CHRISTOPHER P. VANAGS

Office of the Dean, Peabody
College of Education
Vanderbilt University
Peabody #329
230 Appleton Place
Nashville, Tennessee 37203-5721

Web: https://peabody.vanderbilt.edu/bio/chris-vanags
Email: chris.vanags@vanderbilt.edu
Phone: (615) 521 1759

ORCID: https://orcid.org/0000-0003-2200-745X

EDUCATION

2003 – 2007 **Ph.D., Hydrology and Catchment Management**
The University of Sydney, New South Wales, Australia.
Thesis: *A Geophysical and Hydrological Investigation of Palaeochannels in Northern New South Wales*
Supervisor: Dr. R. Willem Vervoort
Associate Supervisor: Dr. Alex McBratney

2000 – 2002 **M.S., Agronomy (Soil Science)**
The University of Georgia, Athens, Georgia.
Thesis: *A Pedological Study of Soil Genesis on Skidaway Island, Georgia*
Supervisor: Dr. William Miller

1997 – 2000 **B.S., Geology**
The University of Georgia, Athens, Georgia.

1995 – 1997 **Earth and Atmospheric Sciences**, 74 Quarter hours earned
Georgia Institute of Technology, Atlanta, Georgia.

TEACHING AND RESEARCH EXPERIENCE

Vanderbilt University

2018 – present **Director of Research Initiatives,** Peabody College of Education
- Report to the Dean of Research to create programs and services to support over 150 research faculty
- Represent the Peabody College of Education for external affairs and partnerships related to STEM education research
- Increase the reach of STEM research initiatives to impact educational standards, practices and policies
- Create affinity groups of faculty across the Vanderbilt Campus to compete for large, multi-departmental and multi-institutional research awards

2014 – present **Research Assistant Professor**, Department of Earth and Environmental Sciences
- Specialize in non-invasive methods for characterizing soil and regolith physical properties on the field- and landscape-scale
  - Shallow geophysical methods (EM, Radar, Seismic)

- o Numerical simulation (MODFLOW, VS2DT)
  - o Geostatistical and geospatial modelling
- Develop and deploy long-term environmental monitoring instrumentation
- Facilitate departmental outreach and broader impact initiatives
- Mentor graduate and undergraduate research projects

2010 – 2018 **Associate Director,** *Vanderbilt Center for Science Outreach*
- Report directly to Director of the Vanderbilt Center for Science Outreach, an organization consisting of 24 Ph.D. scientists and several administrative staff.
- Serve as Co-PI and Project Manager for Abu Dhabi Science Reform Project, which aims to create a STEM-focused curriculum for 84 public high schools in Abu Dhabi, UAE.
- Work with Director to develop, implement and evaluate programs that connect the scientific community with students from Metro Nashville Public Schools
  - o Scientist in the Classroom
  - o Resident Scientist Program
  - o Engineering Ambassadors Network
  - o Day of Discovery
  - o Research Experience for High School Students
  - o Interdisciplinary Science Research Program
  - o The School for Science and Math at Vanderbilt
- Develop Broader Impact network to support Vanderbilt faculty by facilitating interdisciplinary connections on campus and with educational, governmental, and non-profit organizations

2007 - 2015 **Instructor and Director of Distance Learning,** *The School for Science and Math at Vanderbilt,* a research-based four-year curriculum co-taught by 4 Ph.D. scientists
- Part of a team of six scientists that developed The School for Science and Math at Vanderbilt
  - o Created the programmatic structure of an interdisciplinary, research-based school at Vanderbilt
  - o Designed classroom and laboratory facilities
  - o Developed linkages with Vanderbilt researchers who serve as adjunct faculty and mentors to students in the school
- Developed and managed educational technology platforms to enhance and support School for Science and Math and Interdisciplinary Science Research Program
- Advised student research projects and mentored students throughout their tenure at the School for Science and Math at Vanderbilt

The University of Sydney
2004 – 2005 **Demonstrator,** *Advanced Hydrology*– 2 sections (senior-level)

2003 – 2004 **Field instructor,** *Advanced Soil Physics* (2 week field school) – 2 sections

The University of Georgia

2001 – 2002	**Laboratory instructor/ Teaching assistant,** *Introduction to Soils and Hydrology* – 3 sections (junior-level)
2000 – 2002	**Tutor/Mentor, UGA Athletics,** *Environmental Geology*
2001	**Teaching assistant,** *Environmental Instrumental Analysis* - 1 section (grad/senior level)
2000	**Laboratory instructor,** *Environmental Geology* - 1 section (freshmen level)

