Discovery

Dr. Pat Green and
Dr. Gil Cloyd (right)

Discovery

College Research Day

Discovery and innovation are thriving at the College of Veterinary Medicine, and once a year the college community comes together at the annual College Research Day to learn about the exciting research being performed by our colleagues. The event showcases research and scholarship accomplishments of veterinary students, residents, graduate students and faculty in the college. Some of the 2016 research topics included: *Non-Woven Fabrics for Nasal Wipe Sampling of Influenza A Virus in Swine, Androgen and Pregnane Response to Stress in Critically Ill Foals,* and *SAMHD1- Mediated HIV-1 Restriction in Cells Does Not Involve Ribonuclease Activity.*

Dr. G. Gilbert Cloyd presented the keynote address and the inaugural Rainier Endowed Chair Lecture, "Veterinary Careers in Industrial Research and the Importance of Private Sector Innovation". Dr. Cloyd is an Ohio State College of Veterinary Medicine alumnus and retired Chief Technology Officer of Proctor & Gamble. He was appointed to Ohio State's Board of Trustees in 2005, served as chairperson of the Board from 2007-09 and was appointed as a Charter Trustee in October 2009.

2016 Brain Camp participants

Discovery

Brain Power: College Hosts Two-Week Course for Veterinarians

During the summer of 2016, the college hosted Brain Camp, the American College of Veterinary Internal Medicine and European College of Veterinary Neurology Neuroscience's two-week course for veterinary neurologists, surgeons, radiologists and advanced clinicians. Offered every two years in either Europe or the United States, this was the first time the conference was held at Ohio State. The course attracted over 160 participants, speaking eight different languages and provided advanced instruction in neuroanatomy, neurophysiology, electrodiagnosis, neuropathology, large animal neurology, neurosurgery and neuroradiology.

Discovery

Merial National Institute of Health Symposium Brings Together the Best and Brightest

There's only one prestigious symposium that has the power to bring together 460 students from 38 schools and six countries, including the United States, Canada, Australia, France, the Netherlands, and the Caribbean — Merial National Institute of Health Veterinary Scholars Symposium. Held during the summer of 2016 at The Ohio State University College of Veterinary Medicine, the symposium showcased the role of veterinary scientists that are advancing basic and applied biomedical and environmental research. Themes included comparative and translational oncology, infectious disease and regenerative medicine.

Ab Osterhaus, professor at the University of Veterinary Medicine in Hannover, Germany, was the keynote speaker and delivered his talk, "Combating Emerging Viruses: One Health Approach." Dr. Cheryl London, associate professor at the Ohio State College of Veterinary Medicine and research professor at Tufts School of Veterinary Medicine and Molecular Research Institute at the Tufts Medical Center, discussed ways to leverage comparative oncology in order to maximize translational outcomes. The symposium was a focal point for next-generation veterinarians and provided students with insight into research and career development.

Jennifer A. Geisler and Dr. Michael Oglesbee

L to R: Wuxun Lu, Dr. Li Wu and Nagaraja Triumuru

Discovery

Wu Lab Discoveries Help Combat HIV/AIDS Epidemic

According to the World Health Organization, 36.7 million people were living with HIV at the end of 2015, with 1.8 million of these being children. The research performed by the Wu lab team at The Ohio State University College of Veterinary Medicine could help identify new medication and treatment options for HIV-infected patients. With their collaborators from University of Chicago, Dr. Li Wu, professor in the Department of Veterinary Biosciences and two post-doctoral researchers in the Wu lab, Nagaraja Tirumuru and Wuxun Lu, reported their new findings on cellular proteins' regulation of HIV RNA modification in eLife, a journal that publishes outstanding research in life sciences and biomedicine. The team found that three cellular proteins specifically recognize modified HIV RNA and inhibit HIV infection in CD4-positive T lymphocytes, the main target cells of HIV infection in human bodies. Wu believes that their findings have translational implications, meaning they have a broader impact on other viral infections or diseases.

