



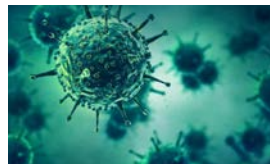
**Boris Striepen named**

Mark Whittier & Lila Griswold Allam  
Professor of Microbiology and  
Immunology Page 4



**PENN Presidential**

Associate Professorship  
De'Broski Herbert  
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**Infectious Disease  
Institute launches**

in OCTOBER  
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# NEWSLETTER



**Dr. Hankenson  
returns to lead  
ULAR at PENN**

On November 1, Dr. Claire Hankenson returns to PennVet as a professor in the Department of Pathobiology and will also serve as an Associate Vice Provost for Research, the University Laboratory Animal Resources (ULAR) Executive Director, and the Attending Veterinarian for the University of Pennsylvania. Dr. Hankenson received her DVM from Purdue University in 1997, completed her laboratory

animal medicine residency and earned her MS in Microbiology (within the laboratory of Dr. Julie Overbaugh at the Fred Hutchinson Cancer Research Center) both at the University of Washington in 2001. Since that time, she achieved board certification by the American College of Laboratory Animal Medicine (ACLAM) (2002) and has worked in academic and administrative roles at the University of Michigan (2002-2006), University of Pennsylvania (2006-2014) and Michigan State University (MSU) (2014-2021).

During her time at MSU, Dr. Hankenson was the Director of Campus Animal Resources (CAR) and Attending Veterinarian, as well as a professor in the College of Veterinary Medicine. MSU significantly expanded its biomedical research profile during her tenure following a dedicated recruitment campaign for research scientists. This led to the construction and opening of four major research buildings (three new and one fully renovated) all with animal facilities that required commissioning and populating with a variety of species and relocation of multiple laboratory groups. As the MSU research program grew, so did the animal care program. Under Dr. Hankenson's leadership, new efforts in dedicated and efficient service delivery for training of scientists, veterinary technical support, specialized breeding colony management, and conversion of decentralized cage wash areas into a centralized cage wash operation were successfully undertaken. In addition, a plethora of rodent caging styles were converted to individually ventilated racking systems across all facilities. Strong partnerships between CAR, the College of Veterinary Medicine and the College of Agriculture and Natural Resources were established to collaborate on the oversight of the large animal and agricultural species utilized in teaching, production, and research programs. These critical management experiences were instrumental in preparing Dr. Hankenson to return to lead ULAR at Penn.

In partnership with the CVM at MSU, Dr. Hankenson established a veterinary student summer externship in laboratory animal medicine that blended into their established NIH-Merial summer program. These students were very successful in finalizing projects into publications and presentations at the annual Phi Zeta Day retreats. Rotation students from both the veterinary and veterinary nursing programs were routinely welcomed to CAR throughout the academic year to learn more about the specialty of laboratory animal medicine and participate in clinical rounds, journal clubs and training classes. These educational experiences evolved as a natural extension from Dr. Hankenson's prior time at Penn where she served as the ULAR Residency supervisor and summer student advisor.

Dr. Hankenson's research interests were founded in infectious diseases, with a focus in immunology, retrovirology and Feline Leukemia Virus. As her career progressed, she transitioned into laboratory animal science, where she focused on refinements for mice and rats as biomedical models. While first at Penn, she undertook a rigorous evaluation of tail biopsy practices for genotyping of laboratory mice, including aspects of tissue collection and assessments of appropriate

Continued on page 3

## Publications



**Guerin A, Roy NH, Kugler E, Berry L, Burkhardt JK, Shin J-B, Striepen B (2021)**  
Cryptosporidium

tho-try effector protein ROP1 injected during invasion targets the host cytoskeletal modulator LMO7. *Cell Host Microbe* S1931-3128(21)00303-6 PR: <https://www.vet.upenn.edu/about/news-room/>



