Monthly Newsletter for the Biosciences & Environmental Sciences Divisions (B&ESD) March 2014

Pubs and Products

Bast, C. B., Diamond, G., Rodgers, G., and E.V. Falke. 2014. Benzonitrile. Acute Exposure Guideline Levels. In: Acute Exposure Guideline Levels for Selected Airborne Chemicals. Volume 16. National Research Council, The National Academies Press. Washington, D.C. pp. 121-142.

Bast, C. B., Diamond, G., Rodgers, G., and E.V. Falke. 2014. Methacrylonitrile. Acute Exposure Guideline Levels. In: Acute Exposure Guideline Levels for Selected Airborne Chemicals. Volume 16. National Research Council, The National Academies Press. Washington, D.C. pp. 143-179.

C.B. Bast, L. Ingerman, G. Leach, and E.V. Falke. 2014. Tear Gas (CS). Acute Exposure Guideline Levels. In: Acute Exposure Guideline Levels for Selected Airborne Chemicals. Volume 16. National Research Council, The National Academies Press. Washington, D.C. pp. 309-380.

Bast, C. B., Klotzbach, J., Rodgers, G., and E.V. Falke. 2014. Aliphatic Nitriles. Acute Exposure Guideline Levels. In: Acute Exposure Guideline Levels for Selected Airborne Chemicals. Volume 16. National Research Council, The National Academies Press. Washington, D.C. pp. 13-120.

Baxter, H., Mazarei, M., Labbe, N., Kline, L., Cheng, Q., Windham, M., Mann, D. G. J., Fu, C., Ziebell, A., Sykes, R., Rodriguez, M., Jr., Davis, M., Mielenz, J., Dixon, R. A., Wang, Z.-Y., and C. N. Stewart, Jr. 2014. Two-year field analysis of reduced recalcitrance transgenic switchgrass. *Plant Biotech J.* Available online. DOI: 10.1111/pbi.12195

Brown, S. D., Nagaraju, S., Utturkar, S., De Tissera, S., Segovia, S., Mitchell, W., Land, M. L., Dassanayake, A., and M. Köpke. 2014. Comparison of single-molecule sequencing and hybrid approaches for finishing the genome of Clostridium autoethanogenum and analysis of CRISPR systems in industrial relevant Clostridia. *Biotechnol. Biofuel.* Available online. DOI: 10.1186/1754-6834-7-40

Campbell, A. G., Schwientek, P., Vishnivetskaya, T., Woyke, T., Levy, S., Beall, C. J., Griffen, A., Leys, E., and M. Podar. 2014. Diversity and genomic insights into the uncultured Chloroflexi from the human microbiota. *Environ. Microbiol.* Available online. DOI: 10.1111/1462-2920.12461

Damit, B., Wu, C.-Y., and M.-D. Cheng. 2014. On the validity of the Poisson Assumption in Sampling Nanometer-Sized Aerosols. *Aerosol Sci. Tech.* 48: 562-570.

A report on “Gaps in Agricultural and Forestry Best Management Practices for the Lower Little Tennessee Watershed: Examining Environmental Sustainability for Bioenergy” was submitted to the US Department of Energy’s (DOE) Bioenergy Technologies Office (BETO) by Rebecca Efroymson, Esther Parish, and Virginia Dale in fulfillment of ORNL’s WBS 4.2.2.40, Task E goal for FY14, Quarter 2.

Hansen, R. R., Shubert, K. R., Morrell-Falvey, J. L., Lokitz, B. S., Doktycz, M. J., and S. T. Retterer.

2014. Microstructured block copolymer surfaces for control of microbe adhesion and aggregation. *Biosensors* 4: 63-75.

Jagadamma, S., Mayes, M. A., Steinweg, J. M., and S. M. Schaeffer. 2014. Substrate quality alters microbial mineralization of added substrate and soil organic carbon. *Biogeosci. Disc.* 11: 4451–4482. DOI: 10.5194/bgd-11-4451-2014.