Discovery

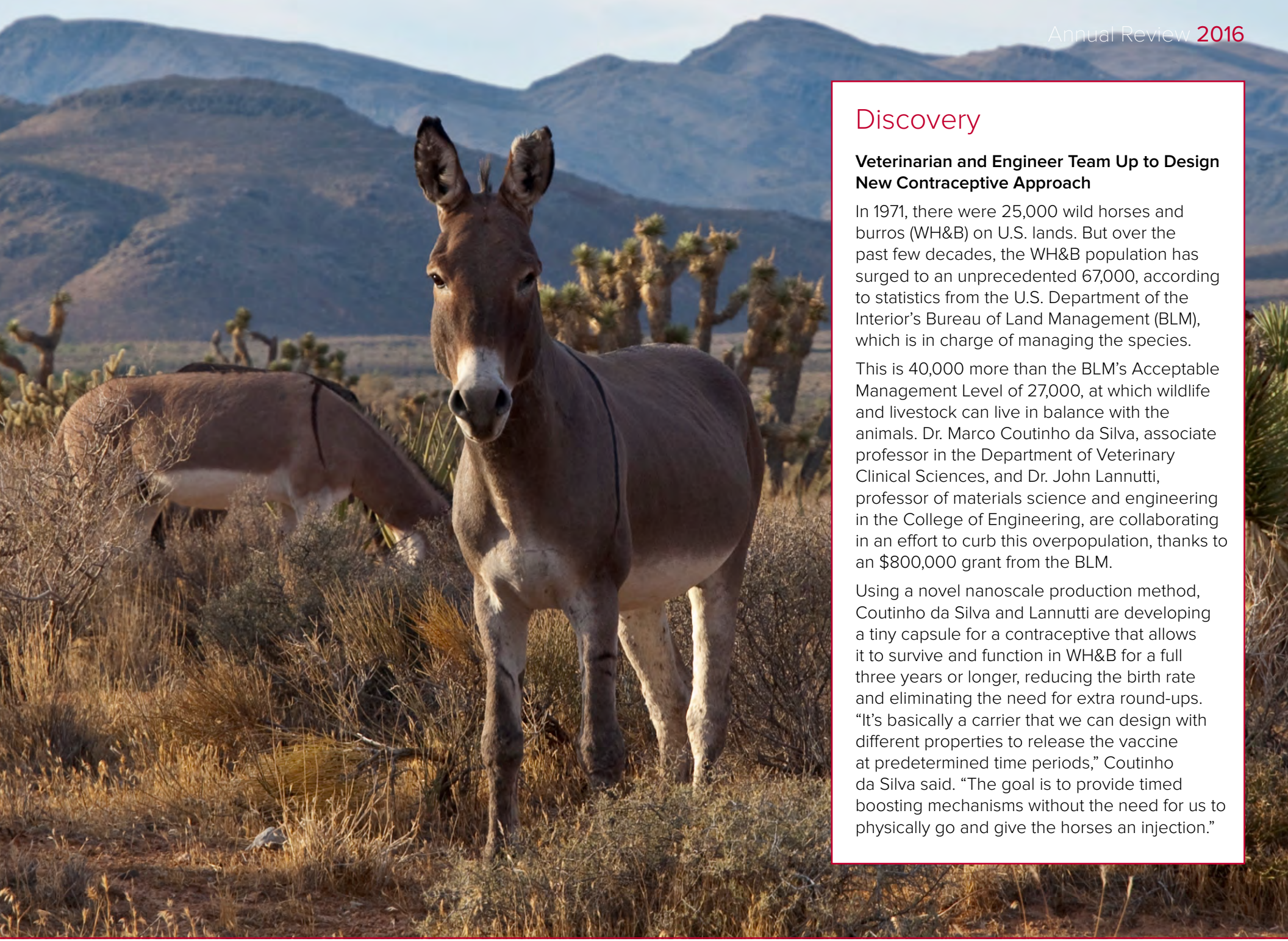
Researchers Find New Methods to Fight the Spread of Disease

Dogs aren't exactly famous for their personal hygiene or for maintaining a respectful distance from their canine pals. With a nuzzle, a shared ball or a bark, a dog battling a bug can easily pass it to others and, in some cases, people.

Thanks to a team of veterinary experts at the College of Veterinary Medicine, there is new guidance for halting the spread of a multitude of dog diseases. The advice, which appears in a **user-friendly guide** and in a scientific paper in the *Journal of the American Veterinary Medical Association*, is intended to be a tool for those in charge of canine group settings and for dog owners, explained Dr. Jason Stull, a veterinarian and assistant professor of veterinary preventive medicine at Ohio State. "We don't think about the risk of disease being spread in dog settings but when you have many dogs in a fairly confined space, the opportunities for disease transmission are everywhere," Stull said. The researchers reviewed more than 400 academic papers related to the topic and examined published reports of outbreaks of disease in dogs before developing their advice.

