

## Curriculum Vitae

**Annette L. Sobel, M.D., M.S.**

### Contact information:

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### Education

1992 M.S. Wright State University (Aerospace Medicine/Human Factors Engineering)  
1983 M.D. Case Western Reserve University  
1979 B.S. Rutgers University (Double concentration in Chemistry and Computer Science)

### Postgraduate Training and Fellowship Appointments

2000 Harvard University JFK School of Government National Security Program  
1995 US Army Air War College  
1992 Residency in Aerospace Medicine, Wright State University  
1990 NASA Flight Surgeon Course  
1986-2000 Command Leadership, US Army Air Command and General Staff College  
1984-86 Residency in Family Medicine, Duke University Medical Center  
1983-84 Internship in Family Medicine, Duke University Medical Center

### Military Service

1979 – 2008 Honorably discharged from the US Army and US Air National Guard, served as  
Major General in Arizona Air National Guard

### Faculty Appointments

2014-present Associate Professor, Department of Medical Education, Texas Tech University  
2008-2013 Assistant to the Provost for Strategic Opportunities, Univ. of Missouri-Columbia  
2011-2013 Director, National Security Innovation Center, College of Engineering,  
Univ. of Missouri-Columbia  
2009-present Adjunct Professor, Electrical & Computer Engr, Univ. of Missouri-Columbia  
2009-present Adjunct Professor, Nuclear Science Engineering Institute, Univ. of Missouri-Columbia  
2008-present Adjunct Professor, Family & Community Medicine, Univ. of Missouri-Columbia  
2000-present Guest Instructor, National Defense Univ., Near East South Asia Center,  
Washington, DC  
2002-2008 Research Professor, Dept. of Electrical Engineering and Chemical Engineering,  
University of New Mexico, Albuquerque  
2002-2008 Adjunct Faculty, Dept. of Electrical Engineering and Computer Engineering and  
Dept. of Biology, University of New Mexico, Albuquerque

## Other Appointments

2014-present	Executive for Critical Infrastructure Protection and Health Security Initiatives, Texas Tech University Health Sciences Center and Texas Tech University
2011-2013	University Advisor to US Office of the Secretary of Defense, Under Secretary of Defense for Acquisition, Technology and Logistics (Chemical, Biological, Radiologic and Nuclear)
2008-2013	Guest Scientist, Los Alamos National Laboratory, NM
2004-2008	Military Advisor to Defense Advanced Research Projects Agency, US Dept. of Defense
2003-2008	Director of Intelligence (J2), National Guard Bureau, Arlington, VA
2003-2005	Director, Governor's Office of Homeland Security, Santa Fe, NM
2003-2005	Deputy Secretary for Emergency Services, Dept. of Public Safety, Santa Fe, NM
2000-2003	Assistant to the Chief, National Guard Bureau for Weapons of Mass Destruction and Civil Support, Arlington, VA
1998-2000	Military Advisor to Dept. of State and Defense Threat Reduction Agency, Cooperative Threat Reduction Programs
1997-2009	Military Advisor to Defense Advanced Research Projects Agency, Unconventional Pathogen Countermeasures Program
1992-2008	Distinguished Member of Technical Staff, Sandia National Labs, Albuquerque, NM
1989	Hyperbaric Medicine Advisor, US Navy

## Specialty Certification

2012	Professional Engineer, Missouri
1992	Human Factors Professional, Human Factors and Ergonomics Society
1986	American Board of Family Medicine

## Licensure

New Mexico, North Carolina, and Ohio

## Awards, Honors and Membership in Honorary Societies

2008	NATO Award for Career Service to the understanding of Weapons of Mass Destruction and Mass Casualty Management
2005	New Mexico Anti-defamation League Distinguished Public Service Award
1999	Fellow, Aerospace Medical Association
1996	Award for Best Social Sciences Presentation, "Ergonomics in Support of Military Operations", 64 <sup>th</sup> Annual Military Ops Research Symposium, Ft. Leavenworth, KS
1995	Fellow, American Association of Family Physicians
1989	Army Astronaut Candidate

## Memberships in Professional & Scientific Societies and Other Professional Activities

### International

2008-present	Permanent Monitoring Panel – Mitigation of Terrorist Acts, World Federation of Scientists, Erice, Sicily, Member 2008-2011, Co-Chair 2012 - present
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### National

2008-present	Member, Base Community Council, Whiteman Air Force Base, US Dept. of Defense
2008-2009	Faculty Contact, Street Smart Campus Initiative (student program), AAUW (formerly known as American Association of University Women)

