

SHANNON WEIGUM

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I. ACADEMIC/PROFESSIONAL BACKGROUND

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 Neuroblastoma 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>
Co-Director	Texas State Center for Innovation and Entrepreneurship	2020-Present
Associate Professor	Texas State University, Biology and MSEC	2017-Present
Assistant Professor	Texas State University, Biology and MSEC	2011-2017
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>
Vice President of Biological Sciences	Paratus Diagnostics, San Marcos TX	2017-2018
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.)

Ice House Program Facilitator, Entrepreneurial Learning Initiative, 2020
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)

Named in Veteran student survey as "a faculty member that they felt contributed significantly to their success and development" (Spring 2016)

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 4299 Undergraduate Research
 BIO 4311 Cancer Biology
 BIO 4350A Cell Biology of Cancer

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 7101 Commercialization Forum
 MSEC 7102 MSEC Seminar
 MSEC 7103/7203/7303 Research MSEC
 MSEC 7299/7399/7699/7999 Dissertation MSEC
 MSEC 7340 Biomaterials and Biosensors

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

Isha Desai (Ph.D. Materials Science, Engineering and Commercialization, expected graduation Aug 2022). Hollow Silica Microspheres or "Molecular Buoys" for Purification and Isolation of Nucleic Acids in Wastewater

Shannon Long (M.S. Biology, expected graduation Aug 2022). Optimization of Novel Nucleic Acid Isolation and Purification Methods

Kelly Braddock (M.S. Biology, Dec 2017). Detection of *S. mutans* bacteria and protease activity associated with formation of dental carries.

Elizabeth McIvor (co-chair K. Lewis; M.S. Biochemistry, Aug 2017). Targeting liver cancer with a nucleic acid aptamer.

Zhenyuan Lu (M.S. Biology, May 2017; Thesis Research Fellowship Recipient 2017). Integration of a lateral flow immunoassay panel for gastroenteritis with a swab-based sample preparation cartridge.

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

Aditya Ranjan (Ph.D. Aquatic Resources, withdrew 2017). Integration of low-cost sample preparation and diagnostic platforms for point-of-care detection of infectious disease pathogens.

Lichen Xiang (Ph.D. MSEC, Dec 2016). Design and application of hollow silica microspheres for density-based bioseparations.

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/Independent Study Projects

Han Vo (B.S. Biochemistry, expected graduation May 2022). Analysis of Reproducibility in Paper-based Microfluidics Immunoassays.

Renya Maku (B.S. Biology, Aug 2020; SURE Program Participant 2019). Paper Microfluidics: Cheap, Quick and Easy Platform for Point-of-Care Diagnostics

Diego Torres (B.S. Biology, Dec 2020). Testing Reproducibility of Paper-based Microfluidic Immunoassays

Peyton Rudolph (B.S. Biology, May 2020). Mesenchymal Stem Cells in Disease Therapeutics - Help or Hype?

Ashley Summers (B.S. Microbiology, May 2017; URF Award Recipient 2017). Multi-functional nanoparticles for lateral flow immunoassays.

Eri (*formerly Erica*) Osta (B.S. Microbiology, expected graduation 2017; URF Award Recipient 2016; NSF REU fellow at Duke University 2015-2016; Francis Rose Fellowship 2016; Durrenberger Scholarship for Women in Science 2016; Mariel Muir

Endowed Scholarship 2016). Hollow silica microspheres for density-based separation of Carcinoembryonic Antigen (CEA) tumor biomarker.

Kayley Smith (B.S. Biochemistry, May 2017). Design and application of hollow silica microspheres for density-based bioseparations.

Jacqueline Benner (B.S. Microbiology, May 2015; SURF Award Recipient 2014). Development of a paper-based microfluidic device for the detection of noroviruses.

Michael Tarver (B.S. Microbiology; May 2015). Honors Independent Study. Methicillin-resistant *S. aureus* and the penicillin binding protein 2a (PBP2a) responsible for antibiotic resistance.

