

Veterinarian blazes a path to the nation's oldest pet dogs to advance research on successful aging

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WEST LAFAYETTE, Ind. - Experts agree that discovering the secrets to successful aging will demand a sustained effort using innovative scientific approaches. Now a research veterinarian is betting that the oldest pet dogs living among us can shed light on a surer scientific path to discovering the secrets of successful aging and cancer resistance.

This week marks the launch of The Old Grey Muzzle Tour 2013, a cross-country scientific expedition by David J. Waters, DVM, to study 12 of the oldest-living Rottweilers in their homes. The trek begins in Homer, Alaska, on Monday (March 4) and will finish April 12 in West Lafayette, Ind.

The 40-day itinerary of The Old Grey Muzzle Tour 2013 includes 12 scientific stops to visit dogs and 11 additional stops, which include two academic lectures and nine celebration events where Waters will meet with groups inspired by his research.

The tour's complete itinerary is as follows: March 4, Homer, Alaska; March 6, Anderson Island, Wash.; March 7, Amboy, Wash.; March 10, Claremont, N.H.; March 11, Staten Island, N.Y.; March 12, Wyckoff, N.J.; March 13, Madison, Va.; March 14, Richmond, Va.; March 15, Atlanta; March 16, Louisville, Ky.; March 19, Lexington, Ky.; March 21, Parke County, Ind.; March 23, Ypsilanti, Mich.; March 26, Lomira, Wis.; March 28, Tulsa, Okla.; March 30, Tijeras, N.M.; March 31 and April 1, Albuquerque, N.M.; April 3, Fort Collins, Colo.; April 6, San Diego; April 7, Aguanga, Calif.; April 9, Pray, Mont.; April 12, West Lafayette, Ind.

Waters is director of the Center for Exceptional Longevity Studies at the Gerald P. Murphy Cancer Foundation, based at the Purdue Research Park of West Lafayette. The Center for Exceptional Longevity Studies is home to the Exceptional Longevity Database, the first systematic study



Kyrie, a 15-year-old female Rottweiler from Homer, Alaska, will be the first dog visited by David J. Waters, DVM, during The Old Grey Muzzle Tour 2013. Waters will travel from Alaska to Indiana during the 40-day national tour. (Center for Exceptional Longevity Studies/Gerald P. Murphy Cancer Foundation photo)

of highly successful aging in pet dogs in which Waters' research team has catalogued the lifetime health and medical histories of almost 250 canine "centenarians" - Rottweilers that have lived at least 13 years, which is more than 30 percent longer than breed average and equivalent to humans reaching 100.

"A notable aspect of highly successful aging is the delay or avoidance of diseases such as cancer," Waters said. "The exceptionally long-lived Rottweilers we are studying have figured out how to side-step cancer, hold it in check. Our autopsy studies have shown that, although few of these dogs die of cancer, more than 90 percent of them are harboring one or more types of cancer at the time of death."

Through dedicated research - the detailed examination of tissues and careful identification of markers circulating in the blood - Waters and his team hope to discover how they do it, so pets and people can walk around with cancer as a nuisance instead of a lethal killer.

"That's why we have established the Longevity Biorepository at the Center for Exceptional Longevity Studies - the world's first collection of serum, blood cells, DNA and autopsy tissues from exceptionally long-lived dogs," he said. "Securing biospecimens from the 12 dogs I visit will expand the array of specimens on hand, thereby accelerating our progress."

Waters' research on oldest-old Rottweilers is already opening avenues of inquiry on the aging-cancer connection and evaluating the impact of early life choices and interventions on healthy longevity, providing a clearer picture of how factors such as response to stress, ovaries, and obesity impact healthy aging. Waters gained these new insights by changing the way aging research is conducted.

"In 2010, our research on aging and healthy longevity broke out of the ivory tower and headed into the living room, capitalizing on the opportunity to study first-hand some of the oldest-living dogs in their homes," said Waters, who is associate director of Purdue's Center on Aging and the Life Course and professor in the Department of Veterinary Clinical Sciences.

Waters' Old Grey Muzzle Tour in spring 2010 captured national media attention and fueled his passion for further pursuing this novel research approach.

"By visiting dogs in their homes, we committed ourselves to an essential tenet of discovery: There's no substitute for first-hand observations," he said. "Whether you are trying to understand how children learn or what it takes to age successfully, first-hand observations are critical."

