



October 2016

Agricultural Research Partnerships (ARP) Network NOTES

Welcome to ARP Network Quarterly Notes! Our goal is to keep you informed about ARP Network and Agricultural Research Service's current information. We hope that the notes build networking opportunities for businesses to connect with ARP Network Members.

Please help us spread the word by sharing ARP Network Notes statewide with your company contacts, colleagues, other organizations, etc. Thank you!

ARS

The Agricultural Research Service (ARS) is USDA's primary internal research agency. ARS conducts research to develop and transfer solutions to major agricultural problems that are both national and international in scope. ARS has nearly 2,000 scientists nationwide and a few in overseas locations. ARS scientists carry out 750 research projects on a variety of subjects. ARS has a Congressional mandate to disseminate the research findings of these projects to the American public and other interested parties. Learn more by visiting: <http://www.ars.usda.gov>.

ARP Network

The ARP Network enlists the help of partners to spark economic development, entrepreneurship and community development. USDA ARS founded the ARP Network in an effort to expand the impact of ARS research and provide resources to help companies grow. By combining ARS research expertise with complementary capabilities and talents of partnering organizations, the ARP Network helps stimulate economic growth through technological advancements. The ARP Network matches business needs with ARS innovations and research capabilities and provides business assistant services to help companies and startups solve agricultural problems, develop products and create new jobs. Learn more by visiting: <https://www.ars.usda.gov/business/Docs.htm?docid=24715>.

ARS News

PBS News Hour - Meet the Mite: The Tiny Bugs in Your Mattress, Your Tea & on Your Face



PBS News Hour interviewed Drs. Gary Bauchan and Ron Ochoa with the USDA, ARS, Electron and Confocal Microscopy Unit in Beltsville, MD and showcased how scientists from around the world get high-resolution images of the mites they are studying. The facility also plays host to the Smithsonian's National Museum of Natural History's

mite collection that contains more than a million different mite specimens representing more than 10 thousand species. You can read the news article and watch the video on the [PBS Newshour website](#).

Are You Planning a Round-Table, Webinar or Other Event in your State?

If you are planning an event in your area, please keep ARS in mind. ARS covers many agricultural topics and may be able to provide event speakers or participates to engage in discussions. ARS is organized into four main program areas: Nutrition, Food Safety, and Quality; Natural Resources and Sustainable Agricultural Systems; Crop Production and Protection; and Animal Production and Protection. Please contact Cathy Cohn: cathleen.cohn@ars.usda.gov

ARS Partnership and/or Licensing Opportunities

Compositions and Methods for Killing and/or Immobilizing Insects

A composition and method for killing and/or immobilizing insects such as harmful or troublesome blood-sucking, stinging and biting insects (e.g. imported fire ants), ticks and mites. The compounds are naturally occurring plant derived compounds. ARS docket no. 19.15. Additional information on this technology can be found in Advances in Entomology, 2015. http://file.scirp.org/pdf/AE_2016012611092768.pdf

Please contact Tommy Valco: thomas.valco@ars.usda.gov

Double Strand RNA Delivery System for Plant-Sap-Feeding Insects

Compositions and methods of delivering double strand ribonucleic acid (dsRNA) to insects that penetrate plant tissues to feed on sap and other liquid components of plants. Taking advantage of the liquid transport capabilities of plant vascular structures, dsRNA is provided to plant tissues in an aqueous solution that is then transported throughout the tissues. The dsRNA-laden plant material is then presented to sap-feeding insects, such as brown marmorated stink bugs that can ingest the dsRNA by feeding on the plant tissue. RNAi through oral delivery may be beneficial due to the ease in delivery to large number of insects. Also, the delivery system bypasses the need to create transgenic plants. ARS docket no. 129.16. Please contact Jim Poulos: jim.poulos@ars.usda.gov

Cryogenic Trap

A thermoelectric cryogenic trap system and method used to separate and identify inorganic and organic arsenicals in a vapor stream. The cryogenic trap is cost effective, sensitive and selective. No reagents or coolants (i.e. no liquid nitrogen) are used. Potential applications include: monitoring to protect consumers from dietary arsenic exposure; monitoring of environmental pollution; and for pharmacokinetic, clinical and toxicology studies. Also, to uphold regulations and protect consumers, methods capable of inorganic arsenic detection at ng/gm level are needed. Because rice is such an important crop, it was selected as the model matrix in this work. ARS Docket no. 118.15. Please contact Jim Poulos: jim.poulos@ars.usda.gov

Process for Isomerization and Decarboxylation of Unsaturated Organic Compounds with a Metal Catalyst or Catalyst Precursor

Agriculturally-derived fatty acids are directly converted into olefins, or other useful hydrocarbons. The process involves the use of a metal catalyst or catalyst precursor that facilitates the isomerization and/or decarboxylation of unsaturated carboxylic acids derivatives into olefins. The resulting products could be

useful as drop-in products for replacement of commercial polymers without modification of existing processes. The 100 percent bio-based content helps meet bio-based formulation requirements. Potential applications include: alkene for polymers such as linear low density polyethylene like polyolefin plasticizers and polyolefin lubricants. ARS docket no. 10.12. Please contact Renee Wagner: renee.wagner@ars.usda.gov

Novel Polytriglycerides

A renewable source of polyketone, polyamine and polyimine triglyceride derivatives by chemically modifying vegetable oils. The polytriglycerides could potentially be used for neutralization; metalworking; metal ion absorption/extraction/sequestration; sequestration of toxic metal species from aqueous media and environmental purposes; and as biodegradable lubricating agents. ARS docket no. 190.13. Please contact Renee Wagner: renee.wagner@ars.usda.gov

A Novel Clostridium Species that Converts Wheat Straw and Switchgrass Hydrolysates into Butyric Acid

