

Jean Suzanne VanderGheynst

Dean and Professor of Bioengineering
College of Engineering
University of Massachusetts, Dartmouth, MA

j.vander@umassd.edu

EDUCATION

- 1997 Cornell University, College of Agriculture and Life Sciences and College of Engineering, Ithaca, NY. Doctor of Philosophy in Agricultural and Biological Engineering with minors in Environmental and Soil and Water Engineering. Advised by Professor Larry P. Walker (retired).
- 1994 Cornell University, College of Agriculture and Life Sciences and College of Engineering, Ithaca, NY. Master of Science in Agricultural and Biological Engineering. Advised by Professor Larry P. Walker (retired).
- 1991 Syracuse University, College of Engineering, Syracuse, NY. Bachelor of Science in Chemical Engineering, with Distinction.

OVERVIEW OF PROFESSIONAL EXPERIENCE

- 2018-present Dean, College of Engineering, University of Massachusetts, Dartmouth, MA
- 2018-present Professor, Department of Bioengineering, College of Engineering, University of Massachusetts, Dartmouth, MA
- 2020-2023 Interim Dean, School for Marine Science and Technology, University of Massachusetts, New Bedford, MA
- 1996-2018 Professor (2007-2018), Associate Professor (2002-2007), Assistant Professor (1996-2002), Department of Biological and Agricultural Engineering, College of Engineering and College of Agricultural & Environmental Sciences, University of California, Davis, CA
- 2009-2018 Executive Associate Dean for Research & Graduate Studies (2017-2018), Associate Dean for Research & Graduate Studies (2013-2017), Interim Dean (2015), Associate Dean for Undergraduate Study (2009-2013), University of California, College of Engineering, Davis, CA
- 2006-2016 Staff Research Scientist, Joint BioEnergy Institute, Lawrence Berkeley National Laboratory, Emeryville, CA

2007-2009	Graduate Advisor, Biological Systems Engineering Graduate Program, Davis, CA
1992-1996	Graduate Research Assistant, Cornell University, Ithaca, NY
1991	Environmental Consultant, Galson Incorporated, East Syracuse, NY
1989-1990	Manufacturing Engineer (summer 1990), Process Engineer (summer 1989), Dow Corning Corporation, Midland, MI

ADMINISTRATIVE ACCOMPLISHMENTS

2018-present Dean, College of Engineering, University of Massachusetts, Dartmouth, MA

The dean of the college of engineering oversees program, faculty and student productivity and development; faculty recruitment; budgets and resource allocation; program accreditation; fundraising and grantsmanship; external relations; inter-school and multi-disciplinary collaborations within the university and with the external community. The dean advocates for the college, with a focus on the recruitment and retention of diverse faculty, staff and students with a vision and commitment to capitalize on the assets of the region including its bilingualism, bi-literacy, and bi-cultural environment. The dean promotes the global visibility of the college's programs, fosters research and creativity, and works closely with leaders of the local, state, and regional communities to ensure that the college's graduates have knowledge and skills to succeed in the workplace of the future. Major accomplishments are summarized below.

Recruiting, retaining and recognizing outstanding faculty and staff:

- Welcomed 25 new faculty between Fall 2019 and Fall 2023. This includes 7 women and 12 scholars who elected to leave faculty positions at other institutions of higher education.
- Created leadership positions for teaching professors to pilot programs on entrepreneurship, recruit and coach engineering ambassadors, implement supplemental instruction to address gaps in math preparation, advise our women in engineering program, and coordinate our first-semester introduction to engineering course.
- Developed nomination guidelines and allocated funding for an annual award to recognize excellence in staff support for the college.
- Developed position description and participated in recruitment of a new communications and marketing position to support the College of Engineering and School for Marine Science and Technology.
- Promoted an academic coordinator to assistant dean in recognition of her leadership of student retention and success efforts at the college and university levels.
- Recruited four new staff in 2021 including an academic advisor, high performance computing facilitator, and research support specialist and three new staff in 2023 including an academic advisor, administrative assistant and professional technician.

Fostering growth in research activity:

- Invested in the development of the cybersecurity center. In 2020 the National Security Agency and the Department of Homeland Security designated University of Massachusetts Dartmouth as a National Center of Academic Excellence in Cyber Research (CAE-R). In 2023 the center

secured \$3.5M from the National Science Foundation to establish a new CyberCorps® Scholarship for Service program.

- Created proposal development support initiative to support faculty research funding. In FY22 and FY23, assistant professors in the college collectively received more than \$3.3M in external funding.
- Developed and implemented the research course release program to recognize and incentivize faculty who financially support graduate students.
- Created a faculty leadership position for a Faculty Research Facilitator/Director of Research in the college to assist with efforts to support college research activities and facilities renovations.
- Initiated Off-Shore Wind Energy Working Group leading to \$700,000 award to UMass Dartmouth for student internships.

Data-driven decision making for strategic resource allocation:

- Implemented a new approach for ranking of faculty line requests to the provost to (1) support instruction and student development based on student-to-faculty ratios; (2) increase enrollment and instruction; (3) increase diversity of our faculty; (4) address stakeholder interests and demands for professional development, and (5) leverage existing research strengths and build capacity to support new research areas.
- Developed and implemented an incentive-based budget model for allocation of student major fees to departments based on student enrollment, graduation, faculty research expenditures on student salaries, and student credit hours of instruction.
- Developed and implemented a new model for assignment of teaching assistants to departments that is intended to recognize enrollment and teaching of laboratories.
- Developed and implemented a new model for assignment of graders to departments that is intended to address workload associated with grading in large enrollment classes.

Enrolling and retaining outstanding students:

- Invested in digital marketing campaigns between 2019-2023 to increase awareness of UMassD college of engineering programs. Campaigns have been informed by data and lessons learned from prior campaigns and included a combination of targeted search and social media ads.
- Facilitated revision of the first-year engineering course Introduction to Engineering (EGR111) to meet the needs for a diverse population of students and integrate engineering design.
- Created a faculty leadership position for a Director of Graduate Studies in the college to stimulate development, coordination, and advancement of overall college of engineering graduate programs; maintain the campus doctoral research university status and increase diversity, equity, inclusion and STEM identity in our graduate student population.
- Supported renovation of an academic advising center to support undergraduate retention efforts (DION 319).
- Invested in the engineering ambassadors program to strategically support outreach and recruitment activities for the college and build engineering community.
- Empowered college technicians and faculty to develop COVID-19 safety protocols for department teaching laboratories and to create a culture of safety for the college community. This enabled engineering students to learn in person during the pandemic.
- Created and funded two new academic advising positions to support retention and student success initiatives and student recruitment.
- Partnered on the College Access Pathway (CAP) in Engineering, a program with Bristol Community College and Diman Regional Vocational High School, that allows students to earn a bachelor's degree in engineering in only three years.

Developing and sustaining a diverse and inclusive community of scholars:

- Developed nomination guidelines and allocated funding for an annual award in the college to recognize faculty commitment to diversity, equity and inclusion.
- Invested in a peer mentoring program focused on first-year female engineering students to increase recruitment and retention of women in engineering. Between Fall 2018 and Fall 2023, the percentage of students who identify as female in our college's undergraduate programs increased from 13% to 19%.
- Facilitated development of a UMass Dartmouth College of Engineering Diversity and Inclusion Plan for submission to the American Society for Engineering Education (ASEE). The College of Engineering was an "exemplar" recipient of the award in the inaugural year of the ASEE Diversity Recognition Program (2019). We renewed our commitment in 2022.
- Engaged alumni to develop annual event between UMass Dartmouth and Women in Defense on Empowering Women in Engineering (2019, 2021), Women and Negotiation (2020) and Empowering Women in STEM (2022, 2023). Proceeds from the event support scholarships for participants in the Women in Engineering program at UMass Dartmouth.
- Mentored faculty member on submission of a successful NSF S-STEM proposal that will support 90 \$10,000 scholarships for low-income, academically talented students pursuing accelerated B.S./M.S. programs.

Investing in spaces to improve student learning and faculty scholarship:

- Supported renovation of spaces to improve teaching with technology.
 - In 2019 spaces included the Software Studio Laboratory I (SENG 222) in the Department of Electrical and Computer Engineering and the Computer Science Teaching and Learning Laboratory (DION 309).
 - In 2020 spaces included the Software Studio Laboratory II (SENG 212) in the Department of Electrical and Computer Engineering, two computer science teaching laboratories (DION 303 and DION 305), and an Internet of Things Innovation Laboratory (DION 306) in the Department of Computer Science, and the Materials Science Laboratory (SENG 110) in the Department of Mechanical Engineering.
 - In 2022-23 spaces included a physics laboratory (SENG 306) in the Department of Physics, and a civil engineering teaching laboratory (SENG 101) in the Department of Civil and Environmental Engineering.
- Supported renovation of laboratories to advance research in fluid dynamics (SENG 007), cybersecurity and bioinformatics (DION 307, SENG 209), geotechnical engineering (SENG 101) and post-award research support (DION 103).

2020-2023 Interim Dean, School for Marine Science and Technology, University of Massachusetts, New Bedford, MA

The Interim Dean led the School for Marine Science and Technology (SMAST) during the transition of leadership between Deans Steven Lohrenz and Kevin Stokesbury. Major accomplishments are summarized below.

- Secured support from PrimaLoft, Inc. to build a biodegradability laboratory at SMAST West. The PrimaLoft partnership was leveraged as matching support for the Marine & Environmental Testing Laboratory funded by the Massachusetts Technology Collaborative.

- Empowered faculty to develop student outcome assessment procedures for the UMassD Inter-campus Marine Science graduate programs.
- Invested in and facilitated new marketing initiative for the professional science master's program to foster awareness of the program and increase student enrollment.
- Drafted and executed a memorandum of understanding with the Massachusetts Maritime Academy for an accelerated pathway program for their students to earn a professional science master's degree from UMassD in one year.
- Secured resources to address deferred maintenance of critical infrastructure at SMAST West, improve facility safety at SMAST West and address security and safety challenges for the SMAST pier.
- Initiated an Undergraduate Research Incentive Program to stimulate undergraduate student awareness of research and generate interest in graduate study at SMAST.
- Implemented a model to provide graduate student support to SMAST departments based on financial support of students on extramural funding, graduate student enrollment, and student credit hours of instruction.
- Developed and implemented the research course release program to recognize and incentivize faculty who financially support graduate students.
- Gradually socialized and implemented campus guidelines for enrollment minima for courses taught by SMAST faculty.

2017-2018 Executive Associate Dean for Research & Graduate Studies, University of California, College of Engineering, Davis, CA

2013-2017 Associate Dean for Research & Graduate Studies, University of California, College of Engineering, Davis, CA

The Associate Dean for Research and Graduate Studies was responsible for coordination and advancement of overall engineering graduate and research programs. Major accomplishments are summarized below.

- Developed new guidelines and procedures for cost-share on major research awards and training grants.
- Implemented procedures for requesting financial support for large, interdisciplinary research awards.
- Initiated new, annual, college-wide recruitment program for graduate students including development of promotional materials for graduate groups and programs.
- In partnership with the UC Davis Office of Research, developed workshop series for new faculty research success.
- Proposed and secured funding for the new program Preparing Engineering Graduates for the 21st Century (PEGS21). With \$1M from the NSF S-STEM program, PEGS 21 aims to increase the recruitment, retention, student success and graduation of students historically underrepresented in Science, Technology, Engineering and Mathematics (STEM) and to implement and study effective practices and strategies that contribute to their success. Developed quarterly seminars to build a student cohort and support activities that lead to student success.
- Implemented new procedures for allocation of funding and student support to graduate programs to incentivize recruitment and retention of diverse students.
- Facilitated the preparation of guidelines for space metrics for assessment of efficient use of research space in the College of Engineering.

- Supported preparation of a proposal for an NSF Engineering Research Center (ERC) leading to receipt of an award. UC Davis is a partner on an ERC in the area of Geotechnical Engineering led by Arizona State University.
- Managed the successful transition of College of Engineering Technology Transfer Center to central campus leadership.
- Secured a contract from Lawrence Livermore National Laboratory to offer the UC Davis Distance Learning Program.
- Coordinated the new Dean's Distinguished Graduate Fellowship program including funding agreements from the Office of Graduate Studies and College of Engineering graduate programs, application review, and award letters to students.
- Initiated new application and review methods for diversity awards for graduate students in the College of Engineering.
- Facilitated the development of a new award to faculty to support collaborative research.
- In partnership with the Office of Research, implemented a competitive funding opportunity for faculty support to prepare NSF Engineering Research Center proposals; developed a call for proposals, proposal submission and review guidelines.
- Led a college wide working group for on-line graduate education to provide recommendations for serving additional graduate students through on-line instruction.
- In collaboration with UC Davis Innovation Access, hosted a workshop for new faculty on resources available in the Office of Research for research commercialization.

2015 Interim Dean, University of California, College of Engineering, Davis, CA

The Interim Dean led the College of Engineering during the transition of leadership between Deans Enrique Lavernia and Jennifer Curtis (July 2015-October 2015). Major accomplishments are summarized below.

- Created position description for the Associate Dean for Facilities and Capital Planning.
- Led recruitment efforts for the Executive Assistant Dean, Associate Dean for Facilities and Capital Planning, and Faculty Director for the Center for Nano and Micro-Manufacturing.
- Initiated searches for twelve new tenure-line faculty positions in engineering.
- In collaboration with department chairs, prepared offer letters and negotiated start-up packages for five new faculty.
- Recruited a new department chair for the Department of Biomedical Engineering.
- Negotiated funding support from the provost for the Center for Nano and Micro-Manufacturing.
- Assisted with on-boarding of new leadership positions, including Dean Jennifer Curtis.

2009-2013 Associate Dean for Undergraduate Study, University of California, College of Engineering, Davis, CA

The Associate Dean for Undergraduate Studies was responsible for overseeing and guiding all undergraduate engineering programs and related services including curriculum development, accreditation, academic advising, and student recruitment and retention. The position supervised the Director for the Undergraduate Student Services unit who supervised four Student Affairs Officers and a Student Services Assistant. Major accomplishments are summarized below.

- Led the ABET task force that oversaw the accreditation of majors in the College of Engineering by the Engineering Accreditation Commission (EAC) and the Computer Accreditation Commission (CAC) of ABET. This included coordinating the preparation of self-study reports,

collection of data for reports and a site visit, development of templates and boilerplate text for five out of eight sections of the report to improve the efficiency for all departments preparing self-study reports, and coordination of all communications with ABET during the months prior to the visit and after the ABET visit including addressing shortcomings identified during the visit. Accreditation for all programs, including one new program in Biomedical Engineering, was approved for six years.

- Implemented the new course Introduction to Engineering (ENG 1) for incoming freshmen. ENG 1 is a one-unit class that served 75-250 students per year between 2009-2013. It aims to improve retention of students admitted as engineering freshmen.
- Implemented the new course Introduction to Issues in Engineering (ENG 11). ENG 11 is a 1-unit, graded, introductory course, developed to allow students to learn engineering concepts through participation in a basic engineering design project and to retain engineering students who participated in the UC Davis Special Transition Enrichment Program (STEP).
- Led the College of Engineering on implementing C- or better grades in prerequisites for engineering classes common to all programs (e.g. programming, properties of materials, statics, circuits, etc.).
- Co-led, with the engineering dean at Sacramento State University, the Sacramento State/UC Davis Math Engineering and Science Achievement (MESA) Center (2009-2012).
- Proposed, developed and raised \$250K for the Leadership in Engineering Advancement Diversity and Retention (LEADR) Student Center in the College of Engineering. The aims of LEADR are to recruit and retain a diverse population of undergraduate students in the College of Engineering and to develop professional skills in students to ensure their success upon graduation.
- Developed and obtained funding for a new advising position to serve freshmen international students and implement programs, such as on-line summer advising, to support students' transition to the US and UC Davis.
- Created an on-line orientation video for incoming College of Engineering freshmen.
- Worked closely with faculty on proposing a new college regulation that states that prerequisites will be enforced at the time of registration.
- Developed and implemented a recruitment strategy for increasing application and enrollment rates of transfer students from community colleges.
- Proposed and implemented the Engineering Design Showcase to engage industry in design activities within all majors in the college, particularly at the undergraduate level. The event builds relationships with industry that increase student recruitment and participation in our undergraduate programs, and allows programs to obtain feedback from industry on design projects for continuous improvement of the senior design experience. The event serves all senior engineers in the College of Engineering.
- In collaboration with faculty and advising staff, coordinated the development of a proposal to the provost for new academic advising positions in engineering. Secured partial funding for three new positions.
- Developed the Sandia Design Award and guidelines for intellectual property assignment for engineering design projects supported by the national labs and industry.
- In partnership with Counseling and Psychological Services on campus, created and secured campus funding for a new mental health advisor housed in the College of Engineering.

2010-2017 Director, Renewable Energy Systems Opportunity for Unified Research, Collaboration and Education (RESOURCE), Davis, CA

The Renewable Energy Systems Opportunity for Unified Research Collaboration and Education (RESOURCE) program was a structured graduate training program that paired PhD students with elementary school teachers to develop and deliver Science, Technology, Engineering and Mathematics (STEM) curriculum related to renewable energy and environmental sustainability. RESOURCE was funded by the NSF GK-12 program. The major goals of the project were to transform engineering graduate programs and students by establishing graduate leadership and fostering collaboration and communication training to directly transfer energy-related research to the K-12 curriculum and to strengthen and sustain partnerships with local K-12 institutions. The director was responsible for leading graduate student and teacher recruitment and training activities, supervising an academic coordinator for the project and facilitating the publication of training products. Major accomplishments are summarized below.