RESEARCH SUMMARY (see appendix for details)

- Principal investigator or co-principal investigator on research projects totaling $10.3 million through federal and state funding agencies, foundations and international government contracts
- Primary or co- author of:
  - 11 peer-reviewed publications, genetic sequences, and extended proceedings (additional article in preparation)
  - 15 abstracts
  - 22 talks and professional presentations
  - 141 Broader Impact and Educational Plans for NSF proposals
- Co-Founder and Associate Editor of *Young Scientist* research journal

PUBLIC SERVICE AND OUTREACH

2016 – present	**Tennessee Environmental Literacy Plan Steering Committee,** *Tennessee State Parks*, Tennessee
2014 – present	**STEM Industry Advisory Council,** *Tennessee Department of Education*, Tennessee
2014 – present	**Environmental Advisory Committee,** *Vanderbilt University and Vanderbilt University Medical Center*, Nashville TN
2007 – present	**Volunteer Naturalist,** *Metropolitan Nashville Parks and Recreation*, Nashville, TN
2013 – 2017	**Board of Directors,** *Urban Green Lab*, Nashville TN
2013 – 2017	**Education Committee,** *Urban Green Lab*, Nashville TN
2013 – 2016	**Stormwater In-Fill Redevelopment Committee**, *Nashville Metropolitan Government*, Nashville, TN
2013 – 2016	**Volunteer Scientist,** *United States Geologic Survey*, Nashville, TN
2008 – 2012	**Science Program Presenter/Coordinator,** *The Explore Institute*, Nashville, TN
2004 – 2005	**President,** *Faculty of Agriculture Postgraduate Association*, Sydney, Australia
2004	**Science Exhibit Presenter/Coordinator,** *The Australian Museum*, Sydney, Australia

AWARDS AND HONORS

Nashville Emerging Leader Award Finalist, **2016**. Nashville Chamber of Commerce

State Outstanding Earth Science Teacher (Tennessee), 2012. National Association of Geoscience Teachers

Award for Excellence in Earth Science Teaching, 2012. The Geological Society of America

Nominated for *"Young Water Scientist of the Year"*, Australia **2006**

Cotton CRC Postgraduate Scholarship recipient, **2003 – 2006**. Funded by the Australian Cotton CRC

Postgraduate Research Support Scheme – **2003, 2006**

International Postgraduate Research Scholarship recipient, **2003 – 2006**. Funded by the Australian Department of Education, Science and Training

International Postgraduate Award recipient, **2003 – 2006**. Funded by the University of Sydney

PROFESSIONAL MEMBERSHIPS

Geological Society of America (2000 – 2016)

American Geophysical Union (2005 – 2016)

National Association of Geoscience Teachers (2012 – 2016)

Society of Exploration Geophysicists (2005 – 2012)

Australian Society of Soil Scientists (2003 – 2006)

Soil Science Society of America (2000 – 2003)

RESEARCH APPENDIX

Funded Research Grants and Contracts

J. Oster, N. Kelley, **C. Vanags**, L. Claiborne, S. Goodbred. *GP:IMPACT: Collaborative Research: TSU-Vanderbilt Partnership - A Pathway to Broaden Participation of Underrepresented Groups in Graduate School and the Geoscience Workforce.* September 2018 – August 2021. National Science Foundation. $150K

C.P. Vanags, V.L. Shepherd, T.E Lawrence. *Sustainable Classrooms*. August, 2017 – September, 2019. Tennessee Department of Environmental Conservation. $130K.

V.L Shepherd and **C.P. Vanags**. *Abu Dhabi STEM Reform Project*. July, 2015 - June 2018. Abu Dhabi Education Council, United Arab Emirates. $6.7M

A. Ledeczi and **C.P. Vanags**. *CSforAll: EAGER: NetsBlox: Visual Programming Environment for Teaching Distributed Computing Concepts*. July, 2014 – June 2016. Vanderbilt University Trans Institutional Partnership Award. $300K

A. Ledeczi and **C.P. Vanags**. *NetsBlox: Cyber Infrastructure and Curriculum to Teach Distributed Computing*. July, 2014 – June 2016. Vanderbilt University Trans Institutional Partnership Award. $200K

V.L. Shepherd and **C.P. Vanags.** *Transforming STEM Learning in Urban Schools Using the SSMV Model December*, 2013 - December, 2015. National Institutes of Health, Science Education Partnership Award $180K

