#### CVM eNews - June 2019

Cornell College of Veterinary Medicine <cornellvet@cornell.edu>

Tue 6/18/2019 1:01 PM

To: Susanne K. Whitaker <skw2@cornell.edu>





# June 2019



<u>The veterinary Class of 2019 during this year's commencement activities.</u>
Congratulations to our graduates in all programs!

#### **Latest News**



The latest issue of 'Scopes is now available online



# Veterinary biobank is first accredited under new global standard



Master of Public Health Program celebrates its inaugural cohort's graduation

#### June Trivia

Look out for the answer to this month's trivia question in August's eNews!

What alum left the college as a student of the famous F.H. Fox and then returned as his dean?

Franklin Loew	Select
Robert Phemister	Select
William Hagan	Select
George Poppensiek	Select

May's trivia question: How was Kirksey Curd (D.V.M. 1912) a pioneer at Cornell?

Answer: He was our first African-American D.V.M. graduate. 72% of you got it correct! Curd was one of six black students to graduate between 1910 and 1919.

## **Community Notes**

**Reunion 2019:** Thank you to the organizers and participants for making it a huge success!





**World Pride 2019** is coming up in New York City. Pride month celebrates progress made by lesbian, gay, bisexual and transgender equality through international events and activities. Cornell alumni are planning a float for the pride parade as well as <u>a Cornell party at Stonewall on Saturday</u>, <u>June 29</u>.

#### **Awards and Honors**

Join us in congratulating the following CVM community members on their various awards and accomplishments:

- Students, faculty earn many awards during commencement season
- Myranda Baumgartner and Shane Conyers of the MPH program, who were selected as This is Public Health Ambassadors.
- **Drs. Nadine Fiani and Santiago Peralta**, who achieved AVDC-Oral and Maxillofacial Surgery-Founding Fellow status, the highest level of certification in this dual specialty.
- **Dr. Brian Rudd**, named a SUNY Professor of Empire Innovation.
- **Dr. Jeongmin Song**, chosen as the recipient of the 2019 Zoetis Award.
- **Dr. Tracy Stokol**, chosen by the American Society for Veterinary Clinical Pathology as the winner of the ASVCP Education Award.
- **Belinda Thompson '77, D.V.M. '81,** who was reappointed by the U.S. Secretary of Agriculture to the Committee on Animal Health, which advises the secretary

- on matters of animal health and broader issues of public concern.
- **Sustainability at CVM**: The CVM Center expansion has been awarded Gold Leadership in Energy and Environmental Design (LEED) status and the Small Animal Community Practice has earned Silver LEED status.

Hellos, goodbyes and HR update

#### **CVM** in the News



USA Today: More dogs are getting sick as climate change pushes diseases into new parts of the U.S.

Bruce Kornreich, D.V.M. '92, Ph.D. '05, describes how rising temperatures can put more dogs at risk.

The Washington Post: A deadly deer disease is spreading. Could it strike people, too?

Dr. Krysten Schuler offers insight into chronic wasting disease for The Washington Post.

**More News** 

**More Events** 

#### **Summer Hiatus**

We'll will be back in your inbox for another eNews update in August 2019. See you then!

In the meantime, you can let us know what you want to see in the Community Notes portion of eNews. Contribute events and articles which might be of interest to your colleagues and the CVM community at large.

Send in your submission by 8/16/19 to <a href="mailto:cornell.edu">cornell.edu</a>. Make sure to put eNews in the subject line so that your item can be considered for the next issue.











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# Class of 2019 celebrates hooding ceremony

👺 Wednesday, May 29, 2019 - 11:40am



Members of the Class of 2019 pose together after their hooding ceremony at Bailey Hall.

After countless hours of lectures, late nights studying and immersive learning on the farm or in the clinic, the Cornell veterinary class of 2019 was recognized through the college's hooding ceremony on Saturday, May 25 at Bailey Hall.

The graduating class comprises 96 students and a diversity of future career goals. The majority of the class, 61 percent, plan to go into private practice, while 32 percent will further their training with internships. All the new veterinarians will stay in the United States, with roughly one-third remaining in New York state.



Lorin D. Warnick, D.V.M., Ph.D. '94, the Austin O. Hooey Dean of Veterinary Medicine, spoke with admiration for the group of graduates, as well as the college's residents and interns, on completing their training. "I hope each of you has a sense of satisfaction with what you have achieved," he said. "I'm sure your



friends and family in the audience are proud of you — as are all of us at the college."

Dean Warnick addresses the D.V.M. Class of 2019

Warnick also thanked the graduates' families and friends. "If your experience was anything like mine, your parents and siblings indulged an unusual number of animals and great variety of species in your homes," said Warnick. "They have also no doubt heard more graphic descriptions of anatomy, pathology and symptoms of infectious disease than they ever wanted; and much of that was probably at the dinner table. For those not in the profession, please excuse us — we simply can't sit down to a meal together without these topics coming up."

Warnick noted how the Class of 2019 were agents of change, mentioning how they helped shape the college's wellness program and sustainability initiatives. "It is fitting that you have been in the college during a time of change; you now are joining a profession that is also rapidly evolving," said Warnick. "As the business of veterinary medicine is changing ... we face a challenge in keeping service to animals and clients at the core of the profession. But this also provides an opportunity; the quality veterinary health care depends on a foundation of excellent clinical skills, but to be most effective it must be surrounded by great communication, organization, and practice management." Warnick closed his speech by thanking the graduates and house officers.

Dr. Robert Weiner, president of the New York State Veterinary Medical Society, led the graduating class in taking the Veterinarian's Oath. Katherine Edmondson, M.S. '85, Ph.D.

'89, assistant dean for students and instruction, announced the names and future plans of each graduate, followed by Warnick hooding each student. Mark Olcott, D.V.M. '95, president of the alumni association executive board, congratulated them upon their hooding.

Following hooding, Dr. Erin Epperly, assistant clinical professor of diagnostic imaging, recipient of the 2019 Zoetis Distinguished Teaching Award, gave the charge to the Class of 2019. Epperly told stories of her own experiences as a new veterinarian, reminding the graduates that they will face both failures and successes in their



Graduates from the Class of 2019 listen to speakers during their hooding ceremony.

career, and that veterinary medicine can be unpredictable. "But one of the best parts about veterinary medicine is that the successes far outnumber the failures," she said. "I am completely confident about the doctors sitting on the stage before you. I am so proud of you all as people, and as vets."

Dr. Carolyn McDaniel, senior lecturer and foundation course leader for Block VII, presented on behalf of the Faculty Student Awards Committee three awards:

- The Horace K. White Prize, awarded to the graduate with the highest academic record during their entire veterinary training, went to Allison Tuchrello, D.V.M. '19
- The Malcolm E. Miller Award, awarded to a graduating student that demonstrates perseverance and scholastic diligence, went to Bridget Bickers, D.V.M. '19
- The Leonard Pearson Prize, awarded to a student most successfully demonstrating potential for professional and/or academic leadership in veterinary medicine, went to Gilad Fefer, D.V.M. '19

The event closed with a performance from the college's own acapella group, Ultrasound, which finished with the entire audience joining in to sing Cornell University's alma mater, "Far above Cayuga's waters."



Shannon O'Keefe, D.V.M. '19, receives her ceremonial hood from Dean Lorin Warnick.