- Provided fellowship funding for 30 graduate students at UC Davis and 17 teachers for engagement of over 2,000 4th, 5th, and 6th grade students at 16 elementary schools in educationally-disadvantaged communities in the Sacramento region.
- Organized annual meetings to prepare fellows for communicating STEM subjects and their research to technical and non-technical audiences.
- Initiated structured, weekly 1-unit seminars for fellows. Fall quarter seminars helped fellows learn the range of skills needed to achieve student learning outcomes in a classroom, winter quarter seminars emphasized assessment of student learning outcomes, and spring seminars were dedicated to preparation of a lesson and/or activity for submission to TeachEngineering.org, a public site for sharing peer-reviewed teaching materials for K-12 engineering education.
- Oversaw fellow and teacher development and publication of lessons and activities on general energy concepts, which are freely available on TeachEngineering.org.
- Collaborated with the Associate Vice Chancellor in Student Affairs, on establishing the UC Davis and Sacramento State Math, Engineering, Science Achievement (MESA) center at UC Davis. MESA is a nationally acclaimed academic model based on K-16 enrichment in mathematics and science, college preparation, retention, career awareness and teacher professional development. It is funded by the state legislature, corporate contributions and grants. The majority of K-12 schools that participate in MESA have a high percentage of economically disadvantaged students and/or a significant proportion of students from populations that are considered to be underrepresented in U.S. postsecondary/graduate education and the STEM workforce. I have served as PI for the center since its inception at UC Davis.
- Led fellow development and publication of teacher-training materials for ten MESA activities for the K-6 level that are accessible at TeachEngineering.org.
- Facilitated fellow and teacher participation in Sacramento City Unified School District's year-long Project Green program, an initiative to add a real-world application to classroom instruction about the environment and sustainable living (<http://www.scusd.edu/post/project-green>). Teams coached by RESOURCE fellows were awarded funding (> \$1.5M) to improve infrastructure and resource use at their school sites.

AWARDS AND HONORS

2019. California Department of Pesticide Regulation, Integrated Pest Management Achievement Award. Awarded for developing and promoting methods for pest management that reduce the risks associated with using traditional chemical pesticides.

2018. Outstanding Senior Faculty Research Award. Awarded by the UC Davis College of Engineering for excellence in research.

2018. HERS Clare Booth Luce Scholarship Award. Awarded to participate in the 2018 Higher Education Resource Services (HERS) Summer Institute for women's leadership development.

2016. Woman of the Year Award. Congressional commendation awarded by Congressman John Garamendi for leadership and dedication to public service.

2016. Distinguished Postdoctoral Scholar Mentoring Award. Awarded by the UC Davis Academic Senate in recognition of outstanding commitment to mentoring in the overall success of the university's postdoctoral scholars.

2015. UC Davis MESA Citation. Awarded by the UC Davis/Sacramento State MESA K-12 school program for leadership, research and support of mathematics, engineering and science achievement (MESA) at the elementary level.

2011. Nona Sall Award. Awarded by the CA State University Sacramento and UC Davis MESA Center for promoting CA K-12 STEM education.

2011. Outstanding Project Award. Awarded by the National Science Foundation GK-12 program in recognition of the efforts of the RESOURCE program.

2005. Farrall Young Educator Award. Awarded by the American Society of Agricultural and Biological Engineers for outstanding teaching in engineering.

2003. Outstanding Mentor Award. Awarded by the Consortium for Women and Research Advisory Board for mentoring women's research at UC Davis.

1999. California Resource Recovery Association Award. Awarded for leadership, commitment and dedication to education and advocacy to organic recycling in California.

1995-1996. U.S. Environmental Protection Agency Graduate STAR Fellowship.

1995. Alice H. Cook and Constance E. Cook Award. Awarded for efforts on improving the status of women at Cornell through leadership of the Expanding Your Horizons conference.

1989-present. Member of Tau Beta Pi Engineering Honor Society.

1991. Outstanding Senior Engineer and Class Marshall. Syracuse University, College of Engineering.

1987-1991. Regents Scholarship from the State of New York.

PROFESSIONAL SERVICE AND DEVELOPMENT

Service to the State of Massachusetts

2019. Governor's Economic Development Council. Represented UMass Dartmouth and the South Coast region of MA.

HERS Institute Alumna

2018. The HERS Institute is a competitively-selected Leadership Development Institute for women in Higher Education. Since 1976, the curriculum covers general leadership principles, higher education trends, change management, budgets and financial statements, career planning, legal issues, inclusive excellence, and fundraising. Sessions are taught by professional practitioners and leaders in their fields, as well as campus administrators. Successful completion of a HERS Institute requires participants to have the support of their Institution administration, to complete a Capstone Leadership Project related to their role at the Institution, and to engage in introspection and skill development surrounding their own leadership roles and identity as a leader. As a HERS Institute Alumna, participants are connected to 5,000 alumnae across Higher Education Administration, Staff, and Faculty roles from across the U.S.

Editorial and Advisory Boards

2021-2022. Chair, STEM Pathways Working Group, National Defense Industrial Association.

2016-2018. Board Member, Engineering Research Council, American Society for Engineering Education

2017-2018. Chair, Curtis W. McGraw Research Award Committee. Engineering Research Council, American Society for Engineering Education

2004-2020. Editorial Board, Industrial Biotechnology

2006-2010. Associate Editor, Biological Engineering

2006-2008. Member and Chair (2007-2008). Farrell Young Educator Award Committee, ASABE

1999-present. Editorial Board, Compost Science and Utilization

Review of External Faculty and Scientist Promotions

2017. Review for Lawrence Berkeley National Laboratory. Promotion to Senior Scientist position

2016. Review for Ohio State University. Faculty promotion from associate to full professor

2015. Review for Cornell University. Faculty promotion from associate to full professor

2014. Review for Lawrence Berkeley National Laboratory. Promotion to Staff Scientist position

2013. Review for University of Hawaii. Faculty promotion from associate to full professor

2011. Review for North Dakota State University. Faculty promotion from assistant to associate professor

2010. Review for Lawrence Berkeley National Laboratory. Promotion to career Research Scientist position

2010. Review for Penn State University. Faculty promotion from associate to full professor

2006. Review for University of Kentucky. Faculty promotion from assistant to associate professor

2006. Review for Cornell University. Faculty promotion from assistant to associate professor

2000. Review for University of Kentucky. Faculty promotion from assistant to associate professor

UNIVERSITY SERVICE AND OUTREACH

University of Massachusetts, Dartmouth, University Service

2021. Member. Search committee for Chancellor, UMass Dartmouth.

2020-2023. Member. Collective bargaining committee. Contributed to revision of contract that resulted in change of Full-Time Lecturer title to Teaching Professor creating opportunities for faculty to advance within the title.

2020. Chair. Search committee for Dean, Charlton College of Business. Successfully recruited Dr. John Williams.

2020. Member. Student Ratings Committee. This labor-management committee created a set of common questions to assess the move to an online modality for each course taught in Spring 2020.

2019. Member. Commonwealth Professor Committee. This labor-management committee developed eligibility, nomination, review and evaluation guidelines for the title of commonwealth professor.

2018-present. Member, Chancellor's Management Council

2018-present. Member, Dean's Council

University of California, Davis, University Service

2018. Member, SEA (STEM Equity Achievement) Change UC Davis Self-Assessment Team.

2018. Member, Aggie Square committee.

2017-2018. Member, Search committee for Associate University Librarian for Research and Learning

2017. Member, Review committee for the UC Davis Biotechnology Program

2017-2018. Member, Faculty Advisory Committee for the Microbiome Special Research Program

2016-2018. Member, Joint Task Force on Research Units

2014-2018. Member, Research Coordinating Council

2013-2018. Member, Administrative Coordinating Council of Deans (ACCD)

2015. Member, Council of Deans and Vice Chancellors

2015. Member, Council of Deans

2015-2016. Member, Crocker Nuclear Laboratory Planning Committee

2014. Member, Studio, Laboratory, and Office Advisory Committee (SLOAC)

2014-2016. Member, Lawrence Livermore National Laboratory & University of California, Davis Joint Administrative Working Group

2013-2014. Member, Carnegie Task Force

2012-2013. Member, iAM-STEM Advisory Committee

2012-2013. Member, STEM Taskforce

2011-2012. Member, 2020 Enrollment Task Force

2011-2012. Member, Program Review Committee for Soils and Biogeochemistry

2010-2013. Member, AB540 Task Force on Unauthorized Immigrant Students

2010-2013. Member, Milan Expo 2015 Planning Committee

2009-2013. Member, Undergraduate Advising Council

2009-2013. Member, Undergraduate Dean's Council

2009-2013. Member and Chair (2009-10, 2012-13) Council of Associate Deans. As chair activities included (1) working with the provost to address enrollment challenges in lower division STEM classes required by multiple majors; (2) preparation of proposal for campus advising resources including new campus-level director for advising, professional development for advisors, and new advising positions in colleges and departments; and (3) creation of new counseling positions (funded by Student Affairs) embedded in the colleges to address student mental health concerns on campus.

2009-2012. Member, Recruitment and Retention Task Force

2009-2013. Member, Yield Committee

2009-2013. Member, Energy Institute: Steering Committee. Developed proposal and bylaws for the Energy Graduate Group a new graduate program in engineering.

2007-2014. Member, Energy Institute Steering committee

2007-2013. Member, CREATE – IGERT executive committee

2010-2013. Director, CREATE- REU program. The CREATE-REU program aimed to engage traditionally underrepresented students in engineering in research related to plant biotechnology. Of the 26 participants, 15 were women, 11 were underrepresented minorities and 6 were first generation community college students. The CREATE-REU program had three key outcomes: (1) active engagement of 26 undergraduates in mentored research related to plant biotechnology and agricultural sustainability, (2) development of a hands-on plant biotechnology short course aimed at building relevant laboratory and analytical skill sets in sophomore and junior level undergraduates, and (3) increased awareness in participating undergraduates of ethics, policy and regulatory issues related to plant biotechnology.

2003-2006. Member, Undergraduate Scholarship committee

University of California, Davis, College of Engineering Service

2018. Chair, Working group for on-line engineering graduate education
- 2017-2018. Member, Strategic Planning Committee. Led the development of tactics, timeline and deliverables for the goal “Enhance Interdisciplinary, Collaborative Research.”
- 2015-2018. Member, College of Engineering Awards Committee
- 2013-2018. Ex-officio, College of Engineering Graduate Studies Committee
- 2013-2018. Ex-officio, College of Engineering Research and Library Committee
2016. Chair, Search Committee for Associate Dean for Capital Space and Planning
2016. Member, Search Committee for Director of Undergraduate Advising in the College of Engineering
2016. Member, Search Committee for Associate Dean for Undergraduate Studies
2015. Chair, Search Committee for Executive Assistant Dean in the College of Engineering
2013. Chair, Engineering Communications and Design Committee. Developed proposal for a new course in engineering design at the freshmen level.
- 2012-2013. Chair, Advising Workgroup. Developed a proposal for advising resources in the College of Engineering. Funds were acquired from the central campus for three new advising positions.
- 2011-2013. Member, Sandia National Laboratory Open Campus
- 2010-2011. Ex officio, Revenue Generation in College of Engineering
- 2010-2011. Member, 2025 Committee in College of Engineering
- 2009-2013. Chair, ABET Task Force for the College of Engineering. Oversaw (1) development of outcome assessment rubric for judges for the Engineering Design Showcase, (2) writing of sections of ABET reports common to all undergraduate programs, (3) coordination of ABET site visit for all undergraduate programs, and (4) responses to weakness and concerns from 2006 and 2012 reviews including program outcome assessment and prerequisite checking.
- 2009-2013. Faculty Adviser for Tau Beta Pi
- 2009-2013. Ex officio, Undergraduate Education and Policy
- 2009-2013. Ex officio, Committee for Student Development
- 2004-2009. Member, College of Engineering Graduate Study Committee
- 2007-2009, 1996-2001. Member, College of Engineering Committee for Student Development

University of California, Davis, Dept. of Biological and Agricultural Engineering Service

- 2016-2017. Member, Search Committee for Lecturer with Potential for Security of Employment

2013-2018. Member and Chair (2015-2018), Awards and Scholarships.
2013-2014. Member, Search Committee for Food Engineer Faculty
2012-2013. Member, Computing & Technology
2012-2013. Department Seminars (Spring)
2012. Viticulture and Enology Seminar (Spring)
2010-2013. Member and Chair (2012-13), Picnic Day committee
2009-2010. Chair, Activities committee
2009-2010. Member, Graduate Executive committee
2009-2010. Member, Planning committee
2008-2009. Member, Shop Advisory Committee
2007-2009. Graduate Advisor
2007-2009. Chair, Graduate Executive Committee
2007-2008. Chair, Department Seminars (Fall)
2007-2009. Member, Undergraduate Study Committee
2006-2007. Chair, Bioconversion Engineer faculty search committee
2003-2006. Member, Graduate Executive Committee
2003-2006. Member, Biological Engineering faculty search committee
2000-2001. Member, Environmental Engineering faculty search committee
2000-2001. Member, Students Relations committee
1999-2000. Member, Facilities and Safety committee
1998-1999. Member, Scholarships and Awards committee
1998-2000. Member, Committee on Research
1997-1998. Chair, Picnic Day committee
1996-2001. Member, Committee on Instruction
1996-1997. Member, Activities committee

Service at Cornell University and Syracuse University

1993-1996. Expanding Your Horizons. Led workshops on organic waste management and served as conference co-director (1995).

1988-1991. Member and President (1990-91) for Syracuse University chapter of Society of Women Engineers. Led fundraising efforts for chapter and initiated tutoring program with schools in Syracuse, NY.

1989-1991. Member and Treasurer (1990-91) for Syracuse University chapter of Tau Beta Pi.

RESEARCH SUMMARY

My research has addressed problems that involve the transformation, decomposition and conversion of biomass derived from plants to products. “Plants” include dedicated crops and algae, food processing residues and urban and agricultural wastes. I have been fortunate to work with a talented team of university, government and industry scholars. These collaborations have led to several successful research projects summarized below.

Algae production systems. Microalgae have tremendous potential to address global challenges related to water treatment, carbon sequestration and food and fuel production. Research in this area focused on discovery and design of new processes for cultivation of algal biomass using waste CO₂ and repurposed water. Work was supported by Chevron Technology Ventures, multiple grants from the National Science Foundation, the CA Energy Commission, the US Department of Energy, and private funding sources.

Key research areas included the following:

- Investigation of algal interactions between microbes and the impacts of these interactions on accumulation of products.
- Design of water-in-oil emulsions that maintain microalgae viability during storage and that promote rapid delivery and release in an aqueous environment.
- Development of methods for quantification of the cell wall, cytoplasmic polysaccharide and lipid contents of model algal strains.

Valorization of organic wastes. Conversion of organic solid wastes and agricultural residues into energy, biochemicals, and food and feed has an untapped potential to reduce our reliance on fossil fuels and other natural resources. One of the challenges facing residue utilization is the recalcitrance of solid wastes and residues to biological conversion. In nature, microbial communities work synergistically to convert plant biomass to products. Research teams aimed to study these communities for the targeted discovery of organisms and functionalities that facilitate plant biomass decomposition and bioconversion to products.

Major areas of research supported by Chevron Technology Ventures, the National Science Foundation, the US Department of Energy, the California Energy Commission, the California Department of Pesticide Regulation, and private and foundation funding sources are as follows:

- Development of storage and bioconversion systems for agricultural residues.
- High-solids pretreatment of agricultural residues.
- Targeted enzyme discovery for lignocellulose hydrolysis.
- Soil disinfestation using solar energy and destabilized lignocellulose.
- Production of insect biomass from lignocellulose.