- 2007-2008 Member, Committee on U.S. Naval Forces' Capabilities for Responding to Small Vessel Threats, DEPS Naval Studies Board, National Research Council
- 2006-2007 Member, Committee on the Role of Naval Forces in the Global War on Terror, National Academies of Science
- 2005-2008 Member, National Board of Directors, Girl Scouts of the USA
- 2003-2004 Member, Committee on Army Science and Technology for Homeland Defense-C4ISR
- 2002-2005 Chair, U.S. Central Command (CENTCOM) Biological Warfare/Disaster Response Workshop Session, Qatar, 2002; Central Asia, 2003; Bahrain, 2004; Kenya, 2005
- 2003 Member, Committee on Science and Technology for Army Homeland Security
- 2002 Member, Defense Science Board, Homeland Security and Intelligence Requirements Panel
- 2000-2004 Chair, Biological Threat Reduction Program, Albuquerque, NM
- 1998-2005 Member, Advisory Board, Defense Intelligence Agency

### **State**

- 2011-present Commissioner, Missouri Military Preparedness and Enhancement Commission (MMPEC), Missouri Dept. of Economic Development
- 2008-2009 Member, Homeland Security Advisory Council, Office of Homeland Security, Missouri Dept. of Public Safety

### **Regional**

- 2013 Co-Chair, STEM Outreach, Boy Scouts of America Great Rivers Council
- 2010-present Member, Board of Directors, Girl Scouts of the Missouri Heartland, Inc.

### **Major Academic Teaching Responsibilities**

- 2008-2012 Seminar Series, Homeland Security, Nuclear Science and Engineering Institute, University of Missouri

### **Conference and symposium presentations**

- Stephan CL, Cooper CM, Sobel A, Hendricks M, Anton J, Cannon-Bowers J, Armstrong J, Bukoski A, Kerby J, Barnes SL, Acceleration of Simulation Based Training of Medical Skills through Multidisciplinary Collaborative Research and Implementation, AMSUS 118<sup>th</sup> Annual Meeting, November 3-8, 2013
- Stephan CL, Sobel A, Cooper CM, Boren S, Hendricks M, Armstrong J, Bukoski A, Kerby J, Barnes SL, Development of Simulation Based Medical Training for Pediatric Endotracheal Intubation Performance Assessment and Review of Current Practices, MU Education Day, April 2013
- Sobel, A.L., A Problem-Based Learning (PBL) Approach to Nanotechnology and Cross-Disciplinary Engineering, International Symposium on Macro- and Supramolecular Architectures and Materials MAAM-12, Special Topic: Nano Systems and Applications, Coimbatore, India, November 21-25, 2012
- Stephan CL, Sobel A, Armstrong J, Bukoski A, Kerby J, Barnes SL, Advancing Technology Development for Simulation Based Medical Training for Combat Casualty Care Training, American Medical Informatics Association 2012 Annual Symposium, November 3-7, 2012
- Sobel, A.L., The Spectrum of WMD Threats and Implications to Surgical Intervention, Duke University Surgery Department, Surgery Grand Rounds, October 31, 2012

Sobel, A., Cameron, G., Fulcher, C., Leung, R., Health information social networks as enablers of disaster resiliency, Medicine 2.0 5<sup>th</sup> World Congress on Social Media, Mobile Apps, Internet/Web 2.0, September 15-16, 2012

Thompson, S. M., Tessler, B.S., Ma, Hongbin, Smith, D.E., Sobel, A., Ultra-High Thermal Conductivity of Three-Dimensional Flat-Plate Oscillating Heat Pipes for Electromagnetic Launcher Cooling. 2012 16<sup>th</sup> International Symposium on Electromagnetic Launch Technology, EML 2012, May 15, 2012 – May 19, 2012.

### **Organizing Roles in Scientific Meetings**

August 2012 – August 2013 “Applying the Scientific Method to Understanding Anomalous Heat Effects: Opportunities and Challenges” (Program Chair), ICCF-18 International Conference on Condensed Matter Nuclear Science, University of Missouri, Columbia, MO

August 2009 – March 2010 “Life Sciences Summit” (Program Chair), University of Missouri System

November 2008 – May 2009 “Energy Summit” (Program Director), University of Missouri System

### **Bibliography**

#### **Research publications (peer reviewed)**

Thompson, S. M., Tessler, B.S., Ma, Hongbin, Smith, D.E., Sobel, A., Ultra-High Thermal Conductivity of Three-Dimensional Flat-Plate Oscillating Heat Pipes for Electromagnetic Launcher Cooling. IEEE Transactions on Plasma Science, 2013; 41(5) pt. 1:1326-1331. Doi:10.1109/TPS.2013.2244920

Sobel, A.L., Fisher, B.M., Educating the next generation to respond to a bioterrorism event. Leadership and Management in Engineering, Oct. 2012; 12(4):324-329. doi:10.1061/(ASCE)LM.1943-5630.0000204.

