



# UMASH

Upper Midwest  
Agricultural Safety  
and Health Center

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*A collaboration of the University of Minnesota School of Public Health and College of Veterinary Medicine, the National Farm Medicine Center of the Marshfield Clinic with the Migrant's Clinicians Network, and the Minnesota Department of Health.*

Summary Annual Report

2014

NIOSH Center of Excellence in Agricultural  
Disease and Injury Research, Education, and Prevention  
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## SECTION I

### Center Summary:

The Upper Midwest Agricultural Safety and Health Center (UMASH) is a Center of Excellence in Agricultural Disease and Injury Research, Education, and Prevention funded by the National Institute for Occupational Safety and Health (NIOSH). The center is a collaboration of the **University of Minnesota School of Public Health** and **College of Veterinary Medicine**, the **National Farm Medicine Center of the Marshfield Clinic** with the **Migrant Clinicians Network**, and the **Minnesota Department of Health**. This collaboration brings together unique and complimentary expertise to address existing and emerging occupational health and safety issues in agriculture.

A central theme for UMASH is **the interrelationship between the production practices and the farm workplace health and safety conditions**. Production practices are primarily driven



by social, economic and animal health considerations. In the agriculture, workplace health and safety conditions are strongly influenced by these production practices. The UMASH emphasizes the concept of **One Health** which focuses on the interdependence between animal health, human health, and the health of the environment. The UMASH also emphasizes the importance of maintaining vigilance over how changes in agriculture production can influence the health and well being of agricultural populations.

The UMASH center has seven currently **funded projects**: health and safety in the pork production industry, methicillin-resistant *Staphylococcus aureus* (MRSA) colonization and infection in swine veterinarians, surveillance of disease and injury in dairy farmers, surveillance of zoonotic diseases in agriculture workers, immigrant dairy worker health and safety, facilitating return to work of ill and injured workers, and establishing a multidisciplinary network to address agriculture worker health and safety issues. The center also has an **outreach** component to disseminate and collect information from stakeholders; a **pilot projects program** to foster new partnerships, explore new opportunities and address emerging issues in the field of agricultural safety and health; and an **evaluation** program to monitor and assess the performance and outcomes of the center.

### Relevance:

The agriculture industry is challenged with responding to an increasing global demand for a safe and plentiful food supply that is both affordable and produced in a sustainable manner. To meet this demand the industry will develop novel approaches to producing food. The changes accompanying food production will also impact the people who produce the food. The complex and varied nature of the agricultural workplace contributes to agriculture being one of the most hazardous occupations. As agriculture evolves to meet increasing global food demand, the occupational health risks encountered by the agricultural work force will evolve with some hazards being eliminated and others emerging. The changing face of agriculture will also change who is producing food. Small farms may give way to larger



enterprises that hire the majority of their labor force; including many who have no background in agriculture. Understanding and managing these changes is essential to protecting the health of agriculture workers and their families.

The Upper Midwest Agricultural Safety and Health Center (UMASH) conducts research, education and prevention activities aimed at improving the health and safety of workers and their families. The UMASH investigates how this evolving industry is changing the risks agricultural populations face. It develops improved methods to identify and reduce risks and it explores how best to interact with producers, agricultural workers and their families, and the broader agriculture community.

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**Ag Center web link:** [umash.umn.edu](http://umash.umn.edu)

## SECTION II

### Program highlights

#### Research Projects:

##### Surveillance for Zoonotic Diseases in Agricultural Workers in Minnesota

Agriculture is a large part of Minnesota's economy, supporting more than 340,000 people through food animal production and processing support services. Zoonotic diseases (diseases that can be passed between animals and people) are a risk to agricultural workers, their families, and others exposed to food animals. However, little information is available describing specific risk factors on the farm for developing a zoonotic disease and how frequently agricultural workers and their families get sick from food animals. The UMASH project at the Minnesota Department of Health (MDH) focuses on describing the size of this problem in agricultural populations, which can be used to develop more effective prevention measures to minimize the occurrence of zoonotic diseases.