**Simeonov KP, Byrns CN, Clark ML, Norgard RJ, Martin B, Stanger BZ, Shendure J, McKenna A, Lengner C**

(2021) Single-cell lineage tracing of metastatic cancer reveals selection of hybrid EMT states. *Cancer Cell* 39(8): 1150-1162. PR: <https://www.vet.upenn.edu/about/news-room/news-stories/pinpointing-how-cancer-cells-turn-aggressive>

**Benallegue N, Kebir H, Kapoor R, Crockett A, Li C, Cheslow L, Abdel-Hakeem MS, Gesualdi J, Miller MC, Wherry EJ, Church ME, Blanco MA, Alvarez JI.**



(2021) The hedgehog pathway suppresses neuropathogenesis in CD4 T cell-driven inflammation *Brain* 144(6): 1670-1683.

**Crockett AM, Ryan SK, Vásquez AH, Canning C, Kanyuch N, Kebir H, Ceja G, Gesualdi J, Zackai E, McDonald-McGinn D, Viaene A, Kapoor R, Benallegue N., Gur R, Anderson SA, Alvarez JI (2021)** Disruption of the blood-brain barrier in 22Q11.2 deletion syndrome. *Brain* 144(5): 1351-1360. PR: <https://penntoday.upenn.edu/news/immune-link-between-leaky-blood-brain-barrier->

analgesia. For this work, she was honored with the 2009 Pravin N. Bhatt Young Investigator prize from the American Association for Laboratory Animal Science (AALAS). Working with students and residents at Penn, she reviewed surgical approaches for supporting thermoregulation in mice undergoing procedures. While at MSU, she challenged the convention of 3-alternating scrub applications during pre-surgical skin preparation, as she found that it can lead to hypothermia in rodents without improving skin disinfection levels compared to topical application of modern disinfecting agents. Assessment of thermoregulation and provision of supplementary heat to maintain mice in their thermoneutral zone is another area of Dr. Hankenson's research. Over the last few years, she has been carrying out studies to assess novel heat sources and incubators for pre-warming of animals due for surgery, as well as undertaking behavioral assessments of mice housed within rooms with temperatures set 15°F warmer than standard housing rooms. Overall, her interest in continuous refinements for rodent medicine and the importance of the 3Rs (replace, reduce, refine) for animal care are intended to benefit the predominant species utilized in biomedical research. She is currently working on the second edition of her CRC Press textbook entitled *Critical Care Management for Laboratory Mice and Rats*. Her publication record includes 44 peer-reviewed publications, nine book chapters, and more than 100 posters/presentations.



Nationally, Claire has served on the Board of Directors for ACLAM and is a Past-President. She is an ad-hoc site visit Specialist for AAALAC (international accreditation and assessment program) and helped to manage two successful triennial AAALAC site visits at MSU, resulting in full campus-wide (biomedical and agricultural) accreditation. In 2022, she will complete her 6-year term on the Board of Directors for PRIM&R (Public Responsibility in Medicine and Research) serving as the board chair. She recently completed her assignment to the NIH Working Group on Enhancing Rigor, Transparency and Translatability in Animal Research, with recommendations delivered to NIH Director, Dr. Francis Collins, and his Advisory Committee in June 2021 ([https://acd.od.nih.gov/documents/presentations/o6112021\\_ACD\\_WorkingGroup\\_FinalReport.pdf](https://acd.od.nih.gov/documents/presentations/o6112021_ACD_WorkingGroup_FinalReport.pdf)).

Dr. Hankenson is thrilled to be rejoining Penn and PennVet to support their animal research programs and to help guide ULAR into the future. In close collaboration with the Office of Animal Welfare, she will strive to balance the critical research and teaching missions with care for the animal models. Regarding academics and mentorship, she is excited to lead the Division of Laboratory Animal Medicine within the Department of Pathobiology and to advise on collaborative and independent research projects. Her goals are to foster a positive and inclusive work environment, strengthen relationships with diverse research teams, and to advocate for the responsible conduct of research, One Health endeavors, and scientific advancements for the benefit of animals and humans alike.

**Selected References:**

Hankenson FC, Garzel LM, Fischer DD, Nolan B, Hankenson KD. Evaluation of tail biopsy collection in laboratory mice (*Mus musculus*): vertebral ossification, DNA quantity and acute behavioral responses. *J Am Assoc Lab Anim Sci.* 47(6): 10-18, 2008.