The graduating class is a diverse one, with many different backgrounds and interests. Students come from hometowns just a few miles from campus, or across the globe — as is the case for MJ Sun, D.V.M. '19. She is originally from China, where her father watched the livestream of the event at 2am in the morning. Graduate Shannon O'Keefe, D.V.M. '19, was a professional singer in New York City prior to CVM who used her art as a counterbalance during the challenges of veterinary school. "Having an outlet during all that studying was essential for my survival in vet school, and performing was something I could control,

something I could feel good about," O'Keefe said. "It helped remind me that there were other things in life than studying."

Shelby Wauson, D.V.M. '19, had been researcher in behavioral neuroscience before deciding veterinary medicine was a better fit for her. Cornell turned out to be transformative for Wauson in many ways. "I've become more focused on doing those things that I truly love, in the profession and beyond," she said. Wauson also became a mother during her time as a student. "Having [my son] Winter has allowed me to gain perspective that I needed," she said. "Balancing work and family is rarely easy, especially for women, but I feel I have a head start now." Wauson will start as an associate veterinarian for a nonprofit small animal clinic in Houston this summer.

O'Keefe, who plans to work at an emergency and critical care internship in Maryland after graduation, says her time at Cornell was one of challenge and reward. "As we approach graduation I am continually overwhelmed by how much I've learned and how much has changed in the way I think about medicine," she said. "It isn't easy, and it isn't always fun, but it is absolutely worth it."

- -By Lauren Cahoon Roberts
- -Photography by Rachel Philipson

Wednesday, May 29, 2019 - 12:29pm

▶ Image



The Cornell veterinary class of 2019 at their hooding ceremony. All photos by Rachel Philipson/Cornell College of Veterinary Medicine.

The 2019 veterinary



















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# Veterinary biobank is first accredited under new global standard

👺 Thursday, May 23, 2019 - 2:45pm



Orvis, a Guiding Eyes for the Blind dog, is pictured during the accreditation visit. Orvis acted as the biobank's model patient for the American Association for Laboratory Accreditation. All photos by Christine Bogdanowicz/Cornell College of Veterinary Medicine.

After years of planning and months of implementation, the Cornell Veterinary Biobank has achieved international accreditation under a new global standard, making it the first biobank of any type to earn such a distinction.

"Quality accreditation increases the confidence in our operation. It shows that we are transparent about our processes, open to critique and are doing high-quality work under a rigorous standard," said Dr. Marta Castelhano, director of the Cornell Veterinary Biobank.

The American Association for Laboratory Accreditation (A2LA), which officially granted Cornell the accreditation in a ceremony May 22 at the College of Veterinary Medicine, is a nonprofit international accreditation body that assesses a

range of laboratory types using meticulous standards developed by the International Organization for Standardization (ISO).

"The achievement of earning A2LA's first accreditation to the new ISO 20387 standard ensures that Cornell's operations will function with the highest level of quality," said Adam Gouker, A2LA's general manager. "A2LA is proud to be a part of this historic milestone and to provide accreditation to the biobank industry, ensuring the quality of materials being used for research and development."

A biobank is a secure storage facility for biological materials and can store samples from humans, plants or – in the case of the Cornell Veterinary Biobank – animals. More than 3,000 animal disorders have a genetic basis, half of which are potential models of human disease.



Cornell leadership, A2LA and biobank staff at a ceremony May 22 celebrating the Cornell Veterinary Biobank achieving international accreditation.

To research these and many other diseases, Cornell's biobank collects samples from both ill and healthy animals; the samples are then processed, catalogued and provided to scientists around the world. Armed with these typically toughto-get samples, scientists can accelerate biomedical research projects that improve both animal and human health.

Accreditation is a thorough process, especially for the Cornell biobank, which includes a complete range of services, including sample collection, acquisition, preparation, preservation, testing, analysis, storage and distribution.

"Some biobanks exist only for storage, but ours does every single process a biobank can do," said Castelhano.

Successful accreditation requires close scrutiny of each step from the A2LA. Castelhano – along with biobank quality specialists Denise Archer; Susan Garrison; Lara Mouttham, Ph.D. '16; and the rest of their biobank team – developed, tested and implemented nearly 80 new standard operating procedures for the biobank in the last year alone.

Cornell was the first to submit an application for accreditation under the more rigorous new standard, which introduces a "fit-forpurpose" clause.

"This means that we have to ask whether a sample of ours was good enough for what a researcher might need it for," Castelhano said. "It makes sure that feedback is part of the process and that the quality of our material reaches beyond the point of distribution."

Representatives from A2LA visited Cornell in early April to review Castelhano and her team's work.

"This is such a tribute to Marta, the team she's put together, all the work that's gone on, the clinicians and individuals who have contributed to the bank over the last 13 years," said Provost Michael Kotlikoff, who served as dean of the college from 2007-2015. At the ceremony, he praised the group for "all the efforts, all the vision, all the creativity in developing something that is really unique."



Dr. Marta Castelhano cuts the "accredited" cake at the event.

"The success belongs to every team member at our college," said Castelhano. "Over 10 groups came together to make this happen – everyone from human resources to information technologies to our hospitals' clinical team. We're all committed to doing this not for ourselves but for our patients, their owners and the scientific community we serve."

By Melanie Greaver Cordova

This story also appeared in the Cornell Chronicle.

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# Master of Public Health Program celebrates its inaugural cohort's graduation

👺 Friday, May 31, 2019 - 3:53pm



"It is rare in the history of a 154-year-old institution that people ever get to be the first at anything, but all of you have done just that," said Lorin D. Warnick, D.V.M., Ph.D. '94, the Austin O. Hooey Dean of Veterinary Medicine. "You are true pioneers." All photos by Rachel Philipson/Cornell College of Veterinary Medicine.

Cornell saw a new addition to its commencement weekend activities with the graduation of the inaugural cohort of the Master of Public Health (M.P.H.) Program. Eleven students from five countries received their hoods in a ceremony marking the occasion at the College of Veterinary Medicine May 25.

"It is rare in the history of a 154-year-old institution that people ever get to be the first at anything, but all of you have done just that," said Lorin D. Warnick, D.V.M., Ph.D. '94, the Austin O. Hooey Dean of Veterinary Medicine. "You are true pioneers."

Housed in the Graduate School and administered through the college, the M.P.H. program launched in fall 2017. "Public health is taught in disciplines throughout Cornell's campus, but we never offered professional public health

training that tied it together before this program," said Dr. Alexander Travis, program director and associate dean for international programs and public health.

The program is among the first of its kind to be formed under new public health competency guidelines, and incorporates two fields of study for students to choose from: infectious disease epidemiology or food systems and health. Underpinning the whole program are the core concepts of sustainability, equity and engagement.

"These two concentration areas are signature strengths of Cornell," said Travis. "What really sets our program apart are our involvement of small teams of students in real life problems with partners outside of academia, and our consideration of the massive environmental challenges facing our planet today. These affect every dimension of our lives, especially our health and wellbeing. If



Housed in the Graduate School and administered through the college, the M.P.H. program launched in fall 2017

we don't start to make sustainability a core part of public health, future generations will suffer for it. We have to think about sustainability as an equity issue across generations."

Several students earned awards, which were presented to them during the hooding ceremony:

#### Valedictorian

• Hirokazu Togo, M.P.H. '19

#### Excellence in Public Health Impact

- Infectious Disease Epidemiology: Lakshman Balaji, M.P.H.
   '19
- · Food Systems and Health: Qijin Wang, M.P.H. '19

Excellence in Public Health Leadership

- Caitlin Baumhart, M.P.H. '19
- · Ana Barsallo Cochez, M.P.H. '19

Individual Best Exemplifying Sustainability, Equity and Engagement (peer-selected)

· Andreina Thielen Martin, M.P.H. '19



The graduating M.P.H. cohort has already made an impact in New York with projects that approach public health issues like food accessibility and vector-borne disease in Tompkins County.