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

Supervised Graduate Non-Thesis Exit Exams

Sammuel McKann (M.S. Biology, Dec 2021)

Adrian Jaso (M.S. Biology, Dec 2020)

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

Committee Member for Graduate Thesis/Dissertations

Nilofar Heshmati Aghda (Ph.D. Materials Science, Engineering and Commercialization; May 2020). Induction of Immunogenic Cell Death via Nanoparticle-Mediated Dual Chemotherapy and Photothermal Therapy.

Carol Ellis-Terrell (Ph.D. Materials Science, Engineering and Commercialization; May 2020). Design and Evaluation of Anti-Biofouling Coatings by Plasma Enhanced Chemical Vapor Deposition.

Sharon Kwee (Ph.D. Biomedical Engineering at the University of Texas Health Science Center San Antonio, Aug 2020). Fabrication and Optimization of a Gold Nanorod Array for Sensing Applications.

Priscilla Pham (Ph.D. Biology, R. McLean advisor; Dec 2019). Probiotic regulation of fat storage via Angiopoietin-like 4 (ANGPL-4).

Tugba Ozel (Ph.D. MSEC, T. Betancourt advisor, Aug 2017). Targeted polymer-based nanocarriers for image-guided treatment of breast cancer.

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

Pedro Gonzalez (M.S. Biology, D. Garcia advisor; May 2017). Optic Nerve Astrocytes of Zebrafish (*Danio rerio*) as a Model for Aging Studies Linked to Alzheimer's Disease in Humans.

Shobhit 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

Ethan Hall (Sept 2019 – May 2020)
Paige Clevenger (Jan 2019 – May 2020)
Claire Randall (Sept 2018 – May 2019)
Alicia Puig (SURE Participant; May 2019 – Aug 2019)
Kayley Smith (Fall 2016 – Spring 2017)
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 and Judging

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.

Judge, Student Project of the Year, Small Business Institute. (November 9, 2020).

Judge, ARTC 5360R Entrepreneurial Design, Texas State University. (November 16, 2019).

III. SCHOLARLY/CREATIVE

A. Works in Print

1. BOOKS

a. Chapters in Books:

1. Weigum, S. E., & Rohde, R. E. (2021). Nucleic Acid-Based Analytic Methods for Microbial Identification and Characterization. In Bailey & Scott's Diagnostic Microbiology (15th ed.). St. Louis, Missouri: Elsevier Inc.
2. Weigum, S. E., & Rohde, R. E. (2021). Overview of the Methods and Strategies in Virology. In Bailey & Scott's Diagnostic Microbiology (15th ed.). St. Louis, Missouri: Elsevier Inc.
3. Weigum, S. E., & Rohde, R. E. (2021). Viruses in Human Disease. In Bailey & Scott's Diagnostic Microbiology (15th ed.). St. Louis, Missouri: Elsevier Inc.
4. Rohde, R.E., Weigum, S., and McGowin, C. (2017). Nucleic Acid-Based Analytic Methods for Microbial Identification and Characterization. *Bailey & Scott's Diagnostic Microbiology, 14th ed.* Ed. P. Tille, Elsevier Inc., Philadelphia, PA.
5. Floriano, P.N., Acosta, S., Christodoulides, N., Weigum, S. and McDevitt, J.T. (2007). 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 or In Press

1. Sousares, M., Partridge, V., Weigum, S., & Du, L. (2017). MicroRNAs in neuroblastoma differentiation and differentiation therapy. *Advances in Modern Oncology Research*, 3(5), 213.
2. Weigum, S., E. McIvor, C. Munoz, R. Feng, T. Cantu, K. Walsh, and Betancourt, T. Targeted therapy of hepatocellular carcinoma with aptamer-functionalized biodegradable nanoparticles. *Journal of Nanoparticle Research*. 2016. 18(11):341.
3. Xiang, L., Wang, Z., Liu, Z., Weigum, S.E, Yu, Q., and Chen, M.Y. Inkjet-printed flexible biosensor based on graphene field effect transistor. *IEEE Sensors Journal*. 2016, 16(23):8359-8364.
4. Weigum, S.E., Xiang, L., Osta, E., Li, A., and López, G. Hollow silica microspheres for buoyancy-assisted separation of infectious pathogens from stool. *J. Chromatography A*. 2016, Sep 30; 1466:29-36.
5. 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.