Diarrheal illnesses such as *Cryptosporidium*, *E. coli* O157:H7, *Campylobacter*, *Salmonella* are reportable to MDH, and all ill people are interviewed with a routine questionnaire that includes questions about agricultural exposures (living, working, or visiting a farm, petting zoo, fair, or other venue with animals). Since January 2012, patients with agricultural exposure have been re-interviewed with a more detailed questionnaire about the types of activities they were doing with the animals. Based on these interviews, 58% of patients with a *Cryptosporidium parvum* infection, 32% of patients with an *E. coli* O157:H7 infection, 26% of patients with a *Campylobacter* infection, and 9% of patients with a *Salmonella* infection had a food animal exposure in the week before their illness. For all but *Salmonella*, the percentages of ill people with food animal contact are much higher than previously reported estimates; (*Cryptosporidium* 16%, *E. coli* O157:H7 6%, *Campylobacter* 17%, and *Salmonella* 11%). MDH offers educational materials to these patients, and 65% of them were interested in receiving the materials.

In addition to collecting data on recent zoonotic infections, MDH has offered four, free full-day workshops to people associated with county fairs on how to have safe human-animal interactions. These workshops have been well-attended and well-received, and we plan on continuing them and expanding our audience to include agritourism operations, such as pumpkin patches, apple orchards, and corn mazes.

This past summer we had an outbreak of *E. coli* O157 associated with a traveling petting zoo that was at multiple county fairs and made people sick at each fair the petting zoo attended. MDH has been working closely with the petting zoo owner, the zoo's veterinarians, and the Minnesota Federation of County Fairs on how to prevent these outbreaks from happening in the future.

Understanding agricultural exposures that increase risk for zoonotic infections.

Educating the public about zoonotic infections:

- Providing educational materials to patients
- Offering Healthy Fair Workshops to county fairs organizers and other agritourism operations

Investigating outbreaks and working with operators and others on how to prevent outbreaks in the future.

## **MRSA Colonization and Infection in Swine Veterinarians**

Public health concern about the emergence of methicillin resistant *Staphylococcal aureus* (MRSA) in livestock, particularly pigs, is increasing. However, there is limited scientific information on the importance of livestock associated MRSA in human populations. The overall objective of this study is to analyze long-term patterns of *S. aureus* colonization (both methicillin resistant (MRSA) and methicillin susceptible (MSSA) strains) and infection of swine veterinarians. Concurrently, a survey of occupational hazards for US swine veterinarians and current practices for risk reduction is being conducted to assess current practices in relation to existing recommendations and guide educational efforts to promote better practices for veterinarians and other groups who are occupationally exposed to animals. The project will terminate in September 2014, and is in the final stages of analysis and reporting



A study cohort of 68 swine veterinarians across 15 states was recruited to participate in a longitudinal study to determine the incidence and prevalence of nasal colonization of MRSA and MSSA. Compliance with sampling was outstanding (over 98%) yielding 1768 *S. aureus* isolates (including 207 MRSA. Monthly prevalence of *S. aureus* (58.3% to 82.4%) and MRSA (5.9% to 15.2%) exceeded US population estimates, and the predominant variants (MLST sequence type/spa type) detected were

ST398/t034, ST5/t002 and ST9/t337 which similarly predominate among US pigs, suggesting that they are commonly contaminated with *S. aureus* from the swine population. The prevalence of MRSA was much lower than an estimate of 44% reported in a similar Dutch study, and remained relatively stable throughout the study. Most veterinarians are intermittently and transiently colonized, but a substantial minority (about 20%) appear to be persistently colonized. Furthermore, the data indicate that the nasal staphylococcal flora of swine veterinarians are predominantly of animal origin. A broader online survey of occupational health in swine veterinarians to determine the occurrence of occupationally related health events yielded 180 responses which are currently being analyzed to assess the personal protection practices of US swine veterinarians. This will include analysis of associations between risks of colonization/infection of swine veterinarians with MRSA/MSSA, exposure to pigs and the use of personal protective equipment.

