Letha J. Sooter, Ph.D.

West Virginia University
53 Campus Dr., 4212 LSB
PO Box 6057
Morgantown, WV 26506-6057

Phone: 304.293.5201 x31557
Fax: 304.293.6363
E-mail: letha.sooter@mail.wvu.edu
Website: www.sooterlab.org

Professional Experience

Spring 2008	Appointed as regular member of the graduate faculty for the Eberly College of Arts & Sciences.
Fall 2008	Adjunct Faculty status obtained in the Department of Chemistry
June 2008 - present	Tenure-track assistant professor at West Virginia University in the Department of Biology and in the WVNano Initiative. Research will focus on *in vitro* selections and biomolecule interactions with materials.
September 2006 – May 2008	Postdoctoral fellow with Dr. Dimitra Stratis-Cullum at the US Army Research Laboratory, Optics Branch. Selection of nucleic acid and peptide binding species for detection of biological, chemical, and explosive warfare agents. Design and development of handheld assay system for detection of warfare agents.
May 2007 – September 2007	Postdoctoral scholar with Dr. Jill Banfield at the University of California, Berkeley, in the Department of Earth and Planetary Sciences. Evolution of life for Mars.
December 2004 – August 2006	Postdoctoral associate with Dr. K. Dane Wittrup, Department of Chemical Engineering, funded by Dr. Angela M. Belcher, Department of Materials Science and Engineering, at the Massachusetts Institute of Technology. Yeast cell surface display selections against surfaces and surface defects.
1999 – 2004	Graduate Research Assistant with Dr. Andrew D. Ellington, Department of Chemistry and Biochemistry at the University of Texas at Austin. Automated *in vitro* selections.
Fall 2001	Teaching Assistant for Fundamentals of Biochemistry.
Fall 1999, Spring 2000	Teaching Assistant for Introduction to Chemical Practices.
June 1999 – August 1999	Research Technician with Dr. Dean R. Appling, Department of Chemistry and Biochemistry at the University of Texas at Austin. Folate metabolism in *S. cerevisiae.*
May 1998 – May 1999	Undergraduate Research with Dr. Sherry J. Yennello, Department of Chemistry at Texas A&M University, The Cyclotron Institute. The effects of high energy particles on DNA *in vitro*.
Fall 1996 – Spring 1998	Undergraduate Research with Dr. Donald W. Pettigrew, Department of Biochemistry and Biophysics at Texas A&M University. The mechanism of fructose-1,6-bisphosphate inhibition of *E. coli* glycerol kinase.
May 1994 – August 1994	High School Summer Job: English as a second language teacher in Kuala Lumpur, Malaysia.
May 1992 – August 1992	High School Summer Job: English as a second language teacher in Tokyo, Japan.

Education

1999 – 2004	Ph.D. in biochemistry at the University of Texas at Austin in Austin, Texas. Graduate Advisor: Andrew D. Ellington.
1995 – 1999	B.S. in biochemistry and genetics with a chemistry minor at Texas A&M University in College Station, Texas.

Publications and Patents

Letha J. Sooter, Dimitra N. Stratis-Cullum, Jeffrey Rice, John Ballew, Yanting Zhang, Patrick Daugherty, H. Tom Soh, Paul M. Pellegrino, Nancy Stagliano. Peptide incorporation into laminar flow hand held assays. 2009. in preparation.

Sooter, L.J.; Stratis-Cullum, D.N. Book Chapter. In *Nanoscience and Nanotechnology for Chemical and Biological Defense*; Ramanathan, N., Ed.; ACS Symposium Series: Oxford University Press: October, 2009. in press.

Sooter, L.J. Purification of Carbon Nanotubes. Patent Application Filed 30 September 2009. United States Army Docket Number ARL 08-14.

Sooter, L.J. Quantum Dot Biotags. Patent Application Filed 30 September 2009, United States Army Docket Number ARL 08-13.

Letha J. Sooter, Dimitra N. Stratis-Cullum, Yanting Zhang, Patrick Daugherty, H. Tom Soh, Paul M. Pellegrino, Nancy Stagliano. Affinity reagent technology development and application to rapid immunochromatographic pathogen detection. *Proceedings of SPIE:* Smart Biomedical and Physiological Sensor Technology V. SPIE paper number 6759-10.

