Dan Spakowicz

Yale University
and The Jackson Laboratory for Genomic Medicine
266 Whitney Ave, New Haven, CT 06511
(612) 807-6316
daniel.spakowicz@yale.edu

EMPLOYMENT

Postdoctoral Researcher — **09/2014-present**
Integrating microbiome analyses with multi-omic host datasets
George Weinstock Lab
Jackson Laboratory for Genomic Medicine, Farmington, CT
Mark Gerstein's Lab
Yale University, New Haven, CT

Postdoctoral Research Associate — **11/2013-09/2014**
Heterologous expression of iterative Polyketide Synthases
Scott A. Strobel Laboratory
Yale University, New Haven, CT

Instructor, Rainforest Expedition and Laboratory Course — **01/2014-09/2014**
Yale University, New Haven, CT
Lecturered and developed course materials for a semester-long course with mandatory field work and summer research components

Junior Researcher — **2004-7**
Dave Thomas's Lab, University of Minnesota
My project involved understanding the atomic modifications that occur in muscle with aging. I became proficient in mass spectrometry and protein purification, as well as basic wetlab techniques.

EDUCATION

Ph.D. — **2008-13**
Scott A. Strobel Laboratory
Yale University, New Haven, CT

Dissertation: "Discovery and Genetics of biofuel production by endophytic fungi"

M. Phil **2007-8**
Yale University, New Haven, CT

B.S. **2000-4**
University of Minnesota, Minneapolis, MN
Majors: Biochemistry, Ecology
Minor: Chemistry
Thesis: "Towards understanding the symbiosis between *Nostoc punctiforme* and *Gunnera insignis*"

PREVIOUS POSITIONS

Junior Researcher **2004-7**
Dave Thomas's Lab, University of Minnesota
My project involved understanding the atomic modifications that occur in muscle with aging. I became proficient in mass spectrometry and protein purification, as well as basic wetlab techniques.

Student Researcher **2003**
Tony Dean's Lab, University of Minnesota
Identified mutations in E. coli metabolism genes that conferred fitness advantages

Laboratory Technician
Judith Berman's Lab, University of Minnesota **2001-2**
Washed dishes, made media, poured plates, etc.

HONORS AND AWARDS

Postdoctoral Fellowship in Medical Informatics **2015-17**
National Library of Medicine, Yale University

Yale Excellence in Teaching Award **2011**
Teaching Assistant for "Rainforest Expedition and Laboratory" Course

Poster Awards
Yale Climate and Energy Institute Conference **2011**
Yale Molecular Biophysics and Biochemistry Department Retreat **2012**

PUBLICATIONS

1. Banerjee, D., Strobel, G.A., Booth, E., Geary, B., Sears, J., Spakowicz, D., and Busse, S. **2010**
   An endophytic Myrothecium inundatum producing volatile organic compounds. Mycosphere 1, 229–240.

2. Forcina, G.C., Castro, A., Bokesch, H.R., Spakowicz, D.J., Legaspi, M.E., Kucera, K., Villota, S., Narváez-Trujillo, A., McMahon, J.B., Gustafson, K.R., et al. **2015**
   Stelliosphaerols A and B, Sesquiterpene–Polyol Conjugates from an Ecuadorian Fungal Endophyte. Journal of Natural Products.

3. Gianoulis, T.A., Griffin, M.A., Spakowicz, D.J., Dunican, B.F., Alpha, C.J., Sboner, A., Sismour, A.M., Kodira, C., Egholm, M., Church, G.M., et al. **2012**
   Genomic Analysis of the Hydrocarbon-Producing, Cellulolytic, Endophytic Fungus Ascocoryne sarcoides. PLoS Genet 8, e1002558.

4. Griffin, M.A., Spakowicz, D.J., Gianoulis, T.A., and Strobel, S.A. **2010**
   Volatile organic compound production by organisms in the genus Ascocoryne and a re-evaluation of myco-diesel production by NRRL 50072. Microbiology 156, 3814–3829.

5. Muir, P., Li, S., Lou, S., Wang, D., Spakowicz, D.J., Salichos, L., Zhang, J., Weinstock, G.M., Isaacs, F., Rozowsky, J., et al. **2016**
   The real cost of sequencing: scaling computation to keep pace with data generation. Genome Biol 17.

