

Curriculum Vitae

Edward Andrew Sobek

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Ph.D December 2002, Department of Biological Sciences, Texas Tech University

M.S. May 1996, Department of Plant Pathology, Iowa State University

B.S. May 1993, Department of Biology, California University of Pennsylvania

WORK EXPERIENCE

Sept 05-Present: *President/Technical Director for Assured Biotechnology Corp.*
(www.assuredbio.com).

I oversee all AIHA accreditation QA/QC specifications to maintain EMLAP certification as a commercial environmental microbiology laboratory. In addition, I ensure that our laboratory strictly adheres to the ISO 17025:2005 quality practices in all commercial DNA-based assays (such as Mold Specific QPCR) that fall outside the scope of AIHA's EMLAP certification. This also included strict adherence to all US EPA, OSHA and CDC standards and guidelines.

I have developed a product evaluation program for environmental microbiology, that include many ASTM methods to test the efficacy of various compounds, materials, and chemicals that are developed to remove, destroy, inhibit, and/or prevent mold and microbial growth. I have also an ASTM testing program to evaluate the chemical properties of various products that are meant to improve the air quality indoors.

My duties also include product development. In such, I have submitted two SBIR grants that aim to use Near Infrared Spectroscopy to monitor formaldehyde levels during manufacturing of medium-density fiber board (MDF) and other engineered wood materials. MDF is used in many retail and commercial furniture lines and must meet the minimal formaldehyde emission standards set by the U.S. E.P.A. I also developed a unique fungal (mold) detection chemistry using Fluorescent spectroscopy in order to detect mold and fungi. I am also responsible for the creation of white papers, developing seminars and various educational programs, and providing clients with my expert opinion related to analyses that are conducted under the scope of commercial work conducted at the laboratory.

- Jan 05-Sept 05: *CSO for MDDS Inc.* Responsible for licensing, developing and testing new technology for the IAQ industry, specifically those technologies that will be beneficial to mold inspectors and mold remediators. Oversee all MDDS laboratory operations and decontamination services. Actively participate in government and other organizations that directly influence or support the IAQ industry.
- May 03-Jan 05: *Indoor Air Quality Technical Director for Microbial Insights Inc.* Responsibilities included: 1) Establishing an environmental microbiology laboratory specializing in the isolation and characterization of microbes (primarily fungi) and microbial components or compounds present in indoor environments. 2) Isolate and identify important environmental microbes such as sulfate and iron reducing bacteria, methanotrophs, and hydrocarbon degrading bacteria from soil and water. 3) Coordinate development of molecular and chemical assays to identify and characterize microbes. Projects assays included Quantitative PCR, Phospholipid Fatty Acid Analysis (PLFA), where organic solvents are used to extract the lipids from cells, then the lipids are concentrated and analyzed by GC/MS to identify individual lipids. Flame and fatty acid methyl ester (FAME) analysis a GC/MS method used to fingerprint and database individual microbial species. 4) Design, coordinate, and analyze anaerobic and aerobic microcosm experiments to evaluate the efficacy of microbial consortia to degrade various environmental contaminants including chlorinated solvents and petroleum hydrocarbons. 6) Establish collaborative research efforts with the University of Tennessee (UTK) and Oak Ridge National Labs (ORNL) to develop novel technologies for identifying and studying microbes and microbial consortia. 8) Present novel research at scientific meetings and publish in peer reviewed journals. (Microbial Insights Inc., Rockford TN/ Center for Biomarker Analysis under Dr. David White, Ph.D. UTK)
- Jan-May 2003: *Post Doctorial Researcher/Adjunct faculty.* Primary responsibility included: 1) Use a variety of statistical and modeling techniques to identify trends in population dynamics and spatial structure of Rio Grande wild turkey populations from GIS and habitat data collected over a five year period. 2) Mentor five graduate students in the area of experimental design and statistical analysis. 3) Serve on graduate student committees and evaluate graduate student research proposals and thesis research in terms of experimental design and statistical analyses. (Texas Tech University, Dept. of Range, Fisheries, and Wildlife Biology)