Lin, H., Hurt, R. A., Jr., Johs, A., Parks, J. M., Morrell-Falvey, J. L., Liang, L., Elias, D. A., and B. Gu. 2014. Unexpected effects of gene deletion on mercury interactions with the methylation-deficient mutant ΔhgcAB. *Environ. Sci. Technol. Lett.* Available online. DOI: 10.1021/ez500107r

Lin, X., Tfaily, M. M., Green, S. J., Steinweg, J. M., Chanton, P., Imvittaya, A., Chanton, J. P., Cooper, W., Schadt, C., and J. E. Kostka. 2014. Microbial metabolic potential for carbon degradation and nutrient acquisition (N, P) in an ombrotrophic peatland. Appl. Environ. Microbiol. Available online. DOI: 10.1128/AEM.00206-14

Lin, X., Tfaily, M. M., Steinweg, J. M., Chanton, P., Esson, K., Yang, Z. K., Chanton, J. P., Copper, W., Schadt, C. W., and J. E. Kostka. 2014. Microbial community stratification linked to the utilization of carbohydrates and phosphorus limitation in a boreal peatland at Marcell Experimental Forest. *Appl. Environ. Microbiol.* Available online. DOI: 10.1128/AEM.00205-14

Milanez, S. 2014. Chloroethane. In: Wexler, P. (Ed.), Encyclopedia of Toxicology, 3rd edition volume 1. Elsevier Inc., Academic Press, pp. 880–882.

Milanez, S. 2014. Chloromethane. In: Wexler, P. (Ed.), Encyclopedia of Toxicology, 3rd edition volume 1. Elsevier Inc., Academic Press, pp. 891–893.

Pierce, E. M., Lukens, W. W., Fitts, J. P., Jantzen, C. M., and G. Tang, G. 2014. Experimental determination of the speciation, partitioning, and release of perrhenate as a chemical surrogate for pertechnetate from a sodalite-bearing multiphase ceramic waste form. *Appl. Geochem.* 42: 47-59.

Rao, B., Simpson, C., Lin, H., Liang, L, and B. Gu. 2014. Determination of thiol functional groups on bacteria and natural organic matter in environmental systems. *Talanta.* 119: 240-7.

Wood, C.S., 2014. Molinate. In: Wexler, P. (Ed.), Encyclopedia of Toxicology, 3rd edition vol 3. Elsevier Inc., Academic Press, pp. 381–382.

Wood, C.S., 2014. Phosphine. In: Wexler, P. (Ed.), Encyclopedia of Toxicology, 3rd edition vol 3. Elsevier Inc., Academic Press, pp. 913–915.

Wood, C., Carlson-Lynch, H., Kim, N., and E.V. Falke. 2014. Hydrogen Selenide. Acute Exposure Guideline Levels. In: Acute Exposure Guideline Levels for Selected Airborne Chemicals. Volume 16. National Research Council, The National Academies Press. Washington, D.C. pp. 236-266.

Wymore, T., Field, M. J., Langan, P., Smith, J. C., and J. M. Parks. 2014. Hydrolysis of DFP and the nerve agent (S)-sarin by DFPase proceeds along two different reaction pathways: Implications for engineering bioscavengers. *J. Phys. Chem. B* Available online. DOI:10.1021/jp410422c

Yin, H., Chen, C.J., Yang, J., Weston, D.J., Chen, J.G., Muchero, W., Ye, N., Tschaplinski, T.J., Wullschleger, S.D., Cheng, Z.M., Tuskan, G.A., and X. Yang. 2014. Functional genomics of drought tolerance in bioenergy crops. *Crit. Rev. Plant Sci.* 33: 205-224

Notable Achievements

Jeff Warren attended the Mer Bleue Peatland Workshop in Montreal, Canada during March 3rd-4th for discussions on mesocosm design, peatland function and presentation of work conducted at the Spruce and Peatland Responses Under Climatic and Environmental Change (SPRUCE) site: "Plant water relations in a spruce – sphagnum bog (to be) subjected to climate change treatments."

During March 3rd-7th Arnaldo Walter, a sustainability expert and professor from Unicamp in Campinas Brazil, was hosted at Oak Ridge National Laboratory (ORNL) by Keith Kline and Maggie Davis to collaborate on common indicators for sustainable biofuel initiatives. Arnaldo also participated in the Department of Energy (DOE) Landscape Design Workshop (New Bern, NC).

During March 4th-6th Virginia Dale, Keith Kline, Yetta Jager and Natalie Griffiths attended the "Incorporating Bioenergy into Sustainable Landscape Designs" Workshop in New Bern, North Carolina. This workshop was hosted by the U.S. Department of Energy (DOE), Bioenergy Technologies Office. Virginia spoke on "A Landscape Design for Bioenergy Feedstocks," and Keith spoke on "Biomass Standards."