Among their recommendations:

- Dogs with signs of infection should be kept out of group settings.
- People who touch dogs in group settings, such as handlers, staff and judges, should frequently wash their hands or use sanitizer.
- Community surfaces and items should be regularly disinfected, and sharing of items such as leashes, toys and bowls should be avoided.
- Dogs should have up-to-date vaccinations, including against distemper, parvovirus, adenovirus, parainfluenza, Bordetella and rabies – all highly contagious diseases that can lead to severe disease and death.
- Efforts should be made to keep rodents and wildlife out of areas where dogs will be, and to keep dogs out of areas most likely to include ticks, fleas and other disease-carrying pests.
- Those in charge of group settings and those who participate should avail themselves of a new **online risk calculator** to help them determine the potential for disease spread.
- Dogs should be kept clean – and cleaned up after.
- Organizers of group events should avoid overcrowding of dogs.
- Care should be taken with puppies and other dogs with weaker immune systems. The benefits of socialization should be weighed against the risk of illness.
- Every group setting should have on-site or off-site access to a veterinarian who can help with disease-prevention guidelines.



Discovery

Veterinarian and Engineer Team Up to Design New Contraceptive Approach

In 1971, there were 25,000 wild horses and burros (WH&B) on U.S. lands. But over the past few decades, the WH&B population has surged to an unprecedented 67,000, according to statistics from the U.S. Department of the Interior's Bureau of Land Management (BLM), which is in charge of managing the species.

This is 40,000 more than the BLM's Acceptable Management Level of 27,000, at which wildlife and livestock can live in balance with the animals. Dr. Marco Coutinho da Silva, associate professor in the Department of Veterinary Clinical Sciences, and Dr. John Lannutti, professor of materials science and engineering in the College of Engineering, are collaborating in an effort to curb this overpopulation, thanks to an $800,000 grant from the BLM.

Using a novel nanoscale production method, Coutinho da Silva and Lannutti are developing a tiny capsule for a contraceptive that allows it to survive and function in WH&B for a full three years or longer, reducing the birth rate and eliminating the need for extra round-ups. "It's basically a carrier that we can design with different properties to release the vaccine at predetermined time periods," Coutinho da Silva said. "The goal is to provide timed boosting mechanisms without the need for us to physically go and give the horses an injection."