6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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 in Review

Manuscripts in Preparation

1. Xiang, L., Lu, Z., and Weigum, S.E. Folded paper-based microfluidic system for separation and detection of *Cryptosporidium*. (invited submission to 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; presenter is underlined)
International, National or Regional Meetings
 1. Weigum, S. E., Carrano, J. C., Biomedical Advanced Research and Development Authority TechWatch, "Diagnostic Innovations Enabling Low-Cost Point-of-Care Disease Detection," Biomedical Advanced Research and Development Authority (BARDA), Washington, D.C., February 13, 2018.
 2. Weigum, S. E., Carrano, J. C., 9th Annual Next Generation Diagnostics Summit, "A Point-of-Care Multiplexed Diagnostic Solution for Gastroenteritis in Low-Resource Settings," Washington, D.C., August 15, 2017.
 3. Osta, E.G.[‡], Xiang, L.[†], Li, A., Chilkoti, A., López, G.P., and Weigum, S.E. Hollow Microspheres for Density-based Bioseparation of CEA Tumor Biomarker. (poster) PREM Director's Meeting, National Science Foundation, Washington D.C., Oct 19, 2016.

❖ Winner of 3rd place in Poster Competition
 4. 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, Oct 6, 2016.
 5. 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, Oct 8, 2016.
 6. 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, Oct 6, 2016.
 7. Osta, E.G.[‡], Li, A., Chilkoti, A., López, G.P., and Weigum, S.E. Development of Density-based Bioseparation Techniques for Tumor Biomarkers. (oral and poster) Research Triangle MRSEC/MIRT Research Symposium at Duke University, Durham, NC, July 29, 2016.
 8. 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.
 9. 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.
 10. 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.

11. 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.

❖ *Winner of Best Oral Presentation*

12. 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.
13. 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.
14. 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.
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) 20th International Molecular Medicine Tri-CON, San Francisco, CA, Feb 11-15, 2013.

❖ *Winner of 1st place CHI Poster Competition*

16. 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.
17. 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.
18. 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.
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, Toronto, CA, April 2009.
20. Weigum, S.E. Cell-based biosensor for analysis of oral cancer biomarkers. American Association of Dental Research Annual Meeting, Dallas, TX, April 2008.
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, Toronto, Canada, May 10-14, 2006.
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, Toronto, Canada, May 10-14, 2006.

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, Toronto, Canada, May 10-14, 2006.
24. 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.
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.

State and Local Meetings

1. Ranjan, K.,[†] Lu, Z.,[†] and Weigum, S.E. Development of a paper-based lab-on-a-chip device for the detection of diarrheal diseases. Eighth Annual International Research Conference for Graduate Students, November 15, 2016, Texas State University, San Marcos, TX.
2. 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”*

3. 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”*

4. 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.
5. 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.
6. 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.
7. 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.

❖ *Winner of Poster Award Competition*

8. Douglas, A.[†], Weigum, S., and Beall, G. Microbial Reduction of Humic Acid. (poster) Clay Minerals Society, College Station, TX, May 2014.