Letha J. Sooter, Sun McMasters, and Dimitra N. Stratis-Cullum. Application of capillary electrophoresis to the development and evaluation of aptamer affinity probes. *Proceedings of SPIE:* Smart Biomedical and Physiological Sensor Technology V. SPIE paper number 6759-31.

Stratis-Cullum, D.N.; McMasters, S.; **Sooter, L.J.**; Pellegrino, P.M. Investigation of Synthetic Molecular Recognition for Biosensing Applications. *Proceedings of SPIE: Chemical and Biological Sensing VIII*. 2007, v6554.

Belcher, A.M.; **Sooter, L.J.**; Wittrup, K.D. Detection of Cracks in Metal Alloys Using Fluorescent Peptides. 2006. Invention disclosure, M.I.T. Case No. 12312.

Sooter, L.J.; Gates-Shannon, P.; Ellington, A.D. Automated assessment the DNA-binding capacity of a proteome by *in vitro* selection. *Journal of the Association for Laboratory Automation*. 2007, 12(3), 135-142.

Sooter, L.J.; Ellington, A.D. Automated Selection of Transcription Factor Binding Sites. *Journal of the Association for Laboratory Automation*. 2004, 9(5), 277-284.

Sooter, L.J.; Ellington, A.D. Reflections on a Novel Therapeutic Candidate. *Chemistry & Biology.* 2002, 9(8), 857-858.

Cox, J.C.; Rajendran, M.; Riedel, T.; Davidson, E.A.; **Sooter, L.J.**; Bayer, T.S.; Schmitz-Brown, M.; Ellington, A.D. Automated acquisition of aptamer sequences. *Combinatorial Chemistry and High Throughput Screening*. 2002, 5(4), 289-299.

Sooter, L.J.; Riedel, T.; Davidson, E.A.; Levy, M.; Cox, J.C.; Ellington, A.D. Toward automated nucleic acid enzyme selection. *Biological Chemistry.* 2001, 382(9), 1327-1334.

Ellington, A.D.; Hesselberth, J.; Marshall, K.; Robertson, M.; **Sooter, L.**; Davidson, E.; Cox, J.C.; Reidel, T.; Wilson, C.; Cload, S.T.; Keefe, A.D. Regulatable, catalytically active nucleic acids. United States Patent Application Number 20040126882. Royalty received.

Ellington, A.D.; Hesselberth, J.; Marshall, K.; Robertson, M.; **Sooter, L.**; Davidson, E.; Cox, J.C.; Reidel, T. Allosterically Regulated Ribozymes. Intellectual Property Publication Number: WO/2001/096541.

Ellington, Andrew D.; Hesselberth, Jay; Marshall, Kristin A.; Robertson, Michael P.; **Sooter, Letha**; Davidson, Eric; Cox, J. Colin; Reidel, Timothy. Regulatable, catalytically active nucleic acids. United States Patent Application Number US20030104520.

Teaching and Advising

Fall 2008

- BIOL 386 – Summer Lea Kuhn
- Undergraduate Volunteer then Undergraduate Worker – Jeff Nichols-Haining
- Doctoral Student Co-Advisor to Heaven Oliver-Kozup through a WV EPSCoR STEM Cancer Nanotechnology Fellowship studying Streptococcal collagen-like protein 1 (Scl1)-mediated binding of plasma complement regulatory protein, Factor H.

Spring 2009

- Molecular Recognition Elements and Sensors, 3 credit hour lecture (BIOL 493M/593F)
- Introduction to Nanotechnology, Biology segment, one third of 3 credit hour lecture and lab (PHYS 293K/ENGR 493E)
- BIOL 386 – Summer Lea Kuhn, Sadar Musa Shah-Khan, Jourdan Tyler Aromin, Andrew Dolphus Myers
- BIOL 491– Briana Dawn Vecchio
- Undergraduate Worker – Jeff Nichols-Haining

Summer 2009

- WVNano Research Experience for Undergraduates (WVNano REU) – Amanda Wriston (WV Wesleyan) and Briana Wallace (Carnegie Mellon)
- WVNano Summer Undergraduate Research Experience (WVNano SURE) – Brandi Findley and Saba Ashfaq
- Doctoral Student Advisor: Anthony Stephen Giovengo
- Doctoral Student Co-Advisor: Heaven Oliver-Kozup