On March 5th Jenny Morrell-Falvey hosted students that are being recruited for the University of Tennessee (UT)-ORNL Graduate School of Genome Science and Technology (GST). They met with ORNL staff and toured the Spallation Neutron Source (SNS), the Computer Overlook Room, EVEREST and the Joint Institute for Biological Sciences (JIBS). Mitch Doktycz gave a presentation "Introduction to ORNL and Its Connection to GST."

Brennan Smith attended the Federal Inland Hydropower Working Group (FIHWG) meeting in Denver, CO, during March 5th-7th.

On March 7th Jeremy Smith presented a lecture entitled "Mad as Hatters. Margaret Thatcher, Albert Einstein and Mercury" to the ORNL/University of Tennessee, Knoxville (UTK) GST Annual Retreat in Knoxville.

Carol Wood was elected treasurer of the Board of Directors of the American Board of Toxicology (ABT). Carol is in her second year of a four-year term on the ABT Board of Directors.

On March 7th Assistant Professor Floor van der Hilst and her Ph.D. student Judith Verstegan of the Copernicus Institute of Sustainable Development, Ultrecht University, The Netherlands, visited ORNL to discuss their research on bioenergy sustainability and opportunities for collaboration.

Several members of the Biosciences Division (BSD) and the Environmental Sciences Division (ESD) (specifically Taniya Roy Chowdhury) have been involved in the formation of the Oak Ridge

Postdoctoral Association (ORPA) back in the fall of 2012. Since then, ORPA has matured to a successful organization to foster the sense of community among the postdoctoral research staff, to advocate for and be the representative voice of the postdoctoral community, to facilitate career development, and to promote the social well-being of its members. Four committees: Research, Career Development, International, and Social provide seminars, workshops, as well as social activities and of late, a number of Postdocs and Postmasters from BSD and ESD (Kaitlin J. Palla, Anthony C. Bryan, Michael B. Bellamy, Makhan L. Virdi, and Juliane Hopf), besides other divisions, are volunteering for ORPA to support ORNL's Postdocs in every possible way. More general information about ORPA, its bylaws, upcoming events and volunteering opportunities are available at:
https://portal02.ornl.gov/sites/universityrecruiting/postdoc/PDA/SitePages/Home.aspx.
In addition, ORPA would like to invite all Postdoctoral and Postmasters researchers at ORNL to attend the 2nd Annual ORNL Postdoc Research Symposium on Thursday July 10th. All regarding information and important dates are listed on ORPA's SharePoint-Site:
https://portal02.ornl.gov/sites/universityrecruiting/postdoc/PDA/2ndPostdocSymposium/SitePages/Home.aspx.

On March 10th Esther Parish, Maggie Davis and Tony King participated in a call with the City of Knoxville Sustainability Trainability staff to discuss regional vulnerabilities to climate change and potential links with ORNL and the City of Knoxville.

Kitty McCracken was elected to the Board of the Tennessee Exotic Pest Plant Council at their meeting in Nashville on March 11th.

Also on March 11th Erin Webb attended a meeting to discuss ORNL's participation in the United States Department of Agriculture (USDA) project at the University of Kentucky in Lexington, KY.

Brennan Smith and Patrick O'Connor met with Jim Miller Chris Utracki (Electric Utility Cost Group [EUCG] Hydroelectric Productivity Committee [HPC] Chair) to discuss the EUCG Analysis Collaboration in Buffalo, NY, during March 11th-12th.

ORNL Distributed Active Archive Center (DAAC) manager, Suresh K. SanthanaVannan made a presentation on ORNL's Climate Change Science Institute (CCSI) on data theme progress to the CCSI Science Advisory Board (SAB) on March 12th. The presentation included several of ORNL DAAC's data and community activities.

On March 12th Virginia Dale, Esther Parish, Keith Kline and Maggie Davis presented a poster on "Bioenergy Sustainability" to highlight ongoing Center for BioEnergy Sustainability (CBES) research at the annual Science Advisory Board review of the ORNL CCSI.

On March 12th Natalie Griffiths *et al.* presented a poster on "Water quality in forested watersheds prior to and during conversion to short-rotation pine for bioenergy" at the annual Science Advisory Board review of the ORNL CCSI.