PUBLICATIONS

- Fremin BJ, Bhatt AS, Kyrpides NC, Sengupta A, Sczyrba A, da Silva AM, Buchan A, Gaudin A, Brune A, Hirsch AM, Neumann A, Global Phage Small Open Reading Frame (GP-SmORF) Consortium. Thousands of small, novel genes predicted in global phage genomes. *Cell reports*. 2022 Jun 21;39(12):110984.
- Neri U, Wolf YI, Roux S, Camargo AP, Lee B, Kazlauskas D, Chen IM, Ivanova N, Allen LZ, Paez-Espino D, Bryant DA, RNA Virus Discovery Consortium. Expansion of the global RNA virome reveals diverse clades of bacteriophages. *Cell*. 2022 Oct 13;185(21):4023-37.
- Shea EA, Fernández-Bayo JD, Hodson AK, Parr AE, Lopez E, Achmon Y, Toniato J, Milkereit J, Crowley R, Stapleton JJ, VanderGheynst JS, Simmons CW. 2022. Biosolarization restructures soil bacterial communities and decreases parasitic nematode populations. *Applied Soil Ecology*. Apr 1;172:104343.
- Miner LP, Fernandez-Bayo J, Putri F, Niemeier D, Bischel H, VanderGheynst JS. 2022. Predicting black soldier fly larvae biomass and methionine accumulation using a kinetic model for batch cultivation and improving system performance using semi-batch cultivation. *Bioprocess and biosystems engineering* 45 (2), 333-344.
- Axelrod R, Palma ML, VanderGheynst JS, Simmons CW, Fernandez-Bayo J.D. 2021. Soil application of almond residue biomass following black soldier fly larvae cultivation. *Frontiers in Sustainable Food Systems*. DOI=10.3389/fsufs.2021.664635
- Fernández-Bayo JD, Simmons CW, VanderGheynst JS. 2020. Characterization of digestate microbial community structure following thermophilic anaerobic digestion with varying levels of green and food wastes. *Journal of Industrial Microbiology & Biotechnology*. 47, 1031–1044.
- Achmon Y, Claypool JT, Fernández-Bayo JD, Hernandez K, McCurry D, Harrold DR, Su J, Simmons BA, Singer S, Dahlquist-Willard R, Stapleton J, VanderGheynst JS, Simmons CW. 2020. Structural changes in bacterial and fungal soil microbiome components during biosolarization as related to volatile fatty acid accumulation. *Applied Soil Ecology*. 153: 2020, 103602, <https://doi.org/10.1016/j.apsoil.2020.103602>.
- Randall TE, Fernández-Bayo JD, Harrold DR, Achmon Y, Hestmark KV, Gordon TR, Stapleton JJ, Simmons CW, VanderGheynst JS. 2020 Changes of *Fusarium oxysporum f.sp. lactucae* levels and soil microbial community during soil biosolarization using chitin as soil amendment. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0232662>
- Palma L, Fernández-Bayo JD, Putri F, VanderGheynst JS. 2020 Almond byproduct composition impacts the rearing of black soldier fly larvae and quality of the spent substrate as a soil amendment. *Journal of the Science of Food and Agriculture*. <https://doi.org/10.1002/jsfa.10522>
- Paddock MB, Fernández-Bayo JD, VanderGheynst JS. 2020. The effect of the microalgae-bacteria microbiome on wastewater treatment and biomass production. *Applied Microbiology and Biotechnology* 104 (2), 893-905.
- Fernández-Bayo JD, Shea EA, Parr AE, Achmon Y, Stapleton JJ, VanderGheynst JS, Hodson AK, Simmons CW. 2020. Almond processing residues as a source of organic acid biopesticides during biosolarization. *Waste Management* 101, 74-82.
- Fernández-Bayo JD, Stapleton JJ, Achmon Y, VanderGheynst JS, Simmons CW. 2020. The role of organic amendment stability in soil biosolarization efficacy. *Acta Horticulturae* 1270:161-168.

- Fernández-Bayo JD, Hestmark KV, Claypool JT, Harrold DR, Randall TE, Achmon Y, Stapleton JJ, Simmons CW, VanderGheynst JS. 2019. The initial soil microbiota impacts the potential for lignocellulose degradation during soil solarization. *Journal of Applied Microbiology* 126(6), 1729-1741.
- Hestmark KV, Fernández-Bayo JD, Harrold DR, Randall TE, Achmon Y, Stapleton JJ, Simmons CW, VanderGheynst JS. 2019. Compost induces the accumulation of biopesticidal organic acids during soil biosolarization. *Resource, Conservation and Recycling* 143, 27-35.
- Holmes B, Paddock MB, VanderGheynst JS, Higgins BT. 2019. Algal photosynthetic aeration increases the capacity of bacteria to degrade organics in wastewater. *Biotechnology and Bioengineering* 2019;1–11. <https://doi.org/10.1002/bit.27172>
- Palma L, Fernandez-Bayo J, Niemeier D, Pitesky M, VanderGheynst JS. 2019. Managing high fiber food waste for the cultivation of black soldier fly larvae. *npj Science of Food*, 3(1), 15.
- Achmon Y, Sade N, Wilhelmi MR, Fernández-Bayo JD, Harrold DR, Stapleton JJ, VanderGheynst JS, Blumwald E, Simmons CW. 2018. The effects of short-term biosolarization using mature compost and industrial tomato waste amendments on the generation and persistence of biocidal soil conditions and subsequent tomato growth. *Journal of Agricultural and Food Chemistry* 66 (22): 5451–5461.
- Fernández-Bayo JD, Randall TE, Harrold DR, Achmon Y, Hestmark KV, Su J, Dahlquist-Willard RM, Gordon TR, Stapleton JJ, VanderGheynst JS, Simmons, CW. 2018. Effect of management of organic wastes on inactivation of *Brassica nigra* and *Fusarium oxysporum f.sp. lactucae* using soil biosolarization. *Pest Management Science* 74(8): 1892-1902.
- Fernández-Bayo JD, Yazdani R, Simmons CW, VanderGheynst JS. 2018. Comparison of thermophilic anaerobic and aerobic treatment processes for stabilization of green and food wastes and production of soil amendments. *Waste Management* 77: 555-564.
- Higgins BT, Gennity I, Fitzgerald P, Ceballos SC, Fiehn O, VanderGheynst JS. 2018. Algal-bacterial synergy in treatment of winery wastewater. *npj Clean Water*
<https://www.nature.com/articles/s41545-018-0005-y>
- Higgins BT, Wang Q, Du S, Hennebelle M, Taha AY, Fiehn O, VanderGheynst JS. 2018. Impact of thiamine metabolites and spent medium from *Chlorella sorokiniana* on metabolism in the green algae *Auxenochlorella prototheciodes*. *Algal Research* 33:197-208.
- Liu P-F, Wang Y, Ulrich RG, Simmons CW, VanderGheynst JS, Gallo RL, Huang C-M. 2018. Leaf-encapsulated vaccines: Agroinfiltration and transient expression of the antigen Staphylococcal Endotoxin B in radish leaves. *Journal of Immunology Research*
<https://doi.org/10.1155/2018/3710961>
- Pace SA, Yazdani R, Kendall A, Simmons CW, VanderGheynst JS. 2018. Impact of organic waste composition on life cycle energy production, global warming and water use for treatment by anaerobic digestion followed by composting. *Resources, Conservation and Recycling* 137:126-135.
- Palma L, Ceballos SJ, Johnson PC, Niemeier D, Pitesky M, VanderGheynst JS. 2018 Cultivation of black soldier fly larvae on almond by-products: impacts of aeration and moisture on larvae growth and composition. *Journal of the Science of Food and Agriculture*. <https://doi.org/10.1002/jsfa.9252>

- Ceballos SJ, Wu C, Claypool J, Singer S, Simmons B, Thelen M, Simmons CW, VanderGheynst JS. 2017. Development and characterization of a thermophilic, lignin degrading microbiota. *Process Biochemistry* 63: 193-203.
- Fernández-Bayo, JD, Achmon Y, Harrold DR, Claypool JT, Simmons BA, Singer SW, Dahlquist-Willard RM, Stapleton JJ, VanderGheynst JS, Simmons CW. 2017. Comparison of soil biosolarization with mesophilic and thermophilic solid digestates on soil microbial quantity and diversity. *Applied Soil Ecology* 119: 183-191.
- Fernández-Bayo JD, Achmon Y, Harrold DR, McCurry DG, Hernandez K, Dahlquist-Willard RM, Stapleton JJ, VanderGheynst JS, Simmons CW. 2017. Assessment of two solid anaerobic digestate soil amendments for effects on soil quality and biosolarization efficacy. *Journal of Agricultural and Food Chemistry* 65: 3434-3442
- Yu C, Harrold DR, Claypool JT, Simmons BA, Singer SW, Simmons CW, VanderGheynst JS. 2017. Nitrogen amendment of green waste impacts microbial community, enzyme secretion and potential for lignocellulose decomposition. *Process Biochemistry* 52:214-222.
- Oldfield TL, Achmon Y, Perano KM, Dahlquist-Willard RM, VanderGheynst JS, Stapleton JJ, Simmons CW, Holden NM. 2017. A life cycle assessment of biosolarization as a valorization pathway for tomato pomace utilization in California. *Journal of Cleaner Production* 141:146-156.
- Achmon Y, Fernández-Bayo JD, Hernandez K, McCurry DG, Harrold DR, Su J, Dahlquist-Willard RM, Stapleton JJ, VanderGheynst JS, Simmon CW. 2017. Weed seed inactivation in soil mesocosms via biosolarization with mature compost and tomato processing waste amendments. *Pest Management Science*. 73 (5): 862-873.
- Yu C, Simmons BA, Singer SW, Thelen MP, VanderGheynst JS. 2016. Ionic liquid-tolerant microorganisms and microbial communities for lignocellulose conversion to bioproducts. *Applied Microbiology and Biotechnology* 100(24):10237-10249.
- Wu Y-W, Higgins B, Yu C, Reddy AP, Ceballos S, Joh LD, Simmons BA, Singer SW, VanderGheynst JS. 2016. Ionic liquids impact the bioenergy feedstock-degrading microbiome and transcription of enzymes relevant to polysaccharide hydrolysis. *mSystems* 1(6).
- Simmons CW, Higgins B, Staley S, Joh LD, Simmons BA, Singer SW, Stapleton JJ, VanderGheynst JS. 2016. The role of organic matter amendment level on soil heating, organic acid accumulation, and development of bacterial communities in solarized soil. *Applied Soil Ecology* 106:37-46.
- Rezaei F, Simmons CW, Lee CM, Labavitch J, VanderGheynst JS. 2016. Dynamics in carbohydrate active enzymes and microbial communities during ensilage of food processing residues. *Applied Engineering in Agriculture* 32(3):439-447.
- Pace S, Ceballos SJ, Harrold D, Stannard W, Simmons BA, Singer SW, Thelen MP, VanderGheynst JS. 2016. Enrichment of microbial communities tolerant to the ionic liquids tetrabutylphosphonium chloride and tributylethylphosphonium diethylphosphate. *Applied Microbiology and Biotechnology*:1-14.
- Higgins BT, Gennity I, Samra S, Kind T, Fiehn O, VanderGheynst JS. 2016. Cofactor symbiosis for enhanced algal growth, biofuel production, and wastewater treatment. *Algal Research* 17:308-315.
- Fernández L, Higgins BT, Scher H, VanderGheynst JS. 2016. Spray application and release of microalgae from water-in-oil emulsions. *Current Biotechnology* (5):154-162.

- Dahlquist-Willard RM, Marshall MN, Betts S, Tuell-Todd C, VanderGheynst J, Stapleton J. 2016. Development and validation of a Weibull-Arrhenius model to predict thermal inactivation of Black Mustard (*Brassica nigra*) seeds under fluctuating temperature regimens. *Biosystems Engineering* 151:350-360.
- Achmon Y, Harrold DR, Claypool JT, Stapleton JJ, VanderGheynst JS, Simmons CW. 2016. Assessment of tomato and wine processing solid wastes as soil amendments for biosolarization. *Waste Management* 48:156-164.
- Yu C, Reddy AP, Simmons CW, Simmons BA, Singer SW, VanderGheynst JS. 2015. Preservation of microbial communities enriched on lignocellulose under thermophilic and high-solid conditions. *Biotechnology for Biofuels* 8(206):1-13.
- Tsugawa H, Cajka T, Kind T, Ma Y, Higgins B, Ikeda K, Kanazawa M, VanderGheynst J, Fiehn O, M A. 2015. MS-DIAL: Data independent MS/MS deconvolution for comprehensive metabolome analysis. *Nature Methods* 12:523-526.
- Lee C, Zheng Y, VanderGheynst JS. 2015. Effects of pretreatment conditions and post-pretreatment washing on ethanol production from dilute acid pretreated rice straw. *Biosystems Engineering* 137:36-42.
- Higgins BT, Nobles D, Ma Y, Wikoff W, Kind T, Fiehn O, Brand J, VanderGheynst JS. 2015. Informatics for improved algal taxonomic classification and research: A case study of UTEX 2341. *Algal Research* 12:545-549.
- Higgins B, Labavitch JM, VanderGheynst JS. 2015. Co-culturing *Chlorella minutissima* with *Escherichia coli* can increase neutral lipid production and improve biodiesel quality. *Biotechnology and Bioengineering* 112(9):1801-1809.
- Fernández L, Scher H, VanderGheynst JS. 2015. The role of silica nanoparticles on long-term room-temperature stabilization of water-in-oil emulsions containing microalgae. *Letters in Applied Microbiology* 61(6):568–572.
- Fernández L, Scher H, Jeoh T, VanderGheynst J. 2015. Room-temperature storage of microalgae in water-in-oil emulsions: influence of solid particle type and concentration in the oil phase. *Bioprocess and Biosystems Engineering* 38(12):2451-2460.
- Cheng Y-S, Labavitch J, VanderGheynst JS. 2015. Organic and inorganic nitrogen impact *Chlorella variabilis* productivity and host quality for viral production and cell lysis. *Applied Biochemistry and Biotechnology* 176(2):467-479.
- Cheng Y-S, Labavitch J, VanderGheynst JS. 2015. Elevated CO₂ concentration impacts cell wall polysaccharide composition of green microalgae of the Genus *Chlorella*. *Letters in Applied Microbiology* 60(1):1-7.
- Changgen M, Yazdani R, Han B, Mostafid ME, Chanton J, VanderGheynst JS, Imhoff P. 2015. Performance of green waste biocovers for enhancing methane oxidation. *Waste Management* 39:205-215.
- Yu C, Thy P, Wang L, Anderson SN, VanderGheynst JS, Upadhyaya SK, Jenkins BM. 2014. Influence of leaching pretreatment on fuel properties of biomass. *Fuel Processing Technology* 128:43-53.

- Tanadul O-u-m, VanderGheynst JS, Beckles DM, Powell ALT, Labavitch JM. 2014. The impact of elevated CO₂ concentration on the quality of algal starch as a potential biofuel feedstock. *Biotechnology and Bioengineering* 111(7):1323-1331.
- Simmons CW, Reddy AP, Simmons BA, Singer SW, VanderGheynst JS. 2014. *Bacillus coagulans* tolerance to 1-ethyl-3-methylimidazolium-based ionic liquids in aqueous and solid-state thermophilic culture. *Biotechnology Progress* 30(2):311-316.
- Simmons CW, Reddy AP, Simmons BA, Singer SW, VanderGheynst JS. 2014. Effect of inoculum source on the enrichment of microbial communities on lignocellulosic biofuel feedstocks under thermophilic and high-solids conditions. *Journal of Applied Microbiology* 117(4):1025-1034.
- Simmons CW, Claypool JT, Marshall MN, Jabusch LK, Reddy AP, Simmons BA, Singer SW, Stapleton JJ, VanderGheynst JS. 2014. Characterization of bacterial communities in solarized soil amended with lignocellulosic organic matter. *Applied Soil Ecology* 73:97-104.
- Simmons CS, Nitin N, VanderGheynst JS. 2014. Attachment of *Agrobacterium tumefaciens* to leaf tissue in response to infiltration conditions. *Biotechnology Progress* 30(5): 1137-1144.
- Simmons C, Reddy A, D'Haeseleer P, Khudyakov J, Billis K, Pati A, Simmons B, Singer S, Thelen M, VanderGheynst J. 2014. Metatranscriptomic analysis of lignocellulolytic microbial communities involved in high-solids decomposition of rice straw. *Biotechnology for Biofuels* 7(1):495.
- Higgins BT, VanderGheynst JS. 2014. Effects of *Escherichia coli* on Mixotrophic Growth of *Chlorella minutissima* and Production of Biofuel Precursors. *PLoS ONE* 9(5):e96807.
- Higgins BT, Dunwoody A, Labavitch JM, VanderGheynst JS. 2014. Microplate assay for quantitation of neutral lipids in extracts from microalgae. *Analytical Biochemistry* 465:81-89.
- Fernández LE, Cheng Y-S, Scher H, VanderGheynst JS. 2014. Managing the cultivation and processing of microalgae to prolong storage in water-in-oil emulsions. *Applied Microbiology and Biotechnology* 98(12):5427-5433.
- Zheng Y, Lee C, Yu C, Cheng Y-S, Zhang R, Jenkins BM, VanderGheynst JS. 2013. Dilute acid pretreatment and fermentation of sugar beet pulp to ethanol. *Applied Energy* 105(0):1-7.
- VanderGheynst JS, Guo H-Y, Cheng Y-S, Scher H. 2013. Microorganism viability influences internal phase droplet size changes during storage in water-in-oil emulsions. *Bioprocess and Biosystems Engineering* 36(10):1427-34.
- Simmons CW, Guo H, Claypool JT, Marshall MN, Perano KM, Stapleton JJ, VanderGheynst JS. 2013. Managing compost stability and amendment to soil to enhance soil heating during soil solarization. *Waste Management* 33(5):1090-1096.
- Reddy AP, Simmons CW, D'haeseleer P, Khudyakov J, Burd H, Hadi MZ, Simmons BA, Singer SW, Thelen MP, VanderGheynst JS. 2013. Discovery of microorganisms and enzymes involved in high-solids decomposition of rice straw using metagenomic analyses. *PLoS One* DOI: 10.1371.
- Marshall MN, Rumsey TR, Stapleton JJ, VanderGheynst JS. 2013. A predictive model for soil temperature during solarization and its validation at two California field sites. *Transactions of the ASABE* 56(1):117-133.
- Lavernia EJ, VanderGheynst JS. 2013. The Algebra Challenge. *The Bridge Summer 2013*:7-15.