Some of the graduates plan to stay in the Ithaca area to either pursue additional degrees or work in the community with organizations like Cornell Cooperative Extension (CCE). Others will venture across the United States, like Steven Shelley, M.P.H. '19, who will work with the Maine Center for Disease Control and Prevention as an epidemiologist, and Darryl Ware, M.P.H. '19, who will start a fellowship with Kaiser Permanente in California. Others will return to their home countries to put their knowledge into practice, like cohort valedictorian Togo. Originally from Japan, Togo will return to his job as a senior environmental health officer in Japan's prefectural government.

#### Making their mark in New York

The graduating M.P.H. cohort has already made an impact in New York with projects that approach public health issues like food accessibility and vector-borne disease in Tompkins County. Each student has partnered with organizations like CCE, Healthy Food for All, the Cayuga Center for Healthy Living and various school districts. For example, Togo and Martin partnered with the Ithaca City School District to find ways to mitigate barriers that prevent students from participating in free breakfast programs.

"We are training the next generation of public health leaders," said Travis, who is committed to keeping the cohort sizes small so that the program can continue its engaged approach working with community partners. Next steps for the program include pursuit of formal accreditation from the Council on Education for Public Health.

"We are training the next generation of public health leaders"

"Although our Master of Public Health program is brand new, Cornell has played a leading role in advancing public health since its own founding,"

- Dr. Alexander Travis, program director

said Warnick. "Today, though, we focus on your role as pioneers: you, the founding class, and this milestone of your graduation."

In addition to the M.P.H. graduates, the college also celebrated the commencement of 96 veterinary students. Five students earned their Ph.D. in the graduate field of biomedical and biological sciences, which includes some who will remain to finish a combined D.V.M. degree or work in a postdoctoral position. More graduates are on the horizon, with four students who will complete the Master in Professional Studies – Veterinary Parasitology program by the end of summer 2019.

By Melanie Greaver Cordova

Friday, May 31, 2019 - 4:06pm





"It is rare in the history of a 154-year-old institution that people ever get to be the first at anything, but all of you have done just that," said Lorin D. Warnick, D.V.M., Ph.D. '94, the Austin O. Hooey Dean of Veterinary Medicine. "You are true pioneers." All photos by Rachel Philipson/Cornell College of Veterinary Medicine.

The graduating M.P. health issues like fo



















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# Historic milestones for both alumni and CVM celebrated at this year's Reunion

Monday, June 10, 2019 - 2:15pm



Cornell College of Veterinary Medicine (CVM) alumni, their families and friends gathered for a sun-drenched Reunion weekend in Ithaca, New York June 6-8.

This year, the college invited alumni to celebrate its historic  $^{125}$ <sup>th</sup> anniversary with the opening of a time capsule from 1994 and a game of college Jeopardy, which tested their knowledge of CVM history and trivia. The three-day event featured many such moments of pomp, circumstance and fun.

Cornell President Martha Pollack kicked the weekend off with her opening remarks at the college. "It's great to have so many of you here at Cornell, celebrating your reunion as graduates of one of the best colleges of veterinary medicine in the world," said Pollack, who noted CVM's impact on education, research and public service.





"As a side note, I do think that having the College of Veterinary

Medicine here has a big impact on how animal-friendly all of Cornell is," Pollack added. "In Michigan, when people heard I had four cats, I used to get a lot of funny looks. When I came here and told people I had four cats, they asked, 'And how many dogs?"

Lorin D. Warnick, D.V.M., Ph.D.'94, the Austin O. Hooey Dean of Veterinary Medicine, also greeted guests at the welcome event. "I am pleased to see so many of you have returned to Cornell for a weekend of comradery and celebration — some of you for the first time in many years," he said.



In addition to tours of the new Small Animal Community Practice and the yearly Festival of the Animals — complete with Minnie the miniature horse, Guiding Eyes for the Blind dogs and animals from the Cornell Companions program — college alumni and community members gathered in Takoda's Run atrium for the official unveiling of Provost Michael Kotlikoff's portrait. Kotlikoff served as dean of CVM from 2007-2015. The portrait hangs in Takoda's Run, one of the major spots of construction and renovation during the college's class expansion project.

"It's fitting that this portrait will be displayed in our new facility, because it is really Mike's leadership that brought in the funding, all the teamwork that needed to be done to build this transformative space for the college," Warnick said.

In keeping with tradition, the CVM reunion celebrated two alumni giving awards, the Dean's Cup and the 25 Club Cup, which recognize classes who have achieved milestones in reunion giving.

The 25 Club Cup award goes to classes out of school for up to 25 years, which achieve 25 percent or higher in giving participation during a reunion year. The classes of 1994 and 1999 won this honor with 34 percent and 38 percent participation, respectively.



The Dean's Cup goes to the class out of school for up to 50 years, with the highest percent of the class making a gift. This year, the



Dean's Cup went to the class of 1969 with 61 percent participation. Additionally this class had the highest giving of all the reunion classes, totaling nearly \$137,000.

Said Warnick, "The place may look different, but the college's passion and dedication for human and animal health and wellbeing is still strong."

-By Lauren Cahoon Roberts

Friday, June 14, 2019 - 12:18pm

▶ Image



Scenes from CVM Reunion 2019

Scenes from CVM R



















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# Students, faculty earn many awards during 2019 commencement season

#### The American Association of Feline Practitioners' Award

This award is presented to a fourth-year student for special interest and accomplishment in feline medicine and surgery.

Marie Jose Torres

#### The American Academy of Veterinary Dermatology Award

This prize is awarded to a fourth-year student who has demonstrated enthusiasm for and understanding of diagnostic and clinical dermatology. The recipient is nominated by the dermatology faculty.

Leslie K. Brunker

#### The American College of Veterinary Internal Medicine Award

This award recognizes fourth-year veterinary students who demonstrate a sincere interest and outstanding didactic and clinical expertise in veterinary internal medicine.

Small Animal - Leslie Brunker and Kailee Zornow

Large Animal - Alexandra Brunet

#### The American College of Veterinary Ophthalmologists' Award

The prize is awarded to a fourth-year student who has distinguished himself/herself by outstanding performance on the clinical ophthalmology rotation and shows exceptional interest and potential in the specialty.

Jennifer Goldreich

#### The American College of Veterinary Radiology Prize

This award is given in recognition of outstanding enthusiasm and understanding in diagnostic and therapeutic radiology.

Nicholas Dylan Walsh

#### The American College of Veterinary Surgeons' Award

This award is given to the fourth-year student who has demonstrated outstanding motivation and interest in the art and science of veterinary surgery.

Small Animal - Sarah Friday

Large Animal - Jocelyn Marie Stedman

#### The James Gordon Bennett Prize

In 1916, Mr. James Gordon Bennett of New York City endowed this prize for the fourth-year student who shows the greatest humaneness in handling animals, with special reference to the use of anesthesia.

Robert Onaga

#### The Anne Besse Prize

Miss A. B. Jennings of New York City endowed this prize in 1925 for the best work in food animal medicine.