*Selected references continued for Dr. Hankenson:*

Braden G, Brice AK, Hankenson FC. Adverse Effects of Vapocoolant and Topical Anesthesia for Tail Biopsy of Pre-Weanling Mice. *J Am Assoc Lab Anim Sci*; 54(3): 291-298, 2015.

Skorupski AM, Zhang J, Ferguson D, Lawrence F, Hankenson FC. Quantification of Induced Hypothermia from Aseptic Scrub Applications during Rodent Surgery Preparation. *J Am Assoc Lab Anim Sci*; 56(5): 562-569, 2017.

Hankenson FC, Marx JO, Gordon CJ, David JM. Effects of Rodent Thermoregulation on Animal Models in the Research Environment. *Comp Med*; 68 (6): 425-438, 2018.

Hankenson FC, Mauntel M, Willard J, Pittsley L, Degg W, Burnell N, Vierling A, Griffis S. Vaporized Hydrogen Peroxide Decontamination of N95 Masks in a Dedicated Animal Research Facility for Reuse During a Novel Coronavirus Pandemic, *Applied Biosafety, Journal of ABSA International*: 25(3): 142-149, 2020.

Hankenson FC, Kim J, Lee TM, Lawrence F, Del Valle JM. Using Waterless Alcohol Based Antiseptic for Skin Preparation and Active Thermal Support in Laboratory Rats. *J Am Assoc Lab Anim Sci*; 60(3): 365-373, 2021.



## HONORS

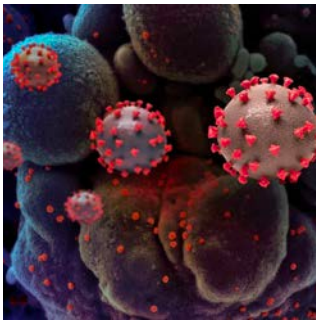
**Boris Striepen**, PhD, Professor of Pathobiology, an internationally recognized parasitologist, has been named the Mark Whittier and Lila Griswold Allam Professor of Microbiology and Immunology at the University of Pennsylvania's School of Veterinary Medicine. Dr. Striepen holds an extraordinary record of scholarly accomplishments. His research program focuses on *Cryptosporidium parvum*, which causes cryptosporidiosis, a zoonotic disease causing diarrhea in millions of children and adults each year,

especially in low-resource countries with poor quality drinking water. Striepen seeks to understand the biology of *Cryptosporidium* and its interaction with the host immune system by using innovative strategies for genetic manipulation of both. He is currently a principal investigator (PI) on three NIH grants and co-PI on one. In addition, Dr. Striepen and Dr. Christopher Hunter are co-PIs on a NIH U01 grant entitled: The role of CD40L in resistance to enteric infection. He has received funding through the Bill and Melinda Gates Foundation from 2015 to 2020.

Penn President Amy Gutmann has appointed **De'Broski R. Herbert**, PhD, in the Department of Pathobiology, as Presidential Associate Professor. Dr. Herbert joined the faculty in 2016 and his research portfolio is a substantial component to the School's strength in neglected diseases of poverty. He is recognized for his formative work in Nigeria where he examined biological samples from children in the Hausa State. His studies discovered worm-like organisms, or helminths, that are endemic to that region. "As a parasitologist and immunologist, Dr. Herbert's mission is to understand how parasites manipulate the host's immune system to favor their survival," said Andrew Hoffman, the Gilbert S. Kahn Dean of Veterinary Medicine. "His work demonstrates clearly that an understanding of parasite-host interactions is key to unlocking the biology of the immune system itself, since disruption unmasks basic mechanisms that are relevant to a variety of diseases including Crohn's disease, rheumatoid arthritis, and more."