C.P. Vanags and S. Baskauf. *Dynamic, spatially-referenced walking tour of Vanderbilt Campus*, July 2014 – June 2015. Curb Center Innovation Grant $2.5K

C.P. Vanags. December, 2013 – October 2018. *Wetland Development at Bells Bend Park*. Tennessee Department of Transportation. $11K

C.P. Vanags, and G.B. McCombs. October, 2007 – June 2013. *Connected Green Space – Wireless and Program access partnering Shelby Bottoms Nature Center and the Vanderbilt Center for Science Outreach*. AT&T. $14K

C.P. Vanags, M.E. Loveless, and J. Meiler. February 2010 – March 2018. *Young Scientist Journal*. $45K

V.L. Shepherd, J. Lopez, G.B. McCombs, and **C.P. Vanags**. August, 2007 – July, 2010. *The School for Science and Math at Vanderbilt*. Funded by the National Institutes of Health, Science Education Partnership Award. $1.25M

R.W.Vervoort, and **C.P. Vanags**. January, 2003 - July 2005. *A geophysical and hydrological investigation of palaeochannels in Northern New South Wales*. Funded by the Australian Cotton Cooperative Research Centre. $360K

Publications and Genetic Sequences– Peer Reviewed

Broll, B., Ledeczi, A., Zare, H., Do, D.N., Sallai, J., Volgyesi, P., Maroti, M., Brown, L., **Vanags, C**. **2018**. A Visual Programming Environment for ntroducing Distributed Computing to Secondary Education. *Journal of Parallel and Distributed Computing*. https://doi.org/10.1016/j.jpdc.2018.02.021.

Broll, B. Ledeczi, A. Volgyesi, P. Sallai, J. Maroti, M. Carrillo, A. Weeden-Wright, S. **Vanags, C**. Swartz, J and Melvin Lu. **2017**. *A visual Programming Environment for Learning Distributed Programming*. SIGCSE 2017: 81-86.

Eeds, A.M.[1] **Vanags, C.P.**[1] Creamer, J.I., Loveless, M.E., Dixon, A.S., Sperling, H., McCombs, G, McCue, K.A., Robinson, D., Kuner, S., Shepherd, V.L. **2014.** *The School for Science and Math at Vanderbilt: A Unique K-12-University Partnership to Enhance STEM Learning*. Cell Biology Education Life Sciences Education 13,297-310.

Vanags, C.P. and Vervoort, R.W. **2013.** *Hydrological and Water Use Efficiency Implications of Geomorphological Stratification in Palæochannels in the Northern Murray Darling Basin*. Crop and Pasture Science 64(12) 1182-1194.

McCue, K.A., Baynham, D.Q., Bolden, I.W., George, E.R., Hererra, A.U., Huang, Y.T., Ma, X., Maisha, M., Peek, C., Pfeiffer, R.E., Pham, A.P., Roland, K.M., Wilson, E.B., McCombs, G.B., Shepherd, V.L., Creamer, J.I., **Vanags, C.P**. and Eeds, A.M. **2009**. *GAPDH sequence of Aconitum noveboracense*. Genbank FJ649623.

Eeds, A.M., Artavia, A.E., Asbell, H.R., Brakefield, A.C., Doub, H.A., Hart, A.M., Hekmat, R., Oakes, J.R., Richards, N.C.S., Roman-Bermudez, K.A., Shirley, L.D., Simon, C.G., Tidwell, B.S., McCombs, G.B., Shepherd, V.L., Creamer, J.I., **Vanags, C.P.** and McCue, K.A. *2009.* *GAPDH sequence of Hedeoma todsenii*. Genbank FJ650499.

Player, S., Hendrickson, M., **Vanags**, **C.P.** Chhay, R. Chan, K. Fletcher, R. **2006**. *Geophysical Applications on the Angkor Plain*. Bulletin of the Indo-Pacific Prehistory Association.

Schlossberg, M.J., **Vanags**, **C.P.** & Miller W.P. **2004**. *Bermudagrass Sod Growth and Metal Uptake in Coal Combustion By-Product-Amended Media*. Journal of Environmental Quality 33:740-748.

Published Extended Proceedings – Peer Reviewed

Broll, B., Ledeczi, A., **Vanags, C**., Volgyesi, P, Salai, J., Maroti, M. **2017**. Introducing Parallel and Distributed Computing to K12. *IPDPS Workshops* 323-330.