Elizabeth Balter

#### The Frank Bloom Pathology Award

Established in 1978 from an endowment given by Dr. Frank Bloom '30, this award is given to a fourth-year student excelling in pathology.

Kelly Elizabeth Sullivan

#### The Gary Bolton Memorial Cardiology Award

Funds for this endowment were donated by friends and colleagues of Dr. Gary R. Bolton in loving memory of his outstanding contributions to the field of small animal cardiology. This prize is awarded to a fourth-year student who has demonstrated understanding and expertise in cardiology and empathy for patients compatible with the philosophy of Dr. Bolton.

Diana Carroccia

#### The Charles Gross Bondy Prize

Mr. Richard Bondy of New York City endowed this prize in 1929 as a memorial to his son, for the best work by a student in the fourth year in the courses in practical medicine and surgery of small animals.

Allison M. Tuchrello

#### The A. Gordon Danks Large Animal Surgery Award

This award was initiated in 1978 by the faculty of the Department of Clinical Sciences to recognize the outstanding contributions of Professor Emeritus A. Gordon Danks. It is presented to a fourth-year student demonstrating outstanding knowledge and talent in the diagnosis and treatment of surgical problems of large animals.

Kerry Schneider

#### The Donald Delahanty Memorial Prize

This prize was established as a special memorial to Dr. Donald D. Delahanty, a member of the Department of Large Animal Medicine, Obstetrics and Surgery from 1952 to 1975. The prize is given to a fourth-year student showing an interest in equine practice and a high level of proficiency in the field.

Jocelyn Stedman

#### The Hugh Dukes Prize in Experimental Physiology

This prize was established by former students and friends of Dr. H. Hugh Dukes, who was a pioneer in the education of students in physiology and who served the University and College for 28 years. It is awarded to a fourth-year student who has done excellent work in physiology laboratory courses and shows potential for teaching and contributing new knowledge to physiology.

Jon Lou

#### The Ettinger Incentive Award

Dr. Stephen Ettinger, Class of 1964, established this award to provide encouragement to all veterinary medical students at Cornell. The award, Dr. Ettinger's Textbook of Veterinary Internal Medicine, is given to a second-year student who has made the greatest improvement in cumulative GPA between the first and second year.

Sarah Lietzke

#### The Myron G. Fincher Prize

This award was initiated in 1980 through an endowment from Dr. Neil W. Pieper '32, given in honor of Professor Emeritus Myron G. Fincher '20 in recognition of his many contributions to the College. This award is presented to a fourth-year student demonstrating the best work in courses dealing with large animal obstetrics and reproductive diseases.

Alicia Chisholm

#### The Tracy French Clinical Pathology Prize

This prize is awarded in honor of Dr. Tracy French, who was an associate professor in Clinical Pathology for over 26 years at Cornell University. It is awarded to the veterinary student who achieves the highest grade in the Clinical Pathology course, VTMED 6320, thus displaying excellence in clinical pathology.

Jessica Box

#### The Grant Sherman Hopkins Prize

The endowment for this prize was given by Ms. Ann Ottaway Hopkins in 1955 in memory of her husband, who had served the College for 45 years as Professor of Veterinary Anatomy. It is awarded upon the recommendation of the anatomy faculty in the Department of Biomedical Sciences on the basis of interest, ability, perseverance and performance in work in that discipline.

Gilad Fefer

#### The P. Philip Levine Prize in Avian Medicine

This prize was established from donations made by friends and colleagues of Dr. P. Philip Levine in memory of his many contributions to the field of avian medicine. Much of his life was dedicated to the training of young people, and to encouraging them to aspire to excellence.

Kayla Woodlock

#### The Robert V. Manning '55 Prize

This prize was established by the family for Dr. Robert V. Manning '55 in his memory. It is awarded to a third- or fourth-year student with interest in bovine medicine who best exemplifies Dr. Manning. The student should exhibit qualities of good work ethic, value system and humor.

Kyle Nugent

#### The Merck Animal Health Veterinary Student Innovation Award

The American Veterinary Medical Foundation has established this award to recognize one outstanding graduating senior at each of the AVMA accredited schools in the United States and Canada. The award is given to a student who is in academic good standing and has demonstrated innovative and/or entrepreneurial creativity leading to a project that impacts or inspires others within the veterinary profession.

Jon Lou

#### The Merck Manual Awards

Merck and Company, Inc., presents engraved copies of the Merck Veterinary Manual to members of the fourth year who will graduate highest in their class.

Alicia Chisholm

Emma La Vigne

Allison Tuchrello

Nicholas Walsh

#### The Jane Miller Prize

Funds for the endowment of this prize were given by Dr. Frank H. Miller, a graduate of McGill University and a trustee of Cornell University for twenty years. As a memorial to his wife, the prize is awarded to a member of the second-year class who has done the best work in veterinary physiology.

Isabella Knecht

#### The Malcolm E. Miller Award

In 1965, Ms. Mary Wells Miller Ewing established this award in memory of her husband, Dr. Malcolm E. Miller '34, a former professor of anatomy and the head of that department from 1947 to 1960. The recipient is a fourth-year student who, in the judgment of the dean, has demonstrated perseverance, scholastic diligence and other personal characteristics that will bring credit and distinction to the veterinary profession.

Bridget Noreen Bickers

#### The Mary Louise Moore Prize

Dr. Veranus A. Moore established this endowed prize as a memorial to his wife for the best work in bacteriology. Dr. Moore served as Chairman of Pathology and Bacteriology Department and as Dean of the Veterinary College from 1908 to 1930.

Emma LaVigne

#### The Neuroanatomy and Clinical Neurology Prize

In memory of Dr. William B. Forsythe, this prize is to be awarded to the fourth-year student who has demonstrated the most outstanding expertise and interest in neuroanatomy and clinical neurology.

Elizabeth DiPaola

#### The Leonard Pearson Veterinary Prize

The award, endowed in 1993, is for the fourth-year student who most successfully demonstrates the potential for professional and/or academic leadership in veterinary medicine.

Gilad Fefer

#### The Philotherian Photographic Prize

Endowed in 1972 by the late Dr. and Mrs. Hadley C. Stephenson, this prize is given to the veterinary student who has taken the best photograph of an animal in its environment.

First Place: Robert Onaga '19

Second Place: Amy Zhang '22

Third Place: Addison Spitzer '22

#### The Julie A. Richter Prize

Established by the family of Julie A. Richter DVM '94 in her memory, this prize is awarded to a third- or fourth-year student who is from a farm background or has an interest in food-animal medicine.

Jenna Hill

#### The Colonel Floyd C. Sager Equine Obstetrics and Pediatrics Award

This award, created on the occasion of Dr. Sager's 90th birthday in 1984 by another Cornellian who trained under Dr. Sager, recognizes a Cornell veterinarian whose name is synonymous with excellence in equine obstetrics and pediatrics. The fourth-year student receiving this award, in the opinion of the faculty of the Department of Clinical Sciences, has displayed outstanding aptitude in equine obstetrics and pediatrics.

#### Simmons and Associates Career Excellence Award

In 2003, the Simmons and Associates Education Trust was established as a not-for-profit educational trust to award and recognize the third-year veterinary student who has distinguished himself/herself by demonstrating a keen interest or measurable aptitude for the pursuit of excellence in the business of small animal medicine.

Elvina Yau

#### The Isidor I. Sprecker Wildlife Medicine Award

This award was established in 1996 by Esther Schiff Bondareff '37 in honor of her friend, Isidor Sprecker DVM '39 as a testimony to her admiration of him, and her keen interest in improving the quality of veterinary health in zoo animals. It is awarded to third- or fourth-year student with a strong interest in pursuing a career in zoo and wildlife medicine.