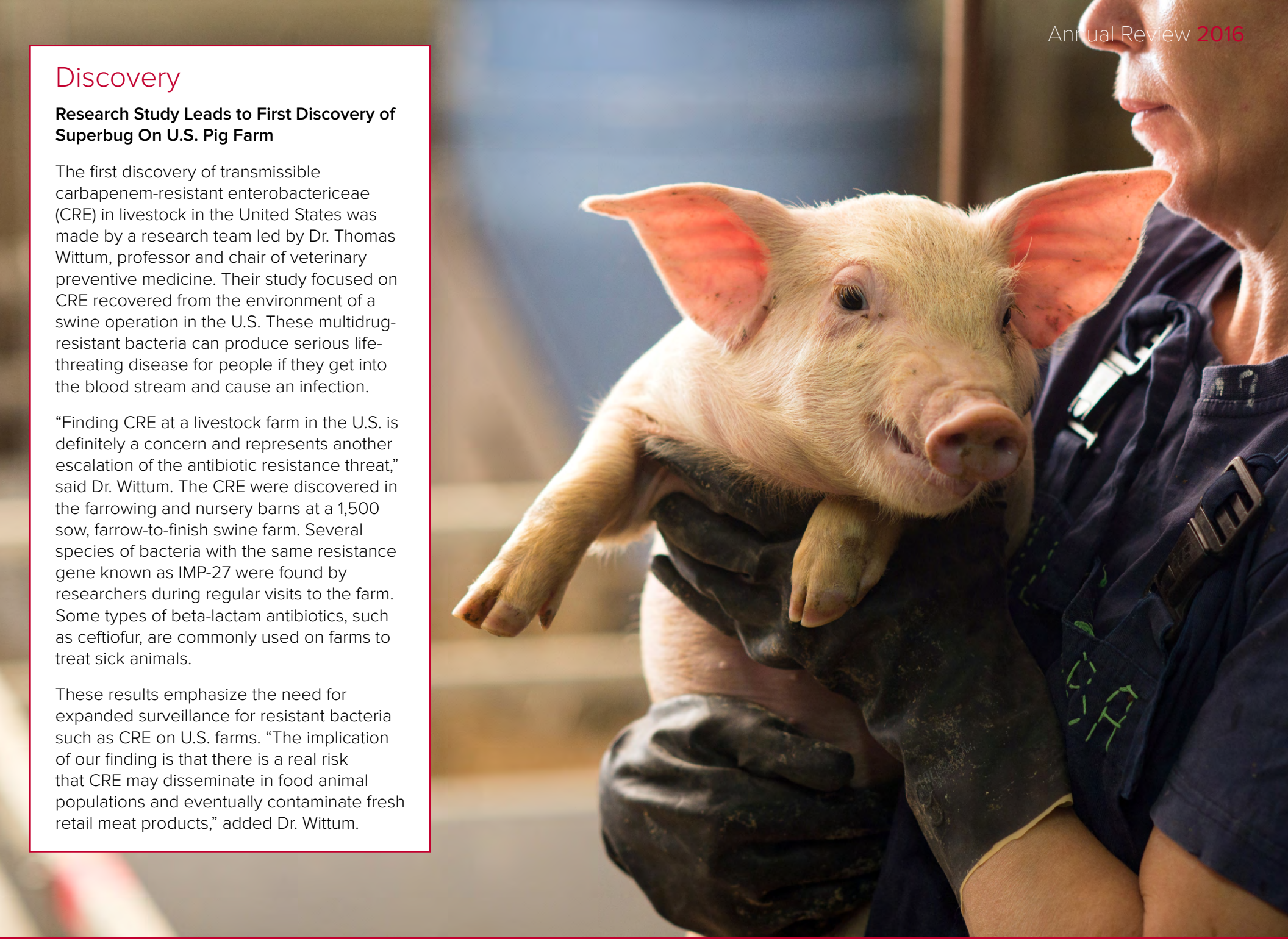
Discovery

Research Study Leads to First Discovery of Superbug On U.S. Pig Farm

The first discovery of transmissible carbapenem-resistant enterobactericeae (CRE) in livestock in the United States was made by a research team led by Dr. Thomas Wittum, professor and chair of veterinary preventive medicine. Their study focused on CRE recovered from the environment of a swine operation in the U.S. These multidrug-resistant bacteria can produce serious life-threating disease for people if they get into the blood stream and cause an infection.

“Finding CRE at a livestock farm in the U.S. is definitely a concern and represents another escalation of the antibiotic resistance threat,” said Dr. Wittum. The CRE were discovered in the farrowing and nursery barns at a 1,500 sow, farrow-to-finish swine farm. Several species of bacteria with the same resistance gene known as IMP-27 were found by researchers during regular visits to the farm. Some types of beta-lactam antibiotics, such as ceftiofur, are commonly used on farms to treat sick animals.

These results emphasize the need for expanded surveillance for resistant bacteria such as CRE on U.S. farms. “The implication of our finding is that there is a real risk that CRE may disseminate in food animal populations and eventually contaminate fresh retail meat products,” added Dr. Wittum.



Any room can be a classroom and this year our faculty capitalized on public lectures to educate the community on a wide array of veterinary medicine topics, including the power of pet interaction and infectious disease.

The Power of a Pet

In February 2016, Dean Rustin Moore of the College of Veterinary Medicine and professor in the Department of Veterinary Clinical Sciences, presented The Power of a Pet at TEDxOhioStateUniversity: Reconstructing Reality, an independent TED event. His talk explored the positive benefits of the human-animal bond for people with autism, Alzheimer's, and post-traumatic stress syndrome.

Reconstructing Reality reached over 1,300 viewers tuning in from 21 different countries. Viewers tuned in to watch the talks and performances from international locations: Japan, India, Germany, Turkey, Qatar, Australia, Mexico and the United States, among others. Dean Moore has since shared his presentation in multiple venues to educate others about the benefit of pet ownership, and the YouTube video of "Power of a Pet" has received over 9,000 views.

Watch "Power of a Pet" here: **go.osu.edu/powerofapet**

Dean Rustin Moore

University Discovery Themes

In May 2016, ten Ohio State faculty members delivered TED-like talks on a range of infectious disease topics. The event was the beginning of an initiative by the university's Discovery Themes, specifically the infectious disease focus area, to convey scientific information and the importance of research to general audiences. Together, the ten speakers painted a larger picture that relayed the importance of research in halting the spread of infectious diseases. The four talks featured below were given by College of Veterinary Medicine faculty.

- Dr. Jeff LeJeune, professor in the Department of Veterinary Preventive Medicine
  How do we intervene on the farm to enhance the safety of our food supply?
- Dr. Stefan Niewiesk, professor in the Department of Veterinary Biosciences
  What's the next generation of vaccine development?
- Dr. Rebecca Garabed, associate professor in the Department of Veterinary Preventive Medicine
  How does the movement of cattle in Cameroon relate to the spread of the common cold?
- Dr. Ian Davis, associate professor in the Department of Veterinary Biosciences
  When the vaccine and the drug don't work, what's next for influenza?