- Cheng Y-S, Zheng Y, Labavitch JM, VanderGheynst JS. 2013. Virus infection of *Chlorella variabilis* and enzymatic saccharification of algal biomass for bioethanol production. *Bioresource Technology* 137:326-331.
- Zheng Y, Yu C, Cheng Y-S, Lee C, Simmons CW, Dooley TM, Zhang R, Jenkins BM, VanderGheynst JS. 2012. Integrating sugar beet pulp storage, hydrolysis and fermentation for fuel ethanol production. *Applied Energy* 93(0):168-175.
- Zheng Y, Lee C, Yu C, Cheng Y-S, Simmons CW, Zhang R, Jenkins BM, VanderGheynst JS. 2012. Ensilage and bioconversion of grape pomace into fuel ethanol. *Journal of Agricultural and Food Chemistry* 60(44):11128-11134.
- Zheng Y, Cheng Y-S, Yu C, Zhang R, Jenkins B, VanderGheynst J. 2012. Improving the efficiency of enzyme utilization for sugar beet pulp hydrolysis. *Bioprocess and Biosystems Engineering* 35(9):1531-1539.
- Simmons CW, Nitin N, VanderGheynst JS. 2012. Rapid, in situ detection of *Agrobacterium tumefaciens* attachment to leaf tissue. *Biotechnology Progress* 28(5):1321-1328.
- Reddy AP, Simmons CW, Claypool J, Jabusch L, Burd H, Hadi MZ, Simmons BA, Singer SW, VanderGheynst JS. 2012. Thermophilic enrichment of microbial communities in the presence of the ionic liquid 1-ethyl-3-methylimidazolium acetate. *Journal of Applied Microbiology* 113(6):1362-1370.
- Luo Z, Simmons CW, VanderGheynst JS, Nitin N. 2012. Quantitative real time measurements of bacteria–bacteriophages interactions in fresh lettuce leaves. *Journal of Food Engineering* 111(1):176-185.
- Kind T, Meissen JK, Yang D, Nocito F, Vaniya A, Cheng Y-S, VanderGheynst JS, Fiehn O. 2012. Qualitative analysis of algal secretions with multiple mass spectrometric platforms. *Journal of Chromatography A* 1244(0):139-147.
- Zheng Y, Yu C, Cheng Y-S, Zhang R, Jenkins B, VanderGheynst JS. 2011. Effects of ensilage on storage and enzymatic degradability of sugar beet pulp. *Bioresource Technology* 102(2):1489-1495.
- Zheng Y, Yates M, Aung H, Cheng Y-S, Yu C, Guo H, Zhang R, VanderGheynst JS, Jenkins BM. 2011. Influence of moisture content on microbial activity and silage quality during ensilage of food processing residues. *Bioprocess and Biosystems Engineering* 34(8):987-995.
- Singer SW, Reddy AP, Gladden JM, Guo H, Hazen TC, Simmons BA, VanderGheynst JS. 2011. Enrichment, isolation and characterization of fungi tolerant to 1-ethyl-3-methylimidazolium acetate. *Journal of Applied Microbiology* 110(4):1023-1031.
- Rezaei F, Joh LD, Kashima H, Reddy AP, VanderGheynst JS. 2011. Selection of conditions for cellulase and xylanase extraction from switchgrass colonized by *Acidothermus cellulolyticus*. *Applied Biochemistry and Biotechnology* 164:793-803.
- Rezaei F, Joh LD, Berry AM, VanderGheynst JS. 2011. Xylanase and cellulase production by *Acidothermus cellulolyticus* grown on switchgrass in solid-state fermentation. *Biofuels* 2(1):21-32.
- Reddy AP, Allgaier M, Singer SW, Hazen TC, Simmons BA, Hugenholtz P, VanderGheynst JS. 2011. Bioenergy feedstock-specific enrichment of microbial populations during high-solids thermophilic deconstruction. *Biotechnology and Bioengineering* 108(9):2088-2098.

- Liu H-Y, VanderGheynst JS, Darby JL, Thompson DE, Green PG, Loge FJ. 2011. Factorial experimental designs for enhancement of concurrent Poly(Hydroxyalkanoate) production and brewery wastewater treatment. *Water Environment Research* 83(1):36-43.
- Joh LD, Rezaei F, Barabote RD, Parales JV, Parales RE, Berry AM, VanderGheynst JS. 2011. Effects of Phenolic Monomers on Growth of *Acidothermus cellulolyticus* *Biotechnology Progress* 27(1):23-31.
- Gladden JM, Allgaier M, Miller CS, Hazen TC, VanderGheynst JS, Hugenholtz P, Simmons BA, Singer SW. 2011. Glycoside Hydrolase Activities of Thermophilic Bacterial Consortia Adapted to Switchgrass. *Applied and Environmental Microbiology* 77(16):5804-5812.
- Cheng Y-S, Labavitch J, VanderGheynst JS. 2011. The impact of cell wall carbohydrate composition on the chitosan flocculation of *Chlorella*. *Process Biochemistry* 46(10):1927-1933.
- Cheng Y-S, Labavitch J, VanderGheynst J. 2011. High-throughput analysis of hexosamine using a colorimetric method. *Analytical Biochemistry* 408:160-162.
- Yu C, Zheng Y, Cheng Y-S, Jenkins BM, Zhang R, VanderGheynst JS. 2010. Solid-liquid extraction of alkali metals and organic compounds by leaching of food industry residues. *Bioresource Technology* 101:4331-4336.
- VanderGheynst JS, Rezaei F, Dooley TM, Berry AM. 2010. Switchgrass leaching requirements for solid-state fermentation by *Acidothermus cellulolyticus*. *Biotechnology Progress* 26(3):622-626.
- VanderGheynst JS, Dooley TM, Guo H, Scher H, Cheng Y. 2010. Storage and release of solutes and microalgae from water-in-oil emulsions stabilized by silica nanoparticles. *Process Biochemistry* 45(1):1-6.
- Rezaei F, VanderGheynst JS. 2010. Critical moisture content for microbial growth in dried food-processing residues. *Journal of the Science of Food and Agriculture* 90(12):2000-2005.
- DeAngelis KM, Gladden JM, Allgaier M, D'haeseleer P, Fortney JL, Reddy A, Hugenholtz P, Singer SW, VanderGheynst JS, Silver WL, Simmons BA, Hazen TC. 2010. Strategies for enhancing the effectiveness of metagenomic-based enzyme discovery in lignocellulolytic microbial communities. *Bioenergy Research* 3:146-158.
- Cheng Y-S, Zheng Y, Yu CW, Dooley TM, Jenkins BM, VanderGheynst JS. 2010. Evaluation of high solids alkaline pretreatment of rice straw. *Applied Biochemistry and Biotechnology* 162(6):1768-1784.
- Cheng Y-S, Zheng Y, VanderGheynst JS. 2010. Rapid quantitative analysis of lipid using a colorimetric method in a microplate format. *Lipids* 46:95-103.
- Allgaier M, Reddy AP, Park JI, Ivanova N, D'haeseleer P, Lowry S, Sapra R, Hazen TC, Simmons BA, VanderGheynst JS, Hugenholtz P. 2010. Targeted discovery of glycoside hydrolases from a switchgrass-adapted compost community. *PLoS One* 5(1):e8812.
- Simmons CW, VanderGheynst JS, Upadhyaya SK. 2009. A model of *Agrobacterium tumefaciens* vacuum infiltration into harvested leaf tissue and subsequent in planta transgene transient expression. *Biotechnology and Bioengineering* 102(3):965-970.
- Reddy AP, Jenkins BM, VanderGheynst JS. 2009. The critical moisture range for rapid microbial decomposition of rice straw during storage. *Transactions of the ASABE* 52(2):673-676.

- Assi JA, King AJ, VanderGheynst JS. 2009. CO₂ evolution rate during solid-state fermentation for preparation of tomato pomace as a poultry feed ingredient. *Int J Agric & Biol Eng* 2(1):28-32.
- Aslam DN, VanderGheynst JS. 2009. Tools to evaluate compost phytotoxicity. *Biocycle* 50(12):28-31.
- VanderGheynst JS, Guo HY, Simmons CW. 2008. Response surface studies that elucidate the role of infiltration conditions on *Agrobacterium tumefaciens*-mediated transient transgene expression in harvested switchgrass (*Panicum virgatum*). *Biomass & Bioenergy* 32(4):372-379.
- Epstein L, Kaur S, VanderGheynst JS. 2008. Botryosphaeria-related dieback and control in noncoastal California grapevines. *California Agriculture* 62(4):161-+.
- Aslam DN, VanderGheynst JS, Rumsey TR. 2008. Development of models for predicting carbon mineralization and associated phytotoxicity in compost-amended soil. *Bioresource Technology* 99(18):8735-8741.
- Aslam DN, VanderGheynst JS. 2008. Predicting phytotoxicity of compost-amended soil from compost stability measurements. *Environmental Engineering Science* 25(1):72-81.
- Aslam DN, Horwath W, VanderGheynst JS. 2008. Comparison of several maturity indicators for estimating phytotoxicity in compost-amended soil. *Waste Management* 28(11):2070-2076.
- VanderGheynst J, Scher H, Guo HY, Schultz D. 2007. Water-in-oil emulsions that improve the storage and delivery of the biolarvacide *Lagenidium giganteum*. *Biocontrol* 52(2):207-229.
- Simmons CW, VanderGheynst JS. 2007. Transient co-expression of post-transcriptional gene silencing suppressors and beta-glucuronidase in harvested lettuce leaf tissue does not improve recombinant protein accumulation in planta. *Biotechnology Letters* 29(4):641-645.
- VanderGheynst JS, Scher H, Guo H-Y. 2006. Design of formulations for improved biological control agent viability and sequestration during storage. *Industrial Biotechnology* 2(3):213-219. *Industrial Biotechnology* 2(3):213-219.
- May BA, VanderGheynst JS, Rumsey T. 2006. The kinetics of *Lagenidium giganteum* growth in liquid and solid cultures. *Journal of Applied Microbiology* 101(4):807-814.
- Joh LD, VanderGheynst JS. 2006. Agroinfiltration of plant tissues for production of high-value recombinant proteins: an alternative to production in transgenic crops. *Journal of the Science of Food and Agriculture* 86(13):2002-2004.
- Joh LD, McDonald KA, VanderGheynst JS. 2006. Evaluating extraction and storage of a recombinant protein produced in agroinfiltrated lettuce. *Biotechnology Progress* 22(3):723-730.
- Joh LD, Wroblewski T, Ewing NN, VanderGheynst JS. 2005. High-level transient expression of recombinant protein in lettuce. *Biotechnology and Bioengineering* 91(7):861-871.
- Ho MA, Squire LM, Sabeh NC, Giles DK, VanderGheynst JS. 2005. Design and evaluation of a grapevine pruner for biofungicide application. *Bioresource Technology* 96(8):963-968.
- VanderGheynst JS, Pettygrove S, Dooley TM, Arnold KA. 2004. Estimating electrical conductivity of compost extracts at different extraction ratios. *Compost Science & Utilization* 12(3):202-207.
- Namkoong W, Park JS, VanderGheynst JS. 2004. Effect of gas velocity and influent concentration on biofiltration of gasoline off-gas from soil vapor extraction. *Chemosphere* 57(7):721-730.

- Marshall MN, Reddy AP, VanderGheynst JS. 2004. Microbial Ecology of Compost. In: Lens P, Hamelers B, Hoitink H, Bidlingmaier W, editors. Resource recovery and reuse in organic solid waste management. London: IWA Publishing. p 193-224.
- Akau HL, Miller KM, Sabehe NC, Allen RG, Block DE, VanderGheynst JS. 2004. Production of *Botrytis cinerea* for potential introduction into a vineyard. *Bioresource Technology* 92(1):41-48.
- VanderGheynst JS, Lei F. 2003. Microbial community structure dynamics during aerated and mixed composting. *Transactions of the ASAE* 46(2):577-584.
- Namkoong W, Park JS, VanderGheynst JS. 2003. Biofiltration of gasoline vapor by compost media. *Environmental Pollution* 121(2):181-187.
- Marshall MN, Cocolin L, Mills DA, VanderGheynst JS. 2003. Evaluation of PCR primers for denaturing gradient gel electrophoresis analysis of fungal communities in compost. *Journal of Applied Microbiology* 95(5):934-948.
- Lopez I, Ruiz-Larrea F, Cocolin L, Orr E, Phister T, Marshall M, VanderGheynst J, Mills DA. 2003. Design and evaluation of PCR primers for analysis of bacterial populations in wine by denaturing gradient gel electrophoresis. *Applied and Environmental Microbiology* 69(11):6801-6807.
- VanderGheynst JS, Dooley TM, Marshall MN. The influence of process management and microbial community structure on the cultivation of a biological control agent in compost. In: Michel FC, Hoitink HAJ, Rynk R, editors; 2002. JG Press, Emmaus, PA.
- Sabehe NC, VanderGheynst JS. 2001. Estimating CO₂ evolution and water evaporation rates during bag cultivation of Shiitake. *Mushroom News* 49(7):14-15,18-22.
- Mysliwiec MJ, VanderGheynst JS, Rashid MM, Schroeder ED. 2001. Dynamic volume-averaged model of heat and mass transport within a compost biofilter: I. Modal development. *Biotechnology and Bioengineering* 73(4):282-294.
- McMahan G, Yeh W, Marshall MN, Olsen M, Sananikone S, Wu JY, Block DE, VanderGheynst JS. 2001. Characterizing the production of a wild-type and benomyl-resistant *Fusarium lateritium* for biocontrol of *Eutypa lata* on grapevine. *Journal of Industrial Microbiology & Biotechnology* 26(3):151-155.
- May BA, VanderGheynst JS. 2001. Estimating the efficacy of *Lagenidium giganteum* liquid cultures. *Proceedings of the Sixty-Eighth Annual Conference of Mosquito and Vector Control Association of California*. 68-74.
- May BA, VanderGheynst JS. 2001. A predictor variable for efficacy of *Lagenidium giganteum* produced in solid-state cultivation. *Journal of Industrial Microbiology & Biotechnology* 27(4):203-207.
- Lei F, VanderGheynst JS. 2000. The effect of microbial inoculation and pH on microbial community structure changes during composting. *Process Biochemistry* 35(9):923-929.
- Walker LP, Nock TD, Gossett JM, VanderGheynst JS. 1999. The role of periodic agitation and water addition in managing moisture limitations during high-solids aerobic decomposition. *Process Biochemistry* 34(6-7):601-612.
- Baker CS, VanderGheynst JS, Walker LP. 1999. Equilibrium moisture isotherms for synthetic food waste and biosolids composts. *Compost Science & Utilization* 7(1):6-13.

- VanderGheynst JS, Cogan DJ, DeFelice PJ, Gossett JM, Walker LP. 1998. Effect of process management on the emission of organosulfur compounds and gaseous antecedents from composting processes. *Environmental Science & Technology* 32(23):3713-3718.
- VanderGheynst JS, Walker LP, VanderGheynst GB. 1997. Development and analysis of oxygen-sensing probes for in situ monitoring of unsaturated solid-state biodegradation processes. *Journal of the Air & Waste Management Association* 47(10):1041-1050.
- VanderGheynst JS, Walker LP, Parlange JY. 1997. Energy transport in a high-solids aerobic degradation process: Mathematical modeling and analysis. *Biotechnology Progress* 13(3):238-248.
- VanderGheynst JS, VanderGheynst GB, Walker LP. 1997. Measuring oxygen in compost piles. *Biocycle* 38(10):72-&.
- VanderGheynst JS, Gossett JM, Walker LP. 1997. High-solids aerobic decomposition: Pilot-scale reactor development and experimentation. *Process Biochemistry* 32(5):361-375.

CONFERENCE PAPERS, PROCEEDINGS AND REPORTS

- Bronner, C. E., Wakefield, A., VanderGheynst, J. S., Moloney, K. Student-centered Strategies for Promoting Inclusive, Supportive, Diverse Environments in Graduate STEM Education. 2019 ASEE Annual Conference & Exposition, Tampa, Florida, <https://peer.asee.org/33305>
- VanderGheynst, J.S., Bronner, C.E., Wakefield, A.M. Professional Development Activities to Improve the Persistence of Low-Income, Academically Talented Underrepresented Graduate Students in Engineering. 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah, <https://peer.asee.org/29954>
- Mullin, J.S., VanderGheynst, J.S. An Introductory Design and Communication Course Intended for all Engineering Majors Takes it to the Farm. 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah, <https://www.asee.org/public/conferences/106/papers/22528/view>
- Higgins, B.T., Paddock, M.B., Staley S., Ceballos, S.J., VanderGheynst, J.S. 2017 Modeling of photosynthetic aeration for energy-efficient wastewater treatment and reduced greenhouse gas emissions. American Society of Agricultural and Biological Engineers Annual International Meeting, Paper No. 1700418, pages 1-15. St. Joseph, Mich.: ASABE.
- Fernandez-Bayo, J.D., Randall, T.E., Achmon, Y., Hestmark, K., Harrold, D.R., Su, J., Dahlquist-Willard, R., Gordon, T., Stapleton, J., VanderGheynst, J.S., Simmons, C.W. 2017. Effect of Partially Stabilized Organic Amendments on Volatile Acids Production and Pest Inactivation using Soil Biosolarization. American Society of Agricultural and Biological Engineers Annual International Meeting, Paper No. 1700606, pages 1-11. St. Joseph, Mich.: ASABE.
- Jabusch, L., VanderGheynst, J.S., 2017. Techno-economic Analysis of Algae Biomass Production. American Society of Agricultural and Biological Engineers Annual International Meeting, Paper No. 1700365, pages 1-23. St. Joseph, Mich.: ASABE.
- Stapleton JJ, Dahlquist-Willard RM, Achmon Y, VanderGheynst JS, Simmons CW. 2016. Soil Biosolarization Research: Determining Improvements in Non-Fumigant Pest Management Strategies and Soil Health Parameters. *CAPCA Adviser Magazine* February:24-27.