Art Ragauskas, Georgia Institute of Technology, Paper Science and Technology Institute, has been named the 14th University of Tennessee/Oak Ridge National Laboratory Governor's Chair. Art will serve as Governor's Chair for Biorefining, based in the University of Tennessee's Department of Chemical and Biomolecular Engineering. He will serve in the Oak Ridge National

Laboratory Energy and Environmental Sciences Directorate, Biosciences Division, and continue as a member of the Department of Energy's BioEnergy Science Center.

ORNL DAAC manager, Suresh K. SanthanaVannan participated in a presentation to John Holdren, Assistant to the President for Science and Technology and Director of the White House Office of Science and Technology Policy, on March 13th. The presentation highlighted some of ORNL DAAC's data capabilities and was included as part of a broader presentation on the ORNL's CCSI.

The BioEnergy Science Center (BESC) has developed a national education and outreach program entitled "Farming for Fuels" in association with The Creative Discovery Museum (CDM). The goal of the Farming for Fuels program is to educate upper elementary and middle school students as well as the general public about alternative sustainable inexpensive energy sources, including one of BESC's research focus areas: creating biofuels from nonfood crops such as Switchgrass and Popular. This outreach program is featured in an article written by Wayne Robinson, Creative Discovery Museum, that will reach nearly 600 science and technology museums by way of the March-April 2014 issue of *Dimensions*, a bimonthly magazine of the Association of Science-Technology Centers, Washington, DC.

The 247th American Chemical Society Spring National Meeting was held in Dallas, TX, during March 16th-20th. The following presentations and published abstracts were included:

- Baohua Gu gave an oral presentation on the roles of Iron and Iron-oxides on the adsorption, transport, and degradation of soil organic matter.
- Benjamin Mann gave an oral presentation on High-resolution profiling of permafrost soil organic carbon composition, characteristics, and relations to carbon turnover rates.
- K. Lilova, L. Wu, E. M. Pierce, C. F. Brown, J. Schliesser, B. Woodfield, and A. Navrotsky. Structure and Thermochemical Studies of Feldspathoid Minerals Used in Nuclear Waste Management presented during the Geochemistry Society Symposium entitled: Geochemistry of Nuclear Waste Storage and Disposition.
- J. B. Dickson, J. B. Harsh, and E. M. Pierce. Incorporation of a Pertechnetate Analog—Perrhenate—by Sodalite in Competition with Nitrate presented during the Geochemistry Society Symposium entitled: Geochemistry of Nuclear Waste Storage and Disposition.
- J. M. Scaglione, K. Banerjee, R. Howard, and E. M. Pierce. Impacts of Groundwater Ionic Species on Spent Fuel Reactivity presented during Geochemistry Society Symposium entitled: Geochemistry of Nuclear Waste Storage and Disposition.
- S. N. Kerisit, E. M. Pierce, and J. V. Ryan. Monte Carlo Simulations of the Corrosion of Borosilicate Glasses. Presented during Geochemistry Society Symposium entitled: Geochemistry of Nuclear Waste Storage and Disposition.

Baohua Gu, along with John Bargar and Scott Fendorf of Stanford University, organized a symposium on "Biogeochemistry in Support of Climate-Land Modeling" at the 247th American Chemical Society Spring National Meeting in Dallas, TX.

Eric Pierce hosted a session, "Geochemistry of Nuclear Waste Storage and Disposition," at the 247th American Chemical Society Spring National Meeting in Dallas, TX.

Dave Ussery served as Chair and Review Panel Member in the Special Emphasis Panel that met on March 13th to review grant applications at the National Institute of Allergy and Infectious Diseases (NIAID) in association with the National Institutes of Health (NIH).

Chris Schadt presented a talk at the Joint Genome Institute (JGI)-Microbial program workshop from the user's perspective on working with JGI as part of the various Community Sequencing Program (CSP) projects resulting from PMI-JGI collaborations. March 18, 2014,9th Annual DOE JGI User Meeting, Walnut Creek, California.

Mark Bevelhimer and Brenda Pracheil attended the Tennessee Chapter of the American Fisheries Society in Counce, TN, during March 18th-20th. Mark Bevelhimer presented "Hydroacoustics Survey of Fish Distribution at a Power Plant Heated Discharge." Brenda Pracheil presented "Spatial Distribution of Threats to Paddlefish Populations across the Southeastern United States."

