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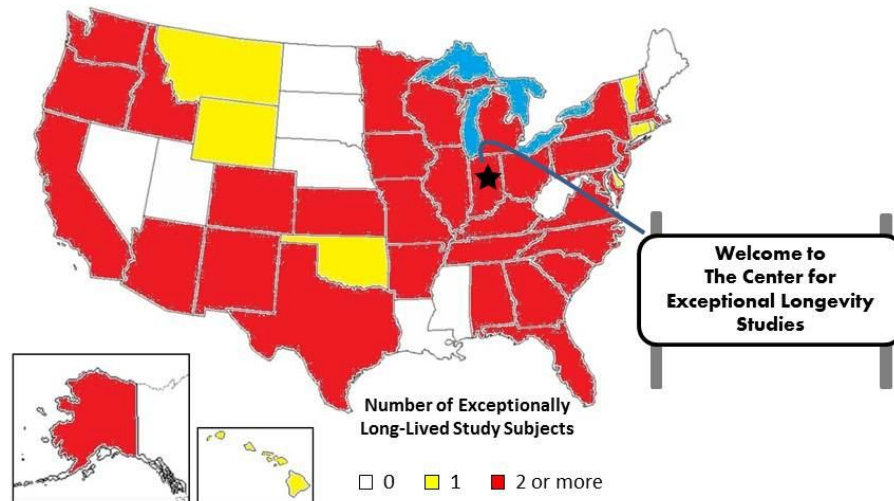
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## Foundation Update ..... Winter 2011

### *Expanding the Aging Research Toolkit: Pet Dogs as Biogerontology's New Workhorse*

*"Move over worms, flies, and mice. Pet dogs are ready to help researchers hunt down answers to a whole new set of questions about what it takes to age more successfully."*

— David J. Waters



The public is counting on scientists to figure out the complex process called aging. Beyond worms, flies, and mice, we need new animal models that can more closely mimic human aging and foster new experimental approaches that will find the factors that favor healthy longevity, not just tack on more years. Scientists at the Murphy Foundation are championing a new idea: **Harnessing pet dogs living in the same environment as people to become biogerontology's new workhorse.** The Foundation's progress in studying exceptional longevity in Rottweiler dogs is already leading to important discoveries, captured in our scientific article "**Aging Research 2011: Exploring the Pet Dog Paradigm**", published in the February issue of *The ILAR Journal*. At **The Center for Exceptional Longevity Studies**, we are changing the way aging research is conducted, boldly exploring previously uncharted territory. During the last decade, we have carefully gathered data from more than 220 exceptionally long-lived Rottweilers, equivalent to 100 year-old people. The Murphy Foundation's **Exceptional Longevity Database** represents a unique national resource for scientists trying to understand what it takes for dogs and humans to age successfully. The map above illustrates the far-reaching scope of the work – dogs from 41 states and Canada have been validated for study. In the majority of states (RED) more than one canine centenarian has been studied. "Science flourishes best when it uses freely all the tools at hand, unconstrained by preconceived notions of what science ought to be," wrote physicist **Freeman Dyson**. 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.

## Inside This Issue

In this issue of *Foundation Update*, we share with you our stories – stories that give a glimpse of recent accomplishments as well as challenges and opportunities situated on the horizon. As you read our stories, you'll get a feel for our craft. Michelangelo admitted: "It is only well with me when I have a chisel in my hand." Like Michelangelo, we're at our best when we are using new tools to chisel out our next discovery – sculpting a more solid understanding of what it takes to live longer and healthier. We invite you to sit back and savor some artful adventures in the realm of science and education.

## Updates

**Personalizing Wellness: No Small Feat** – Murphy scientists are working diligently to advance the idea of *personalized cancer prevention* – selecting the dose, duration, and timing of interventions that will enable each person to reduce his or her own risk for cancer. In April, Dr. Waters delivered a talk entitled "Communicating Health Research to the Public: The Challenge of Promoting Health in a U-Shaped World" at the **10<sup>th</sup> International Conference on Dose Response at the University of Massachusetts**. Dr. Waters' remarks focused on ways that scientists and the public can communicate better to achieve the goal of personalized wellness. This summer, Murphy scientists teamed up with investigators at **The National Cancer Institute** and the **USDA's Grand Forks Health Nutrition Research Center** to publish in the *British Journal of Nutrition* new research findings on selenium and cancer risk. The Murphy Foundation's **SeleniumHealth™ toenail test** continues to help men reduce their cancer risk by helping them get their selenium level right. For more information on the selenium toenail test, contact **Cheri Suckow, R.N.** at the Murphy Foundation or go to [www.seleniumhealthtest.org](http://www.seleniumhealthtest.org).