Vanags, C.P., Minasny, B. & McBratney A. B. **2004**. *The Dynamic Penetrometer for Assessment of Soil Mechanical Resistance*. In Supersoil 2004: Program and Abstracts for the 3rd Australian New Zealand Soils Conference, University of Sydney, Australia, 5 – 9 December 2004.

Selected Abstracts and Professional Presentations

Vanags, C.P. 2016. *Strengthening the Connection between Life-Science Research and K-12: An NSF-Sponsored Workshop*. Lexington, KY (invited).

Yancey, D.M, **Vanags, C.P.**, Shepherd, V.L, Wyss, J.M. **2015.** *The school for Science and Math at UAB (SSM-UAB): Diversifying Proven STEM Education Model*. NIH Science Education Partnership Meeting. Washington, DC.

Vanags, C.P. 2014. *In Praise of Scientific Heresy: How Big Ideas Drive Innovation*. Thinking Outside the Lunchbox Lecture Series. Nashville, TN (invited).

Vanags, C.P. and V.J. Shepherd. **2013.** *The Vanderbilt Center for Science Outreach: A Model for University Broader Impacts Support*. Broader Impacts Infrastructure Summit, Columbia, Missouri (invited).

Vanags, C.P. 2011. *A Model for Community Engaged Research*. Professional Conference of the National Consortium of Specialized Secondary Schools in Mathematics, Science and Technology, Austin, TX.

Vanags, C.P. 2008. *Predicting the field-scale hydrological impacts of shallow palaeochannels in the semi-arid landscape of Northern New South Wales, Australia*. Earth and Environmental Sciences Seminar Series, Nashville, TN (invited).

Vervoort, R.W., and **C.P. Vanags. 2007.** *Conceptual models and structure generating algorithms for heterogeneous hydraulic conductivity fields: Impact on simulating groundwater-surface water interaction in a palaeochannel system*. 35th Congress, International Association of Hydrogeologists, Lisbon, Portugal.

Vanags, C.P., R.W. Vervoort, D. Phiyasirikul-Bennett. **2006**. *Hydrological behaviour of a palaeochannel system under irrigation*. The Australian Cotton Growers Conference, Gold Coast, Australia**.**

Player, S., **C.P. Vanags**, M. Hendrickson, R. Fletcher. **2006**. *The application of geophysical techniques in the greater Angkor region*. 18th Congress, Indo-Pacific Prehistory Association, Manila, March 2006.

Vanags, C.P. and R.W. Vervoort. **2005**. *Using electromagnetic induction to identify contrasting soil hydraulic properties*. Cotton CRC Review, Narrabri, Australia**.**

Vanags, C.P. and R.W. Vervoort. **2005**. How *do sandy palaeochannels affect ahallow groundwater flow in a clay-dominated vadose zone under flood irrigation?* Eos Trans. AG, 86(18) Jt. Assem. Suppl. Abstract H13B-10.

Vanags, C.P and R.W. Vervoort. **2005**. *Inverting electromagnetic data to Identify soil hydraulic properties in Northern New South Wales.* Eos Trans. AG, 86(18) Jt. Assem. Suppl. Abstract H13D-03.

Vanags, C.P., and R.W. Vervoort. **2004**. *Simulated hydrological behavior of a shallow palaeochannel system under irrigation.* In Supersoil 2004: Program and Abstracts for the 3rd Australian New Zealand Soils Conference, University of Sydney, Australia, 5 – 9 December 2004.

Vanags, C.P., R.W. Vervoort and J. Triatafilis. **2004**. *Comparing electromagnetic signature on and off the paddock.* The Australian Cotton Growers Conference, Gold Coast, Australia, August 2004.

Vanags, C.P, W.P. Miller and L.T. West. **2002**. *Using ground-penetrating radar in laterally-discontinuous soils.* In 2002 Agronomy abstracts. ASA, Madison, WI.

Broader Impact Strategies and CAREER Educational Plans

Holley-Bockelmann, K. **2017.** *NSF SPREAD: Pulsar Search Collaboratory Program.* National Science Foundation.

Bodenheimer, B. **2017.** *Designing Virtual Worlds for Children - A Developmental Study of How Children Act, Perceive, and Reason Spatially.* National Science Foundation.

Volgyesi, P. **2017.** CPS: *Medium: Mixed Reality CPS Platform for Machine Learning and Education.* National Science Foundation.

