

Docket	Title	Description	Contact
154.13	VALUE-ADDED PRODUCTS FROM SMALL GRAINS, METHOD OF MAKING AND USES THEREOF	<p>Methods for processing starch containing grains into nutrient enriched fractions.</p> <p>Potential Commercial Applications -Production of, e.g., beta-glucan, protein and starch, from starch containing grains for food, industrial ingredients, or feed, e.g. aquacultural feed</p> <p>Competitive Advantages -Simultaneously fractionate and recover grain fractions such as e.g., protein, beta-glucan and starch, from starch containing grains -Separate protein before ethanol production</p>	<p>david.nicholson@ars.usda.gov</p>
50.14	COMPOSITIONS AND METHODS OF TREATING ANIMAL MANURE	<p>Manure amendment and method for controlling ammonia emissions from poultry litter and reducing phosphorus runoff. The manure amendment is produced by adding various combinations/ratios of sulfuric acid, bauxite and water to alum mud, a waste product from manufacturing alum (aluminum phosphate).</p> <p>Potential Commercial Applications -Controlling ammonia emissions from poultry houses and reducing phosphorus runoff - Treated manure lowers the concentration of ammonia in animal rearing facilities and improves environmental, health and/or animal performance</p> <p>Competitive Advantages -The manure amendment is economical to produce -Has many of the properties of aluminum sulfate -The exact formulation of the final product can be tailored to fit specific manure type</p>	<p>thomas.valco@ars.usda.gov joseph.lipovsky@ars.usda.gov</p>
5.10	BIOPESTICIDE AUTO-DISSEMINATION METHOD AND APPARATUS	<p>A dispenser (auto disseminator) for applying pathogenic fungal spores to Asian citrus psyllid (ACP) vectors, the bacterium that causes citrus greening disease (also known as huanglongbing (HLB)). The auto-disseminator is (preferably) a yellow cylindrical substrate with a wax-coated and pleated surface and it may be scented to smell like citrus foliage. This combination of color and scent is attractive to ACP.</p> <p>Potential Commercial Applications - ACP is susceptible to pathogenic fungi, which may be useful in suppressing ACP populations in situations where chemical control is prohibitive, such as residential areas (referred to as 'dooryard' citrus by growers) -When ACP contact the auto-disseminator, a biopesticide deposited in the substrate pleats infects and ultimately kills the ACP -Could be used by homeowners in neighborhoods near commercial citrus orchards</p> <p>Competitive Advantages -Currently there are no means of controlling or suppressing ACP in dooryard citrus absent highly invasive and difficult measures such as tree removal -The auto disseminator is simply hung from a tree branch</p>	<p>david.nicholson@ars.usda.gov</p>

152.13	METHOD AND SYSTEM FOR PRODUCING AQUACULTURE FEED	<p>A method and system for producing a high-moisture, water-stable aquafeed.</p> <p>Potential Commercial Applications</p> <ul style="list-style-type: none"> -Feed for slow feeding aquatic animals like shrimp, abalone, grazing species (rudderfish or Kysoids) and sturgeon -Feed for traditional fish stock -Specialty fish feeds including weaning diets, medicated feeds, brood feed and larval feeds <p>Competitive Advantages</p> <ul style="list-style-type: none"> -Texture similar to natural feeds such as sardines -Significantly reduced amounts of total carbohydrates as compared to conventional feed -Soft yet durable with high water stability and does not disintegrate upon soaking in water as quickly as traditional feeds do -Contains over 45% moisture (before an optional post-production drying step) 	<p>david.nicholson@ars.usda.gov</p>
42.13	NOVEL METHODS OF COMPOSITIONS TO EVALUATE AND DETERMINE INACTIVATION OF HAZARDOUS BIOLOGICAL MATERIALS	<p>Assays to determine that foodborne bacterial pathogens and other hazardous biological materials are adequately inactivated in food products. These assays/kits are time-temperature integrator assays that determine the inactivation of microbial food safety hazards in samples by quantifying the degradation of mitochondrial DNA using qPCR.</p> <p>Potential Commercial Applications</p> <ul style="list-style-type: none"> -Safety monitoring of thermally or microwaved processed fruits and vegetables -Assay kits to evaluate and/or determine the amount of inactivation of biological material in food products and objects (e.g. reusable medical and dental devices) -Evaluate inactivation protocols and deviations in processing to reduce the amount of viable biological material in or on items <p>Competitive Advantages</p> <ul style="list-style-type: none"> -Continuous and rapid monitoring -Assay food products directly 	<p>james.poulos@ars.usda.gov</p>