## **Occupational Hazards in Pork Production Associated with Production Practices**

The methods for raising pigs continue to evolve with a greater proportion being raised in confinement facilities. Working in these facilities is not without hazard, and exposure to airborne contaminants, including hydrogen sulfide, ammonia, endotoxin, and particulate matter, is common. At sufficient concentrations these contaminants can affect the respiratory system. As pork production practices change to meet animal health, economic, and societal concerns it is likely the potential exposures to workers will also change. One of the aims of this project is to compare air contaminants in facilities that use different rearing methods and characterize the seasonal influence on exposures. We studied a facility over the course of a year that has parallel systems of gestation stalls and group gestation pens and finishing barns with feed delivery systems for both wet and dry feed. We characterized the potential air contaminant exposure risks to ammonia, hydrogen sulfide, carbon dioxide, heat, endotoxin and respirable dust.

The greatest influence on worker exposure is season. The ventilation requirements needed to keep sows and finishing pigs cool in the summer also acts to reduce air contaminant exposures to very low levels. In the cooler months concentrations of all contaminants rise and may be ten-fold higher than in the summer months. While these contaminants are below regulatory levels, the potential health effects of being exposed simultaneously to three respiratory irritants, ammonia, hydrogen sulfide, and endotoxin, are not known. In the process of conducting the systematic measurements in the facility, a substantial spike in hydrogen sulfide was noted during a power-washing activity. The spike may have been the result of the power-washing displacing hydrogen sulfide from the manure collection pit. We intend to follow-up on this observation to further characterize potential risk to the workers. In the finishing barns where feed was delivered as a wet slurry the level of endotoxin was substantially lower than the system that delivered dry feed, although the concentrations of respirable dust were similar. Heat is another factor with a potential impact on the workers. On hot and humid summer days the temperature in the facility can be stressful to the workers and animals alike. Being aware of the risk heat related illness, i.e. heat exhaustion and heat stroke, and methods to control that risk is important. The results of this study to date are now being communicated to producers to create more dialogue about understanding and controlling exposures in these facilities.



### **Surveillance of Disease and Injury in Wisconsin Dairy Farmers and Workers**

The main objective of this project is to establish and maintain a working surveillance system for dairy farms in Wisconsin in order to identify disease and injuries among farmers and farmworkers in this state. We completed our initial survey mailing in the beginning of May and a REDCap online survey tool was used to develop a digital version of the questionnaire. Data entry for the first round of paper responses will be done by Fall 2014. We will also be sending out no-response postcards allowing participants to still mail back their paper copies, if they have them, or use an included URL to complete the survey online, utilizing our REDCap tool.

**Natural Language Processing (NLP)** has been further developed and refined in an effort to data mine our electronic medical record for potential farm workers. Recently, we completed work on our training set of data, successfully identifying only our sample population as farmers, and excluding our control population as non-farmers. This landmark step shows that with further refinement on a larger dataset this tool will perform as it was intended to. There may also be other uses for our methods within our electronic medical records, for mining and interpreting other data similarly.



## Education and Translation Projects:

### Facilitating Return to Work for Injured and Ill Animal Agriculture Workers

The Return to Work project was designed to develop a computer application that would assist treating physicians in safely returning injured agricultural workers to their place of employment when they are not yet fully recovered but still capable of doing some productive tasks. The Return to Work project has taken great strides in the past quarter of Year 3. Our work included establishing new connections with pork farms at the University of Wisconsin Agricultural Research Stations in Arlington, WI and River Falls, WI. This was a significant accomplishment as the pork industry has been placed on high alert, allowing very limited or no outside visitors on their farms due to the recent Porcine Epidemic Diarrhea virus (PEDv) that has claimed the lives of nearly 10 million piglets across the nation.