Biswas, G. **2017.** *ITEST: Leveraging the Internet of Things for Hands-On STEM Learning in High Schools.* National Science Foundation.

Biswas, G. **2017.** *EHR CORE: Collaborative Research: Scaffolding Emotion Regulation to Enhance Self-Regulated Science Learning With SIMSELF.* National Science Foundation.

Brady, C. **2017.** *RoboScape: Mixed-Reality Multi-Robot Platform for Systems Learning* National Science Foundation.

Biswas, G. **2017.** *Collaborative Research:Investigation of Personalized Student Learning in Interdisciplinary Science and Engineering via a High-Frequency Real-Time Environmental Data Monitoring Sys.* National Science Foundation.

Oster, J. **2017.** *GP:IMPACT: Collaborative Research: TSU-Vanderbilt Partnership - A Pathway to Broaden Participation of Underrepresented Groups in Graduate School and the Geoscience Workforce.* National Science Foundation.

Nordman, J. **2017.** *Mechanisms Governing DNA Replication Timing and Copy Number Control During development.* National Science Foundation.

Caldwell, J. **2017.** *Atomic-Scale Crystalline Hybrids: Tuning the IR Dielectric Function through Optic Phonon Hybridization.* National Science Foundation.

Biswas, G. **2017.** *ITEST: Leveraging the Internet of Things for Hands-On STEM Learning in High Schools.* National Science Foundation.

Biswas, G. **2017.** *DRK-12: Integrating Virtual and Computational Environments for*

Collaborative Science Learning. National Science Foundation.

Biswas, G. **2017.** *Collaborative Research: Scaffolding Emotion Regulation to Enhance Self-Regulated Science Learning With SIMSELF*. National Science Foundation.

Tao, Y. **2017.** *CAREER: In vivo ophthalmic imaging assay technologies*. National Science Foundation.

Nordman, J. **2017.** *CAREER: Mechanisms Governing DNA Replication Timing and Copy Number Control During development*. National Science Foundation.

Weeden-Wright, S. **2017.** *CAREER: Hot Carrier Effects in a Novel Miniaturized 3D RF Paradigm*. National Science Foundation.

Byram, B. **2017.** *CAREER: Ultrasound Brain-Computer Interface*. National Science Foundation.

Truelove, J. **2017.** *CAREER:The Impact of Attention and Working Memory on Value-based Decision-making*. National Science Foundation.

Capra, T. **2017.** *CAREER: Phenome-wide Analysis of the Drivers of Evolutionary Adaptation*. National Science Foundation.

Loveless, D. **2017.** *CAREER: Maximizing Performance and Reliability of Advanced Electronics Technologies through Stochastic Modeling*. National Science Foundation.

Bellan, L. **2017.** *CAREER: Thermoresponsive Transient Electronics*. National Science Foundation.

Zelik, K. **2017.** *CAREER: Smart clothing to monitor and prevent low back injury*. National Science Foundation.

Lippmann, E. **2017.** *CAREER: Deconstructing Neurovascular Mechanobiology*. National Science Foundation.

Duddu, R. **2017.** *CAREER: Integrating damage-mechanics-based calving law into prognostic ice sheet models and teaching ice sheet dynamics through interactive simulation*. National Science Foundation.

Bordenstein, S. **2017.** *The Vanderbilt Microbiome Initiative*. Vanderbilt University Trans-Institutional Partnership Award

Bodenheimer, B. **2016.** *Designing Virtual Worlds for Children - A Developmental Study of How Children Act, Perceive, and Reason Spatially*. National Science Foundation.

Lin, S. **2016.** *GOALI: A Novel Janus Membrane with Asymmetric Wetting Properties for Simultaneous Anti-wetting and Anti-fouling Membrane Distillation*. National Science Foundation.

Lippmann, E. **2016.** *High throughput screening of iPSC differentiation to subtype-specific dopaminergic neurons using a novel microformulation platform*. National Science Foundation.

Loveless, D. **2016.** *CAREER: Maximizing Computational Performance and Reliability in State-of-the-Art Near-Threshold Computing Technologies*. National Science Foundation.

Lin, S. **2016.** *CAREER: High Performance Anti-fouling Membranes Enabled by Interfacial Materials with Special Wettability*. National Science Foundation.

Vorobeychik , E. **2016.** *CAREER: Adversarial Artificial Intelligence for Social Good*. National Science Foundation.

Bellan, L. **2016.** *CAREER: Thermoresponsive Transient Electronics*. National Science Foundation.