102.09	NITRIFICATION-ENHANCED AMMONIA SCRUBBER FOR ANIMAL REARING FACILITIES	<p>Method and apparatus for controlling ammonia emissions from animal rearing facilities. The system is comprised of a dust scrubber in series with an ammonia scrubber which removes ammonia from the air. The ammonia is converted to nitrate by acid-tolerant nitrifying bacteria. The nitrification process produces acid, which reduces the pH of the scrubber solution in the ammonia scrubber, allowing the scrubber to capture additional ammonia.</p> <p>Potential Commercial Applications -Removal of ammonia and dust exhausted from animal rearing facilities, such as poultry and swine houses</p> <p>Competitive Advantages -Nitrification-enhanced perpetual acid generator. The acid is used to scrub ammonia exhausted from animal rearing facilities -Resulting nitrogen-rich product solution can be used as fertilizer</p>	<p>thomas.valco@ars.usda.gov joseph.lipovsky@ars.usda.gov</p>
87.13	SPONTANEOUSLY IMMORTALIZED AVIAN CELL LINE	<p>A spontaneously immortalized avian cell line, designated ZS-1, derived from the primary chicken embryonic fibroblasts</p> <p>Potential Commercial Applications -Production of viral agents, e.g., recombinant viral agents, expression of recombinant proteins, diagnostic assays of pathological specimens, etc.</p> <p>Competitive Advantages -The immortal cell line is free of avian leukosis virus (ALV) and yet susceptible to all subgroups of ALV, including subgroup E -Supports virus replication</p>	<p>renee.wagner@ars.usda.gov</p>

173.09	PHAGE TWORT ENDOLYSIN CHAP DOMAIN IS LYTIC FOR STAPHYLOCOCCUS AUREUS	<p>A potential antimicrobial treatment to combat <i>S. aureus</i> mastitis. The invention is a nucleic acid sequence encoding an antimicrobial peptidoglycan hydrolase polypeptide, the Phage Twort (PlyTW) endolysin, a protein that attacks the cell wall peptidoglycan of <i>S. aureus</i>. Both the full length phage Twort endolysin PlyTW and truncated PlyTW (PlyTW Δ172-373) lyse live <i>S. aureus</i>, including multidrug-resistant staphylococci. Truncated PlyTW (PlyTW Δ172-373) lacks the amidase domain of the full length PlyTW, but has higher lytic activity.</p> <p>Potential Commercial Applications -Treatment for mastitis as well as for infection and other human diseases caused by <i>S. Aureus</i> -Potentially used to produce novel protein fusion antimicrobials believed to be refractory to antibiotic resistance development</p> <p>Competitive Advantages - Useful as an alternative antibiotic treatment to the multidrug-resistant <i>S. aureus</i></p>	james.poulos@ars.usda.gov
197.13	SYSTEM AND METHOD FOR TERMINATING COVER CROPS USING VEHICLE- GENERATED HEAT	<p>A system and method that uses vehicle-generated heat (which is currently wasted) to terminate cover crops. The cover crop termination system can be mounted on the front of a walk-behind tractor. As the tractor is propelled across a field of cover crops, heat from the vehicle's exhaust is directed to a perforated manifold positioned adjacent to the cover crop so that the exhaust heat terminates the cover crop.</p> <p>Potential Commercial Applications -A means to terminate cover crops that is directed to smaller scale organic farming operations</p> <p>Competitive Advantages -Effectively managing cover crops without using synthetic herbicides</p>	thomas.valco@ars.usda.gov joseph.lipovsky@ars.usda.gov
82.14	ACTIVE COULTER PLANTING SYSTEM	<p>A no-till agricultural system that uses a walk-behind tractor for planting seeds. The system comprises of active coulters integrated into a planter apparatus that is connected to a walk-behind tractor. The active coulters cut and penetrate cover crop residue on a surface of a field so that seeds are planted in the soil below the surface crop residue.</p> <p>Potential Commercial Applications -Effective planting system for small farms to achieve no-till planting of cash and cover crops into residue cover</p> <p>Competitive Advantages -Novel planter design to plant seeds into soil with residue cover using small walk-behind tractor</p>	thomas.valco@ars.usda.gov joseph.lipovsky@ars.usda.gov