Our physical/occupational therapy team has characterized and quantified the position, forces and motions of over one hundred farm tasks in order to populate the task database that will guide physician compiled return to work prescriptions. Their efforts were multiplied as we also hired two additional therapists from Marshfield Clinic to assist with the dairy task measurements in the field.

Our software development team has made extensive progress on the electronic form for data entry, the backend database, the clinician interface, and the output sheets. We hired a new bi-lingual interpreter in March who will assist us in the Spanish language output sheets that will inform the workers of their task restrictions. We interviewed additional farmers, conducted focus groups with Spanish-speaking workers, and interviewed clinicians with the help of our Usability team.



### Seguridad en las Lecherías: Immigrant Dairy Worker Health and Safety

The steady increase in consumer demand for dairy products has led to the increase in size and concentration of dairy farms. These large farms bring new occupational risk factors and changes in the diversity of the workforce. Specifically, more immigrant workers are being hired in the industry to meet the staffing needs of milk production. Out of the 70,000 farmworkers in Wisconsin dairies, it is now estimated that half are Hispanic immigrants, many of whom have limited formal education, speak only Spanish and have no training in handling large animals.

The *Seguridad en las Lecherías* (Safety in Dairies) project addresses the needs of this vulnerable workforce by designing a bilingual health and safety training curriculum that is culturally appropriate for Hispanic workers. The training consists of five 1-hour lessons in Spanish and is ideal for workers with low levels of literacy and limited formal education. Health and safety messages are emphasized through authentic images of Hispanic dairy employees in action and interactive discussions to maintain participants engaged. A 'train-the-trainer' approach prepares selected Hispanic workers to become *promotores de salud* (community health workers) within their farm to allow for an ongoing support and reinforcement of safety

messages after the training is completed. The Occupational Safety and Health Administration (OSHA) has approved the curriculum. Other organizations such as the Mexican Consulate in St. Paul and the University of Wisconsin River Falls' Center for Dairy Farm Safety have also endorsed it.

As of September 2014, the *Seguridad* project has trained over 450 workers in 36 farms providing over 1,600 worker training hours. Trainings have proved to be so popular that they have been scheduled well into the next year. Workers who have been trained show a clear increase in health and safety knowledge. Farmers also benefitted in their relationships with their workforce through this training. As one producer stated, "My employees are definitely utilizing the information learned in this training. This program helped our employees realize that we care about their safety and their well-being as people not just as employees."



### Multidisciplinary Network to Address Agriculture Worker Health and Safety Issues

UMASH Network Project has continued to expand the group of stakeholders interested in agricultural safety and health and to develop tools that support this objective. Specific focus areas have included needlestick prevention, animal stockmanship, dairy worker injuries, and engagement of the agriculture insurance industry.

Our Project staff has been actively involved in enhancing education related to **needlestick prevention**. Activities include:

- Published findings in the Journal of Agromedicine.
- Developing a bi-lingual video in English and Spanish on needlestick safety. This video accompanies the needlestick fact sheets which were completed in 2013.
- The video will be placed on the UMASH website and is intended for farm workers who are in direct contact with dairy cows.
- Distributing the needlestick fact sheets at various events including the National Pork Board, Minnesota State Fair, on-site farm training and other networking events.



The Network project cooperated with the University of Minnesota, Extension and the University of Wisconsin, River Falls to provide education on **Low Stress Animal Handling Techniques** (i.e. stockmanship) during the summer of 2014. This program focused on moving dairy cows safely and effectively to reduce potential injuries for both workers and animals. This included discussion about protecting workers with appropriate training. Future plans include developing an accompanying video on moving cows to the milking parlor. The UMASH team is working with a dairy specialist at the University of Minnesota for content and production. Our staff has also continued to collect **dairy worker surveys** to characterize worker training practices and documented injuries. These results were recently published as an abstract in the Journal of Agromedicine.