- Stapleton JJ, Dahlquist RM, Achmon Y, VanderGheynst JS, Simmons CW. 2016. Biosolarization and soil health – A research update. 2016 Proceedings of the Western Society of Weed Science 69:55.
- Oldfield, T, Achmon, Y, Perano, K, Dahlquist-Willard, R, VanderGheynst, J, Stapleton, J, Simmons, C, Holden, N. The carbon footprint of biosolarization. Biosystems and Food Engineering Research Review May 2016, University College Dublin, Belfield, Dublin 4, Ireland. 4 pages.
- Yazdani, R., VanderGheynst, J.S. Methane Enhancement by Anaerobic Composting of Food Waste and Fat, Oil and Grease. CEC-500-98-014. August 2016. Public Interest Energy Research (PIER) Program. California Energy Commission. 85 pages.
- Stapleton, J.J., R.M. Dahlquist, C. W. Simmons, M.N. Marshall, J.S. VanderGheynst. Soil treatment with destabilized compost and solarization: An alternative to fumigants. Page 101 in: Proceedings of the 8th International IPM Symposium. Salt Lake City, Utah, March 23-26, 2015.
http://www.ipmcenters.org/ipmsymposium15/Documents/Posters/098_Stapleton.pdf
- Rezaei, F., VanderGheynst, J.S. Microbial Fuel Cells to Generate Electricity from High-Solids Food Wastes. August 2012. CEC-56534A/09-13. Energy Innovations Small Grant Program. California Energy Commission. 30 pages. <http://www.energy.ca.gov/2014publications/CEC-500-2014-065/CEC-500-2014-065.pdf>
- Cherepennikova, M.I. and J. S. VanderGheynst. Influence of mosquito larvae *Aedes aegypti* extract on biomass, oospore production and pathogenicity of *Lagenidium giganteum*. International Journal of Immunopathology, Allergology, Infectology. No. 1, 2009. p 58-59. (in Russian)
- Cherepennikova, M.I. and J. S. VanderGheynst. Effect of cholesterol/ lecithin ratio on sexual reproduction of the biolarvacide *Lagenidium giganteum* COUCH. International Journal of Immunopathology, Allergology, Infectology. No. 1, 2009. p 59-60. (in Russian)
- Cherepennikova M.I. and J. S. VanderGheynst. Effect of nitrogen sources on oospore and biomass production by *Lagenidium giganteum* in vitro. International Journal of Immunopathology, Allergology, Infectology. No. 1, 2009. p 60. (in Russian)
- VanderGheynst, J.S., T.M. Dooley, H.-Y. Guo, H. Scher. Storage and release of solutes and microalgae from water-in-soil emulsions stabilized by silica nanoparticles, American Society of Agricultural and Biological Engineers Paper Number 084572, 17 pages including 4 figures and 3 tables. 2008
- Aldas, R.E., B.M. Jenkins, and J.S. VanderGheynst. Degradation potential and soil carbon mineralization of biomass gasification tars, American Society of Agricultural Engineers Paper Number 07-7118, 16 pages including 4 figures and 5 tables. 2007
- VanderGheynst, J.S., and H. Scher. Physical stability and survival of microorganisms stored in water-in-oil emulsions, American Society of Agricultural Engineers Paper Number 06-7045. 11 pages including 7 figures and 2 tables. 2006
- McEachin, D.N., and J.S. VanderGheynst. Development of models for predicting carbon mineralization and phytotoxicity in compost-amended soil, American Society of Agricultural Engineers Paper Number 06-7044, 13 pages including 1 figure and 5 tables. 2006
- Stapleton, J.J., M.N. Marshall, and J.S. VanderGheynst. Response of phytoparasitic nematodes and microbial soil community structure to high-temperature tent solarization for disinfecting container nursery soil. Presented at California Conference for Biological Control. Riverside, CA. 4 pages. 2006.

- Marshall, M.N., and J.S. VanderGheynst. Combining compost application and soil solarization for control of soilborne plant pathogens, American Society of Agricultural Engineers Paper Number 03-2264, 10 pages including 5 figures and 1 table. 2003
- VanderGheynst, J.S., and N.C. Sabeh. Bioprocess production of *Fusarium lateritium* for the biological control of *Eutypa lata*, American Society of Agricultural Engineers Paper Number 03-7056, 6 pages including 1 figure and 1 table. 2003
- Dooley, T.M., and J.S. VanderGheynst. Production of biological control agent *Trichoderma harzianum* in food waste compost, American Society of Agricultural Engineers Paper Number 01-6011, 12 pages including 5 figures and 2 tables. 2001
- Akau, H.L., N.C. Sabeh, D.E. Block, and J.S. VanderGheynst. Producing and evaluating *Botrytis cinerea* for vineyard inoculation, American Society of Agricultural Engineers Paper Number 01-7029, 10 pages including 4 figures and 2 tables. 2001
- Marshall, M.N., and J.S. VanderGheynst. Extraction and amplification of fungal DNA from compost samples, American Society of Agricultural Engineers Paper Number 00-6126, 5 pages including 3 figures and 1 table. 2000
- VanderGheynst, J.S., B.A. May, and M. Karagosian. The effect of cultivation methods for the growth rate and shelf life of *Lagenidium giganteum*, American Society of Agricultural Engineers Paper Number 00-8005, 5 pages including 3 figures. 2000
- Marshall, M.N., and J.S. VanderGheynst. Molecular analysis of fungal communities in compost. California Conference on Biological Control. pp 159-162. July. 2000
- May, B.A., T. Rumsey, and J. VanderGheynst. Estimating the growth kinetics of *Lagenidium giganteum* in solid-state cultivation. California Conference on Biological Control. pp. 163-166. July. 2000.
- May, B.A., J.S. VanderGheynst, and T.R. Rumsey. Estimating the growth kinetics of *Lagenidium giganteum* in solid-state cultivation, American Society of Agricultural Engineers Paper Number 08-3044, 13 pages including 6 figures and 2 tables. 2000
- Lei, F., and J.S. VanderGheynst. Assessment of microbial community structure changes during mixed and static-bed composting processes, American Society of Agricultural Engineers Paper Number 99-5029. 15 pages including 11 figures and 4 tables. 1999
- VanderGheynst, J.S. Zoosporegenesis biological control agent production, Quarterly (UC Journal for the California Alliance for Minority Participation in Science, Engineering and Mathematics), Vol. 7(1), pp. 20-22. 1999
- Lei, F., and J.S. VanderGheynst. Community structure analysis of rice straw and grape pomace composting using phospholipid fatty acid analysis, American Society of Agricultural Engineers Paper Number 98-4095. 13 pages including 9 figures and 4 tables. July. 1998
- Chinn, M.S., J.S. VanderGheynst, and J.A. Miles. Design and construction of a semi-continuous reactor for solid state cultivation, American Society of Agricultural Engineers Paper Number 98-7039. 7 pages including 3 figures and 1 table. 1998
- VanderGheynst, J. S., and B. A. May. 1998. The effects of moisture content and temperature on the production of *Lagenidium giganteum* in solid-state fermentation. Mosquito Control Research

Annual Report, University of California, Division of Agriculture and Natural Resources. pp. 35-38 including 4 figures.

Chinn, M. S., R. C. Fowler, and J. S. VanderGheynst. 1998. The effect of oil concentration on the growth of *Lagenidium giganteum* in solid-state fermentation. Mosquito Control Research Annual Report, University of California, Division of Agriculture and Natural Resources. pp. 87-88 including 3 figures.

VanderGheynst, J.S., G.B. VanderGheynst, and L.P. Walker. Measurement and analysis of biological activity in composting processes using zirconia oxide oxygen sensors, American Society of Agricultural Engineers Paper Number 97-4113. 12 pages including 6 figures and 1 table. August. 1997

PRESENTATIONS

VanderGheynst, J.S. 2023. UMass Dartmouth Research and Innovation. 401 Techbridge, Technology Commercialization Showcase, April 18, 2023, Newport, RI.

VanderGheynst, J.S. 2022. Out-of-school engagement to increase access to STEM Education Pathways. Keynote. SE MA STEM Network: Educating for the Future. Virtual event. September 22, 2022

VanderGheynst, J.S. 2022. Active tutoring. ASEE Engineering Deans Institute. March 8-10, 2022. Las Vegas, NV.

VanderGheynst, J.S. 2022. STEM education pathways. NDIA STEM Summit. March 14, 2022. Washington DC.

VanderGheynst, J.S. 2019. The Value of Advanced Placement Coursework. Presented to students at Diman Regional Vocational School. September 19, 2019. Fall River, MA.

Paddock, M.D., Fernandez-Bayo, J.D., VanderGheynst, J.S. Analyzing the Microalgae-Wastewater Microbiome. Presented at the American Society of Agricultural and Biological Engineers 2019 Annual International Meeting. July 10, 2019. Boston, MA.

Palma, L., Fernandez-Bayo, J.D., Putri, F., VanderGheynst, J.S. Valorization of Almond Co-Products Using Black Soldier Fly Larvae. Presented at the American Society of Agricultural and Biological Engineers 2019 Annual International Meeting. July 10, 2019. Boston, MA.

Fernandez-Bayo, J.D., Palma, L., VanderGheynst, J.S. Feedstock impacts *Hermetia illucens* (Black Soldier Fly) larvae growth and the microbial community of the spent feedstock. 2019. DOE Joint Genome Institute. Genomics of Energy & Environment 11th Meeting. Walnut Creek, California. April 3-6, 2019.

Paddock, M.D., Fernandez-Bayo, J.D., VanderGheynst, J.S. Analyzing the microalgae-wastewater microbiome. 2019. DOE Joint Genome Institute. Genomics of Energy & Environment 11th Meeting. Walnut Creek, California. April 3-6, 2019.

VanderGheynst, J.S. 2019. Grand Opportunities in Science, Technology, Engineering & Mathematics. Keynote presentation. STEM 4 Girls. March 29, 2019, Dartmouth, MA

- VanderGheynst, J.S. Performance of black soldier fly larvae on a Mediterranean diet. 2018. 2018 Annual Meeting of the California Almond Board. December 4-6, 2018. Sacramento, CA.
- Palma, L., Fernandez-Bayo, J.D., Putri, F.E., VanderGheynst, J.S. Varying almond hull composition and nitrogen amendment impacts black soldier fly larvae growth and composition. 2018. 2018 Annual Meeting of the California Almond Board. December 4-6, 2018. Sacramento, CA.
- Fernandez-Bayo, J.D., Palma, L., Putri, F.E., VanderGheynst, J.S. Almond hull soil amendment quality after insect cultivation. 2018. 2018 Annual Meeting of the California Almond Board. December 4-6, 2018. Sacramento, CA.
- VanderGheynst, J.S. 2018. Preparing Your Pitch: Developing your Research, Teaching, and Outreach Message. American Society for Engineering Education Annual Meeting. June 24-27, 2018. Salt Lake City, Utah.
- VanderGheynst, J.S., Bronner, C.E., Wakefield, A.M. Professional Development Activities to Improve the Persistence of Low-Income, Academically Talented Underrepresented Graduate Students in Engineering. 2018 American Society for Engineering Education Annual Meeting. June 24-27, 2018. Salt Lake City, Utah.
- Mullin, J.S., VanderGheynst, J.S. An Introductory Design and Communication Course Intended for all Engineering Majors Takes it to the Farm. 2018 American Society for Engineering Education Annual Meeting. June 24-27, 2018. Salt Lake City, Utah.
- Jabusch, L.K., VanderGheynst, J.S. Techno-economic analysis of algae and algae grazer in co-culture. The 8th International Conference on Algal Biomass, Biofuels and Bioproducts. June 11-13, 2018. Seattle, WA.
- Palma, L., VanderGheynst, J.S. Cultivation of black soldier fly larvae (BSFL) on almond hulls and shells: impacts of moisture, nitrogen, particle size and aeration. The 2nd International Conference “Insects to Feed the World.” May 15-18, 2018. Wuhan, China.
- VanderGheynst, J.S., Palma, L. Fed-batch cultivation of black soldier fly larvae on almond by-products: impacts of feeding rate and inoculation density. The 2nd International Conference “Insects to Feed the World.” May 15-18, 2018. Wuhan, China.
- VanderGheynst, J.S., Simmons, C.W. Integrating organic waste recycling with agriculture in a resource-limited environment. Presented at the winter meeting of the UC Davis Arab Region Consortium. February 7, 2018. Davis, CA.
- VanderGheynst, J.S. Production of black soldier fly larvae on almond by-products. 2017 Annual Meeting of the California Almond Board. December 5, 2017. Sacramento, CA.
- Fernández-Bayo, J.D., Parr, A.E., Achmon, Y., Shea, E.A., Lopez, E.A., Stapleton, J.J., VanderGheynst, J.S., Hodson, A.K., Simmons, C.W. Nematicidal Activity of Biosolarization Using Almond Waste Amendments. Methyl Bromide Alternatives Outreach Symposium, November 2017. San Diego, California.
- Higgins, B.T., Paddock, M.B., Staley S., Ceballos, S.J., VanderGheynst, J.S. Modeling of photosynthetic aeration for energy-efficient wastewater treatment and reduced greenhouse gas emissions. Presented at the American Society of Agricultural and Biological Engineers 2017 Annual International Meeting. July 17, 2017. Spokane, WA.

- Fernandez-Bayo, J.D., Randall, T.E., Achmon, Y., Hestmark, K., Harrold, D.R., Su, J., Dahlquist-Willard, R., Gordon, T., Stapleton, J., VanderGheynst, J.S., Simmons, C.W. 2017. Effect of Partially Stabilized Organic Amendments on Volatile Acids Production and Pest Inactivation using Soil Biosolarization. Presented at the American Society of Agricultural and Biological Engineers 2017 Annual International Meeting. July 19, 2017. Spokane, WA.
- Jabusch, L. K., VanderGheynst, J.S. Integrating Growth Kinetics into a Techno-economic Analysis for Algae Biomass Production. Presented at the American Society of Agricultural and Biological Engineers 2017 Annual International Meeting. July 17, 2017. Spokane, WA.
- Stapleton, J.J., J.S. VanderGheynst, and C.W. Simmons. Optimizing solarization-based technologies as alternatives to soil fumigation. CA Department of Pesticide Regulation. Sacramento, CA. March 21, 2017.
- VanderGheynst, J.S. Freshmen Introduction to Engineering. Presented to the Deans Advisory Committee. San Ramon, CA. February 1, 2017.
- Fernández-Bayo, J.D., T.E. Randall, Y. Achmon, K. Hestmark, D. Harrold, J. Su, R.M. Dahlquist-Willard, T. Gordon, J.J. Stapleton, J.S. VanderGheynst, C.W. Simmons. Application of Partially Stabilized Organic Amendments to Inactivate *Brassica nigra* (a weed) and *Fusarium oxysporum f.sp.lactucae* (a fungus) using Soil Biosolarization. CA Weed Science Society. January 18, 2017.
- Fernández-Bayo, J.D., C.W. Simmons, J.S. VanderGheynst. Impact of organic waste management processing on waste stabilization and product quality for soil amendment. S-1041 Multistate Committee Annual Meeting and Symposium. Albany, CA. August 8-9, 2016.
- Achmon Y., J.D. Fernández-Bayo, J.T. Claypool, K. Hernandez, D.G. McCurry, D.R. Harrold, J. Su, R.M. Dahlquist-Willard, J.J. Stapleton, J.S. VanderGheynst, C.W. Simmons. Closing the loop: Utilization of food processing organic waste for sustainable agriculture pest management and biogas production. S-1041 Multistate Committee Annual Meeting and Symposium. Albany, CA. August 8-9, 2016.
- Achmon, Y., Fernández-Bayo JD, J.S. VanderGheynst, J.J. Stapleton, C.W. Simmons. Do more with less! Utilizing food waste for sustainable agriculture and renewable energy, Postdoctoral research symposium, UC Davis, Davis, CA, USA. May 18, 2016.
- Paddock, M., B.T. Higgins, J.S. VanderGheynst. Assessing algal-bacterial gas exchange for enhanced wastewater treatment. ASABE 2016 Annual International Meeting. Orlando, Florida. July 17-20, 2016
- Jabusch, L.K., B.T. Higgins, J.M. Labavitch, J.S. VanderGheynst. Characterization of Algal Cell Walls for Biofuels Development. The 6th International Conference on Algal Biomass, Biofuels and Bioproducts. San Diego, CA. June 26-29, 2016.
- Higgins B.T., I. Gennity, S. Samra, T. Kind, O. Fiehn, J.S. VanderGheynst. Algal-bacterial cofactor symbiosis for enhanced biofuel production and wastewater treatment. The 6th International Conference on Algal Biomass, Biofuels and Bioproducts. San Diego, CA. June 26-29, 2016.
- Fernandez-Bayo, J.D., Y. Achmon, D. Harrold, D. McCurry, K. Hernandez, R.M. Dahlquist-Willard, J.J. Stapleton, R. Yazdani, J.S. VanderGheynst, C.W. Simmons. Changes in Soil Microbial Diversity Following Amendment with Mesophilic and Thermophilic Digestates During Soil Solarization. DOE Joint Genome Institute. Genomics of Energy & Environment 11th Meeting. Walnut Creek, California. March 21 – 24, 2016.