- 1998-2002: *Graduate Student/Doctoral Candidate*. Responsibilities included: 1) Design and manage dissertation research project. 2) Maintain academic excellence in all coursework. 3) Provide quality instruction to undergraduates in various laboratory courses. 4) Function as a graduate research assistant by providing logistical support and conducting detailed statistical analysis for the U.S. Army funded microbial indicator/land preservation project in Fort Benning, GA. 5) Present research finding at various scientific meetings and departmental seminars. Advisor: Dr. John C. Zak, Texas Tech University. 6) Obtained funding to conduct independent research into the ecology of tropical microbes within the Puerto Rico Long Term Ecological Research Station (NSF funded).
- 1996-1998: *Research Technician*. Microbe-Mediated Alfatoxin Biological Control Program. Responsibilities included: 1) Isolated *Aspergillus flavus* strains from agriculture soils in Yuma Arizona. 2) Conducted vegetative compatibility analysis on isolates via nitrate or *nit* mutant technology in order to determine VCG population structure. 3) Characterize alfatoxin production potential of isolated strains using TLC and GC/MS. 4) Characterize *A. flavus* S-strain isolates based on morphology, pectinase activity and alfatoxin profiles. 5) Produce large batches of the atoxogenic biocontrol agent for field trials. 6) Present and publish scientific findings. Supervisor: Dr. Peter J. Cotty, USDA-ARS, New Orleans.
- 1993-1996: *Graduate Research Assistant*. Responsibilities included: 1) Design and conduct greenhouse and field experiments to examine associations between corn insect pests and the corn ear rot fungus *Fusarium moniliforme*. 2) Maintain academic excellence in all coursework. 3) Provide quality instruction to undergraduate students enrolled in the introductory plant pathology laboratory course. 4) Present research findings at the annual APS meeting and departmental seminars. Advisor: Gary P. Munkvold, Iowa State University.
- 1991-1993: *Undergraduate Research Associate*. Responsibilities included: 1) Isolate *Entomophiga miamaga* resting spores from cadaver gypsy moth larva for biocontrol field trials. 2) Help set up gypsy moth biological control field trials. 3) Use scanning electron microscopy to study the pathogenic effects of *E. miamaga* on gypsy moth larva. 4) Isolate and quantify pathogenic *Cylindrocladium* species from tree nursery soils using baiting techniques. Advisor: Dr. Barry Hunter, California University of Pennsylvania

TEACHING EXPERIENCE:

Present: I teach two courses each semester, including two summer session under the University of Tennessee's Professional and Personal Development Program. The Courses are "Certified Mold Inspector" and "Mold in the Home, School and Workplace". (<http://www.outreach.utk.edu/ppd/wintercatalog.pdf> pages 1&19). The Certified Mold Inspector course has been so successful that several more summer sessions have been added, and the course will likely be offered throughout the country in the near future.

- 2001 *Graduate Teaching Assistant.* (Fungal Biology) Dr. John C. Zak, Texas Tech University.
- 2000 *Graduate Teaching Assistant.* (Microbiology majors) Advisors: Dr. John C. Zak and Dr. Randal Jeter, Texas Tech University.
- 1999 *Graduate Teaching Assistant.* (Plant Physiology) Advisor: Dr. David Tissue, Texas Tech University.
- 1998 *Graduate Teaching Assistant.* (Microbiology non-majors) Advisors: Dr. John C. Zak and Dr. Randal Jeter, Texas Tech University.
- 1994 *Graduate Teaching Assistant.* (Biology of Fungal Pathogens) Advisor: Edward Braun, Iowa State University.

RESEARCH PROJECTS:

Current: Advanced imaging techniques to identify imported Chinese drywall.

Use of Mold Specific PCR to exam to distribution of fungi on North American Bat Species.

- 2008 *CDC/NIOSH/DRDS:* Exploring the potential of MSQPCR and related DNA-based detection technologies to link mold exposure to aggravated and rapid onset asthma.
- 2004 *British Petroleum:* Potential application of FungiLog to monitor oil fields for changes in soil biodiversity.

Titan Corporation: Evaluation of Binary Ionization Technology for reducing or elimination microbial contamination in indoor environments, food processing, crop storage and greenhouse production.

University of Tennessee's Center for Biomarker Analysis: Evaluation of lipid regulatory metabolite profiles in breath condensate as indicators of allergic responses to environmental allergens using GC/MS/MS.

2003 *University of Tennessee's Center for Biomarker Analysis*: Identification and quantification of viable fungal networks in soil using novel fungal-specific florescent probes and confocal microscopy.

Notre Dame University and U.S. Army Corp of Engineers: Identification and evaluation of petroleum degrading fungi present in burned and contaminated Iraq oil fields as agents of bioremediation.

University of Tennessee's Center for Biomarker Analysis: Properties and Composition of Roof-Crust Forming Microbial Consortia.