Project staff continues to engage the **insurance industry** to promote worker injury prevention. This includes data analysis of Minnesota worker compensation claims (those with lost work time) from the past ten years. The swine industry data was recently presented to the National Pork Board and was well received, especially by human resource managers. We have now engaged the Wisconsin Department of Health to obtain comparable data.



At the request of a work compensation insurer, UMASH staff is now analyzing and characterizing high injury rates in a specific agricultural sector. This pilot collaboration has great potential for increased outreach to farmers/producers and workers for injury prevention. In

addition, working with the liability insurers continues to be a focus for reaching smaller farms that may not carry workers compensation.

## Outreach and Engagement

Connecting with our stakeholders continues to be a key mission of UMASH. We publish a quarterly electronic newsletter “**The UMASH Connection: Farms and People**” that is sent to over 900 individuals representing producers, processors, agri-businesses, public health and health care practitioners and researchers, veterinarians, farm family members, agricultural media outlets, and many others. Newsletters are archived on the UMASH website. Also on the website are project updates, educational Fact Sheets and information about meetings, presentations, and upcoming events. Throughout the year, UMASH investigators present UMASH and other related research at scientific and industry conferences and meetings.

During 2014 our center has been engaging stakeholders to better understand factors that impact worker safety within the Hispanic agricultural workforce. Many dairies in Minnesota and surrounding states employ Spanish-speaking workers and our stakeholders have indicated needs for training and resources for these workers and managers. In January, UMASH, in conjunction with the University of Minnesota's Center for Integrative Leadership and Global Initiative for Food Systems Leadership sponsored a second **Finding Common Ground Forum, “The Changing Agricultural Workforce: Challenges and Opportunities for the worker, the employer, and the community.”** The forum brought a broad range of stakeholders together for practical discussions on best practices in reaching and engaging these workers. In May, UMASH collaborated with the Midwest Center for Occupational Health and Safety to hold a **NORA Symposium that brought “Occupational Health for Immigrant: Reducing the Disparities”** into the spotlight with Dr. Marc Schenker and Xochitl Casteneda as keynote speakers.

In September, UMASH participated in the **Southern Minnesota Latino Summit**, hosted by the University of Minnesota Extension, to connect with community organizations involved with or interested in supporting the Latino population in southern Minnesota. Our Networking project has completed a video resource in both English and Spanish on Needlestick Prevention which will be distributed this fall. Additionally, UMASH personnel participated in three Dairy Field Days presenting safety and health sessions for workers and managers on two dairies in Minnesota and at the University of Wisconsin, River Falls.

UMASH outreach team members have a daily interactive presence on Facebook and Twitter and work collaboratively to promote the education and training videos that are available to the public through the joint **US Ag Centers YouTube channel**. Through these communication channels we highlight stories that focus on local events directly related to agricultural and environmental safety, One Health Issues and industry specific topics.

**Print materials** for center promotion and outreach include flyers for various project events, a news release for National Farm Safety Week, the quarterly newsletter, a poster, general and event-specific trifold brochure, flier, general and event specific postcards, and business cards for all staff. New fliers during this period from the National Farm Medicine Center and the Minnesota Department of Health include “Don’t Get Hurt: Stay Safe At Work” in both English and Spanish as well as a new ‘Ag Spotlight’ feature which are all posted for consumer use on our website at [umash.umn.edu](http://umash.umn.edu).