164.13	CAPTURE OF HUMAN NOROVIRUS FROM CLINICAL ENVIRONMENTAL AND FOOD SAMPLES AND MEASUREMENT OF INFECTIVITY	<p>Method for detecting and quantitating viable infectious Human noroviruses (HuNoVs). The method comprises capture of intact capsids, genome release, and in situ qRT-PCR.</p> <p>Potential Commercial Applications</p> <ul style="list-style-type: none"> -Detection of low concentration of multiple strains of HuNoV from complex samples e.g., clinical, environmental, food samples, etc. -Validation of disinfection methods for HuNoV <p>Competitive Advantages</p> <ul style="list-style-type: none"> -Measures infective HuNoVs -Requires only one reaction container -Reduced number of false positives compared to conventional qRT-PCR -Minimizes qRT-PCR inhibitors normally present in clinical, environmental and food samples -Low cost assay 	renee.wagner@ars.usda.gov
5.12	ANTIMICROBIAL ENZYME FUSIONS REDUCE RESISTANCE AND KILL INTRACELLULAR STAPHYLOCOCCUS AUREUS	<p>Engineered triple-acting staphylolytic peptidoglycan hydrolases where three unique antimicrobial activities from two parental proteins are combined into a single fusion protein, effectively reducing the incidence of resistant strain development. The fusion protein reduced colonization by <i>S. aureus</i> in a rat nasal colonization model, surpassing the efficacy of either parental protein.</p> <p>Potential Commercial Applications</p> <ul style="list-style-type: none"> -A new antimicrobial to combat <i>S. aureus</i> infection in animals and humans <p>Competitive Advantages</p> <ul style="list-style-type: none"> -Modification of the triple-acting lytic construct with a protein transduction domain significantly enhanced both biofilm eradication and the ability to kill intracellular <i>Staphylococcus aureus</i> as demonstrated in cultured cells, and mouse models of staphylococcal mastitis and osteomyelitis -Alternative antibiotic treatment to the multidrug-resistant <i>S. aureus</i> 	james.poulos@ars.usda.gov
191.09 + 14.15	HIGH-AFFINITY MONOCLONAL ANTIBODIES FOR BOTULINUM TOXIN TYPE B	<p>Patent no. 8,900,824, High affinity antibodies for binding epitopes of Botulinum neurotoxin (BoNT) serotype B and hybridomas that produce such antibodies.</p> <p>Potential Commercial Applications</p> <ul style="list-style-type: none"> -Used to develop a sandwich ELISA-based test for detecting BoNT/B <p>Competitive Advantages</p> <ul style="list-style-type: none"> -Can detect picogram quantities of toxin -Used to develop very sensitive, rapid and highly specific immunoassays 	david.nicholson@ars.usda.gov

<p>204.13</p>	<p>ELECTROSPUN CASEIN FIBERS AND FIBEROUS MEMBRANES</p>	<p>Methods of forming a fiber mat, involving forming an aqueous solution of at least one protein, at least one polysaccharide, and optionally a plasticizer, and electrospinning the aqueous solution onto a collector to form a mat. Creates electrospun fibers from food proteins by using a food-grade polysaccharide to facilitate molecular entanglement in solution and which required no treatments prior to electrospinning.</p> <p>Potential Commercial Applications - Possibly to produce energy dense foods; foods to create satiety to fight obesity through loading of sensitive compounds known to curb hunger; creation of foods for enhanced delivery or time-released of nutrients such as vitamins, antioxidants, minerals, lipids and bioactive peptides; deliver enhanced flavors or textures; tailoring of the bioavailability of foods; foods for medical use; the development of edible sensors; and casein-based non-food materials, such as new fabrics.</p> <p>Competitive Advantages - New types of foods based on dairy and other food proteins over existing food formulations - Allows inclusion of micronutrients, heat sensitive bioactives, probiotic/prebiotic blends into functional beverage and food formulations - The texture and nutritious compositions can be tailored by the inclusion of nutrients during electrospinning or by altering operating conditions</p>	<p>james.poulos@ars.usda.gov</p>
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