Mariah Beck

#### SUNY Chancellor Awards

The Chancellor's Award for Student Excellence recognizes outstanding students who have integrated academic excellence with other aspects of their lives, which may include leadership, campus involvement, community service, the arts, athletics or career achievement.

Isabelle Jimenez

#### The Anna Olafson Sussex Pathology Award

This award was endowed in 1974 by Peter and Harriette Olafson in memory of Dr. Olafson's sister. The award is given to a third-year student who has done outstanding work in pathology.

Elizabeth Martens

Tracy Potter

#### The Jacob Traum Award

Through an endowment established by friends of Jacob Traum, this prize is awarded to the fourth-year student who is judged by the Department of Microbiology and Immunology as having exhibited superior interest and accomplishment in bacteriology, pathology and virology, including an aptitude for and expressed interest in research on infectious diseases.

Erika First

#### Robert Rosenthal Senior Student Award for Proficiency in Clinical Oncology

This award is presented to the senior veterinary student deemed to have outstanding aptitude for, and competence in, the diagnosis, treatment and general care of companion animals affected by malignant disease.

Steven Moirano

#### Proficiency in Theriogenology Award

The "Proficiency in Theriogenology Award," sponsored by the Society for Theriogenology, is awarded to a senior student deemed to have illustrated proficiency in clinical theriogenology.

Lauren DeGennaro

#### The George and Donna B. Warnick Scholarship

The George and Donna B. Warnick Scholarship is funded by Lorin D. Warnick and is wife Jill Thorley Warnick in honor of Dean Warnick's parents in recognition of and gratitude for their exemplary lives. Dr. Warnick hopes the values and character of his parents that inspired him during his education will also be motivating to the next generation of veterinary students. These include a frim commitment to education, broad reading and learning, strong work ethic, responsibility, honesty and respect for other people.

#### The Horace K. White Prize

An endowment for this prize was originally given by Mr. Horace K. White (and later his sons of Syracuse, New York) for the student with the highest academic record during their veterinary training. This award, originally called the Presidents' Prize, dates back to 1873 and is probably the longest-standing prize at Cornell. The original donor was a brother to Andrew Dickson White, the first president of the university.

Allison M. Tuchrello

#### The Zoetis Large Animal Clinical Awards

Zoetis Animal Health gives these prizes to students considered to be the most proficient in the practice of large animal medicine.

John Leahy, Dairy Production Medicine

Alexandra Brunet, Equine Medicine

#### Award for Proficiency in Emergency and Critical Care

The Veterinary Emergency and Critical Care Society sponsor this award given to a fourth-year student who has demonstrated extraordinary commitment and exceptional proficiency in caring for emergency and critical care patients.

Sarah Eriksen

#### Veterinary Class of 1974 Clinical Resident Award

The D.V.M. class of 1974 established these awards to recognize the special efforts of residents who teach veterinary students and provide services to hospital clients. Recipients of the award are selected from residents serving the Cornell University Hospital for Animals. The recipients are selected by a vote of the fourth-year class.

Dr. Christophe Bourguignon, Companion

Dr. Barbara Delvescovo, Equine and Farm

Dr. Erika Militana, Both

#### The New York State Veterinary Medical Society Prize

This prize is provided annually by the State Society for the best Senior Seminar. Members of the fourth-year class are eligible to compete. Nominations are made by the Senior Seminar Committee

Nicholas Walsh

#### The Daphne Award

This award was established to recognize clinical proficiency and assist new graduates beginning a career in a practice setting. It is awarded to a small number of graduating students who exemplify excellence in the practice of veterinary medicine; whose knowledge, professional skills, compassion and high standards of patient care promise to advance a legacy of excellence throughout their professional careers.

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Sarah Friday

Kiki Mullikin

Christina Watts

#### Outstanding Veterinary Technician Award

This honor is awarded to a licensed veterinary technician working in the Cornell University Hospital for Animals who is judged to demonstrate noteworthy dedication to the training of veterinary students, exemplary compassion for animal patients and clients, and outstanding technical and nursing proficiency.

Karen Warner

#### The William C. Rebhun and Samuel Gordon Campbell Award

This award, established in 2000 by the Rebhun and Campbell families, recognizes a fourth-year student who, while on clinical rotations, has demonstrated a practical and reliable work ethic; a passion for discussing casework with colleagues, faculty and staff; and a balanced and active life away from the veterinary college. In keeping with the philosophies and traits that reflect the contributions of Drs. Rebhun and Campbell, the recipient of this award will also have demonstrated an egalitarian approach to clinical work, meeting clients, patients, staff, fellow students and faculty with equal respect and care.

Shelby Wauson

#### The Gentle Doctor Award

The Gentle Doctor Award was originally made possible by Dr. William Hornbuckle's contribution of prize money for the Norden Distinguished Teacher Award received by him in 1979. Dr. and Mrs. Robert Kirk established a permanent endowment fund for the continuation of this award. The recipient of the award is a fourth-year student who, in the opinion of the faculty of the Department of Clinical Sciences, exemplifies enthusiasm, motivation and dedication to the delivery of excellent veterinary patient care.

Zachary Dvornicky-Raymond

Nicholas Roman

#### Dorothy Sullivan Prize

Established in 1996 through the bequest of Dorothy "Dotty" Sullivan, a long-time employee of Cornell and the college's Office of Student Services, this prize is awarded to the fourth-year student whose interests and exemplary efforts as ambassador have strengthened and enriched the activities, outreach, image and environment of the College of Veterinary Medicine.

Jeremy Eule

Rachel Hilliard

#### Zoetis Distinguished Teacher Award

The college's premier teaching award, presented annual to a full-time faculty member selected by the graduating class.

Dr. Erin Epperly

Cornell University College of Veterinary Medicine

Careers

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## June 2019: Hellos, goodbyes and HR update

Help us welcome new employees who joined the CVM community in May and bid a fond farewell to those who have retired.

#### **New Hires**

- Rebecca Allington, AHDC Diagnostic Tech I Virology, Animal Health Diagnostic Center
- Joaquin Araos, Lecturer Anesthesiology, Department of Clinical Sciences
- Jason William Baker, Client Service Representative, Cornell University Hospital for Animals
- Marissa Consalvi, Department Manager, Department of Microbiology and Immunology
- Mark Daniel Cummings, Licensed Veterinary Technician ENFAH, Cornell University Hospital for Animals
- Liz Daniels, Veterinary Practice Manager, Cornell University Hospital for Animals
- · Leslie D'Arcy, Assistant to the Assistant Dean of Alumni Affairs and Development, Office of Alumni Affairs and Development
- Hannah Hoelscher, Licensed Veterinary Technician ENFAH, Cornell University Hospital for Animals

#### Retirements

• Cherie Soule, Accounts Representative IV, Accounting Service Center

### Human Resources Update

#### Do you know a Cornell employee ROCKSTAR?

Make sure they get the recognition they deserve—nominate them for one for one of the **President's Awards for Employee Excellence!** Beginning May 15, nominations will be accepted for four individual and one team award categories to recognize the achievements of staff and faculty at Cornell. Any employee can nominate another or a team, or, with specific documentation, can self-nominate.

For more information, see the President's Awards for Employee Excellence website or – beginning May 15 – log in to the nomination form directly.