The poster, "Defining the functional diversity of the Populus root microbiome," was presented at the 9th Annual DOE JGI User Meeting Walnut Creek, CA, March 18th-20th. Coauthors were listed as W. Nathan Cude, T.-Y. S. Lu, M. S. Robeson II, Z. K. Yang, C. Timm, D. J. Weston, S. L. Allman, M. Podar, C. W. Schadt, C. S. Harwood, A. L. Schaefer, Y. Oda, J. L. Morrell-Falvey, A. Bible, D. W. Ussery, G. A. Tuskan, M. J. Doktycz and D. A. Pelletier.

Eric Pierce attended a meeting in Washington, D.C., on the new technology development program at DOE Office of Environmental Management (EM) program referred to as ARPA EM. Several conference calls were also conducted leading up to this meeting also with the goal of identifying ways to incorporate innovation into the DOE EM.

ORNL DAAC scientist Bob Cook participated in an External Advisory Board review of the Western Consortium for Watershed Analysis, Visualization and Exploration (WC-WAVE), a National Science Foundation (NSF) Experimental Program to Stimulate Competitive Research (EPSCoR) consortium run in Idaho, Nevada, and New Mexico. This review took place in Boise, ID, during March 19th-21st at the outset of the project. WC-WAVE will generate a virtual mountainous watershed (VW) framework to create and integrate watershed models. The VW framework capabilities will simulate watershed dynamics, enabling researchers to easily acquire and integrate data, visualize the data to obtain results, and identify environmental consequences of hydrologic changes.

Eric Pierce attended a meeting in Washington, D.C., with the Khlopin Radium Institute to discuss the next phase of EM International Program Funding for mercury technology development.

Sindhu Jagadamma was appointed as an Editorial Board Member for African Journal of Agricultural Research.

Brennan Smith attended the Centre for Energy Advancement through Technological Innovation (CEATI) Hydro Workshop in Palm Desert, CA, during March 19th – 21st.

Eric Pierce and Yarom Polsky participated in a multi-lab effort to develop a big idea in subsurface science. The DOE National Laboratory Idea developed was entitled "Real-time Control of

Subsurface Fractures and Fluid Flow." This ongoing effort is expected to support the FY16 budget process.

Erin Webb has been invited to serve on the Eastern Regional Advisory Council for the University of Tennessee Institute of Agriculture. The key agenda item of the meeting is the "rural balance sheet" of the Governor's Rural Challenge: https://www.tn.gov/agriculture/general/ruralchallenge.shtml#MainContent.

Eric Pierce has been identified as the ORNL Interface for DOE Office of River Protection (ORP)/Waste Treatment and Immobilization Plant (WTP). This support role represents a follow-up action from the DOE meeting held on Feb. 6 in Richland, WA entitled: "Refining the National Laboratory Role in DOE's Office of River Protection Mission."

Pat Parr served as Discover Life in America board chair for the All Taxa Biodiversity Conference in Gatlinburg, TN, during March 20th-21st. The conference was also attended by Kitty McCRacken and Angelina Haines.
Kitty McCracken presented a talk, "Bats on the Oak Ridge Reservation" at the Discover Life in America All Taxa Biodiversity Conference in Gatlinburg, TN, on March 21st.

On March 21st the Plant Microbe Interfaces (PMI) Leadership team conducted a Scientific Advisory Board Meeting in Walnut Creek, California, following the 9th annual DOE JGI User Meeting. Scientific Advisory Board members participating were David Benton (University of Wisconsin), Jason Stajich (University of California-Riverside) and Eugene Nester (University of Washington). Susannah Tringe (JGI-Lawrence Berkeley National Laboratory [LBNL]) joined the meeting and contributed as an ad hoc member for this particular meeting.

A recent article by Balaji Rao, Carolyne Simpson, Hui Lin, Liyuan Liang and Baohua Gu was featured online on Global Medical Discovery [ISSN 1929-8536] (http://globalmedicaldiscovery.com). Read more online at http://globalmedicaldiscovery.com/key-scientific-articles/determination-thiol-functional-groups-bacteria-natural-organic-matter-environmental-systems/. This work developed a new method to determine thiols on bacterial cells and natural organic matter in environmental systems.