Sobel, Annette, The role of information superiority in the global war on terrorism. Lecture Notes in Computer Science, v 3975 LNCS, p 750-752, Intelligence and Security Informatics - IEEE International Conference on Intelligence and Security Informatics, ISI 2006, Proceedings, 2006.

Freeman, K.M., Thompson, S. F., Allely, E.B., Sobel, A.L., Stansfield, S.A., Pugh, W.M. A virtual reality patient simulation system for teaching emergency response skills to U.S. Navy medical providers. Prehospital and Disaster Medicine, 2001 Jan-Mar; 16(1):3-8.

Stansfield S, Shawver D, Sobel A, Prasad M, Tapia L. Design and implementation of a virtual reality system and its application to training medical first responders. Presence: Teleoperators & Virtual Environments. 2000 Dec; 9(6):524-56.

Noah, D.L., Sobel, A.L., Ostroff, S.M., Kildew, J.A. Biological warfare training: infectious disease outbreak differentiation criteria. Annals of the New York Academy of Sciences, 1999; 894:37-43.

Stansfield, Sharon, Shawver, Dan, Sobel, Annette, MediSim: A prototype VR system for training medical first responders, Proceedings - Virtual Reality Annual International Symposium, p 198-205, 1998.

Savoy, S.M., Eames, S.J., Jurbergs, D.C., Zhao, J., McDevitt, J.T., Sobel, A.L., Application of superconducting technologies as chemical/biological agent "electronic eyes", Proceedings of SPIE - The International Society for Optical Engineering, v 2933, p 48-56, 1997, Terrorism and Counter-Terrorism Methods and Technologies.

Sobel, A.L., Avrin, W.F., Application of HTS technology to cardiac dysrhythmia detection, Annual International Conference of the IEEE Engineering in Medicine and Biology - Proceedings, v 16, n pt. 1, p 47-48, 1994.

Sobel, A.L., Systems engineering approach to biomedical decision-making: a new role for advanced automatic target recognizer technologies, Proceedings of the Annual Conference on Engineering in Medicine and Biology, v 15, n pt. 2, p 592-593, 1993.

Kuperman, G.G., Sobel, A.L., Training systems for TAV operations, SAE Technical Papers, 1992, 1992 SAE Aerospace Atlantic.

### **Research publications (non-peer reviewed)**

Deuster, P.A., Weinstein, A.A., Sobel, A.L., Young, A.J., Warfighter nutrition: current opportunities and advanced technologies report from a Department of Defense Workshop, Military Medicine, 174, 7:671, 2009.

John ME, Wade R, Sobel AL, Stanley HE, et al. (Committee on the Role of Naval Forces in the Global War on Terror, Naval Studies Board (The National Academies). The role of naval forces in the global war on terror: abbreviated version. Washington, DC: National Academies Press; 2007.

Green, M.S., Weinberger, M., Ben-Ezer, J., Bin, H., Mendelson, E., Gandacu, D., Kaufman, Z., Dichtiar, R., Sobel, A., Cohen, D., Chowers, M.Y., Long-term death rates, West Nile Virus epidemic, Israel, 2000. Emerging Infectious Diseases (CDC), 11(11):1754-1757, Nov 2005.

Lyons JW, Reimer DJ, Sobel AL, Spigelmire MF, Young L (Committee on Army Science and Technology for Homeland Defense, Board on Army Science and Technology (The National Academies)). Army science and technology for homeland security: report 2 -- C4ISR. Washington, DC: National Academies Press; 2004.

Lyons JW, Bugliarello G, Sobel AL, Spigelmire MF (Committee on Army Science and Technology for Homeland Defense, Board on Army Science and Technology (The National Academies)). Science and technology for Army homeland security: report 1. Washington, DC: National Academies Press; 2003.

Shawver, D.M., Sobel, A.L., Stansfield, S.A., Biosimmer: A virtual reality simulator for training first responders in a BW Scenario, Technical Information Center Oak Ridge Tennessee, Report number(s): SAND-98-2533C, 11 Nov 1998, 8 p.

Stansfield, S., Sobel, A.L., Creating virtual humans for simulation-based training and planning. Technical Information Center Oak Ridge Tennessee, Report number(s): SAND-98-0881C; CONF-980551, 12 May 1998, 10 p.

Freeman, K., Thompson, S., Allely, E., Sobel, A., Stansfield, S., Virtual reality training system for the triage and stabilization of head trauma and multiple injury patients. Naval Health Research Center, Report number(s): NHRC-00-18, 1997, 25 p.

### **Editorials, Reviews, Chapters, including participation in committee reports**

National Research Council. Division on Engineering and Physical Sciences. Naval Studies Board. U.S. Naval Forces' Capabilities for Responding to Small Vessel Threats Final Report. Washington, D.C.: The National Academies Press, 2013.