#### Caregiver Support & Education Network Meetings

Thursday, June 20, 2019 at 12:00pm to 1:00pm Weill Hall, 221

Are you providing care for an adult family member, spouse, or friend, either locally or long distance? Perhaps the one you care for is living in a facility, independently in their own home, or in your home. If so, you are invited to attend meetings of the Caregiver Support & Education Network. Participants are welcome to attend when their schedule allows. Caregivers come together to share the challenges, joys and resources of caregiving as well as listen to occasional speakers presenting on topics of interest specifically to caregivers. Facilitators will share strategies, tools, and resources for coping with stress, caregiver guilt, and burnout as well as information on local/national resources that may assist you. Attendees are welcome to bring their lunch.

Questions? Contact Diane Bradac, sdb39@cornell.edu

#### Employee Corn Hole Tournament

Thursday, June 27, 2019 at 3:00pm to 5:00pm at the Moakley House Golf Course, 215 Warren Road, North Campus

Cornell Recreation Connection is sponsoring this afternoon of fun for all Cornell employees.

\$10 per person includes tournament play plus wings and nachos bar.

Time slots available at 3:00pm and 4:00pm, finishing by 5 pm.

Contact Moakley House, 254-6536 to make a reservation for you or your team. A great team building event!

#### Current Nonacademic Open Positions

The list below is dynamic and updated regularly. For additional information, please visit the Cornell Careers Page at https://hr.cornell.edu/jobs.

- · Animal Tech II- ENFAH Surgery Tech Assistant- Cornell University Hospital for Animals
- Admin. Asst. III- Health Information Mgmt. (HIM) Analyst- Cornell University Hospital for Animals
- Licensed Veterinary Technician-Emergency & Critical Care-Cornell University Hospital for Animals
- Diagnostic Technologist- Animal Health Diagnostic Center
- Dairy Field Technician (Warsaw, NY), Animal Health Diagnostic Center
- Laboratory Operations Assistant II, Animal Health Diagnostic Center
- Program/Extension Aide II (Canton, NY), Animal Health Diagnostic Center
- Medical Technologist Assistant, Endocrinology, Animal Health Diagnostic Center
- Laboratory Manager, Kurpios Lab, Molecular Medicine
- Laboratory Technician III, Rudd Lab, Microbiology & Immunology

#### Academic Open Positions

For a listing of open academic positions, please visit: https://apps.hr.cornell.edu/recruiting/facultycareer.cfm.

For information on the topics above, please contact the CVM Office of Human Resources at 607-253-4111.

Cornell University College of Veterinary Medicine

Careers

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# Climate change could threaten dogs with diseases pushing into new parts of the USA

Elizabeth Weise, USA TODAY Published 11:05 a.m. ET June 15, 2019 | Updated 2:05 p.m. ET June 18, 2019

SAN FRANCISCO - As if this year's storms (/story/news/nation/2019/05/29/tornadoes-stuck-weather-pattern-brings-month-mayhem/1273501001/), floods (/story/news/nation/2019/05/29/arkansas-river-flood-danger-levees-threatened-arkansas-oklahoma/1268616001/) and heat waves (/story/news/nation/2019/06/11/heat-wave-western-us-bakes-temperatures-soar-120-degrees/1419639001/) weren't enough to worry you, some experts fear climate change (/story/news/2019/05/29/severe-weather-across-us-driven-climate-change-trump-administration-new-jersey-kansas-dallasfort/1271937001/) is expanding the distribution of diseases that can sicken or even kill dogs, putting more pets at risk for diseases their owners have never had to deal with before.

Though diseases in dogs are not tracked as intensively as those in humans, veterinary epidemiologists and biologists said Rocky Mountain spotted fever, a bacterial disease that can cause fever, joint pain and vomiting, is moving into California and Texas. Heartworm, which can damage the cardiovascular system and clog the heart, is spreading beyond its traditional home in the South and Southeast. Lyme disease, which can cause joint swelling and lameness, affects dogs as far north as Canada.

"The veterinarians need to know what's local. But what's out there is changing so fast, how are you going to keep up?" said Janet Foley, a professor of epidemiology at the University of California-Davis School of Veterinary Medicine.

Many of these diseases also affect humans. But dogs are especially at risk because they spend a lot of time outdoors and in vegetation.



Heartworms are transmitted in the larval stage by mosquitos and can infiltrate the cardiovascular system of dogs. (Photo: Stephen Jones, DVM, American Heartworm Society)

Warren Hess, assistant director in the American Veterinary Medical Association, said the spread of heartworm disease is increasing because of the changes in how frequently dogs are moved across the country.

"With the increased social pressure to restrict the sale of dogs in pet stores, this has resulted in a dramatic increase in the movement of dogs from pet shelters to fill the demand," he said.

Natural disasters also play a part. "The biggest spread in heartworm disease in the United States certainly followed the 2005 national distribution of dogs due to Hurricane Katrina," said Hess, whose responsibilities include disaster preparedness.

He said that although climate change is happening, and will continue to happen, "it is important that we properly frame the discussions and use all available science as we further the discussion."

Linking the expansion or shift of ticks that carry diseases, infection rates and dog populations is not an easy task. There are no mandated reporting requirements as there are for some human diseases. Data on tick and mosquito distribution is piecemeal in many areas. Tests for some of the diseases that appear to be on the move didn't exist 10 years ago, so it's difficult to judge their historic range.

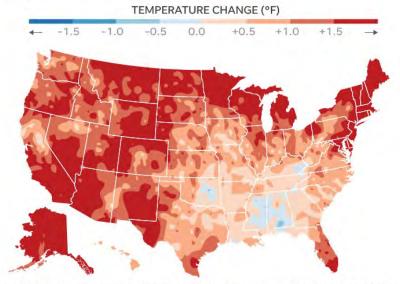
Even so, many scientists see patterns and links that point them toward climate change.

"There's no smoking gun, and there will never be a smoking gun. We're trying to connect two things that operate at very different scales both in time and space," said Ram Raghavan, a professor of spatial epidemiology at the College of Veterinary Medicine at Kansas State University in Manhattan, Kansas.

He's documented significant changes to the tick populations in the Midwest – in infestation intensity, the areas and when ticks are active. His team's surveillance in western parts of Kansas and Oklahoma found Lone Star ticks that didn't use to live there. These ticks can carry ehrlichiosis, a disease that in dogs can cause bruising of the gums, bleeding from the nose and lameness.

#### Observed U.S. temperature change

Temperature changes over the past 22 years (1991-2012) compared to the 1901-1960 average, and compared to the 1951-1980 average for Alaska and Hawaii.



SOURCE NOAA, National Climatic Data Center, North Carolina Institute for Climate Studies

"There is this belief that these ticks do not exist in these areas, but increasingly over the last five years, we're constantly finding them. So I'm pretty sure they've expanded" their habitat, he said. "Tick-borne diseases have really gone up. We go out into the field, and we see and find ticks more easily than we used to do in the past."

To get to the bottom of it will require data that doesn't exist. Raghavan has written several grant proposals to the U.S. National Institutes of Health for funding to do long-term studies, broad testing and analysis.

"Regardless of who caused climate change, climate has changed. Let's take the emotion out of the debate and get some answers," he said.

Temperatures in the contiguous USA are on average 1.5 degrees warmer than they were the century before, according to the U.S. National Oceanic and Atmospheric Administration. Rainfall and humidity levels have changed in some areas. All of these factors affect where insects that can carry disease thrive.