Boualem Hadjerioua attended a meeting to discuss Water Quality n Nashville, TN, on March 21st. The meeting was an in-depth discussion of technical progress challenges, end result, implementation, and final deliverables.

Cheryl Bast, Sylvia Milanez and Carol Wood attended the 54th Annual meeting of the Society of Toxicology and presented the following posters:

- C. Bast, P.M. McGinnis, M. McClanahan, and F. Adeshina. 2014. Provisional Advisory Level Development for 4-Aminopyridine. The Toxicologist, Supplement to Toxicological Sciences. 138: 166.
- S. Milanez, L.D. Koller, D.C. Dorman, C. Baird, and F. Adeshina. 2014. Provisional Advisory Level Development for Chlorine. The Toxicologist, Supplement to Toxicological Sciences. 138: 166.

- C. S. Wood, D.R. Mattie, C. Baird, G.M. Henningson, and F. Adeshina. 2014. Provisional Advisory Level Development for Ricin. The Toxicologist, Supplement to Toxicological Sciences. 138: 166.
- D.J. Stewart, C. Bast, C.S.Wood, and S.S. Kuebewura. 2014. Data Source Summary Documents (DSSDs) Derived for Updated Drinking Water Standards and Health Advisories (DWSHA) Tables. The Toxicologist, Supplement to Toxicological Sciences. 138: 600.

A user proposal submitted by Baohua Gu and Ben Mann to Environmental Molecular Science Laboratory (EMSL) was approved. The proposal is entitled "Identification of mercury-reactive species in natural organic matter."

Carol Wood attended the Board of Directors meeting for the American Board of Toxicology in Phoenix, AZ, on March 22nd. During the meeting, Carol was elected to a two-year term as Treasurer of the Board.

Within The Plant Microbe Interfaces Science Focus Area (SFA) project, Jessy Labbé presented a talk entitled "Analyzing the pan-genome of the ectomycorrhizal clade Laccaria" to the 12th European Conference on Fungal Genetics and the 4th workshop of the Mycorrhizal Genomics Initiative consortium, in Seville, Spain, on March 22nd-27th. Jessie Uehling, graduate student at Duke University with Rytas Vilgalys and working along with Jessy, gave a talk entitled "Genomic analyses of Mortierella elongata and associated bacterial endosymbiont (Candidatus glomeribacter sp.)."
"Determining the functional basis for bacterial endosymbiosis by Candidatus Glomeribacter sp. in the fungus Mortierella elongata through genomics and metabolomics" was also presented, with coauthors Jessie Uehling, Khalid Hameed, Jessy Labbé, Dale Pelletier, Tim Tschaplinski, Andrii Grygansky, Chris Schadt, Amy Schaefer, Francis Martin, Rytas Vilgalys and Gregory Bonito.

Boualem Hadjerioua went to a meeting to discuss the 45-Mile Hydro project in Ottawa, Canada. March 23rd-26th. The trip was part of ORNL support to Earth by Design (EBD) with the assessment and reporting about the new small hydro technology that would be installed at the 45-Mile small hydro project. The trip was coordinated with EBD and DOE Golden Office.

ORNL DAAC staff Tammy Beaty, Suresh K. SanthanaVannan, Yaxing Wei, and Daine Wright attended the Earth Science Data System (ESDS) working group meeting in Greenbelt MD, during March 24th-26th.
ORNL DAAC staff presented posters on the following topics:

- "On-demand Delivery and Visualization of Environmental Science Data through THREDDS" – presenter Yaxing Wei
- "ORNL DAAC MODIS subsetting and visualization tool " presenter Suresh K.S Vannan
- "Semi-automated Data Set Submission Work Flow for Archival with the ORNL DAAC" – presenter Daine Wright.

The journal article, "Comparison of single-molecule sequencing and hybrid approaches for finishing the genome of *Clostridium autoethanogenum* and analysis of CRISPR systems in industrial relevant Clostridia," published in *Biotechnology for Biofuels*, has been well-received. Read the original article at http://www.biotechnologyforbiofuels.com/content/7/1/40/abstract. ORNL co-authors are Steve Brown, Sagar Utturkar and Miriam Land. The article has been featured on the PacBio blog: http://blog.pacificbiosciences.com/2014/03/importance-of-

finished-microbial-genome.html, and the online article metric tracker, Altmetric (www.altmetric.com), has indicated that in its history of tracking 1,998,956 articles across all journals (as of 3/26/2014), compared to these other articles, this above article has done particularly well on metrics and is in the top 5%.