**Penn Vet Will Announce Infectious Disease Institute in October**—*The new institute will innovate solutions, conduct research, and advance education in infectious diseases*



Signaling the world's vulnerability to zoonotic disease, Penn Vet will be announcing a new, game-changing infectious disease institute in late-October. With more than 60% of all known infectious diseases of humans originating in animals, and 75% of all newly emerging infectious diseases being zoonotic, there is an urgent need for improved detection, mitigation, and prevention of these threats. The institute

will expand Penn Vet's research on infectious agents and enhance the School's ability to be proactive to new or re-emerging disease.

"We have one of the largest and most respected zoonotic disease programs in the country. Never has the need to broaden Penn Vet's expertise on local and global infectious diseases been more evident than during the ongoing COVID-19 pandemic," said Christopher Hunter, PhD, Mindy Halikman Heyer Distinguished Professor of Pathobiology, who will serve as the inaugural director of the institute. "This institute represents a steadfast commitment to our faculty and to provide preparedness and an infrastructure to our public, agricultural and wildlife health partners. We want to identify the barriers to faculty research on zoonotic disease and help to develop the experts that will be critical for future challenges."

Representing diversity of thought, background, and expertise, the institute's leadership team will provide direction, accountability, and operational philosophy that will guide the institute's interdisciplinary agenda. Members of the leadership team also include: Associate Director De'Broski Herbert, PhD, Presidential Associate Professor and Associate Professor of Pathobiology; Associate Director Lisa Murphy, VMD, Associate Professor of Toxicology; Associate Director Dan Beiting, PhD, Assistant Professor of Pathobiology; and Associate Director Julie Ellis, PhD, Adjunct Associate Professor of Pathobiology.

Penn Vet will formally launch the institute on October 26<sup>th</sup> at the Annual Faculty Research Retreat.

### Climate Week at Penn—A Wet and Sweltering Spillover

A *webinar*, moderated by De'Broski Herbert, PhD, is free and open to the public. Climate change is now, and it's here. Join Penn Vet experts as they discuss how hot temperatures are accelerating vector-borne disease. Panelists Julie Ellis, PhD, Lisa Murphy, VMD and Michael Povelones, PhD will speak on Monday, September 20 at 4-5 pm. Register: <https://bit.ly/3haPcxD> Questions? Contact Brittany Tinsley, 215-746-2421; [bscan@vet.upenn.edu](mailto:bscan@vet.upenn.edu)

### Equestrian Veterinary Scholarship Program for Equine Research



**Penn Vet**—together with the Royal Veterinary College and MARS EQUESTRIAN™ has launched a new, international scholarship program aimed at advancing the health and welfare of the horse while providing a unique opportunity to conduct research through an interdisciplinary, mentorship-based approach. [Dr. Kyla Ortved](#), assistant professor of [large animal surgery](#) at New Bolton Center, will serve as the primary mentor for the program's research project.

### The Annual Faculty Research Retreat

is planned for October 26<sup>th</sup>. A full program of faculty talks is planned with the Marshak Lecture to be given by Dr Audrey Odom John, Chief of Infectious Diseases, Children's Hospital of Philadelphia. Guest speaker, author/journalist Carson Vaughan will talk on the value of communication between journalists and scientists.

Registration Link:

[www.vet.upenn.edu/faculty-research-retreat](http://www.vet.upenn.edu/faculty-research-retreat)

Abstracts due: Sept 30

## Recent Awards (Direct Costs)

### **Gatha Thacker** (Chakrabarti Lab)

BRCA Early Career Award  
Regulation of IFN- $\gamma$  signaling  
in BRCA1-loss dependent breast  
cancer \$75,000 7/1/21—6/30/22

### **Hania Kebir** (Alvarez Lab)

Multiple Sclerosis Soc. Canada  
Immunotherapy to target meningeal  
B cells in a model of progressive-  
like multiple sclerosis  
\$123,000 7/1/21—6/30/24

### **Jorge Alvarez**

EMD Serono INC  
Defining the role of BTK in  
meningeal  
inflammation— from meningeal B  
cells to tertiary  
follicle like structures  
\$205,152 2/4/19—7/31/22