University of Arkansas: Diversity, Structure, and Microbial Profile of Canopy-Soil Microbes in New Zealand and Costa Rica.

Texas Tech University, ORNL and U.S. Army: Modeling suites of soil factors to determine universal indicators of disturbance on U.S. Army Lands in Fort Benning, GA.

PUBLICATIONS:

Sobek, E.A., J.H. Campbell, S. Parkhurst, and A. Coffey. 2008. ERMI and MSQPCR: State-of-the-Art DNA Mold Diagnostic for use in the science of building forensics. *Proceedings of the American Academy of Forensic Sciences*, Volume 14(C55):166.

Sobek, E.A. and J.C. Zak. 2003 The Soil FungiLog Procedure: Method and Analytical approaches towards understanding fungal function diversity. *Mycologia* 95(4):590-602.

Duda, J.J., D.C. Freeman, J.M. Emlen, J. Belnap, S.G. Kitchen, J.C. Zak, E. Sobek, M. Tracy, and J. Montante. Changes in native soil ecology associated with invasion of the exotic annual chenopod, *Halogeton glomeratus*. *Biology and Fertility of Soils* 38:72-77

Sobek, E.A. and G.P Munkvold. 1999. European corn borer (Lepidoptera: Pyralidae) larvae as vectors of *Fusarium moniliforme*, causing kernel rot and symptomless infection of maize kernels. *Journal of Economic Entomology*. 92 (3): 503-509.

Sobek, E.A. and P.J. Cotty. 1997. Phenotypic variation within the s-strain of *Aspergillus flavus*. *Proc. Beltwide Cotton Conf.* Vol (1): 113-116.

Patents:

Pending:

July, 2008: #US-2008-0176255-A1. Mold detection composition and methods.

A filterless Airborne Endotoxin Detection System.

Provisional Submissions

June 2007 to Present: Six provisional Patents have been submitted.

Invited Presentations:

2009: Sobek, E.A. ERMI and MSQPCR: State-of-the-art DNA Mold Diagnostics for Use in the Science of Building Forensics. Indoor Air Quality Association Annual Meeting. Fort Worth Texas.

2008: Sobek, E.A., J. Campbell, A. Coffey, S. Parkhurst. ERMI and MSQPCR: State-of-the-Art DNA Mold Diagnostic for Use in the Science of Building Forensics. Special Session: Sick Building Syndrome. American Academy of Forensic Sciences, Washington, D.C.

Sobek, E.A. Use of DNA for Mold Detection in Schools. Kentucky and Tennessee School Plant Manager Association Meeting, Pigeon Forge, TN.

Sobek, E.A and J. Campbell. DNA Mold Detection in Commercial Buildings, ORNL Environmental and Safety Meeting. Oak Ridge, TN

Sobek, E.A. The latest and greatest DNA technologies available to detect microbial contamination indoors. Guest presenter at the Environmental Solutions Association's Indoor Air Quality Training Course held January 11th and 12th in Nashville TN.

2004: Sobek, E.A. and S. Diniz. Binary Ionization Technology. National Food Processors Association/USDA & FSIS Special Topics Symposium: Novel Sterilants for Microbial Contamination. Washington, D.C.

Sobek, E. A and D.C. White. Lipid analyses of microbial communities- application for environmental remediation, microbial ecology and medicine. Society of Toxicology Annual Meeting. Baltimore, MD.

2001: Sobek, E. A. and J. C. Zak. Elevational trends in soil fungal biodiversity in an arid landscape. Joint meeting of the American Phytopathological Society/Soil Nematology Society/Mycological Society of America. Salt Lake, Utah.

Standard Presentations

- 2003: White, D.C., A.D. Peacock, E.A. Sobek, and G. A. Davis. 2003. Let's Ask the Microbes What matters? A Field Guide to the Biochemical Responses of Degradation Populations to Environmental Conditions. The Annual Conference on Soil Sediments and Water. University of Massachusetts
- 2002: Sobek, E. A., J. C. Zak, K. Urbanczyk, H. Grizzle, M. Bickle, and C. Hernandez. The pine canyon watershed program: Understanding impacts of global change on soil fungal biodiversity in an arid environment. GSA Abstracts Vol. 34, No. 3.
- 2001: Anthony J. Krzysik, John C. Zak, David A. Kovacic, Edward Sobek, D. Carl Freeman, John H. Graham, Michelle L. Brown, Jeffrey D. Duda, Cathy C. Graham, Michael Wallace, John M. Emlen, and Harold E. Balbach. Ecological Indicators for Quantifying Landscape Disturbance. SEMP Annual Meeting, Washington DC, November.
- 2001: Sobek, E.A., and J.C. Zak. Is functional diversity of soil fungal assemblages influenced by elevation in desert ecosystems? Soil Ecology Society meetings. GA.
- 2000: Sobek, E.A., S. Cox, J. Dobranic, and J. Zak. Assessing the relationship between biodiversity, function, and decomposition in soil fungal assemblages. Poster Presentation at the Ecological Society of America Annual Meeting. Snowbird, UT.
- 1999 Sobek, E.A., and J.C. Zak. Functional diversity among assemblages of soil fungi in a desert ecosystem. Poster Presentation at the XVI International Botanical Congress. St. Louis, MI.