6. Patridge, E.V., Darnell, A., Kucera, K., Phillips, G.M., Bokesch, H.R., Gustafson, K.R., Spakowicz, D.J., Zhou, L., Hungerford, W.M., Plummer, **2015**
   Pyrrolocin A, a 3-Decalinoyltetramic Acid with Selective Biological Activity, Isolated from Amazonian Cultures of the Novel Endophyte Diaporthales sp. E6927E. Natural Product Communications 10,

7. Prochniewicz, E., Spakowicz, D., and Thomas, D.D. **2008a**
   Changes in Actin Structural Transitions Associated with Oxidative Inhibition of Muscle Contraction†. Biochemistry 47, 11811–11817.

8. Prochniewicz, E., Lowe, D.A., Spakowicz, D.J., Higgins, L., O'Conor, K., Thompson, L.V., Ferrington, D.A., and Thomas, D.D. **2008b**

Functional, structural, and chemical changes in myosin associated with hydrogen peroxide treatment of skeletal muscle fibers. American Journal

9. Rundell, S.M., Spakowicz, D.J., Narváez-Trujillo, A., and Strobel, S.A. **2015**
The Biological Diversity and Production of Volatile Organic Compounds by Stem-Inhabiting Endophytic Fungi of Ecuador. Journal of Fungi 1, 384–396.

10. Shaw, J.J., Berbasova, T., Sasaki, T., Jefferson-George, K., Spakowicz, D.J., **2015a**
Dunican, B.F., Portero, C.E., Narvaez-Trujillo, A., and Strobel, S.A.
Identification of a Fungal 1,8-cineole Synthase from Hypoxylon sp. with Common Specificity Determinants to the Plant Synthases. J. Biol. Chem.

11. Shaw, J.J., Spakowicz, D.J., Dalal, R.S., Davis, J.H., Lehr, N.A., Dunican, **2015b**
B.F., Orellana, E.A., Narváez-Trujillo, A., and Strobel, S.A.
Biosynthesis and genomic analysis of medium-chain hydrocarbon production by the endophytic fungal isolate Nigrograna mackinnonii E5202H. Appl. Microbiol. Biotechnol.

12. Spakowicz, D.J., and Strobel, S.A. **2015**

Biosynthesis of hydrocarbons and volatile organic compounds by fungi: bioengineering potential. Applied Microbiology and Biotechnology 99, 4943–4951.

13. Strobel, G., Tomsheck, A., Geary, B., Spakowicz, D., Strobel, S., Mattner, **2010**
S., and Mann, R.

Endophyte Strain NRRL 50072 producing volatile organics is a species of Ascocoryne. Mycology 1, 187–194.

14. Strobel, G.A., Knighton, B., Kluck, K., Ren, Y., Livinghouse, T., Griffin, M., **2008**
Spakowicz, D., and Sears, J.

The production of myco-diesel hydrocarbons and their derivatives by the endophytic fungus Gliocladium roseum (NRRL 50072) Microbiology 154, 3319–3328.

15. Tomsheck, A.R., Strobel, G.A., Booth, E., Geary, B., Spakowicz, D., Knighton, B., Floerchinger, C., Sears, J., Liarzi, O., and Ezra, D. **2010**

Hypoxylon sp., an endophyte of Persea indica, producing 1, 8-cineole and other bioactive volatiles with fuel potential. Microbial Ecology 60, 903–914.

TEACHING EXPERIENCE

Instructor, Rainforest Expedition and Laboratory Course **01/2014-09/2014**
Yale University, New Haven, CT
Rated one "America's 10 Hottest Classes" in 2009 by thedailybeast
Lecturered and developed course materials for a semester-long course with mandatory field work and summer research components

Teaching Assistant, Rainforest Expedition and Laboratory Course **2008-11**
Yale University, New Haven, CT
Lectured on Phylogenetics and tree building
Led discussions of primary literature
Helped design course direction and materials
Received Yale's Excellence in Teaching Award

TALKS

Mycological Society of America Meeting, New Haven, CT **2012**
Genomic and transcriptomic analysis of a novel endophytic fungus for the discovery of natural product pathways

Yale Molecular Biophysics and Biochemistry Department Retreat **2010**
Biofuel production by novel endophytic fungi

US Department of Defense National Security Fellows Conference, Washington D.C. **07/2009**
Biofuel production by novel endophytic fungi

Cell and Molecular Biology Training Grant Symposium, Yale University **02/2009**
Towards the identification of the genes responsible for biofuel production in *Ascocoryne sarcoides*

POSTERS

Yale Molecular Biophysics and Biochemistry Department Retreat **10/2012**
Genomic and transcriptomic analysis of the novel endophytic isolate for the discovery of natural product pathways
Poster Award

Gordon Research Conference: Natural Products **07/2012**
Genomic and transcriptomic analysis of the novel endophytic isolate for the discovery of natural product pathways