During each dog visit, Waters will perform detailed physical and neurological exams, collect DNA samples, and record body measurements. He will also conduct extensive interviews with owners, exploring the living environment and learning the things that owners have done to promote their pet's exceptional health.

"At each stop, I'm searching for a special kind of information, finding the difference that will make a difference in how we and others think about the aging process," he said. "I'm trying to spot the connections that will put us on a surer path to discovery."

After the home visit, urine and blood are collected regularly by the dog's veterinarian and sent to the Center for Exceptional Longevity Studies for analysis and specimen banking. The researchers also follow-up regularly with owners regarding the dog's activity level, pain and cognition.

Waters sees The Old Grey Muzzle Tour 2013 as a key element in building research momentum needed to accelerate discovery. In this 150th anniversary of the veterinary profession, The Old Grey Muzzle Tour serves as an exemplar of the American Veterinary Medical Association's One Health initiative, championing the kinds of research intended to benefit the health of animals and humans.

Waters, 54, will have his stamina tested by the intensive journey, but he is quick to divert attention to the true heroes of the Tour.

"The real heroes of this expedition are those exceptionally long-lived, cancer-resistant Rottweilers who are furthering a pet-person partnership to beat cancer and uncover the secrets of successful aging," he said. "After my visit is over, I remember each one of them as my teacher."

In addition to the scientific goals, Waters hopes to increase public awareness for the need for this brand of "connecting" research.

"We have a real opportunity here," he said. "Dogs with extreme longevity - equivalent to humans who reach 100 years - may hold the keys to unlock the mechanisms that connect cancer resistance and successful aging."

Since 1999, Waters' research team at the Center for Exceptional Longevity Studies has worked to expand the aging research toolkit by studying aging in pet dogs as a model for understanding healthy human longevity. The potential to gain from this research approach, along with the Center's progress, was summarized by Waters in a scientific paper commissioned by The National Academies of Sciences titled "Aging Research 2011: Exploring the Pet Dog Paradigm" (ILAR Journal, 2011).

David G. Bostwick, MD, MBA, chief scientific officer of AIBioTech, which is sponsoring the celebration stop March 14 in Richmond, Va., described Waters' work in the context of research done by other investigators at the intersection of aging and cancer.

"Dr. Waters' work with the oldest-old pet dogs is educating us, challenging the way we think about aging," Bostwick said. "The biogerontology field certainly needs new workhorses to generate and test new hypotheses. I'm wagering those grey muzzles that he's studying in-depth will have some intriguing stories to tell us about how we can age more successfully."

As Waters prepares to embark on his journey, he reflected on the wisdom of the world-renowned physicist Freeman Dyson.

"Professor Dyson taught us that science flourishes best when it uses freely all the tools at hand, unconstrained by preconceived notions of what science ought to be," Waters said. "We see pet dogs as powerful tools to deepen our understanding of the aging process. New tools mean new hope: hope that the new research can lead to longer, healthier lives."

Requests for information about Waters' progress during The Old Grey Muzzle Tour 2013 should be addressed to Cheri Suckow, 765-775-1007, murphyfoundation@gpmcf.org.

About the Center for Exceptional Longevity Studies

The Center for Exceptional Longevity Studies of the Gerald P. Murphy Cancer Foundation seeks to identify important genetic and environmental determinants of healthy longevity and to better understand the complex relationship between aging and cancer. While the scientific community looks for reliable research approaches to verify exciting scientific leads, we see enormous value in studying pet dogs living with their owners as a natural aging laboratory. There is a big payoff for validating this kind of innovative thinking - an opportunity to promote healthy longevity in both pets and people. The Center and its research are supported by P&G Pet Care, makers of Iams and Eukanuba, and the Rottweiler Health Foundation. The research is conducted jointly by the Murphy Cancer Foundation and Purdue University. The Murphy Foundation is a 501(c)(3) not-for-profit research institute.

About Purdue Research Park of West Lafayette

The Purdue Research Park (<http://www.purdueresearchpark.com>) has the largest university-affiliated business incubation complex in the country in four locations across Indiana. The parks are home to nearly 240 companies that employ more than 4,200 people and are located in West Lafayette, Merrillville, Indianapolis and New Albany.

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