## Evaluation:

Understanding the impact of the UMASH center continues to be important to ensuring effective and impactful use of the Center's resources. The UMASH partners with the Minnesota Evaluation Studies Institute at the University of Minnesota to implement the evaluation program for the UMASH center. During the past year, evaluation efforts were focused in three areas:

- Pilot Project Program - An evaluation of the 2012 funded pilot projects was conducted that resulted in improvements to 2014 Request for Application to help UMASH meet its goals for capacity building in areas of agricultural health and safety research, prevention, and intervention; outreach and education; and evaluating and translating research into practice. New project reporting tools were developed and follow-up with grantees will continue for up to three years post project to capture information about project outcomes, such as, publications, presentations, application of results, new partnerships, and/or new funding, that resulted after the project ended.
- Monitoring and Evaluation System - UMASH is evaluating internal processes to improve documentation, consolidation, and sharing of information that comes into the center from its members and external stakeholders. Members of the evaluation team are participating in discussions with the other US Ag Centers about effective systems for tracking Center outcomes and strategies for communicating to the funders and the general public the impact of the research outcomes.
- Strategic planning - The evaluation team has been leading a strategic planning process with the UMASH center directors to evaluate progress and plan for the future. The strategic plan and accompanying action plans will serve as a roadmap to guide the Center activities, focus energy and resources, and evaluate impact of the Center. The process is multi-faceted involving facilitated discussions with the Center directors as well as Center-wide discussions to solicit input and ideas more broadly. Once the strategic plan is in place bi-annual reviews are planned for on-going evaluation and documentation progress.

## Other Center Activities

Finding Common Ground Forum: *The Changing Agriculture Workforce: Challenges and Opportunities for the Worker, the Employer, and the Community.*



The UMASH Center, in conjunction with the University of Minnesota's Center for Integrative Leadership and Global Initiative for Food Systems Leadership sponsored a second "Finding Common Ground," forum designed to foster conversation among participants with diverse perspectives to discover and advance a common understanding. More than 60 agricultural workers farmers, health professionals, extension educators, university faculty and other interested individuals gathered to discuss the changing agriculture workforce and its implications on worker health and safety as well as agriculture. The consensus ideas developed in this forum was included as a possible topic of focus for the 2014 pilot project proposals.

2014 National Occupational Research Agenda (NORA) Symposium: Occupational Health for Immigrant: Reducing the Disparities

In May, UMASH collaborated with the Midwest Center for Occupational Health and Safety (MCOHS) to hold a NORA symposium with Dr. Marc Schenker and Xochitl Casteneda as keynote speakers. Attendees from diverse backgrounds including healthcare, occupational health and safety, education, research, government, communications, and immigrant worker advocacy gathered to review the issues of global migration, the relation of migration to work, and the causes and evidence for disparities in occupational health outcomes for immigrant workers. Over thirty-five poster/abstracts were presented, including thirteen posters from UMASH projects.

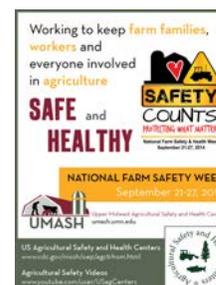


In May, UMASH also hosted a **Research Exchange Meeting** between researchers and staff from the University of Minnesota's UMASH, Midwest Center for Occupational Health and Safety (MCOHS), the National Farm Medicine Center at the Marshfield Clinic, and from Iowa's Great Plains Center for Agricultural Health and Heartland Center for Occupational Safety and Health. The purpose of the exchange was to promote dialogue, networking, and potential collaboration between researchers. Ten "icebreaker" presentations sparked the day's thinking. Small group discussion topics included aerosol science, extractive industries, injury prevention, Total Worker Health, occupational health surveillance, infectious diseases in agricultural populations, and airborne exposures in agriculture.

UMASH participated in the **Driven To Discover Research initiative at the 2014 Minnesota State Fair** and conducted a brief survey, *"What's behind your food?"* to gather information from the general public about food purchasing choices and knowledge and awareness of agricultural worker health and safety. Over 300 people completed the survey at the State Fair, at the University of Minnesota's farmer's market during National Farm Safety Week, or on-line via the UMASH website.



