care diagnostic tests for intestinal protozoa.</i> University of Texas Medical Branch, Galveston, TX.	December 2010
<i>Detection of oral cancer biomarkers using a lab-on-a-chip sensor.</i> UTHSC at San Antonio, Dental Branch	June 2008

C. Grants and Contracts

1. FUNDED EXTERNAL GRANTS AND CONTRACTS:

Paratus Diagnostics, Inc.
Assay Development for Periodontal Diagnostic Tests
 PI: S. Weigum
 8/1/2016 – 7/31/2017
 \$42,000

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
 \$99,580 (*Currently in contract negotiations*)

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

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 \$3,129,001; *Project funding* \$44,375 to date

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

9/1/2012 – 2/28/2014

\$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
Trauma-related Reactive Astrogliosis in a Paper-Supported 3-D Cell Culture Model
 PI: S. Weigum
Pre-Proposal 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

\$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

\$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:

RFA-HD-17-015

NIH Animal-Assisted Interventions for Special Populations (R21)

Health Effects of Canine-Assisted Interventions with Pediatric Oncology Patients

PI: E. Hartwig

Role: Co-PI

Submitted 7/29/2016

\$300,000

PA-AFRL-AFOSR-2016-001

DOD Defense University Research Instrumentation Program (DURIP)

Atomic Resolution Transmission Electron Microscope for Defense Materials Research Education

PI: C. Rhodes

Role: Key Personnel

Submitted 7/22/2016

\$1,500,000

NIH Nationals Center for Advancing Translational Sciences (NCATS) SBIR Phase I

Point-of-care Diagnostic Test for Rapid Detection of C. difficile

PI: C. Kim (GoDx, San Diego, CA)
 Role: Co-PI
Submitted: 4/5/2016 (Review Score: 31)
 \$300,000

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

D. Fellowships, Awards, Honors:

Featured in Texas Monthly promotion highlighting research activities at Texas State, "Targeting a Killer" April 2016
 Hillviews Magazine "Targeting a Killer" research focus, Texas State University, Winter 2014
 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 (COSE) 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

Supporting Transgender Students on Campus, Oct 26, 2016
 Allies Training for LGBTQIA promoting inclusiveness across campus (2015)
 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 – 2014

Strategic Hiring Plan Committee, 2013
 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

Seminar Host

Dr. Jim Wittliff, Director of the Institute for Molecular Diversity and Drug Design; Professor
 of Biochemistry and Molecular Biology; University of Louisville, KY. April 8, 2016.
 Dr. Assem Abolmaaty Sayedahmed, Director Technology Innovation Commercialization
 Office; Associate Professor of Food Microbiology, Ain Shams University, Cairo, Egypt.
 Sept 5, 2014.

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:

Outreach

Attended Q&A session for the Women in Science and Engineering student organization at
 Anderson High School, Austin, TX. Nov 19, 2016.
 Hosted, SACNAS-sponsored STEM Open House Tour of research lab, April 22, 2016
 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 “Micro/Nano Tools in Global Health” during the Biomedical
 Engineering Society Annual Meeting, *scheduled Oct 5-8, 2016. Minneapolis, MN.*
 Organized oral/poster presentation competition at PREM Student Summer Research
 Conference, June 26 – 28th, 2016. Texas State University, San Marcos, TX.
 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.

Proposal Reviewer

Kansas IDeA Network of Biomedical Research Excellence (K-INBRE) Bridging Grant

Manuscript Reviewer

BMC Research Notes
 Clinical and Vaccine Immunology
 PLOS One

Abstract Reviewer

BMES Annual Meeting – 2016

BMES Annual Meeting- 2015

BMES Annual Meeting - 2014

Scientific Policy and Advocacy Participation

Third Annual Texas Healthcare and Bioscience Summit: Steering Texas to Greatness. May 5-6, 2016. Austin TX.

Second Annual Texas Healthcare and Bioscience Summit. Feb 4-5, 2015. Texas Capitol, Austin, TX.

Other

Judge at Sixth Annual National Undergraduate Global Health Technologies Design Competition, April 15, 2016. Houston, TX.

Judge at Fifth Annual National Undergraduate Global Health Technologies Design Competition, March 27, 2015. Houston, TX.

Judge at Fourth Annual National Undergraduate Global Health Technologies Design Competition, March 28, 2014. Houston, TX.

E. Organization Memberships:

Biomedical Engineering Society (BMES); 2011-present

American Chemical Society (ACS); 2008-present

BioAustin; 2012-present

Association of Women in Science (AWIS); 2014-present

Women in Chemistry

Iota Sigma Pi Honor Society

American Society of Cell Biology