Capra, T. **2016.** *CAREER: Phenome-wide Analysis of the Drivers of Evolutionary Adaptation*. National Science Foundation.

Oster, J. **2016.** *Early Career: Acquisition of an isotope ratio mass spectrometer for the analysis of environmental and geologic samples at Vanderbilt University.*

Ledeczi, A. **2106.** *CSforAll: EAGER: NetsBlox: Visual Programming Environment for Teaching Distributed Computing Concepts*. National Science Foundation.

Lippmann, E. **2016.** *EAGER: Biomanufacturing: Scalable production of subtype-specific iPSC-derived midbrain dopaminergic neurons using a novel microformulation platform*. National Science Foundation.

Biswas, G. **2016.** *C2STEM: Learning by Modelling: A collaborative and Synergistic Aproach to K-12 Computing and STEM Education*. National Science Foundation.

Biswas, G. **2016.** *DIP - Collaborative: Studying Co-Regulation in Complex Collaborative Learning Scenarios: Providing Computer-Based Awareness and Support*. National Science Foundation.

Young, J. **2015**. *Elucidating the molecular regulation of carbon partitioning in plants with modified source-sink relationships*. National Science Foundation.

Bodenheimer, B. **2015.** *CHS: Small: Collaborative Research: Improving Wayfinding and Navigationin Immersive Virtual Environments*. National Science Foundation.

Lower, B. **2015.** *Aero- and Chemo-tactic Responses of Magnetotactic Bacterium AMB-1.* National Science Foundation.

Young, J. **21015.** *Collaborative Research: GOALI: Metabolic Engineering of Next Generation CHO Hosts for Monoclonal Antibody Production*. National Science Foundation.

Ledeczi, A. **2015.** *Digital Learning Technology for Computer Science Education: TIPS*. Vanderbilt University Trans-Institutional Partnership Award

Wilson, J. **2015.** *CAREER: Engineering Polymeric Nanomaterials for Programming Innate Immunity*. National Science Foundation.

Oster, J. **2015.** *CAREER:California megadroughts in context: Integrating high-resolution speleothem records with isotope-enabled climate models and translating climate data for the K-12 classroom*. National Science Foundation.

Bodenheimer, B. **2015.** *The Challenges of Scale in Simulation and Computation: The Vanderbilt Interdisciplinary Program in Data Enabled Science and Engineering (VIP-DESE)*. National Science Foundation.

Bennartz, R. **2015.** *NRT-DESE: Vanderbilt University Spatial Information Science Program (VU-SISP)*. National Science Foundation.

Biswas, G. **2015.** *C2STEM-CS: A synergistic Approach to K-12 Computing and STEM Education*. National Science Foundation.

Myers, M. **2015.** RSB: *Cyber-Optimized Smart Buildings for Multi-Hazard Resilience and Sustainability*. National Science Foundation.

Leboeuf, E. **2015.** *CyberSEES: Type 2: Cyber-Enabled Hydropower Management for Sustainable Water Resources*. National Science Foundation.

Bodenheimer, B. **2015.** *Improving Wayfinding and Navigation in Immersive Virtual Environments*. National Science Foundation.

Valdastri, P. **2014.** *I-Corps: A modular toolkit for rapid prototyping of capsule robots*

Bennartz, R. **2014.** *TIPS: Vanderbilt University Spatial Information Science Program*. Vanderbilt University Trans-Institutional Partnership Award

Camp, J. **2014.** *Hazard SEES: Social and Physical Dimensions of Land Use and Cyclone Vulnerability*. National Science Foundation.

Young, J. **2014.** *BIOMAPS: Collaborative Research: Integrated Systems Engineering Approach for Improving Photosynthetic Efficiency*. National Science Foundation.

Levin, D. **2014.** *Using eye tracking to improve screen-captured STEM instruction*. National Science Foundation.

Young, J. **2014.** *Collaborative Research: GOALI: Metabolic Engineering of Next Generation CHO Hosts for Monoclonal Antibody Production*. National Science Foundation.

Conrad, J. **2014.** *hAuNP probes for live cell mRNA imaging*. National Science Foundation.

Guelcher, S. **2014.** *Elastomeric micro-fiber composite scaffolds: a tunable model platform for tissue engineering*. National Science Foundation.

Guelcher, S. **2014.** *Elastomeric micro-fiber composite scaffolds: a tunable model platform for tissue engineering (VA Tech collaboration)*. National Science Foundation.