### **Eman Anis**

PA Center Poultry & Livestock  
Excellence  
Surveillance for Egg Drop  
Syndrome (EDS) Infection Using a  
Commercial ELISA kit  
\$8,063 5/24/21—5/24/22

### **Ron Hartly**

Fox Chase: Development of Host-  
Oriented Small Molecule  
Therapeutics for Filoviruses and  
Arenaviruses  
\$553,990 4/1/21—3/31/24

### **De'Broski Herbert**

NIHT32  
Parasitology: Modern Approaches  
\$1,160,564 9/1/21—8/31/23

### **De'Broski Herbert**

NIH R01  
Myeloid derived IL-33 controls Treg  
responses  
during parasite infection  
\$1,000,000 8/6/21—7/31/25

### **Chris Hunter/Boris Striepen**

NIH U01 The role of CD40L in  
resistance to enteric  
infection  
\$1,690,655 8/17/21—5/31/26

### **John Wolfe**

CTSA/PICAB (Comparative  
Animal Biology)  
Institutional Clinical and  
Translational Science Award  
\$27,796 6/1/21—5/31/22

### **Michael Atchison**

NIH/R01 Mechanisms of lineage  
plasticity revealed by YY1  
deficiency  
\$1,240,972 6/1/21—5/31/26

### **Michael Atchison**

NIH/R01 YY1-dependent chromatin  
structure stabilization of B lineage  
commitment  
\$1,532,099 7/15/21—6/30/26

### **Michael Atchison**

NIH/Boehringer Ingelheim  
Award funding the NIH-BI summer  
scholars program at Penn Vet  
\$20,000 4/1/21—3/31/22

### **Claudia Lovell** (Anguera Lab)

Rheumatology Research Foundation  
Future Physician Scientist Award  
\$30,000 7/1/21—6/30/23

### **Christopher Lengner**

NIH/R01. The basis for and function of  
enteroendocrine lineage plasticity in the  
intestinal DNA damage response  
\$1,115,688. 5/5/21—4/30/24

### **Anna Kashina**

PA Dept. of Agriculture  
Fecal Microbiome Signatures as a  
Diagnostic Marker in Chronic Wasting  
Disease.  
\$510,000 5/14/21—2/28/23

### **Nicola Mason**

NIH U24. New Supplement:  
Coordinating Center for Canine  
Immunotherapy Trials and Correlative  
Studies  
\$1,890,627 9/1/20—8/31/21.

### **Leonardo Murgiano**

Collie Health Foundation  
Molecular mapping and characterization of  
the genetic modifier associated with Collie  
Eye Anomaly (CEA)  
\$46,504 9/1/21—2/28/22



## New Faculty



**Monica Midon** is the newest faculty member to join the Department of Clinical Studies-New Bolton Center. Dr. Midon, an assistant professor of Anesthesiology, comes to Penn Vet from Auburn University College of Veterinary Medicine, Auburn, Alabama, where she completed her residency in anesthesia and obtained a Master of Science degree. Her latest research assessed the impact of varied fractions of inspired oxygen on oxidative stress during anesthesia, and evaluated anesthetic recovery in horses using accelerometry. Prior to Dr. Midon's experience at Auburn, she completed a graduate degree and anesthesia residency at UNESP, Sao Paulo, Brazil, and a post-graduate specialization in anesthesiology at Faculdade Jaguariúna in Brazil. There, she also gained experience working in private practice. Dr. Midon brings a wide breadth of experience in clinical service and teaching, as well as her research focusing on factors affecting recovery from anesthesia in the horse.

*Selected publications.....*



Berry ASF, **Pierdon MK**, Misic AM, Sullivan MC, O’Brien K, Chen Y, Murray SJ, Ramharack LA, Baldassano RN, **Parsons TD & Beiting DP** (2021) Remodeling of the maternal gut microbiome during pregnancy is shaped by parity. *Microbiome* 9(1) 1-15.



Essler JL, Kane SA, Nolan P, Akaho EH, Berna AZ, DeAngelo A, Berk RA, Kaynaroglu P, Plymouth VL, Frank ID, Weiss SR, Odom John AR, and **Otto CM** (2021) Discrimination of SARS-CoV-2 infected patient samples by detection dogs: A proof of concept study *PLoS One* 16(4):e0250158.