**Murphy Foundation Turns Spotlight on Personal Performance and Professional Development** – To reach our greatest potential collectively and as individuals, the Murphy Foundation recognizes the critical importance of self-renewal. In 2011, we published an article in *the Journal of Veterinary Medical Education* entitled "**On the Self-Renewal of Teachers**". It could have just as easily been called "On the Self-Renewal of Plumbers", "of CEOs", "of Health Professionals", "of Parents". That is because the ideas put forth are our best approximation of the skills and attitudes that are key to moving people toward their highest potential. We believe these skills and attitudes are not domain-specific, but instead transcend disciplines making them useful for a varied assortment of folks, not just professional teachers. Our thesis is that **you can gain immeasurably by developing your own personalized, hand-picked gallery of intellectual heroes who in turn serve as your life-long teachers**. At first glance, tethering yourself to heroes might seem too imitative, counterproductive to developing your own original thinking. But, we believe this scheme to be a prime prescription for personal renewal and performance. By exploiting our natural impulse to imitate what we see, this activity lifts us to new heights of possibility. Amidst all the noise in our busy lives, we trust these teachers to grab our attention, reminding us of our own *unfinishedness* – that, despite all of our successes, we are still works in progress. By seeing these intellectual heroes as teachers who we can emulate, our capacity for original thinking has been liberated, not constrained. And we revisit them often – awakening in us new ambitions and sustaining our commitment to reaching our highest creative capacity. *Who are your intellectual heroes? Meet our heroes and download a copy of our self-renewal article at [www.gpmcf.org/osrt.html](http://www.gpmcf.org/osrt.html).*

**Ovaries and Aging** – In 2009, research from 3 independent investigators studying 3 different species uncovered a previously overlooked possibility: **Ovaries are part of a system that promotes longevity**. Murphy scientists reported their discovery of the ovary-longevity connection in pet dogs in the December 2009 issue of *Aging Cell*, the highest impact journal among 57 scientific journals dedicated to gerontology and geriatrics. In June 2011, Dr. Waters visited **Dr. Walter Rocca**, an investigator at **Mayo Clinic** whose research is attempting to define the number of years of ovary exposure that optimizes healthy longevity in women. This year, Murphy scientists published two follow-up reports calling the scientific community's attention to the knowledge gaps and far-reaching opportunities that

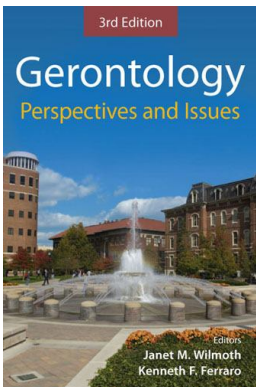
research on ovaries and longevity holds. "Our ovaries research is all about how to promote successful aging," said Dr. Waters. "By understanding just how ovaries influence the aging process, this research will ultimately help us engineer more successful aging trajectories, not only for women but possibly men as well." Recognized for his expertise in this emerging field of research, Dr. Waters is already slated to deliver 5 talks nationally on ovaries and longevity in 2012. Check out the listing of dates and cities at [www.gpmcf.org/upcoming.html](http://www.gpmcf.org/upcoming.html).