Biswas, G. **2014.** *C2STEM: Learning by Modelling: A collaborative and Synergistic Aproach to K-12 Computing and STEM Education*. National Science Foundation.

Sung, H. **2014.** *Spatiotemporal Control of Retinoid Effects on Cardiac Cell Fate*. National Science Foundation.

Myers, M. **2014.** *RSB: Cyber-Optimized Smart Buildings for Multi-Hazard Resilience and Sustainability*. National Science Foundation.

Valdastri, P. **2014.** *CAREER: Lifesaving Capsule Robots*. National Science Foundation.

Landman, B. **2014.** *CAREER: Modeling Personalized Brain Development with Big Data*. National Science Foundation.

Meiler, J. **2014.** *ABI Development: The Bio Chemical Library for Protein Structure Determination*. National Science Foundation.

Bardhan, R. **2014.** *CAREER: Plasmonic Light Harvesting in Thin Film Perovskite Solar Cells*. National Science Foundation.

Oster, J. **2014.** *Linking carbon dynamics in the karst Critical Zone to paleoclimate records using a reactive transport approach*. National Science Foundation.

Vorobeychik , E. **2014.** *CAREER: Recognizing and Interdicting Cyber Attack Plans*. National Science Foundation.

Bodenheimer, B. **2014.** *NRT:DESE: The Challenges of Scale in Simulation and Computation: The Vanderbilt Interdisciplinary Program in Data Enabled Science*

and Engineering (VIP-DESE). National Science Foundation.

Bennartz, R. **2014.** *NRT-DESE: Vanderbilt University Spatial Information Sscience Program (VU-SISP)*. National Science Foundation.

Valentine, J. **2014.** *CAREER: Highly Anisotropic Nanostructures for Achieving Angularly Selective Transmission of Light*. National Science Foundation.

Valdastri, P. **2014.** *CPS: TTP Option: Synergy: Collaborative Research: An Open CPS Testbed for Research and Education in Computer Assisted Colonoscopy*. National Science Foundation.

Leboeuf, E. **2014.** *CyberSEES: Type 2: Cyber-Enabled Hydropower Management for Sustainable Water Resources*. National Science Foundation.

Gokhale, A. **2014.** *C2STEM-CS: A Synergistic Approach to K-12 Computing and STEM Education*. National Science Foundation.

Vorobeychik , E. **2014.** *CYBER: Incentive-Centered Network Design for Interdependent Critical Infrastructure*. National Science Foundation.

Camp, J. **2014.** *Coastal SEES Collaborative Research: Land Use Land Cover Changes and Their Impacts on Postlandfall Cyclones in Coastal Bangladesh - Identifying Sustainable Land Management Option*. National Science Foundation.

McCammon, H. **2014.** *Litigation Strategies in U.S. Social Movements*. National Science Foundation.

Bodenheimer, B. **2014.** *Improving Wayfinding and Navigation in Immersive Virtual Environments*. National Science Foundation.

Tung, T. **2014**. *Imperial Decline and Climate Stress: A Bioarchaeological and Isotopic Study of Violence, Health, and Diet in the Post-Wari Era, Ayacucho, Peru*. National Science Foundation.

McNamara, T. **2013.** *Spatial skills, environmental characteristics, and external representations: Understanding the cognitive processes employed in wayfinding with navigational aids*. National Science Foundation.

Young, J. **2013.** *BIOMAPS: Collaborative Research: Integrated Systems Engineering Approach for Improving Photosynthetic Efficiency*. National Science Foundation.

Sung, H. **2013.** *Spatiotemporal Control of Retinoid Effects on Cardiac Cell Fate*. National Science Foundation.

Sung, H. **2013.** *Engineering a Capillary Network Regulating Angiogenic and Inflammatory Responses*. National Science Foundation.

Covington, B. **2013.** *NSF Graduate Research Fellowship Program*. National Science Foundation.

Guelcher, S. **2013.** *Investigating Microenvironmental Regulation of Cell Fate Using Bone-Templated 3D Scaffolds*. National Science Foundation.

Sung, H. **2013.** *Spatiotemporal Control of Retinoid Effects on Cardiac Cell Fate*. National Science Foundation.

Ledeczi, A. **2013.** *NeTS: Medium: NetsBlox: A Visual Programming Environment for K-12 Computer Networking Education*. National Science Foundation.

Sanchez, F. **2013.** *Engineering Interfacial Interactions for Superior Calcium-Based*

Composites. National Science Foundation.