The UMASH outreach team led efforts to promote **National Farm Safety Week (NFSW)** jointly across the US Ag Centers. The joint promotion included a press release, a joint social media posting to launch NFSW, a radio PSA, and a print ad with the NFSW logo and links to the Agriculture, Forestry, and Fishing program website and the US Ag Centers YouTube channel. UMASH worked with the University of Minnesota communications group to customize and distribute the press release to local and regional media outlets. UMASH also recorded and distributed UMASH customized radio PSAs in English and in Spanish, increased social media postings during the week to increase awareness and help promote resources across the US Ag Centers.



## **Pilot Projects Program**

The UMASH pilot project program provides grant funding to explore new areas and build new partnerships in agricultural safety and health. The pilot project program emphasizes projects that address National Occupational Research Agenda (NORA) objectives for agriculture and approach One Health problems in agriculture. It is anticipated that the pilot projects will foster additional work in these areas

### **2014 New Pilot Project Awards**

The 2014 UMASH pilot project program engaged five new projects:

- **Occupational Safety and Health Curriculum Development and Training for Minnesota Agricultural Educators**

South Central College, Mankato MN

This project will develop occupational safety and health (OSH) based curriculum to deliver to Minnesota agricultural educators that work with farm business management instruction, supervise high school students in agricultural workplaces, and/or coordinate college level agribusiness internships. Ag educators will be encouraged to initiate agricultural workplace safety walk-throughs with their students. A goal of the project is to create increased partnerships between trusted agricultural educators, career and technical education students, and agricultural businesses, including farm owners. *This project will follow up on one of the 2014 Finding Common Ground Consensus ideas.*

- **Spheres of Influence: mapping and engaging the institutions that can influence agricultural safety and health**

National Farm Medicine Center, Marshfield Clinic Research Foundation, Marshfield WI

This pilot project will develop an instrument that will both qualitatively assess and quantitatively measure the influence that agricultural lenders believe they exert on farmers and ranchers and vice-versa. The results of these activities will set the stage for a larger, extended study regarding institutions and agents that inhabit the spheres of influence around agricultural safety. It will also assist the development of the role that applied cultural anthropology can play in the field of agricultural health and safety. *This project will follow up on one of the 2014 Finding Common Ground Consensus ideas.*

- **Epigenomic remodeling associated marks in bronchial epithelium upon exposure to *Aspergillus fumigatus* spores**

School of Medicine and Health Sciences, University of North Dakota, Grand Forks, ND

The proposed project aims to identify DNA methylation events and gene-expression changes across the entire genome using high-throughput sequencing technologies. The results of these studies are likely to be important while considering fungal-exposure assessment methods, and for making informed therapeutic and diagnostic decisions for mold-associated diseases. The project is in line with UMASH's criteria for pilot project funding as it is likely to have a high potential for making an impact on the health and well-being of agriculture workers.

- **Pilot project to assess bacterial exposure in workers spreading animal manure**

College of Veterinary Medicine; College of Food, Agricultural, and Natural Resource Sciences, University of Minnesota, St. Paul MN

This pilot study will evaluate the risk of colonization with *Staphylococcus aureus* (including MRSA) in people whose work involves spreading animal manure, a group that does not appear to have been previously studied with respect to risk of zoonotic pathogens. The project will also collect baseline information on the use of personal protective equipment by manure spreading professionals and make a preliminary assessment of the significance of occupational exposure by spreading of swine manure as a source of exposure to *S. aureus* and MRSA of swine origin.

- **Worksite Screening for Chronic Disease Among Migrant Agricultural Workers**

Community Health Service, Inc., Rochester MN

This project will implement a novel approach to provide health services to agricultural migrant workers (AMW's) in Southeastern Minnesota in a convenience, non-threatening environment. By providing medical equipment (i.e. glucose meters and blood pressure cuffs) and training at the farm site, agricultural migrant workers will be able to track their chronic health conditions without having to travel to a regional clinic. Healthcare providers will monitor and identify individuals in need of greater medical attention or counseling. *This project will follow-up on one of the 2014 Finding Common Ground Consensus ideas.*