Fall 2009

- BIOL 386 –Andrew Dolphus Myers, Ian Douglas, Casey Nassif, Brandi Findley
- BIOL 491– Briana Dawn Vecchio
- BIOL 486 - Sadar Musa Shah-Khan, Jourdan Tyler Aromin
- Doctoral Student Advisor: Anthony Stephen Giovengo
- Doctoral Student Co-Advisor: Heaven Oliver-Kozup
- Master Student Advisor: Smita Singh
- Postdoctoral Associate Advisor: Bridget D. Hines

Lectures and Seminars

26 August 2008 – WVU - Guest Lecture for CHEM 516 entitled “Fluorescence and its applications in biochemistry”

16 September 2008 – WVU - Seminar in Nanoscience (Phys 691) entitled “Molecular Recognition Elements and Sensors”

24 September 2008 – WVU - Chemistry colloquia entitled “Molecular Recognition Elements and Sensors”

14 November 2008 - WVU - Junior Nanotechnology Seminar (ENGR 493J) entitled "Molecular Recognition Elements and Sensors"

02 February 2009 – WVU - Biology seminar entitled “Not-So-Natural Selection”

6 March 2009 - WVU - Guest lecture for Boyd Edward's Sophmore Nanotechnology course

15 April 2009 - Invited Talk, Charleston, WV - STaR symposium 2009 pannel member. Explosives expert for "Security & Intelligence" panel.

11 May 2009 - WVU - WVNano Initiative Research Symposium entitled "Sensing Applications for Molecular Recognition Elements.

Service

- Army Research Office; Reviewer
- PITTCON 2008 symposia organizers and chairs: Dimitra Stratis-Cullum and Letha J. Sooter. “Detection of Chemical and Biological Hazards in Food”.
- Fall 2008 – Summer 2009: WVU Biology Department Graduate Committee
- Fall 2008 – Summer 2009: WVNano Graduate Education Committee
- Spring 2009 – Attended National Conference for EPSCoR / IDeA States

- Spring 2009 – Spoke with United States Senate Commerce Committee senior staff regarding nanotechnology
- Summer 2009 – WVNano SURE – Brandi Findley and Saba Ashfaq
- Summer 2009 – WVNano REU – Briana Wallace and Amanda Wriston
- Fall 2009 – Summer 2010: WVU Biology Department Curriculum Committee
- Fall 2009 – Summer 2010: WVNano Graduate Education Committee

Abstracts and Symposia

- 2008 Chemical and Biological Defense, Physical Science and Technology Conference oral presentation. "Molecular Recognition Element Development with Applications to Pathogen Detection via Hand Held Assays" authored by **Letha J. Sooter**, Dimitra N. Stratis-Cullum, Jeffrey Rice, John Ballew, Yanting Zhang, Patrick Daugherty, Tom Soh, Paul M. Pellegrino, and Nancy Stagliano. November, 2008. Submitted.
- 234th ACS National Meeting oral presentation. "Rapid Immunochromatographic Biowarfare Detection Using Affinity Reagents from Microfluidic *in vitro* Selections" authored by **Letha J. Sooter**, Dimitra N. Stratis-Cullum, Yanting Zhang, Patrick Daugherty, Tom Soh, Paul M. Pellegrino, and Nancy Stagliano.
- SPIE Optics East 2007 oral presentation. "Affinity Reagent Technology Development and Application to Rapid Immunochromatographic Pathogen Detection" authored by **Letha J. Sooter**, Dimitra N. Stratis-Cullum, Yanting Zhang, Patrick Daugherty, Tom Soh, Paul M. Pellegrino, and Nancy Stagliano.
- SPIE Optics East 2007 poster presentation. "Application of capillary electrophoresis to the development and evaluation of aptamer affinity probes" authored by **Letha J. Sooter**, Sun McMasters and Dimitra N. Stratis-Cullum.
- Institute for Collaborative Biotechnologies 2006 poster presentation. "Detection of airplane cracks using a fluorescent peptide" authored by **Letha J. Sooter**, Angela M. Belcher, and K. Dane Wittrup
- Institute for Collaborative Biotechnologies 2005 poster presentation. "Yeast display selections against surfaces" authored by **Letha J. Sooter**, Angela M. Belcher, and K. Dane Wittrup.
- LabAutomation 2004 poster presentation. "Automated selection of transcription factor binding sites" authored by **Letha J. Sooter** and Andrew D. Ellington.
- LabAutomation 2002 poster presentation. "Toward Automated Nucleic Acid Enzyme Selection" authored by **Letha J. Sooter**, Timothy Riedel, Eric A. Davidson, Matthew Levy, J. Colin Cox and Andrew D. Ellington.
- LabAutomation 2001 poster presentation "Automated Nucleic Acid Selection" authored by J. Colin Cox, Travis S. Bayer, Timothy Riedel, **Letha J. Sooter**, Eric A. Davidson, Gwendolyn Motz, Carlos A. Garcia and Andrew D. Ellington.
- Texas A&M University Undergraduate Research Oral Presentation "The mechanism of fructose-1,6-bisphosphate inhibition of *E. coli* glycerol kinase" authored by **Letha J. Sooter** and Donald Pettigrew.