On March 25th several members of CBES met with Richard Hess of Idaho National Laboratory (INL) to discuss coordination of ongoing Resource Analysis and Sustainability projects for DOE Bioenergy Technologies Office (BETO).

During March 25th-27th Nicole Samu met with Deborah Linke, Brenna Vaughn, and Mazdak Arabi to discuss the New Hydropower Technology Catalog Collaboration at Colorado State University in Fort Collins, CO.

Eric Pierce and Mark Peterson attended a meeting on March 26th in Oak Ridge to support the EM Oak Ridge Operation Integrated Project Team focus on developing a long-range plan for Mercury Applied Research and Technology Development.

During March 26th-27th Rebecca Efroymson and Terry Mathews attended the DOE-sponsored Algal Biofuels Strategy Workshop in Charleston, SC. Rebecca presented "Sustainable Development of Algae for Biofuel: Select Accomplishments and Directions."

Brennan Smith attended a Tennessee Valley Authority (TVA) Integrated Resource Plan (IRP) meeting in Chattanooga, TN, during March 27th-28th.

Vertimass LLC, a California-based start-up company, has licensed an Oak Ridge National Laboratory technology that directly converts ethanol into a hydrocarbon blend-stock for use in transportation fuels. ORNL inventors include Chaitanya Narula, Brian Davison and Martin Keller.

BESD New Arrivals

Andrew Balser arrived in March to work as a post-doctoral research associate with Peter Thornton in ESD's Terrestrial Systems Modeling group.

Dol Raj Chalise has joined the Energy-Water Ecosystem Engineering Group of the Environmental Sciences Division as a post-Masters research associate. Dol is working with Katherine Zhang on the Hydropower Cost Modeling and other projects.

Alexandru Dumitrache arrived in March to work as a post-doctoral research associate with David Graham in BSD's Microbial Ecology & Physiology group.

Sudershan Gangrade has joined ESD's Energy-Water Ecosystem Engineering Group as a post-Masters research associate. Sudershan will work collaboratively with a team of engineers, economists, hydrologists, and environmental scientists, with opportunity to participate across multiple efforts related to cost, markets, and next-generation technologies.

Laurel Kluber arrived in March to work as a post-doctoral research associate with Mircea Podar in BSD's Systems Genetics group.

Maria Isabel Martinez Gonzalez arrived in March to work as a post-Masters research associate with Craig Brandt. The position is in the Ecological Analysis Team within the Earth and Aquatics Sciences Group in ESD but will also involve working on projects of other teams within the division. Maria will provide assistance in the design, development and analysis of large multidisciplinary geospatial databases.

Kyutae Lee has joined ESD's Energy-Water Ecosystem Engineering Group as a post-doctoral research associate. Kyutae will work with Brennan Smith to engage in hydropower technology innovation research aimed at reducing costs and increasing deployment of hydropower technology in the United States.

Intawat Nookaew reported to work in March, working as a computational biologist/bioinformaticist with Dave Ussery in BSD's Comparative Genomics group.

Lauren Riley arrived in March to work as a post-Bachelors research associate with Adam Guss in BSD's Microbial Ecology & Physiology group. Lauren will focus on understanding how plant matter can be converted into renewable fuels by designing and implementing novel metabolic pathways in *Clostridium thermocellum* and engineering biofuel production pathways from abundant plant materials.

Mike Schramm has joined ESD's Energy-Water Ecosystem Engineering Group as a post-Masters research associate. He will be working with Mark Bevelhimer and Chris DeRolph to develop a database of FERC-mandated environmental mitigation at licensed hydropower projects across the U.S.

Michele Thornton reported to work in March, working with Suresh K. SanthanaVannan in ESD's National Aeronautics and Space Administration (NASA) – DAAC.

Andrea Timm arrived in March. She will be working as a post-doctoral research associate with Scott Retterer, in BSD's Biological and Nanoscale Systems Group.

Tobin Verbeke arrived in March to work as a post-doctoral research associate with Mircea Podar in BSD's Systems Genetics group.

Gangsheng Wang reported to work in March, working with Eric Pierce in ESD's Earth and Aquatic Sciences group.