For veterinarians and biologists who study diseases spread by insects, it's not just where but when the diseases strike that's changing. The times of year when dogs are at risk is changing in some areas where summers are becoming too hot to support the insects or the diseases they carry. That doesn't stop the spread.

"Diseases like Lyme disease that used to be transmitted in the peak summer months could now be peaking in the spring and fall because it's too hot in the summer. So you get a longer transmission window," said Andrew Dobson, a professor of ecology and evolutionary biology at Princeton University in New Jersey.



A dog tick (note white behind head), Lone Star tick (white dot on back) and a deer tick. (Photo: American Lyme Disease Foundation)

# **Rocky Mountain spotted fever is spreading**

That means more dog owners have to pay attention to illnesses such as Rocky Mountain spotted fever, a disease carried by ticks that can sicken and even kill humans and their canine companions.

The bacteria initially invades the bloodstream, then settles into the cells that line blood vessels. Blood can seep out of the vessels and pool under the skin or even in the brain. The disease can be treated with antibiotics if caught in time.

At UC-Davis, Foley studies its spread. Historically, most cases were spread by the American dog tick and occurred in the southern Atlantic states and the south-central states. North Carolina and Oklahoma accounted for the largest proportion.

Foley has tracked a new tick strain making its way north. This tropical strain of the brown dog tick has been found in many parts of the world and is known in the USA in Florida, Texas, Arizona and Southern California, where it may have been introduced from Brazil and Mexico.

It can carry Rocky Mountain spotted fever. Cases are appearing along the U.S.-Mexican border in areas that have never had to deal with the disease before. The new tick has gotten as far north as Los Angeles. Foley expects it to make its way up through California's Central Valley as far north as Sacramento.

It's much more aggressive than tick species Americans are used to.

"It bites more, the hotter it gets. So the hotter it is, the more infections there are," Foley said.

#### Heartworm cases on the rise

Dog owners have to do more to keep their dogs protected against heartworm. The parasitic worms called *Dirofilaria immitis* are spread through the bite of a mosquito that carries them in a larval state.

It is an especially grisly disease. Once a dog is infected with the larva, it can grow into a foot-long parasitic worm that invades the dog's cardiovascular system, damages the arteries that carry blood from the heart to the lungs and blocks blood flow to the lungs by their presence and the clots they can cause.

To spread from one dog to another, the larvae have to develop to a specific infective stage inside the mosquito. The hotter it gets, the more quickly the larvae mature into a form that can transfer from the mosquitoes to the dogs. When it's 71 degrees out, that process can take 16 to 20 days. If it's 82 degrees, it takes 11 to 12 days, said Bruce Kornreich, a cardiologist and professor of veterinary medicine at the Cornell University College of Veterinary Medicine in New York.

Heartworm has historically been a problem in the South and Southeast. Environments farther north are now able to support the mosquitoes that transmit it and the larvae that cause it.

Infections are rising. From 2013 to 2016, there was a 21.7% increase in heartworm infections in the number of dogs per veterinary clinic testing positive for heartworm, said Christopher Rehm, a veterinarian who practices in Mobile, Alabama, and is president of the American Heartworm Society.

There are no solid figures on how many dogs heartworm kills each year, but untreated infections shorten a dog's lifespan.

"Based on my own anecdotal experience, I would conservatively estimate that heartworm-infected dogs lose one-third of their lifespan if not treated properly and in a timely manner," Rehm said.

As the parasite moves into new areas, owners may not always be aware they need to be on the lookout for it. It's also a problem for more months of the year, Foley said.

"A hot winter means the mosquitoes don't die back, so they're raring to go as early as January and start spreading heartworm," she said.

Pet owners across a wider swath of the USA need to give their dogs preventive medicine to keep them from getting heartworm. People in areas where heartworm infections were a problem only in the summer now must treat their dogs for more months out of the year.

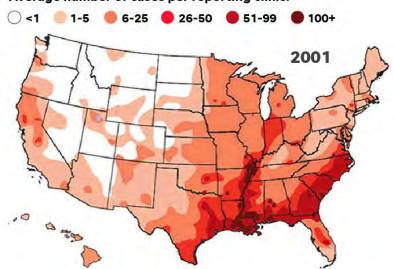
Since 2010, the American Heartworm Disease Association and the federal Food and Drug Administration have recommended year-round preventive treatment, because the disease is more prevalent and it's so devastating to dogs who get it, Kornreich said.

Even if heartworm is caught and treated in time, it takes its toll on dogs. "Once they've ever had a heart infection, they're never the same," Rehm said.

#### Range of the heartworm disease in the US

The severity of heartworm-positive cases among pets in the United States from 2001-2016, done every three years and is based on testing data from thousands of veterinary practices and animal shelters.

#### Average number of cases per reporting clinic:



SOURCE American Heartworm Society; USA TODAY

## Lyme disease moving north

On top of being an enormous health hazard to humans, Lyme disease can harm dogs, causing lameness, fever and lethargy. It's carried primarily by the blacklegged tick, or deer tick, in the Northeast and the western blacklegged tick in the South.

Both are on the move.

"With Ixodes (blacklegged ticks) moving northward from the United States into Canada, it's a clear example of how things are changing," said Michael Yabsley, a professor in the College of Veterinary Medicine at the University of Georgia in Athens.

Even as Lyme disease moves northward, it's not decreasing in its historic area. In fact, infection rates in dogs are getting worse, said Yabsley, who studies wildlife diseases.

In 2018 in Columbia County, New York, 30% of dogs tested were positive for Lyme disease. In Worcester County, Massachusetts, it was 21%, and in Ulster County, New York, it was 20%, according to data collected by the Companion Animal Parasite Council.

## 'Fast' and 'ugly' changes

Some fear that the changing climate might bring diseases never before seen in canine companions. When ticks expand into new areas, they come into contact with new hosts, and those hosts may carry new diseases – which they could spread to the animals they bite.

This may have happened with two human diseases. The <u>Heartland virus (https://www.cdc.gov/heartland-virus/symptoms-treatment/index.html)</u>was discovered in 2009 and has infected about 20 people in the Midwest. It can cause fever, fatigue, nausea and diarrhea. Almost all patients have been hospitalized and some have died, according to the Centers for Disease Control and Prevention.

The <u>Bourbon virus (https://www.cdc.gov/ticks/tickbornediseases/heartland-virus.html)</u> was first identified in 2014 and has infected a limited number of people in the Midwest and the South, some of whom have died, according to the CDC. It can cause fever, rash, tiredness, body aches and vomiting.

The shifting climate is going to affect people and their pets in ways they may not be prepared for, Dobson said.

"There's no debate about whether it's happening or not," he said. "It's happening fast, and it's ugly."

Read or Share this story: https://www.usatoday.com/story/news/nation/2019/06/15/climate-change-could-hurt-your-dog-diseases-spread-into-new-areas/1414608001/

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#### **Animals**

# A deadly deer disease is spreading. Could it strike people, too?

By Jason Bittel June 14

Jeannine Fleegle reached into a black garbage bag, pulled out a severed deer head, and placed it on a folding table smeared with blood and fur.

"This is no one's favorite time of year," Fleegle said, picking up a scalpel.

It was a chilly morning, and Fleegle, a wildlife biologist for the Pennsylvania Game Commission, was with a half-dozen other state scientists in a garage in the small town of Bolivar. Covered in head-to-toe white Tyvek suits, they were surgically extracting hundreds of brain stem samples from deer killed by hunters during the state's rifle season. The samples would be analyzed for signs of a deadly pathogen.