Student Abstracts and Symposia

- 2009 West Virginia Science Technology and Research (STaR) Symposium poster presentation. In-Vitro Selection of TNT Explosive via Single-Stranded DNA Molecular Recognition Elements for Use in Biosensor Devices. Briana D. Vecchio and **Letha J. Sooter**. First place undergraduate poster competition with $1200 award.
- 2009 West Virginia Science Technology and Research (STaR) Symposium poster presentation. In-Vitro Selection Against Melamine Using Molecular Recognition Elements. Sardar Musa Shah-Khan, Jourdan T. Aromin, Briana D. Vecchio, and **Letha J. Sooter**.
- 2009 WVU American Chemical Society Research Poster Competition. In-Vitro Selection Against Melamine Using Molecular Recognition Elements. Sardar Musa Shah-Khan, Jourdan T. Aromin, Briana D. Vecchio, and **Letha J. Sooter**.
- 2009 WVU American Chemical Society Research Poster Competition. Generation of Molecular Recognition Elements Through In Vitro Selection for Atrazine Detection. Jourdan T. Aromin, Sardar Musa Shah-Khan, Briana D. Vecchio, and **Letha J. Sooter**.
- 2009 WVU American Chemical Society Research Poster Competition. In Vitro Selection Against a CdSe/ZnS Quantum Dot Using Yeast Cell Surface Peptide Display. Andrew Myers and **Letha J. Sooter**.
- 2009 WVNano Symposium poster presentation. In-Vitro Selection of TNT Explosive via Single-Stranded DNA Molecular Recognition Elements for Use in Biosensor Devices.Briana D. Vecchio and **Letha J. Sooter**. Third place undergraduate poster competition.
- 2009 WVNano Symposium poster presentation. Yeast Peptide Display Selections Against Explosives for Sensor Use. Jeffrey T. Nichols-Haining and **Letha J. Sooter**.
- 2009 WVNano Brown Bag Lunch Series oral presentation. Isolating Molecular Recognition Elements Through In Vitro Selections. Jourdan T. Aromin, Sardar Musa Shah-Khan, Briana D. Vecchio, and **Letha J. Sooter**.

- 2009 WVNano Brown Bag Lunch Series oral presentation. In Vitro Selection Against a CdSe/ZnS Quantum Dot Using Yeast Cell Surface Peptide Display. Andrew Myers and **Letha J. Sooter**.
- 2009 Summer Undergraduate Research Symposium poster presentation. *In Vitro* Selections for Molecular Recognition Elements for Melamine and Quantum Dots. Amanda S. Wriston and **Letha J. Sooter.**
- 2009 Summer Undergraduate Research Symposium poster presentation. *In Vitro* Selection of Molecular Recognition Elements for 2,4-D Acid and Quantum Dots to Use in Biosensors. Briana Wallace and **Letha J. Sooter.**
- 2009 Summer Undergraduate Research Symposium poster presentation. *In Vitro* Selection of Atrizine and Quantum Dots via Molecular Recognition Elements. Brandi N. Findley and **Letha J. Sooter.**
- 2009 Summer Undergraduate Research Symposium poster presentation. Saving the Environment Two Steps at a Time: MRE for DEET and Biodiesel Analysis . Saba Ashfaq and **Letha J. Sooter.**

Workshops and Training

- "Visual Basic for the Laboratory, Intermediate" Lab Automation 2002 conference. January 26-30, 2002. Palm Springs, CA.
- "Visual Basic for the Laboratory, Beginner" Lab Automation 2001 conference. Palm Springs, CA.

Awards

- Academic Grant for LabAutomation 2002
- LabAutomation 2002, 2nd place poster presentation of "Toward Automated Nucleic Acid Enzyme Selection" authored by **Letha J. Sooter**, Timothy Riedel, Eric A. Davidson, Matthew Levy, J. Colin Cox and Andrew D. Ellington.