9. 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.
10. 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.
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, Texas State University, San Marcos, TX, Nov 21-22, 2013.
12. 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.
13. 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. 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>TXST Center for Innovation and Entrepreneurship: Overview and Trajectory</i>	
Global Entrepreneurship Week	November 2020
<i>Current and Future: Innovation and Entrepreneurship Ecosystem at Texas State</i>	
TXST New Ventures Pitch Competition	May 2019
<i>Through the Ceiling: Discussion & Networking with Women Executives</i>	
Women Entrepreneurship Week	October 2019
<i>Interdisciplinary Research: Science Saving Lives</i>	
HSI STEM Impact and SURE Undergraduate Research Symposium	August 2018
<i>Point-of-care diagnostic tools for global health applications</i>	
UTHSC at San Antonio, Biomedical Engineering	March 2017
<i>Establishing productive academic-industry partnerships</i>	
Congressional Delegate visit, STAR Park Texas State University	October 2016
<i>A new approach to pathogen isolation using "Molecular Buoys"</i>	
Biology Seminar Series, Texas State University	September 2016
<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:

NASA SBIR Phase I

Aptamer Beacons for Manual and Remote Automated Microbial Detection

PI: J. Bruno, (Nanohmics, Austin TX)

Role: co-PI

7/01/2019 – 1/31/2020

Paratus Diagnostics, Inc.

Assay Development for Oral Diagnostic Tests

PI: S. Weigum
8/1/2016 – 7/31/2017

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
7/24/2016 – 8/31/2017

NSF MRI: *Acquisition of Atomic Force Microscope to Advance Texas State University Materials Research*
PI: W. Brittain
Role: Senior Personnel

DOD (BAA-W911NF-15-R-0025)
Aerosol Jet Printing System for Additive Manufacturing and Material Development
PI: Y. Chen
Role: Senior Personnel

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
9/1/2016 – 8/31/2019

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

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

2. FUNDED INTERNAL GRANTS AND CONTRACTS:

Texas State University Research Enhancement Program (REP)
Characterization of a Liver Cancer Aptamer for Theranostic Applications
PI: S. Weigum
1/1/2017 – 5/31/2017

Texas State University Undergraduate Research Fellowship (URF)
Development of a Multiplex Immunoassay Panel for Gastrointestinal Pathogens
PI: A. Summers

Role: Advisor
1/1/2017 – 5/31/2017

Texas State University Undergraduate Research Fellowship (URF)
Liver Cancer Cell Death Induced by Targeted-Nanoparticles Loaded with Doxorubicin
PI: K. Smith
Role: Advisor
1/1/2017 – 5/31/2017

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

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

D. Fellowships, Awards, Honors:

Presidential Distinction Award for Excellence in Service, 2020-2021
Presidential Fellowship, 2018-2019
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
STEM Workforce Advisory Council, December 2021 - Present.
Minor in Innovation and Entrepreneurship Working Group, August 2021 - Present.
Nina Vaca Innovation and Entrepreneurship Award, March 2021 - Present.
Intellectual Property Committee, February 2021 - Present.
Scott Emerson Endowed Innovation in Health Award Committee, December 2020 - Present.
Women Entrepreneurship Founder Series, September 2020 - Present.
Bobcat Startup Living Learning Community, September 2020 - Present.

New Ventures Pitch Competition, September 2019 - Present.
Big Ideas Round II, November 13, 2020.
Women's Entrepreneurship Week, September 2019 - August 2020.
SXSW Innovation Lab, March 15, 2020.
Council on Inclusive Excellence, September 2018 - August 2019.
Graduate College Outstanding Dissertation Award, September 2018 - August 2019.
College of Science and Engineering (COSE) Safety Committee, 2014 -2015
MSEC Admissions Committee, 2011 – 2016
MSEC Organizing Committee encompassing curriculum, recruitment, DIA distribution, and course scheduling, 2013 – 2016
MSEC Website Development Team, 2011 - 2015

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

Organizer of Biology Scholarship and Awards, September 2019 – Present
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

Organizer of 1Million Cups Greater San Marcos, 2020 - Present
Member of Regional Education Workforce Committee, 2021 - Present
Member of Greater San Marcos Partnership Vision 2025 Steering Committee, 2020-2021
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 Medicine” 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