The formal name of the ailment is chronic wasting disease, or CWD. But its effects on deer, elk and other cervids — weight loss, stumbling, listlessness and certain death — have inspired a creepier colloquial name: zombie deer disease.

More than half a century after it was first detected, the disease is now spreading rapidly. Last winter, Tennessee became the latest of 24 states to report CWD infections, which have also been found in two Canadian provinces, Norway, Finland and South Korea. Now, as it strikes animals across a widening territory, concern is growing among scientists and public health officials that the disease might leap to humans.

CWD is a transmissible spongiform encephalopathy, another of which did jump species: mad cow disease. In humans, mad cow disease is known as variant Creutzfeldt-Jakob disease, and it has killed more than 220 people worldwide since the 1990s. Some experts say that in a nation with an estimated 10 million deer hunters harvesting 6 million deer a year and eating many of them, it may be just a matter of time before chronic wasting makes its way to us.

Both CWD and mad cow are thought to be caused by proteins that malfunction and misfold, called prions. There is no known cure or treatment for prion diseases.

"Last year, we estimate that as many as 15,000 carcasses may have been served to people that were CWD-positive," said Michael Osterholm, director of the Center for Infectious Disease Research and Policy at the University of Minnesota. "And what people don't understand with prion-related conditions like this is that time changes the risk."

There are thought to be eight strains of CWD, and every time one goes through an animal, Osterholm said, there's a chance it might adapt in a way that allows it to pass into humans.

This threat is adding urgency to Fleegle's work in Pennsylvania. On the same morning she dug into deer brains, biologists at seven other stations across the state were doing the same. Their mission is to establish and maintain "disease management areas," where hunting remains permitted but with additional restrictions on carcass handling and processing. The goal is to halt CWD's spread.

A distinctive odor of wet fur and death loomed as Fleegle sliced a deer's neck down to the last vertebrae, exposing the brain stem beneath. "You core it like an apple," she said, swirling the instrument in the cavity to detach nerves holding the stem in place. Next, she plucked a thumb-sized piece of creamy, white tissue and dropped it into a jar of formalin, which preserves the sample for testing.

"This one is a bit older, and it's started to decompose, but that's okay," Fleegle said.

The disease can spread from animal to animal via saliva, blood, urine and feces, where prions build up. Inside the body, the brain, spinal column, and spleen all serve as reservoirs for the infected prions, which makes them good areas for diagnosis.

Fears about CWD's threat to new species rose last year, when a decade-long study provided the first evidence the disease could develop in primates under certain conditions. Scientists successfully gave CWD to macaque monkeys by injecting it into their brains and by feeding the animals infected brain material from a deer. Some monkeys even developed infections after eating tainted venison.

The finding was alarming because macaque DNA is very similar to our own, said Stefanie Czub, a virologist at the University of Calgary and lead researcher of the study, which is not yet published. But Czub said the results should be interpreted with caution.

"It's not really like you put it into a macaque and boom, they come down with the disease," she said.

While a hunter might come in contact with a deer that has one CWD strain, Czub's team hit the macaques with multiple strains at once to test the limits of what's possible.

Even so, the Centers for Disease Control and Prevention has taken a better-safe-than-sorry approach when advising hunters.

"We urge you to strongly consider having your animal tested if it's harvested from an area where chronic wasting disease has been found," said Ryan Maddox, a CDC epidemiologist. If it tests positive, don't eat it, the CDC says.

That advice might seem like it would go without saying. But Fleegle said she's heard hunters say they planned to dine on infected deer. "The decision to eat any harvested animal lies with the hunter," she said. "We are not a food safety agency."

Pennsylvania and many other states now enforce restrictions on transporting deer killed in areas where CWD is established, and that's important because deer season amounts to a sort of pilgrimage for many hunters. During the 2016-2017 season, for example, people from 49 other states traveled to Wisconsin to hunt deer, despite nearly every county in the state testing positive for CWD or being adjacent to one that has.

Records show 32,000 deer were killed in such areas. Although it is not known how many were infected or how many carcasses were taken out of Wisconsin, the potential for spread is clear.

The problem with moving diseased carcasses is that CWD prions have a remarkable ability to persist in the environment even after a carcass has been discarded and withered away, said Krysten Schuler, a wildlife disease ecologist at the Cornell University College of Veterinary Medicine.

In experiments, prions have remained present and infectious two years after a carcass decays. If CWD prions are as hardy as the ones that cause a disease in sheep called scrapie, that timetable might be even longer.

"They've done things with scrapie where they actually buried brain material in the soil and dug it up 16 years later, and it still caused disease," Schuler said.

While harvested deer are one danger, the disease can also be spread by moving farmed deer, either for big-game hunting, breeding or petting zoos. The pathogen even seems to have made

the voyage across the Pacific as a stowaway inside captive Canadian reindeer destined for a Santa's Village in South Korea.

Shawn Schafer, executive director of the North American Deer Farmers Association, said he thinks cervid farming and CWD have been unfairly linked. Deer farms are often the "canary in the coal mine" for identifying new infections, he said, because they test every dead animal, whereas states sample a small proportion of the wild population.

Schafer said he's more concerned about other wildlife diseases, such as West Nile virus, than CWD.

"As a rule, we don't eat sick animals," he said. "But do I test all the deer that I hunt? No. I'm sure many of them have been positive, and I'm just not worried about it."

Not everyone is so nonchalant. Schuler, the Cornell ecologist, is also a hunter. She said venison is her family's primary source of red meat, and all of it gets tested at her lab before making it to the dinner table.

Matt Ross, a wildlife biologist and assistant director of conservation for the pro-hunting Quality Deer Management Association, said he follows the CDC guidelines and recommends other hunters do the same. But he acknowledged it can be a tough sell. Where people hunt and get animals processed, or how they handle a carcass in the field, tend to be deeply ingrained, he said.

"Folks don't like change, that's just human nature," Ross said. "And traditions are a big part of hunting."

Ross said his association educates hunters about CWD and has pledged to invest \$1 million toward combating it over the next five years. It makes sense for human health, he said, and for hunting's future.

"Hunters should care. They should care deeply," said Ross. "Because it's going to impact our ability to see deer and hunt deer."

A week before the brain dissections in Bolivar, Fleegle visited Kip's Deer Processing in Carnegie to pick up deer heads for testing. Hunters bring owner Kip Padgelek deer from all over so that his shop can turn them into steaks, ground meat and jerky. The game commission has an

agreement with Padgelek and other processors that allows biologists to collect data such as age, sex and location from heads that would otherwise be sent to a landfill.

Padgelek had provided a work station for Fleegle out back, not only because she needed room to process several barrels filled to the brim with severed heads. Many hunters are wary of the game commission and might keep driving if they spotted one of the state's trucks out front, she said.

Padgelek estimated that he had lost about 200 customers from Ohio and West Virginia in the 2018 season because of CWD restrictions. But while he said he's by no means a supporter of every decision the game commission makes, he recognizes why the rules are there.

"I've seen [CWD] wipe out processors," said Padgelek, referring to businesses that have been forced to change or close due to the spread of the disease in states farther west. "I know things have to change if we want to keep hunting."

#### Read more:

America's reindeer have quietly gone extinct in the Lower 48

Roadkill: In a growing number of states, it's what's for dinner

Bambi's revenge? Deer photographed nibbling on human bones, a first.

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