Research Grants

- 2009: \$70,000.00 USDA SBIR Formaldehyde detection MDF board Manufacturing
- 2004: \$100000.00 DOD, United States Army SBIR
- 2001: \$1350.00 Conchologists Society of America
- 2001: \$500.00 Texas Tech University
- 2000: \$500.00 Texas Tech University

Working Groups

2001-2005: Member of the National Center of Ecological Analysis and Synthesis Working Group, "A knowledge Network for Biocomplexity"

Workshops

2008: Human DNA Quantification Using Real-Time PCR Assays (6.75 CE Hours).
Workshop #6: American Academy of Forensic Sciences Meeting, February 18, 2008.

DNA Mixture Interpretation: Principles and Practice in Component Deconvolution and Statistical Analysis (6.75 CE Hours). Workshop #16: American Academy of Forensic Sciences Meeting, February 19, 2008.

2004: Environmental Mold: Legal, Insurance, Legislative, and Regulatory Aspects. Sponsor: American Industrial Hygienist Association. Feb 12.

2003: Multivariate Analysis of Ecological Data held at the University of South Bohemia, Ceske Budejovice, Czech Republic. The course was taught by Jan Leps and Petr Smilauer. Jan 7-15.

Food and Airborne Fungi. Conducted by the Centraalbureau voor Schimmelcultures-Fungal Biodiversity Center, The Netherlands. June 12-17.

Mold, Moisture and Remediation Workshop. Sponsored by the American Conference of Governmental and Industrial Hygienist. Nov. 10-13.

HONORS AND AWARDS

Outstanding Graduating Senior Award- Cal U
Beta Beta Beta, National Honorary Biological Society- Cal U
The Honor Society of Phi Kappa Phi- Texas Tech University

Membership in Professional Societies

American Society for Microbiologist
American Conference of Industrial and Governmental Hygienist
American Industrial Hygiene Association
ASM
ASTM
British Mycological Society
Ecological Society of America
Mycological Society of America
Pan American Aerobiology Association
Soil Ecology Society of America

Activities and Services

Present: Moderator for Multidisciplinary Sick Building Syndrome Session. American Academy of Forensic Sciences Annual Scientific Meeting, February 18-23, 2008

Serving 4th year term for the American Industrial Hygienist Association's Technical Advisory Panel for Laboratory Accreditation.

Serving 3rd year term as a member of the American Industrial Hygiene Associations Environmental Microbiology Task Force

Active Member of the ASTM Indoor Air Quality Standards Committee

Founded Clean Air Labs Educational Outreach Program: The program conducts educational sessions at local schools related to Indoor Air Microbiology. It also includes advanced microbiology and DNA technology training for High School students at the laboratory under the supervision of their teacher.

Adjunct Faculty Member, University of Tennessee, Plant Sciences Department, Knoxville TN.

- 2001: Texas Tech University Graduate Student Senator for Dept. of Biological Sciences
- 2000: (1) Served as Committee Chair for the American Phytopathological Society Placement Committee
(2) Presenter at Friendship grade school, Lubbock TX
(3) Judge, Poster Presentation, Howard Hughes Medical Institute undergraduate competition, Lubbock TX
- 1999: (1) President Texas Tech Univ. Chapter of the American Society for Microbiology
(2) Judge, Poster Presentation, Lubbock grade school science competition, Lubbock TX.
- 1997-1999: Served on the Placement Committee for the American Phytopathological Society
- 1994-1996: Served as Graduate Student Senator representing the Plant Pathology Department at Iowa State University
- 1992-1993: Served as vice president for Beta Beta Beta , National Honorary Biological Society, California University of Pennsylvania Chapter.