Yale Climate and Energy Institute Conference **2011**
Compound Context Analysis reveals hydrocarbon production genes in *Ascocoryne sarcoides*
Poster Award

Yale Climate and Energy Institute Conference **2010**
Towards the creation of genetic tools in the biofuel producing endophytic fungus *Ascocoryne sarcoides*

Yale Molecular Biophysics and Biochemistry Department Retreat **2009**
Towards the creation of genetic tools in the biofuel producing endophytic fungus *Ascocoryne sarcoides*

Yale Molecular Biophysics and Biochemistry Department Retreat **2008**
Towards genetic undestanding of biofuel production pathways in *Ascocoryne sarcoides*

Biophysical Society Meeting **2007**
Age-related damage to myosin in skeletal muscle fibers

Biophysical Society Meeting **2006**
Oxidation-induced damage to actin in skeletal muscle fibers

FIELD WORK

Sarawak, Malaysia **11/2011**
Isolation of novel volatile-producing endophytes
Led an expedition to collect plant specimens in Bako and Kubah National Parks

Amazon Basin, Ecuador **03/2008-10**

Isolation of novel endophytes
Collected plant specimens from Cerro Blanco Dry Forest, a variety of locations in the cloud forests near Mindo, at several locations along the Napo river in the Amazon basin, in the Yasuni National Preserve, in the altiplano region zone above 11,000', and in the Podocarpus forest near Loja.

Patagonia, Chile **12/2007**
Collection of alternative strains of the biofuel producing endophyte Ascocoryne sarcoides
Collected samples from private property near Punta Arenas and Puerto Montt.

Monteverde, Costa Rica **02-06/2004**
Undergraduate Thesis
The goal of this work was to understand the relationship between a blue-green alga and its host montane herb.

RELEVANT EXPERIENCE

Scientific Reviewing/Judging/Mentoring

Ad hoc reviewer for the journal Fungal Biotechnology	**03/2016**
Ad hoc reviewer for the journal *Biofuels*	**03/2012**
Ad hoc reviewer for the journal Bioresource Technology	**04/2011**
Judge, iGEM Jamboree	**11/2010**
Co-founder and Advisor to the Yale iGEM team	**2009-2012**
Judge, CT science fair	**2008-9**

Community Involvement/Outreach

Benefits Director, circlesocial.com (Benefits Corporation)	**2016-present**
Board of Directors, Elm City Cycling (non-profit 501c3)	**2010-14**
Elected Representative to the Yale Graduate Student Assembly	**2008-12**
Member of the Yale Graduate Student Assembly Steering Committee	**2010-12**
Member and Chair of the Yale Graduate Student Assembly Teaching Committee	**2009-10**
Graduate Student Represenative to the Yale Grievance Committee	**2011-12**
Graduate Student Represenative to the Yale Traffic Safety Subcommittee	**2011-13**

First Author of "Intersection Safety Report: Identifying the most dangerous intersections on the Yale Campus to prioritize action". **04/2012**

Member of the Graduate Student Assembly Transit and Security Committee	**2008-12**
Ad hoc reviewer for the Graduate Student Assembly Conference Travel Fund	**2009-10**
Co-first author of the report "Yale Bike Plan" that diagrammed and described the needs and desires of the graduate student community for cycling infrastructure on the Yale campus	**09/2012**

PROFESSIONAL MEMBERSHIPS

American Society for Microbiology	**2015**
Mycology Society of America	**2012-15**
Biophysical Society	**2006-7**

GRADUATE COURSEWORK

Molecular Structure and Function (U of Minn)	**2005**
Muscle (U of Minn)	**2006**
Advanced Genetic Analysis (Yale)	**2007**
MathematicalMethods in Biophys (Yale)	**2007**
Macromolecular Structure (Yale)	**2007**
Methods & Logic Molecular Bio (Yale)	**2007**
Macromolecular Interactions (Yale)	**2008**
Adv Eukaryotic Molecular Biology (Yale)	**2008**
Enzyme Mechanisms (Yale)	**2008**
Phylogenetics & Macroevolution (Yale)	**2008**
Phylogenetics Laboratory (Yale)	**2008**
Eukaryotic Genome Annotation and Analysis (JCVI, Rockville, MD)	**2008**
Business of Biotech (Yale Week-long Seminar Series)	**2012**
Medical Informatics (Yale)	**2015**
Advanced Data Analysis (Yale)	**2015**
Bioinformatics: Data Mining and Simulation	**2016**
Longitudinal and Multilevel Statistics	**2016**