- Stapleton, J.J., R.M. Dahlquist-Willard, Y. Achmon, M.N. Marshall, J.S. VanderGheynst, C.W. Simmons. Advances in Biosolarization Technology to Improve Soil Health and Organic Control of Soilborne Pests. Organic Agriculture Research Symposium. Pacific Grove, CA. January 20, 2016.
- Fernandez-Bayo, J.D., Y. Achmon, J. Toniato, D. Harrold, D. McCurry, K. Hernandez, R.M. Dahlquist-Willard, J.J. Stapleton, R. Yazdani, J.S. VanderGheynst, C.W. Simmons. Assessment of the potential use of two anaerobic digestates as soil amendments for biosolarization. The Second International Horticulture Research Conference (Hortres2015). Davis, CA. October 29 – November 2, 2015.
- VanderGheynst, J.S. Grand opportunities in math, science and engineering. Keynote Presentation for the Math, Engineering, Science and Engineering awards ceremony. UC Davis, Davis, CA, USA. May 2015.
- VanderGheynst, J.S. Transfer student pathways and diversity in engineering. Presented to Intel as part of \$5M request for support for transfer students and diversity efforts in engineering. UC Davis, Davis, CA, USA. October 7, 2015.
- Achmon, Y., J.S. VanderGheynst, J.J. Stapleton, C.W. Simmons. Food industrial processing wastes applications in sustainable soil pest management and biogas production. Journey through Science Day, sponsored by PepsiCo and the New York Academy of Sciences (NYAS). December 14, 2015.
- Achmon, Y., J.S. VanderGheynst, J.J. Stapleton, C.W. Simmons. Closing the loop: Utilization of food processing organic waste for sustainable agriculture, The Second International Horticulture Research Conference (Hortres2015). Davis, CA. October 29 – November 2, 2015.
- Achmon, Y., J.S. VanderGheynst, C.W. Simmons, R.M. Dahlquist, E.J. Davis, J.J. Stapleton. Biosolarization: where agroecology and technology meet soil fumigation alternatives in San Joaquin Valley. UC Kearney 50th celebration, UC Kearney, Parlier, CA, USA. May 26, 2015.
- Achmon, Y., J.S. VanderGheynst, J.J. Stapleton, C.W. Simmons. Closing the loop: Utilization of food processing organic waste for sustainable agriculture, Postdoctoral research symposium, UC Davis, Davis, CA, USA. May 14, 2015.
- Claypool J.T., B. Simmons; S.W. Singer, C.W. Simmons, J.S. VanderGheynst. Time-course transcriptome of *Bacillus coagulans* in the presence of 1-ethyl-3-methylimidazolium acetate. 37th Symposium on Biotechnology for Fuels and Chemicals, La Jolla, CA. April 27 - 30, 2015.
- Higgins B., Gennity I., Samra S., Fiehn O., VanderGheynst J.S. The role of cofactors in algal-bacterial symbiosis for enhanced biofuel production. 37th Symposium on Biotechnology for Fuels and Chemicals, La Jolla, CA. April 27 - 30, 2015.
- Jabusch, L., Higgins B., Labavitch J., Fiehn O., VanderGheynst J.S. Characterization of *Chlorella* cell walls under nitrogen replete-deplete growth conditions. 37th Symposium on Biotechnology for Fuels and Chemicals, La Jolla, CA. April 27 - 30, 2015.
- Harrold D., VanderGheynst J.S. 2015. Nitrogen Dependence of Cellulase and Hemicellulase Activities Secreted by Lignocellulose Degrading Microbial Communities. 37th Symposium on Biotechnology for Fuels and Chemicals, La Jolla, CA. April 27 - 30, 2015.
- Ceballos S.J., Pace S., Singer S., Simmons B., Thelen M., VanderGheynst J.S. Isolating individual organisms and microbial communities that thrive in a lignin rich environment. 37th Symposium on Biotechnology for Fuels and Chemicals, La Jolla, CA. April 27 - 30, 2015.

- Pace S., Ceballos S., Harrold D., Trower W., Simmons B., Singer S., Thelen M., VanderGheynst J.S. Thermophilic enrichment of microbial communities in the presence of Tetrabutylphosphonium chloride and Tributylethylphosphonium diethylphosphate ionic liquids. 37th Symposium on Biotechnology for Fuels and Chemicals, La Jolla, CA. April 27 - 30, 2015.
- Jabusch, L. Higgins B., Labavitch J., Fiehn O., VanderGheynst J.S. Effects of Mixotrophic Growth on Chlorella Cell Wall Composition. 36th Symposium on Biotechnology for Fuels and Chemicals. Clearwater Beach, FL. April 28 - May 01, 2014.
- Higgins, B., Labavitch J., VanderGheynst J.S. Mixotrophic growth of Chlorella for biofuel production. 36th Symposium on Biotechnology for Fuels and Chemicals. Clearwater Beach, FL. April 28 - May 01, 2014.
- Higgins, B., Kind T., Fiehn O., VanderGheynst J.S. Role of cofactor exchange in algal-bacterial symbiosis under mixotrophic conditions. Metabolomics 2014. International Conference of the Metabolomics Society, Tsuruoka, Japan. June 23-26, 2014.
- Higgins, B., Z. Tietel, B. Wikoff, O. Fiehn, J.S. VanderGheynst. Mixotrophic growth of Chlorella for biofuel production. NSF-JST Joint Workshop "Metabolomics for Low carbon Society" Nara, Japan. June 2014.
- Williams, K., K. Hubble, Z. McCaffrey, B. Higgins, L. Joh, J. VanderGheynst. RESOURCE Outcomes: Renewable Energy Graduate Student-Teacher Partnerships. Presented at the International Teacher-Scientist Partnership Conference, AAAS Annual Meeting Boston, MA. February 13-14, 2013
- Holtman, E.F., D.G. McCurry, T. Fischer, K. Loper, M.N. Marshall, J.S. VanderGheynst, R.M. Dahlquist, and J.J. Stapleton. Validation of a model predicting mortality of *Brassica nigra* seeds under conditions of diurnal heating simulating soil solarization. 65th Annual Conference for the California Weed Science Society. Sacramento, CA. January 22-25, 2013
- Dahlquist, R.M., Simmons, C.W., Kroeker, D.A., Hernandez, K.M., Betts, S.T., Claypool, J., Jabusch, L., Marshall, M.N., VanderGheynst, J.S., and Stapleton, J.J. The Effect of Combined Solarization and Destabilized Green Waste Compost on Weed Seed Mortality and Soil Biology. Annual Meeting of the Western Society of Weed Science. SanDiego, CA. March 11-14, 2013
- Dahlquist R.M., E.F. Holtman, D.G. McCurry, T. Fischer, K. Loper, M.N. Marshall, J.S. VanderGheynst, and J.J. Stapleton. Validation of a Weibull Model Predicting Mortality of *Brassica nigra* Seeds Under Diurnal Heating Simulating Soil Solarization. Annual Meeting of the Western Society of Weed Science. SanDiego, CA. March 11-14, 2013
- Simmons C., A. Reddy, P. D'Haeseleer, J. Khudyakov, H. Burd, M. Hadi, B. Simmons, S. Singer, M. Thelen, J. VanderGheynst. Targeted discovery of thermophilic microbial communities and enzymes that deconstruct lignocellulose in a high-solids environment via metagenomic analysis. 35th Symposium on Biotechnology for Fuels and Chemicals, Portland, OR, April 29-May 2, 2013.
- Betts, S., R. Dahlquist, M. Marshall, J. VanderGheynst, C. Tuell-Todd, and J.J. Stapleton. A comparison of Weibull and logistic models for predicting thermal death of black mustard (*Brassica nigra*) seeds. Annual Meeting of the Western Society of Weed Science. Reno, NV. March 12-15, 2012.
- Betts, S., R. Dahlquist, M. Marshall, J.S. VanderGheynst, C. Tuell-Todd, and J.J. Stapleton. A comparison of Weibull and logistic models for predicting thermal death of black mustard (*Brassica nigra*) seeds. 64th Annual California Weed Science Society Conference. Santa Barbara, CA. January 23-25, 2012.

- Simmons, C.W., Reddy, A., Jabusch, L.K., Claypool, J.T., Singer, S.W., Simmons, B.A., VanderGheynst, J.S. Thermophilic enrichment of microbial communities in the presence of 1-ethyl, 3-methylimidazolium acetate 34th Symposium on Biotechnology for Fuels and Chemicals, New Orleans, LO, April 30-May 3, 2012.
- Higgins, B., L. Jabusch, Y-S Cheng, J.S. VanderGheynst. Effects of Bacterial Contamination on Mixotrophic Growth of *Chlorella* for Biofuel Production. Presented at the 2nd International Conference on Algal Biomass, Biofuels and Bioproducts. San Diego, CA. June 10-13, 2012.
- D'Haeseleer, P., J. M. Gladden, A. M. Redding-Johanson, C. J. Petzold, P. I. Benke, M. Allgaier, D. C. Chivian, J.S. VanderGheynst, T.C. Hazen, B.A. Simmons, and S.W. Singer. Metagenomics, Proteomics, and Metabolic Reconstruction of a Thermophilic Feedstock-adapted Bacterial Community. New Orleans, LA. ASM annual Meeting May 22, 2011.
- Fernandez, L.E., H. Guo, H. Scher, J.S. VanderGheynst. Biological Stability and Delivery Studies to Elucidate the Role of Thickener Solid Particles on Water-in-Oil Emulsion Containing Microalgae. 242nd ACS National Meeting & Exposition, Denver, CO., August 28-September 1, 2011.
- Cheng, Y-S, J. Labavitch, A. Powell and J.S VanderGheynst. Enzymatic hydrolysis of algal biomass for enhancement of lipid extraction and carbohydrate utilization. 33rd Symposium on Biotechnology for Fuels and Chemicals, Seattle, WA, May 2-5, 2011
- VanderGheynst, J.S. Developing Future RESOURCES for STEM Communication and Training, Presented at the NSF Graduate STEM Fellows in K-12 Education (GK-12) Annual Conference in Washington, DC. March 11, 2011.
- Reddy, A.P., M. Allgaier, J.M. Gladden, S.W. Singer, P. Hugenholtz, B.A. Simmons, T.C. Hazen, and J.S. VanderGheynst. Characterization of the activity of thermophilic microbial communities on bioenergy feedstocks. 32nd Symposium on Biotechnology for Fuels and Chemicals, Clearwater Beach, FL, April 19-22, 2010.
- Singer, S.W., J.M. Gladden, P. D'haeseleer, M. Allgaier, D.C. Chivian, T.C. Hazen, J.S. VanderGheynst, P. Hugenholtz. and B.A. Simmons. Targeted Discovery of Enzymes From Enriched Microbial Consortia for High Temperature Saccharification of Ionic-Liquid Pre-Treated Biomass. American Institute of Chemical Engineers annual meeting, November 6, 2010.
- Allgaier, M., A. Reddy, J.I. Park, N. Ivanova, P. D'haeseleer, S. Lowry, R. Sapra, T.C. Hazen, B.A. Simmons, J.S. VanderGheynst, and P. Hugenholtz. Targeted discovery of glycoside hydrolases from a switchgrass-adapted compost microbial community. International Symposium on Microbial Ecology, Seattle, WA. ISME 13 – 13th, August 22-27, 2010.
- Singer, S., J. Gladden, M. Allgaier, A. Reddy, J.S. VanderGheynst, T.C. Hazen, P. Hugenholtz, P. D'haeseleer, B. Simmons. Targeted enzyme discovery in thermophilic feedstock-adapted microbial communities using proteogenomic and biochemical techniques. ISME 13 – 13th International Symposium on Microbial Ecology, Seattle, WA., August 22-27, 2010.
- Reddy, A.P., M. Allgaier, J. M. Gladden, S. Singer, P. Hugenholtz, B. Simmons, T.C. Hazen, and J.S. VanderGheynst. Enrichment of highly efficient thermophilic microbial communities active on switchgrass and corn stover in a high-solids environment. 239th ACS National Meeting & Exposition, San Francisco, CA, March 21-25, 2010.

- Cheng, Y-S, J. Labavitch, Orn-U-Ma Tanadul A. Powell, J.S. VanderGheynst. Quantification and characterization of carbohydrate compositions in microalgal biomass. 239th ACS National Meeting & Exposition, San Francisco, CA., March 21-25, 2010.
- Zheng, Y. C. Lee, C. Yu, Y-S Cheng, R. Zhang, J.S. VanderGheynst, and B.M. Jenkins. Pretreatment and fermentation of sugar beet pulp into fuel ethanol. 32nd Symposium on Biotechnology for Fuels and Chemicals, Clearwater Beach, FL., April 19-22, 2010
- Singer, S. W. J. M. Gladden, M. Allgaier, A. P. Reddy, J.S. VanderGheynst, T.C. Hazen, B.A. Simmons, and P. Hugenholtz. Targeted enzyme discovery in thermophilic feedstock-adapted microbial communities. 32nd Symposium on Biotechnology for Fuels and Chemicals, Clearwater Beach, FL, April 19-22, 2010
- Hazen, T.C., P. Hugenholtz, S. Singer, J.S. VanderGheynst, P.M. D'haeseleer, M.P. Thelen, K. DeAngelis, A.P. Reddy, M. Allgaier, J. Fortney, G. Anderson, T. DeSantis, E. Brodie, C. Wu, D. Goodheart, M. Firestone, W. Silver, and B.A. Simmons. JBEI Microbial Communities Deconstruction Research Activities. Genomics: GTL Awardee Workshop VII and USDA-DOE Plant Feedstock Genomics for Bioenergy Awardee Workshop. Bethesda, Maryland. February 8-11, 2009.
- Allgaier, M., A.P. Reddy, J.S. VanderGheynst, A. Copeland, V. Kunin, P. D'haeseleer, K. DeAngelis, J. Fortney, D. Chivian, P.S. Dehal, B.A. Blake Simmons, T.C. Hazen, and P. Hugenholtz. Metagenomic Characterization of Compost and Rain Forest Soil Microbial Communities. Genomics:GTL Awardee Workshop VII and USDA-DOE Plant Feedstock Genomics for Bioenergy Awardee Workshop. Bethesda, Maryland. February 8-11, 2009.
- Knierim, B., L. Prak, S. Singh, D. Jorgens, M. Zemla, K. DeAngelis, A.P. Reddy, J.S. VanderGheynst, T.C. Hazen, B. Holmes, R. Sapra, B.S. Simmons, P. Adams, and M. Auer. Electron Microscopic Imaging at JBEI. Genomics: GTL Awardee Workshop VII and USDA-DOE Plant Feedstock Genomics for Bioenergy Awardee Workshop. Bethesda, Maryland. February 8-11, 2009.
- Zheng, Y., M. Yates, D. Yang, Y-S Cheng, C.W. Yu, T. Dooley, J.S. VanderGheynst, R. Zhang, B.M. Jenkins. Sugar Beet Pulp Storage via Ensilage: Effects on Sugar Yield upon Enzymatic Hydrolysis. 31st Symposium on Biotechnology for Fuels and Chemicals. San Francisco, CA. May 3-6, 2009.
- Yu, C.W., B.M. Jenkins, J.S. VanderGheynst, R. Zhang, Y. Zheng, and Y-S Cheng. Leaching of Food Industry Residues to Improve Feedstock Quality and Resource Recovery. 31st Symposium on Biotechnology for Fuels and Chemicals. San Francisco, CA. May 3-6, 2009.
- Scher, H., H. Guo, Y-S Cheng and J.S. VanderGheynst. Stabilization and Delivery of *Chlorella vulgaris* in Water-in-Oil Emulsions. 31st Symposium on Biotechnology for Fuels and Chemicals. San Francisco, CA. May 3-6, 2009.
- Cheng, Y-S, Y. Zheng, C.W. Yu, J.S. VanderGheynst, R. Zhang and B.M. Jenkins. A comparison of lime and sodium hydroxide pretreatment for delignification of rice straw. 31st Symposium on Biotechnology for Fuels and Chemicals. San Francisco, CA. May 3-6, 2009.
- Reddy, A.P., M. Allgaier, P. Hugenholtz, B. Simmons, T.C. Hazen and J.S. VanderGheynst. Tracking microbial community changes during decomposition of switchgrass. 31st Symposium on Biotechnology for Fuels and Chemicals. San Francisco, CA. May 3-6, 2009.
- Zheng, Y., M. Yates, Y-S Cheng, C.W. Yu, T. Dooley, R. Zhang, J.S. VanderGheynst and B.M. Jenkins. Effect of Moisture Content on the Ensilage of Sugar Beet Pulp and Tomato Pomace. 31st Symposium on Biotechnology for Fuels and Chemicals. San Francisco, CA. May 3-6, 2009.