Ortiz I, Felix M, Resende H, Ramírez-Agámez L, Love CC & **Hinrichs K** (2021) Flow-cytometric analysis of membrane integrity of stallion sperm in the face of agglutination: the “zombie sperm” dilemma. *J. Assist. Reprod. Genet.* doi: 10.1007/s10815-021-02134-z. *Epub ahead of print.*



Sinha N, Whelan EC, Tobias JW, Avarbock M, **Stefanovski D & Brinster RL** (2021) Roles of Stra8 and Tcerg1l in retinoic acid induced spermatogonial differentiation in mouse. *Biol Reprod.* 105(2) 503-518.



**Scherrer NM & Hopster K** (2021) Neuromuscular blockade with atracurium for ophthalmic surgery in horses-Effects on surgical and anesthetic characteristics and recovery quality. *Vet Ophthalmol* doi: 10.1111/vop.12922. *Online ahead of print.*

Welcome



**Roderick “Erick” Gagne** obtained a Master’s degree and PhD from Tulane University in Ecology and Evolutionary Biology. There he studied the disease ecology of an invasive parasite infecting Hawaiian stream fishes. Following graduate school, he completed a two-year post-doctoral position at the University of Wyoming where he used molecular and ecological techniques to better understand population structure of wildlife as well as the origin and epidemiology of infectious disease in wildlife. He then was a research scientist at Colorado State University in Dr. Sue VandeWoude’s lab. In general, his research integrates genetic and ecological approaches to evaluate infectious diseases. This work has two primary focuses — understanding how pathogens spread across landscapes and determining mechanisms of cross species transmission. In his spare time, Erick enjoys hiking, surfing, skiing, and generally spending time outdoors with his wife Ashley, his daughter Laurel, and their three dogs. Originally from Philadelphia he is excited to be back in the area.

**PennVet Global Parasitology Seminars**—*speakers and audiences from around the world.* The seminars, offered by the Department of Pathobiology, will be held at 12 noon in room 132 Hill Pavilion via ZOOM. <https://upenn.zoom.us/j/92124794158>



September 20, 2021  
 Michael White, Distinguished USF Health Professor  
 Department of Global Health, University of South Florida  
 “Development of an ex vivo model of Toxoplasma recrudescence”

October 11, 2021  
 Catherine Lavazec, Biology of Plasmodium transmission team  
 Institut Cochin, Paris, France  
 “Deciphering host-parasite interactions in Plasmodium falciparum transmission”

October 18, 2021  
 Astra Bryant  
 Dept of Microbiology, Immunology, and Molecular Genetics  
 University of California, Los Angeles  
 “The neural basis of temperature-driven host seeking in the human threadworm Strongyloides stercoralis”

October 25, 2021  
 Carolina Barillas Mury  
 Laboratory of Malaria and Vector Research, National Institutes of Health  
 “Mosquito Immunity and Malaria Transmission”

November 1, 2021  
 Gavin Wright  
 Cell Surface Signalling Laboratory, Wellcome Sanger Institute, UK  
 “Genome-led vaccine target discovery for animal African trypanosomiasis”

November 8, 2021  
 Tobias Spielmann  
 Bernhard Nocht Institute for Tropical Medicine (BNITM), Germany  
 “Drugs and nutrients: critical dependencies in malaria parasites”

November 15, 2021  
 Phil Newmark  
 Morgridge Institute for Research  
 Madison, WI  
 “Fc-dependent IgG parasite clearance as a guide for vaccine development against P. falciparum malaria”

For more information: contact Sue Pilder at [waddingt@vet.upenn.edu](mailto:waddingt@vet.upenn.edu)

**The Penn Vet Research Newsletter**

Suggestions, comments, requests and story ideas may be directed to:  
[resnews@vet.upenn.edu](mailto:resnews@vet.upenn.edu)

Phillip Scott, PhD  
 Vice Dean *for* Research & Academic Resources

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