Landman, B. **2013.** *CAREER:Rapid Prototyping for Image Labeling*. National Science Foundation.

Bordenstein, S. **2013.** *The genetic architecture of maternal suppression of symbionts*. National Science Foundation.

Ayers, J. **2013.** *Use of accessory mineral geochronology for determining soil provenance in a limestone terrain*. National Science Foundation.

Nueurt, Gregor. **2013.** *CAREER: Dynamic Regulation of Long Non-Coding RNA*. National Science Foundation.

Oster, J. **2013.** *Quantifying the effect of climate variability on soil carbon isotopes using reactive transport modeling: implications for speleothem paleoclimate studies*. National Science Foundation.

Sarkar, N. **2012.** *Co-robotic Intervention architecture for Young Children with Autism*. National Science Foundation.

Adams, J. **2012.** *HCC: Large: Enabling Spatial Learning and Action for Human and Robot Teams in Large Virtual Environments*. National Science Foundation.

Adams, J. **2012.** *HCC: Small: Data Visualization and Interaction for Information-Dense Mobile Interfaces*. National Science Foundation.

Sung, H. **2012.** *Engineering a Capillary Network Regulating Angiogenic and Inflammatory Responses*. National Science Foundation.

Edd, J. **2012.** *Dissecting the roles of cell-cell communication in nucleation of spreading depolarization*. National Science Foundation.

Sarkar, N. **2012.** *Individualized Adaptive Robot-Mediated Intervention Architecture for Autism*. National Science Foundation.

Abbot, P. **2012.** *The transition to sociality at the plan-insect interface*. National Science Foundation.

Bordenstein, S. **2012.** *The genetic architecture of maternal suppression of symbionts*. National Science Foundation.

Adams, J. **2012.** *NRI-Large: Forming Strong Co-Robot Teams Through Integrated Spatial Learning and Action*. National Science Foundation.

Adams, J. **2011.** *NRI-Small: Adaptive Interaction for Co-Robots*. National Science Foundation.

Sarkar, N. **2011.** *Development of a Therapist Assistant Robot to Facilitate Neuromuscular Rehabilitation in the Clinic*. National Science Foundation.

Reed, R. **2010.** *RadFxSat - A University Based Satellite Program to Study Radiation Effects on Advanced Nanoelectronics*. National Aeronautical and Space Administration.

Leboeuf, E. **2010.** *IGERT: Novel Energy and Sustainability Technologies for a Responsible Society*. National Science Foundation.

Xu, Y. **2010.** *CAREER: Optoelectronic Carbon Nanotube Probes for Nanobiohybrids*. National Science Foundation.

Lowe, E. **2010.** *PROPMAP: A Novel GPU-accelerated Structure-Property Relationship*

Mapping Algorithm Utilizing Volunteer Computing. National Science Foundation.

Hillyer, J. **2010.** *Dynamics of the Mosquito Heart: Hemolymph Flow and Associated Immune Cells*. National Science Foundation.

Gammill, W. **2010.** *NSF Graduate Research Fellowship Program*. National Science Foundation.

Guelcher, S. **2009**. *A New Class of Biomaterials Programmed to Regulate Host Body Responses*. National Science Foundation.

Dickerson, J. **2009.** *CAREER: Fabrication of Free Standing, Binder-Free Thin Films of Nanomaterials*. National Science Foundation.

Kaplan, D. **2009.** *CAREER: Role of Sld2 in the Initiation of DNA Replication*. National Science Foundation.

Leboeuf, E. **2009.** *Mitigating Environmental Impacts of Energy Choices*. National Science Foundation.

Abbot, P. **2009.** *CAREER: Towards an integrative understanding of the ecology and evolution of sociality in aphids*. National Science Foundation.

Abbot, P. **2009.** *Natural Enemies, Natural Selection and Adaptive Radiation in Ambrosia Gall-Forming Midges*. National Science Foundation.

Guelcher, S. **2009.** *CAREER: Bioactive Weight-Bearing Bone/Polymer Composites*. National Science Foundation.

Page, T. **2009.** *Circadian Regulation of Learning and Memory*. National Science Foundation.

Sanchez, F. **2009.** *Engineering interfacial interactions for advanced calcium-based composites*. National Science Foundation.

Oskay, C. **2009.** *BRIGE: Multiscale Computational Investigation of Failure of Heterogeneous Structures under Extreme Thermo-Mechanical Environment*. National Science Foundation.