- Singer, S., A.P. Reddy, J.S. VanderGheynst, and B.A. Simmons. *Aspergillus fumigatus* JF1: An Ionic Liquid Tolerant fungus Isolated from Compost. 31st Symposium on Biotechnology for Fuels and Chemicals. San Francisco, CA. May, 3-6, 2009.
- Zheng, Y., H. Aung, J.S. VanderGheynst, R. Zhang, D. Yang, C.W. Yu, and B.M. Jenkins. Screening and Selection of Lactic Acid Bacteria for Ensiling Food Processing Wastes. 30th Symposium on Biotechnology for Fuels and Chemicals. New Orleans. May 4-7, 2008.
- Aslam, D.N., T.R. Rumsey and J.S. VanderGheynst. Models to estimate planting time delay to prevent phytotoxicity of compost amended soil. 16th Annual US Composting Council Conference. Oakland, CA. February 9-12, 2008.
- VanderGheynst, J.S., T. Dooley, H. Guo, H. Scher. Storage and release of solutes and microalgae from water-in-oil emulsions stabilized by silica nanoparticles. ASABE Annual International Meeting. Providence, Rhode Island. July. 2008
- Marshall, M., T. Rumsey, and J.S. VanderGheynst. The effect of solarization on activity, composition, and inactivation of soil microbial communities. ASABE Annual International Meeting. Providence, Rhode Island. July. 2008
- Aslam, D.N. and J.S. VanderGheynst. Management of compost production and soil amendment to prevent phytotoxicity. Pacific Southwest Organic Residuals symposium, September 22-24, 2008. UC Davis.
- VanderGheynst, J.S., H.B. Scher, and H. Guo. Storage and delivery of aquatic microorganisms in emulsions stabilized by surface-modified silica nanoparticles. Presented at the 234th ACS National Meeting. August. 2007
- Reddy, A.P., and J.S. VanderGheynst. Biological activity and community structure leading to thermal runaway in stored agricultural biomass. Presented at the International Conference on The Future of Agriculture: Science, Stewardship, and Sustainability. April. 2006
- Marshall, M.N., T.R. Rumsey, and J.S. VanderGheynst. Development and validation of predictive models of soil heating and pathogen inactivation during soil solarization. Presented at the International Conference on The Future of Agriculture: Science, Stewardship, and Sustainability. April. 2006
- VanderGheynst, J.S., and H.B. Scher. Improving the survival kinetics of cells stored in water in oil emulsions through osmotic pressure tailoring of droplet size. Presented at the 232nd ACS National Meeting. September. 2006
- Simmons, C.W., and J.S. VanderGheynst. Modeling of T-DNA transfer and resultant transient transgene expression in agroinfiltrated leaf tissue. Presented at the 232nd ACS National Meeting. September. 2006
- Shultz, D., N. Sabeh, and J.S. VanderGheynst. Production and delivery of a biocontrol agent for *Eutypa* prevention. Presented at American Society of Enology and Viticulture Meeting. 2004
- VanderGheynst, J.S. Quantitative detection and distribution of *Eutypa lata* in grapevine. Presented at American Society of Enology and Viticulture Meeting. 2004
- Joh, L., and J.S. VanderGheynst. Agroinfiltration of plant tissues as a protein production system. Presented at the Annual UC Biotechnology Retreat. 2004

- Suarez, M.J., L.D. Joh, and J.S. VanderGheynst. Extraction of β -Glucuronidase (GUS) from tomato fruit. Presented at the Annual Biomedical Research Conference for Minority Students. October. 2003
- VanderGheynst, J.S. Production of a biological control agent on agricultural residues. Presented at the American Chemical Society National Meeting. August. 2002
- Block, D.E., K. Chador, M. Marshall, M. Olsen, K. Sananikone, N. Tran, J.S. VanderGheynst, and W. Yeh. Optimization of the fermentation of *Fusarium lateritium* for use as a biological control agent. Presented at the American Institute of Chemical Engineers Annual Meeting. November. 1999
- Marshall, M., and J.S. VanderGheynst. Molecular analysis of fungal plant pathogens and biological control agents. *Proceedings of the Institute of Biological Engineering*, 2: C6. 1999
- VanderGheynst, J.S. The use of phospholipid fatty acid analysis to measure microbial community structure changes in composting processes. *Proceedings of the Institute of Biological Engineers*, 2: C7. 1999.
- Lavin, B., and J. VanderGheynst. Growth and oosporogenesis of *Lagenidium giganteum* in semi-solid phase cultivation. *Proceedings of the Institute of Biological Engineering*, 1: C22. 1998
- VanderGheynst, J.S. How agricultural end-users can assess compost quality. Presented at UC Workshop on Compost Use for Pest Management, UC Davis, Davis. May 13. 1997
- VanderGheynst, J.S., and R.C. Fowler. Fostering self-directed learning in biosystems projects: methodology and case examples. Poster presented at the August 1997 IBE meeting, Paper No. 4-7
- VanderGheynst, J.S., D.J. Cogan, and J.M. Gossett. The effect of process management on the emission of odors from composting processes. Poster presented at the August 1997 IBE meeting, Paper No. 6-7.

PATENTS

- JS VanderGheynst; HB Scher. Storage Stable Compositions of Biological Materials. U.S. Patent 7485451 B2 issued Feb 3, 2009
- N Nitin; S Young; JS VanderGheynst. Bioactive Delivery Vehicles. US Patent 10,864,168, 2020

FUNDED RESEARCH AND CONTRACTS

- Title: S-STEM: Scholarships to Accelerate Engineering Leadership and Identity in Graduate Students
 Agency: NSF
 Period: 12/01/2021-11/30/2027
 Amount: \$1,498,020
 PIs: T. Ferreira (PI), S. Kayumova, H. Samendari, R. Laoulache, J.S. VanderGheynst
- Title: Marine Environmental Testing Laboratory Project

Agency: Massachusetts Technology Collaborative
 Period: 09/15/2021- 06/30/2024
 Amount: \$ 739,936
 PIs: S. Lohrenz (PI), T. Ferreira, P. Moisander, B. Howes, J.S. VanderGheynst

Title: Land application of tomato processing effluents and field debris: adding value while minimizing treatment demands

Agency: CA League of Food Processors
 Period: 04/01/2018 - 03/31/2019
 Amount: \$51,557
 PIs: C. Simmons (PI), J. Fernandez-Bayo, J.S. VanderGheynst

Title: The impact of almond by-product composition and nitrogen amendment on black soldier fly cultivation and quality

Agency: CA Almond Board
 Period: 03/01/2018 - 12/31/2019
 Amount: \$177,880
 PIs: J.S. VanderGheynst (PI)

Title: Distance Learning Program
 Agency: Lawrence Livermore National Laboratory
 Period: 10/01/2016 - 09/30/2020
 Amount: \$390,658
 PIs: J.S. VanderGheynst (PI between 2016-2018)

Title: Production of *Hermetia illucens* (black soldier fly) larvae on almond by products

Agency: CA Almond Board
 Period: 08/01/2017 - 12/31/2017
 Amount: \$40,000
 PIs: J.S. VanderGheynst (PI), C.J. Ceballos

Title: Field trial assessment of biosolarization using almond residue amendments to improve soil health and manage pests in almond orchards

Agency: CA Almond Board
 Period: 08/01/2017 - 07/31/2018
 Amount: \$70,000
 PIs: C. Simmons (PI), J.S. VanderGheynst, J.J. Stapleton

Title: UC Davis/Sacramento State Math, Engineering and Science Achievement Program

Agency: UC Office of the President
 Period: 04/01/2017 - 03/31/2018
 Amount: \$180,000
 PIs: J.S. VanderGheynst (PI)

Title: Assessment of almond residual biomass as soil amendment for biosolarization

Agency: CA Almond Board
 Period: 03/01/2017 - 07/31/2017
 Amount: \$58,862
 PIs: C. Simmons (PI), J.S. VanderGheynst, J.J. Stapleton

Title: Reducing toxin exposure for workers in western agriculture: Development of sustainable alternatives to soil fumigation
Agency: NIOSH
Period: 01/01/2017 - 12/30/2022
Amount: \$1,200,000
PIs: C. Simmons (PI), J.S. VanderGheynst, J.J. Stapleton

Title: S-STEM: Preparing Engineering Graduates for the 21st Century
Agency: NSF
Period: 07/01/2016 - 06/30/2021
Amount: \$1,000,000
PIs: J.S. VanderGheynst (PI between 2016-2018), C.E Bronner, K.A. McDonald

Title: UC Davis/Sacramento State Math, Engineering and Science Achievement Program
Agency: UC Office of the President
Period: 04/01/2016 - 03/31/2017
Amount: \$180,000
PIs: J.S. VanderGheynst (PI)

Title: California LSAMP Bridge to the Doctorate (BD) Activity
Agency: NSF
Period: 10/01/2016 - 09/30/2018
Amount: \$1,075,000
PIs: Hillman (PI), P. Mohapatra, J.S. VanderGheynst

Title: Improving microalgae feedstock for biofuel production using CO₂ and waste nutrients from anaerobic digesters
Agency: California Energy Commission
Period: 1/01/2016 - 08/31/2018
Amount: \$600,000
PIs: A. Franz (PI), A.M. Kendall, R. Zhang, J.S. VanderGheynst

Title: UC Davis/Sacramento State Math, Engineering and Science Achievement Program
Agency: UC Office of the President
Period: 04/01/2015 - 03/31/2016
Amount: \$180,000
PIs: J.S. VanderGheynst (PI)

Title: Continuous biological protection and control of algal pond productivity
Agency: US Department of Energy
Period: 9/01/2015 - 8/31/2018
Amount: \$1,000,000
PIs: M. Thelen (PI), L. Carney, T.W. Lane, J.S. VanderGheynst

Title: UC Davis/Sacramento State Math, Engineering and Science Achievement Program
Agency: UC Office of the President
Period: 07/01/2014 - 07/01/2015

Amount: \$180,000
PIs: J.S. VanderGheynst (PI)

Title: Developing co-products from anaerobic digestion: Application of composted anaerobic digestate to soil to enhance sustainable agriculture and waste management
Agency: Diamond Developers Co. LTD, Sustainable Research and Training Program
Period: 9/1/14-12/30/16
Amount: \$150,000
PIs: C. Simmons (PI), J.S. VanderGheynst

Title: Sequential energy and compost production from organic residues
Agency: Diamond Developers Co. LTD, Sustainable Research and Training Program
Period: 9/1/14-12/30/16
Amount: \$150,000
PIs: J.S. VanderGheynst (PI), C. Simmons

Title: Managing soil organic matter amendment and microbial community structure to enhance soil heating during solarization
Agency: NSF – CBET Environmental Sustainability program
Period: 7/1/14-6/30/19
Amount: \$300,009
PIs: J.S. VanderGheynst (PI), C. Simmons, J. Stapleton

Title: Managing mixotrophic algae cultivation for efficient water treatment and biofuel production
Agency: NSF – CBET Energy for Sustainability program
Period: 7/1/14-6/30/19
Amount: \$318,766
PIs: J.S. VanderGheynst (PI), B. Higgins, O. Fiehn, T. Kind

Title: Methane Enhancement by Anaerobic Composting of Food Waste and Fats, Oil and Grease
Agency: CA Energy Commission
Period: 7/1/14-12/31/15
Amount: \$149,999
PIs: J.S. VanderGheynst (PI), R. Yazdani

Title: Modeling of enhanced soil heating, microbial restructuring, and pest disinfestation during solarization of soil with lignocellulosic amendment
Agency: California Department of Pesticide Regulation
Period: 7/1/14-3/30/17
Amount: \$299,999
PIs: C. Simmons (PI), J. Stapleton, J.S. VanderGheynst

Title: Integrating cheminformatic resources for investigating photoautotrophic and mixotrophic metabolism in algae
Agency: National Science Foundation
Period: 1/1/12-12/30/17
Amount: \$2,510,859
PIs: O. Fiehn (PI), T. Kind, J.S. VanderGheynst, J. Labavitch

Title: Ionic liquid resistance in a cellulose degrading community
Agency: UC Lab Fees Research Program
Period: 7/1/12-06/30/16
Amount: \$1,324,958
PIs: J.S. VanderGheynst (PI), M. Thelen, P. D'Haeseleer

Title: Winery Waste Water Treatment using Algae
Agency: Gallo, Inc.
Period: 2/1/12-12/31/12
Amount: \$11,000
PIs: J.S. VanderGheynst (PI)

Title: Co-Robots for STEM Education in the 21st Century
Agency: NSF National Robotics Institute
Period: 9/1/12-08/31/15
Amount: \$950,590
PIs: H. Cheng (PI), J.S. VanderGheynst, T. White

Title: Renewable Energy Systems Opportunity for Unified Research Collaboration and Education (RESOURCE)
Agency: National Science Foundation
Period: 10/1/10-2/28/17
Amount: \$2,803,933
PIs: J.S. VanderGheynst (PI), K. McDonald, B. Jenkins, A. Bellman, L. Joh

Title: Microbial Fuel Cells to Generate Electricity from High-Solids Food-Processing Wastes
Agency: California Energy Commission
Period: 10/1/10-1/31/12
Amount: \$95,000
PIs: J.S. VanderGheynst (PI), F. Rezaei

Title: Leaching Pretreatments for Biomass Feedstock Upgrading
Agency: Chevron Technology Ventures
Period: 1/1/09 – 12/31/12
Amount: \$408,930
PIs: B.M. Jenkins (PI), J.S. VanderGheynst, R. Zhang, T. Jeoh, C. Leshner, P. Thy, S. Kaffka

Title: Liquid fuels from microalgal cell walls and cytoplasmic polysaccharides
Agency: Chevron Technology Ventures
Period: 1/1/09-03/31/12
Amount: \$344,418
PIs: J.S. VanderGheynst (PI) and J. Labavitch

Title: Developing a business case model for the production of bioethanol from food processing wastes and rice straw
Agency: Chevron Technology Ventures
Period: 1/1/09-12/31/11

Amount: \$208,956
 PIs: J.S. VanderGheynst (PI), Ogden, B. M. Jenkins, Z. Fan and R. Zhang

Title: The effect of combined solarization and in solum compost decomposition on soil health
 Agency: BARD
 Period: 10/1/09-03/30/13
 Amount: \$325,000
 PIs: J.S. VanderGheynst (PI), J. Stapleton, M. Raviv, D. Minz

Title: Control of Ash and Slag Transformations and Syngas Quality in Biomass Gasification for Liquid Fuels Synthesis
 Agency: Chevron Technology Ventures
 Period: 1/1/08 – 12/31/11
 Amount: \$884,160
 PIs: B. M. Jenkins (PI), J.S. VanderGheynst, R. Zhang

Title: Emulsion technology for the long-term storage and delivery of microalgae for large-scale biofuel production
 Agency: Chevron Technology Ventures
 Period: 2/1/08-2/1/12
 Amount: \$505,248
 PIs: H. Scher (PI), J.S. VanderGheynst

Title: REU Site: Collaborative Research and Education in Agricultural Technology and Engineering (CREATE)
 Agency: National Science Foundation
 Period: 10/1/08-10/1/12
 Amount: \$360,000
 PIs: J.S. VanderGheynst (PI), P.C. Ronald

Title: Joint BioEnergy Institute (JBEI)
 Agency: Department of Energy (DOE)
 Period: 9/1/07-9/1/15
 Amount: \$125,000,000; subcontract to JSV: \$537,434
 PIs: J. Keasling

Title: IGERT: Collaborative Research and Education in Agricultural Technologies and Engineering (CREATE)
 Agency: National Science Foundation
 Period: 7/1/07-6/30/13
 Amount: \$3,098,985
 PIs: K. McDonald (PI), A. Dandekar, M. Newell-McGloughlin, P. C. Ronald, J.S. VanderGheynst

Title: Development and evaluation of biomass storage alternatives to accommodate seasonal production of biofuel feedstocks
 Agency: Chevron Technology Ventures
 Period: 6/1/07-6/1/11
 Amount: \$945,463

PIs: J.S. VanderGheynst (PI), B. M. Jenkins, R. Zhang
 Title: New Metabolic and Lignocellulosic Deconstruction Technologies from *Acidothermus*
 Agency: Chevron Technology Ventures
 Period: 6/1/07-6/1/11
 Amount: \$899,998
 PIs: A. Berry (PI), J.S. VanderGheynst

Title: Biological Process Research and Development Equipment
 Agency: Chevron Technology Ventures
 Period: 03/01/07 - 02/29/08
 Amount: \$497,650
 PIs: K.A. McDonald (PI), J.S. VanderGheynst

Title: Equipment Request for Biomass Pretreatment and Processing
 Agency: Chevron Technology Ventures
 Period: 03/01/07 - 02/29/08
 Amount: \$35,000
 PIs: R. Zhang (PI), B.M. Jenkins, J.S. VanderGheynst

Title: Influence of sub-lethal heating and soil type on microbial colonization of weed seeds
 Agency: UC Integrated Pest Management Program
 Period: 02/01/07-05/01/07
 Amount: \$12,500
 PIs: J. Stapleton (PI), J.S. VanderGheynst

Title: Design of Water-in-Oil Emulsions for Storage of Microorganisms and Their
 Controlled Release in Aquatic Ecosystems
 Agency: National Science Foundation
 Period: 10/1/06 - 9/30/08
 Amount: \$ 270,000
 PIs: J.S. VanderGheynst (PI), H. Scher