A sustainable method for producing butyric acid comprising fermenting a lignocellulosic biomass hydrolysate using a newly isolated *Clostridium sp.* under anaerobic conditions using dilute acid-pretreated hydrolysates of wheat straw, corn fiber, corn stover, rice hull, and switchgrass, for example. Potential applications include: animal feed supplement to reduce pathogenic bacterial colonization; food and perfume additives, varnishes, pharmaceuticals and disinfectants; and production of plasticizers, surfactants and textile auxiliaries. ARS docket no. 133.13. Please contact Renee Wagner: renee.wagner@ars.usda.gov

Methods and Strains for Producing Bioproducts in *Aureobasidium Pullulans*

Methods for producing arabitol-containing liamocin and other bioproducts from novel genetically altered strains of *Aureobasidium pullulans*. The *A. pullulans* strains contain genetic alterations to control the type of liamocin produced and decrease unwanted bio-products and bio-contaminants. Other useful bio-products produced include exophilins, massoia lactone, pullulan and liamocins with other head groups. The bioproducts can be produced melanin-free. The modified *A. pullulans* produce near 100% arabitol-containing liamocins on an inexpensive carbon sources such as glucose. Antibacterial activities of liamocins against certain Gram positive organisms may have potential applications as a veterinary treatment. The bioproducts could also potential be used for the synthesis of a variety of products such as biosurfactants and polymers. Other potential uses include as antifouling agents and phytopathogen control agents. ARS docket no. 69.15. Please contact Renee Wagner: renee.wagner@ars.usda.gov

ARS Partnership Opportunities

Hemoglobin Composite for the Removal of Organic Dye

Annually, approximately 2 million tons of animal blood are produced in the US as a by-product from slaughterhouses. Most of this blood is used in relatively low value animal feed applications. Hemoglobin can easily be isolated from blood. The invention provides a higher value application for blood to attract or absorb different organic contaminants from aqueous solution. The ARS scientists are looking to further

develop this technology through a Cooperative Research and Development Agreement (CRADA). ARS docket no. 177.16. Please contact Jim Poulos: jim.poulos@ars.usda.gov

Method for Killing Insects

Natural compounds that provide alternatives to conventional synthetic pesticides to control the populations of brown marmorated stink bugs and other insect pests. The compounds could reduce threats to natural ecosystems and human health caused by application of conventional synthetic pesticides. The ARS scientists are looking to further develop this technology through a Cooperative Research and Development Agreement (CRADA). ARS docket no. 179.16. Please contact Jim Poulos: jim.poulos@ars.usda.gov

Enhancing Discoverability of Scientific Literature through Geographic Searching

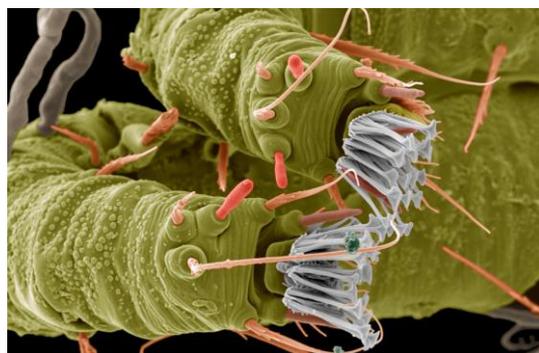
Discovery of scientific research that is from or relevant to a specific area is not easy because current literature search technologies focus on topics and keywords and do not provide robust options for geographic searching. With the help of a diverse team of collaborators, ARS has developed a search engine called "JournalMap" that uses research locations and physical site variables to identify scientific papers of interest. The JournalMap.org project uses ARS-developed algorithms and workflows to geotag scientific articles based on where the study was conducted and provides a map-based search interface for literature discovery. JournalMap.org currently has over 25,000 geotagged articles and agreements with multiple publishers and societies to contribute content to the system. ARS is seeking a partner with which to further develop knowledge discovery services for researchers and publishers. Publication: Karl, J.W. et al. 2013. Geo-Semantic Searching: Discovering Ecologically-Relevant Knowledge from Published Studies. *BioScience* 63(8): 674–82. doi:10.1525/bio.2013.63.8.10. Please contact Jeff Walenta: jeffrey.walenta@ars.usda.gov

Available Technologies for Licensing

Each year, approximately 60 new patents are issued by the U.S. Patent Office for USDA inventions. The Office of Technology Transfer (OTT) transfers these inventions through licenses to the private sector for commercialization. Here is a link to *recently filed* U.S. patent applications that are available for licensing. This list is updated monthly so check back often! <http://www.ars.usda.gov/Business/Business.htm>

ARS Digital Online Research Magazine

AgResearch is a monthly publication highlighting short features on the scientific research discoveries occurring at all of ARS' research laboratories across the Nation and abroad. View *AgResearch* at <http://agresearchmag.ars.usda.gov>. One can subscribe to electronic delivery of the magazine on the website



USDA Blog

Check out USDA Blog site for updates on Agricultural issues (<http://blogs.usda.gov>). One can sign up for email updates on the website by checking boxes of categories of interest including the blog, news categories and social media.

VIVO

USDA VIVO provides a powerful Web search tool for connecting researchers, research projects and outcomes and others with relationships to the research. The idea is to link researchers with peers and potential collaborators. VIVO makes it possible to quickly identify USDA scientific expertise.

(<http://vivo.usda.gov>).

We are seeking contributions for future ARP Network Notes from members who wish to share information that would be of interest to the group. Suggestions include events, Ag challenges and community initiatives. For ideas of content for future notes, please contact Cathy Cohn at cathleen.cohn@ars.usda.gov.

Get more information: www.ars.usda.gov



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