Sobel, A.L., Striving for global health and water security: achievable or not? The Role of Science in the Third Millennium, International Seminar on Nuclear War and Planetary Emergencies – 45<sup>th</sup> Session, Erice, Italy, 19-24 August 2012, p. 425-430. doi: 10.1142/9789814531788\_0033.

Sobel, A.L., Assessment of RDD event medical response, recovery, and mitigation in a world of one science. International Seminar on Nuclear War and Planetary Emergencies – 43<sup>rd</sup> Session, Erice, Italy, 19-24 August 2010, p. 457-473. doi: 10.1142/9789814531788\_0033.

Sobel A. Emerging roles of reserve forces: National Guard roles and mission in domestic biopreparedness. In Katona P, Sullivan JP, Intriligator MD, eds. Global Biosecurity: Threats and responses. New York: Routledge, 2010. p. 157-161.

Sobel, A.L., One science for CBRN mitigation. International Seminar on Nuclear War and Planetary Emergencies – 42<sup>nd</sup> Session, Erice, Italy, 19-24 August 2009, p. 657-659. doi: 10.1142/9789814327503\_0065.

Sobel A. Technology opportunities and challenges. In: Shapira SC, Hammond JS, Cole LA, eds. Essentials of terror medicine. New York: Springer-Verlag; 2009. p. 133-48.

Garwin, R.L., Buriot, D., Krivokhizha, V., Leivesley, S., Moore, A.L., Rajaraman, R., Sobel, A., Steinhäusler, F., Wilson, R., Responding to the prospect of dirty dust (the residue from a radiological dispersal device-rdd). International Seminar on Nuclear War and Planetary Emergencies – 40<sup>th</sup> Session, Erice, Italy, 19-24 August 2008, p. 597-605. doi: 10.1142/9789814289139\_0057.

National Research Council. Division on Engineering and Physical Sciences. Naval Studies Board. Committee on the Role of Naval Forces in the Global War on Terror. The Role of Naval Forces in the Global War on Terror. Washington, D.C.: The National Academies Press, 2007.

Sobel A. Actionable intelligence in support of homeland security operations In: Katona P, Intriligator MD, Sullivan JP, eds. Countering terrorism and WMD: creating a global counter-terrorism network. New York: Routledge; 2006. p. 212-17.

### **Grants and Fellowships**

May 2013 – September 2014	PI A. Sobel, “Enhancing Disaster Resilience in a Digital Age”, MIZZOU Advantage, University of Missouri, \$100,000
October 2011 – April 2013	PI A. Sobel, “Frontiers in Design Contest: STEM Outreach for Missouri K-12 Schools”, State Farm Community Grant, \$8,000
March 2011 – December 2013	PI A. Sobel, “University of Missouri Railgun Program”, U.S. Navy, Office of Naval Research N00014-11-C-0392, \$1,628,112
February – September 2011	PI A. Sobel, USCC West of the Mississippi Regional Cyber Challenge Camp, Center for Internet Security, \$44,570.
February – May 2011	PI M. Prelas, co-PI, “Bioterrorism & Complex Systems”, MIZZOU Advantage, University of Missouri, \$20,000
January – May 2011	PI A. Sobel, “Emerging Threats to OneHealth”, U.S. Office of the Director of National Intelligence, Intelligence Community Centers of Academic Excellence in National Security Studies Program, ODNI Regional Colloquium, \$30,980
August 2010 – February 2011	PI A. Sobel, “A system prototype study of connecting soldiers to digital applications surge for the Basic Officers Leadership Course, Military Police Schoolhouse, Fort Leonard Wood, MO, Leonard Wood Institute LWI-291-024, \$300,000
August 2010 – February 2011	PI A. Sobel, “Research on further developing the role of strategic communication in fostering agile and adaptive leadership and messaging for Fort Leonard Wood, MO., Leonard Wood Institute LWI-291-022, \$343,476
June 2010 – April 2013	PI A. Sobel, “STEM Outreach for Missouri K-12 Schools”, Fred V. and Dorothy H. Heinkel Charitable Foundation, \$6,000
June 2010 – April 2013	PI A. Sobel, “STEM Outreach for Missouri K-12 Schools”, State Farm Community Grant, \$9,000
April – December 2010	PI L. Barker, co-PI, “Human Systems Integration Training in the US Army: Needs assessment and planning for the development of an educational consortium”, Leonard Wood Institute LWI-291-015, \$300,000
February 2010 – February 2011	PI A. Sobel, “A real time decision making tool to mitigate the effect of public health emergencies”, Kansas City Area Life Sciences Institute, Inc. KCALSI-10-02-CM, \$50,000
February 2009 – January 2010	PI A. Sobel, “A study to examine the effectiveness of the strategic communications strategy of the US Army Maneuver Support Center, Leonard Wood Institute LWI-26-1009, \$100,000

References available upon request.