Title: Control of trunk diseases by protecting new pruning wounds, and by trunk surgery and
 subsequent protection of surgical and pruning wounds
 Agency: American Vineyard Foundation
 Period: 04/01/06-04/01/07
 Amount: \$25,000
 PIs: L. Epstein (PI), J.S. VanderGheynst

Title: Epidemiology and control of trunk canker in grapevines in the Sacramento valley
 Agency: American Vineyard Foundation
 Period: 04/01/05-4/01/06
 Amount: \$49,000
 PIs: J.S. VanderGheynst (PI), L. Epstein

Title: Simulating Soil Recolonization Under Typical Conditions
 Agency: Integrated Pest Management

Period: 10/11/05 - 09/30/10
Amount: \$ 2,580
PIs: J.S. VanderGheynst (PI)

Title: Novel formulation methods to improve the shelf life and delivery of biological control agents
Agency: USDA-NRI
Period: 10/01/03-10/01/06
Amount: \$200,000
PIs: J.S. VanderGheynst (PI), H. Scher

Title: Development of molecular techniques for the analysis of microbial communities on grapes
Agency: American Vineyard Foundation
Period: 06/01/01 - 06/01/02
Amount: \$25,000
PIs: J.S. VanderGheynst (PI), D. Mills

Title: Graduate Assistance in Areas of National Need
Agency: US Department of Education
Period: 10/01/00-10/01/03
Amount: \$365,400
PIs: J.S. VanderGheynst (PI), B. Hartsough, R. Zhang

Title: Food and Agricultural National Needs Fellowship Grant
Agency: USDA National Needs
Period: 10/01/00-10/01/03
Amount: \$207,000
PIs: M. Delwiche (PI), J.S. VanderGheynst

Title: Development of Control Methods for Eutypa Dieback Disease
Agency: California Competitive Grant Program for Research in Viticulture and Enology, and the American Vineyard Foundation
Period: 04/01/00-03/01/04
Amount: \$525,000
PIs: D. Block (PI), L. Epstein, Gu, D. Gubler, Molyneux, J.S. VanderGheynst

Title: Research Experience for Undergraduates
Agency: National Science Foundation
Period: 06/01/00 - 10/01/01
Amount: \$10,294
PIs: D. Block (PI), J.S. VanderGheynst

Title: Influence of moisture and oxygen levels on *Lagenidium giganteum*
Agency: BioSTAR-Agraquest
Period: 09/01/00 - 08/31/01
Amount: \$45,785
PIs: J.S. VanderGheynst (PI)

Title: Solid state fermentation for upgrading grape pomace
Agency: UC Mexus Conacyt
Period: 07/01/99 - 06/30/00
Amount: \$24,990
PIs: J.S. VanderGheynst (PI)

Title: Research Experience for Undergraduates
Agency: National Science Foundation
Period: 09/01/98 - 08/31/99
Amount: \$10,294
PIs: D. Block (PI), J.S. VanderGheynst

Title: Semi-solid phase cultivation of *Lagenidium giganteum*
Agency: BioSTAR- Agraquest
Period: 06/01/98 - 05/31/99
Amount: \$24,823
PIs: J.S. VanderGheynst (PI)

Title: Monitoring biological control agents in composting
Agency: National Science Foundation
Period: 09/01/98 - 08/31/00
Amount: \$99,993
PIs: D. Block (PI), J.S. VanderGheynst

Title: Efficient production of *Botrytis cinerea* for vineyard inoculation
Agency: Far Niente
Period: 07/01/99 - 11/30/00
Amount: \$10,005
PIs: D. Block (PI), J.S. VanderGheynst

Title: Controlled degradation of organic wastes for production of disease-suppressive soil amendments
Agency: USDA
Period: 10/01/98 - 09/30/00
Amount: \$63,614
PIs: J.S. VanderGheynst (PI)

Title: Graduate assistance in areas of national need
Agency: US Department of Education
Period: 09/01/97 - 08/31/00
Amount: \$351,258
PIs: B. Hartsough (PI), R. Zhang, J.S. VanderGheynst

AGRICULTURAL EXPERIMENT STATION PROJECTS

CA-D-BAE-2228-RR. The Science and Engineering for a Biobased Industry and Economy - S1041 Multistate Regional Project, 10/1/2013-09/30/2018

CA-D-XXX-2091-H. Developing Microalgae Conversion Systems for Enhanced Biofuel and Bioproduct Refining. 10/01/2010-09/30/2014

CA-D-BAE-2005-RR. The Science and Engineering for a Biobased Industry and Economy - S1041 Multistate Regional Project, 10/1/2009-09/30/2013

CA-D-BAE-7102-RR. The Science and Engineering for a Biobased Industry and Economy. S1007 Multistate Regional Project, 10/1/2003-09/30/2008

CA-D*-XXX-7027-H. Production and Delivery of Microorganisms for the Biological Control of Plant Pathogens and Insects. 10/1/2001-09/30/2006

CA-D*-XXX-7210. Controlled Degradation of Organic Wastes for Production of Disease-suppressive Soil Amendments. 10/01/1998 - 09/30/2001

RESEARCH SUPERVISION

Post-Doctoral Researchers Supervised

Dr. Shannon Ceballos (PhD in Molecular and Cellular Biology, University of CA, Davis), December 2013-November 2017.

Dr. Sara Pace (PhD in Biological Systems Engineering, University of CA, Davis), July 2017-November 2017.

Dr. Ygal Achmon (PhD in Biotechnology and Food Engineering, Technion-Israel Institute of Technology, Haifa, Israel), October 2014-August 2017.

Dr. Jesus Fernández-Bayo (PhD in Soil Science. University of Granada, Spain), February 2015-December 2016.

Dr. Brendan Higgins (PhD in Biological Systems Engineering, University of CA, Davis), December 2014-August 2016.

Dr. Chao Wei Yu (PhD in Biological Systems Engineering, University of CA, Davis), July 2012-November 2016. Deceased.

Dr. Amitha Reddy (PhD in Biological Systems Engineering, University of CA, Davis), July 2007-August 2016.

Dr. Christopher Simmons (PhD in Biological Systems Engineering, University of CA, Davis), July 2011-August 2013.

Dr. Farzaneh Rezaei (PhD in Biological and Agricultural Engineering, Penn State University, PA), July 2009-August 2016.

Dr. Yu-Shen Cheng (PhD in Biological Systems Engineering, University of CA, Davis), December 2010–February 2012.

Dr. Yi Zheng (PhD in Biological Systems Engineering, University of CA, Davis), July 2007-September 2010.

Service as Major Professor

Graduated PhD Students under Direct Supervision

Dr. Lydia Palma	2020	Cultivation of Black Soldier Fly Larvae on Almond Byproduct as a Sustainable Protein Source
Dr. Lauren Jabusch	2018	Algae Production Under Predation and with Probiotic Amendment: Techno-economic Analyses
Dr. Sara Pace	2017	Life Cycle Assessment Based Modeling of Organic Waste Residue Using Anaerobic Digestion and Composting
Dr. Josh Claypool	2017	Understanding Microbial Community Dynamics in High-Solids Lignocellulolytic Systems Using Bioinformatics Tools
Dr. Brendan Higgins	2014	Co-culturing Green Algae with Bacteria for Enhanced Growth and Production of Biofuel Precursors
Dr. Lorena Fernandez	2013	Biological Stability and Delivery Studies to Elucidate the Role of Thickener Solid Particles on Water-in-Oil Emulsion Containing Microalgae
Dr. Orn-u-Ma Tanadul	2013	Storage Carbohydrate Metabolism in Microalgae at Elevated CO ₂
Dr. Christopher Simmons	2012	An Analysis of <i>Agrobacterium tumefaciens</i> Attachment to Leaf Tissues and Subsequent Plant Transformation
Dr. Yu-Shen Cheng	2011	Comparative study of <i>Chlorella</i> Carbohydrates and Associated Biological Processes for Biofuel Production
Dr. Megan Marshall	2007	Development and Validation of Predictive Models of Soil Heating and Pathogen Inactivation during Soil Solarization
Dr. Amitha Reddy	2007	Biological Activity and Community Structure Leading to Thermal Runaway in Stored Rice Straw
Dr. Larry Joh	2005	High-Level Transient Expression, Extraction, and Purification of Recombinant β -glucuronidase from Agroinfiltrated Lettuce

Graduated MS Students under Direct Supervision (with thesis)

Matthew Paddock	2019	Growth of Microalgae on Anaerobic Digestate for Wastewater Treatment & Biofuel Production
Kelley Hestmark	2017	Investigation of the Impact of Green Waste and Compost Addition on the Efficacy of Soil Biosolarization
Lauren Jabusch	2016	Characterization of Algal Cell Walls for Biofuels Development
Esther Jin Kim	2016	Understanding Microbial Activity and Silica Degradation in Rice Straw
Todd Dooley	2010	Economic, Energy, and Environmental Alternative Analysis of Process Models for Producing Bioethanol
Damien Shultz	2007	Evaluation and Optimization of Two Water-in-Oil Emulsions for the Storage and Delivery of Fungal Biopesticides
Danielle Aslam	2006	Measuring the Phytotoxicity of Compost
Christopher Simmons	2007	Biological and Physical Factors that Affect Transient Expression in Agroinfiltrated Harvested Leaf Tissue
Yik Lam	2007	Improving the Consistency and Yield of Recombinant Protein Expression in Agroinfiltrated Lettuce Tissue
Megan Marshall	2001	Characterization of a Molecular Method for Distinguishing Microbial Communities in Compost
Melinda Jones	2002	An Economic Analysis of Alpha-1-Antitrypsin Production in Rice Seed and Rice Cell Culture
Beth May	2001	A Study of the Efficacy and Kinetics of <i>Lagenidium giganteum</i>

TEACHING EXPERIENCE AND CURRICULUM DEVELOPMENT

ENG 3. Introduction to Engineering Design.

Instructor of record in Fall 2015 and Winter 2017

- Course description: Introduction to the engineering design process that incorporates the development of oral and written communication skills integral to the design process. Conducted in workshop format with hands-on engagement in the design process.
- Format: 2 units of lecture and 2 units of studio
- Curriculum development: Developed and implemented the course. Created all lectures and assignments. In partnership with the College of Engineering development team, acquired \$200,000 for renovating the Richard Dorf Engineering Communications and Design Classroom, which was officially opened for instruction in Fall quarter 2015.

ENG 1. Introduction to Engineering.

Instructor of record in Fall 2009, Winter 2010, Fall 2010, Winter 2011, Fall 2011, Winter 2012, Fall 2012, Winter 2013, and Fall 2013

- Course description: Introduction to the role of engineers in the acquisition and development of engineering knowledge, the differences and similarities among engineering fields, and the work ethic and skills required for engineering.
- Format: 1 unit of lecture
- Curriculum development: Developed and implemented the course for all incoming freshmen in the College of Engineering

ENG 11. Introduction to Issues in Engineering.

Instructor of record in Fall 2011, Fall 2012, and Fall 2013

- Course description: Introduction to communication, teamwork and design for freshman engineering students who participated in a summer transition program.
- Format: 1 unit of lecture
- Curriculum development: Developed and introduced a design project and presentation assignment.

ENG 98. Gearing up for Graduate School.

Instructor of record in Winter 2014, Winter 2015, Winter 2016, Winter 2017, and Winter 2018

- Course description: This seminar series aims to clarify the opportunities available to engineering students who pursue a graduate degree. General guidance is provided on the elements of a graduate school application. Assignments are intended to prepare seminar participants to submit the required elements of a graduate school application.
- Format: 1 unit of lecture

EBS 127. Mass Transfer and Kinetics in Biological Systems.

Instructor of record in Fall 2008, Fall 2009, Fall 2011, Fall 2013, and Fall 2017

- Course description: Fundamentals of mass transfer and kinetics in biological systems. Molecular diffusion and convection. Biological rate equations. Heterogeneous kinetics. Batch and continuous reaction processes. Mass transfer operations.
- Format: 3 units of lecture and 1 unit of laboratory
- Curriculum development: Developed and implemented the course. It is required for students in the Biological Systems Engineering undergraduate major and used for assessment of ABET outcomes. Developed lectures, assignments and laboratories.

EBS 125. Heat and Mass Transfer in Biological Systems.

Instructor of record in Spring 1997, Spring 1999, Spring 2001, Spring 2003, Spring 2005, and Spring 2007

- Course description: Fundamentals of heat transfer with application to biological systems. Steady and transient heat transfer. Analysis and simulation of heat conduction, convection, and radiation. Heat transfer operations.
- Format: 3 units of lecture and 1 unit of laboratory
- Curriculum development: Developed new course notes and laboratory on solar heat transfer.

EBS 132. Unit Operations in Biological and Food Engineering.

Instructor of record in Spring 1998, Spring 2000, Spring 2002, Spring 2004, and Spring 2006

- Course description: Mechanical unit operations which involve non-Newtonian flow. Thermal operations related to drying, sterilization, freezing and refrigeration. Mass transfer operations applied to membrane separations, adsorption and absorption processes.
- Format: 3 units of lecture and 1 unit of laboratory
- Curriculum development: Developed new course notes and laboratories on recovery of recombinant proteins from plants.

EBS 160. Biotechnical Systems Engineering.

Instructor of record in Winter 2000, Winter 2001, Winter 2002, Winter 2003, Winter 2004, Winter 2005, Winter 2006, Winter 2007, and Winter 2008

- Course description: Microbial and enzyme kinetics. Biomass conversion. Microbial pesticides. Production and recovery of biochemicals from plants and animals. Detection of recombinant tissues and microorganisms.
- Format: 3 units of lecture and 1 unit of laboratory
- Curriculum development: Responsible for developing this new elective course at the undergraduate level to serve students in the specialization of biotechnical engineering. Developed all lectures, assignments and laboratories.

EBS 267. Renewable Bioprocessing.

Instructor of record in Fall 2002, Fall 2004, Fall 2006, Fall 2008, Fall 2010, Fall 2012, and Spring 2015

- Course description: Applications of biotechnology and bioprocess engineering in the use of plant biomass for the production of biochemicals and fuels. Design of microbial and plant -based production systems including associated fermentation, extraction and purification processes.
- Format: 3 units of lecture
- Curriculum development: Responsible for developing this new course at the graduate level to support graduate students investigating the biochemical conversion of biomass to biofuels and bioproducts. Developed all lectures, assignments and case studies.

MCB 263. Biotechnology Fundamentals.

Co-instructor of record in Winter 2006, Winter 2008, and Winter 2010

- Course description: Fundamentals of molecular biology and engineering as they relate to recombinant DNA technology. Rate processes of biological systems, optimization of bioreactor performance, and other practical issues related to over-expression and production of recombinant molecules.
- Format: 2 units of lecture

EBS 170. Engineering Design for Biological Systems Engineers.

Served as capstone project advisor (3-unit commitment) for the following projects:

2015-2016. Cultivation of black soldier fly larvae.

2015-2016. Algal encapsulation of nutraceutical compounds (co-adviser with N. Nitin).

2010-2011. The effects of varying calcium and boron supplied to *Lactuca sativa* on *in planta* transgene transient expression following Agroinfiltration.

2008-2009. Estimation of overall heat transfer coefficients for an acid pretreatment cooling system.

2005-2006. Economics of agroinfiltration for recombinant protein production.

- 2004-2005. Production, formulation and delivery of *Lagenidium giganteum* for mosquito control.
- 2002-2003. Efficient production and delivery of *Fusarium lateritium* for Eutypa dieback control.
- 2001-2002. Design of a gradient maker for denaturing gradient gel electrophoresis.
- 2000-2001. Production of *Lagenidium giganteum* oospores in insect cell culture.
- 1999-2000. Efficient cultivation of *Botrytis cinerea* for production of late-harvest wines.
- 1999-2001. Encapsulation of the fungus *Hirsutella rhossiliensis* for biological control.
- 1998-1999. A system to measure pressure drop during the solid-state cultivation of fungi.
- 1998-1999. Development and characterization of a fluidized bed reactor for solid-state cultivation.
- 1997-1998. Design and testing of a semi-continuous reactor for solid-state cultivation.
- 1997-1998. Experimentation and modeling of a bench-scale composting reactor.

EBS 162. Industrial Bioprocessing.

Guest lecturer in Winter 2009

- Course description: Processing steps involved in the collection of feedstocks, processing biological materials to value added products such as enzymes, biopharmaceuticals, fuels, and chemicals and subsequent waste management.
- Format: 3 units of lecture

PBI 214. Higher Plant Cell Walls.

Guest lecturer in Fall 2008, Fall 2010, Fall 2012, and Fall 2016

- Course description: Lectures focus on the structure, analysis, synthesis, and development-related metabolism of cell walls. Discussions center on analysis of scientific papers related to lecture topics.
- Format: 2 units of lecture and 1 unit of discussion
- Curriculum development: Developed lecture notes and exam questions on the pretreatment of lignocellulose for biochemical conversion to biofuels and biochemicals.

ECI 190. The Civil Engineer in Society.

Guest lecturer in Winter 2014, Spring 2014, Winter 2015, and Spring 2015

- Course description: The Civil Engineering profession; introduction to concepts in business, management, public policy and leadership including the importance of professional licensure and a discussion of professional ethical and societal issues related to civil engineering.
- Format: 2 units of lecture
- Curriculum development: Developed lecture and assignment on the biology of leadership.