## Shorts

**New Cancer Treatment: Fighting Fire with Fire** – The most deadly diseases demand the attention of the most innovative minds. Cancer is one of those diseases calling out for unexpected discoveries. Today, cancer treatment plans rely heavily on the use of cytotoxic drugs that kill tumor cells. But these drugs also poison normal cells so treatments carry with them a dose-limiting toxicity. As a result, cancer patients and their physicians are looking for new options that are more effective, less toxic. *Can the growth of a patient's cancer be suppressed by giving that patient more cancer cells?* Teaming up with investigators at **The Rogosin Institute** in New York City, Murphy scientists are helping to develop a new cancer-fighting technology: *treating cancer patients by implantation of bead-encapsulated living mouse cancer cells*. The work represents an exciting new way of advancing cancer treatment for two reasons. First, the idea of fighting cancer cells with cancer cells is a fresh and unexpected twist. It's like fighting fire with fire. Secondly, by showing that pet dogs stricken with prostate cancer benefitted from the bead therapy, we propelled the research ahead more quickly into human cancer trials. Thus, the work is validating the idea that pet dogs with naturally occurring cancers can become a dependable part of the pipeline for developing new cancer treatments for humans. Discovering a more productive path to defeating cancer is the very essence of a win-win kind of comparative cancer research that benefits both pets and people, a research program we call **PATH to Progress®**. The work, published in *Cancer Research* in January 2011, was featured in **The Wall Street Journal**.

## Murphy Scientists Set High Expectations in New Gerontology Textbook –

The biology of aging is one of the most rapidly moving fields of scientific inquiry. Recognizing the important contributions to aging research made by the Murphy Foundation's Center for Exceptional Longevity Studies, Murphy scientists have been selected to author a chapter in the 4<sup>th</sup> edition of *Gerontology: Perspectives and Issues*, a textbook used by several universities to train students in gerontology. The chapter entitled "**The Biology of Successful Aging: Watchful Progress at Biogerontology's Known-Unknown Interface**" offers a perspective on the kinds of questions biogerontologists wrestle with. "If students are looking for a litany of facts, they will be disappointed," said **Naomi Kariuki**, co-author of the chapter. "We expect the reader to travel beyond the facts and toward the challenges and possibilities that questioning brings." High expectations indeed – challenging the students who will become tomorrow's leaders in gerontology to challenge conventional wisdom and advance the aging field in new and productive directions.

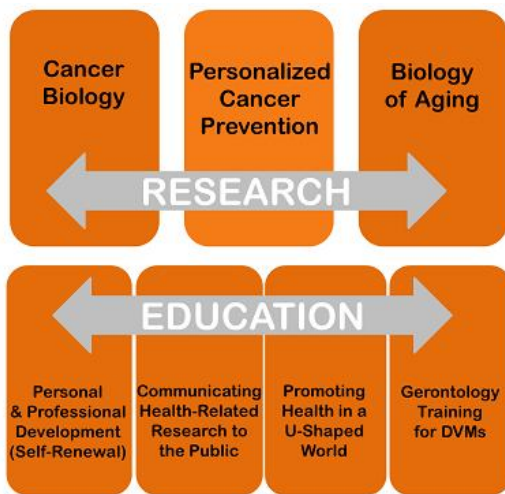


**More on Training** – The Murphy Foundation continues its strong commitment to cross-training tomorrow's leaders in 3 areas: aging research, cancer research, and communication of health research to the public. In August, Dr. Waters was one of 15 faculty selected for the **National Cancer Institute's 2011 Summer Curriculum in Cancer Prevention Molecular Course**, an international course offered to physicians, scientists, and other health professionals. Dr. Waters presented a progressive look at animal models used to advance cancer treatment and cancer prevention. In August, physical therapy students at **Arcadia University** in Philadelphia enjoyed lectures from Dr. Waters on the biology of aging and cancer prevention. Earlier this year, Dr. Waters developed a new course for graduate students in **Purdue's Center on Aging and the Life Course**. "**The Endocrinology of Aging**" provides an integrated look at the role hormones play in aging – exploring ideas like how stress hormones reduce our resilience to

bounce back after challenges, and how our body fat may fuel inflammation, contributing to conditions like arthritis, Alzheimer's disease, even cancer.

**Murphy Foundation Pays Tribute to Cancer Survivors** – In June 2011, Dr. Waters delivered a **keynote address at The American Cancer Society's Relay for Life Cancer Survivor Luncheon in Parke County, Indiana.** In his remarks, Dr. Waters put forward a thought-provoking idea: That the secret to winning the battle against cancer might just hinge on finding a way to get all of our scientists and health professionals working to their fullest potential. He posed the question: **Is too much focus in medicine right now on the WOW-ness of what today's technology can do, and too little invested in the performance of the people who have dedicated their lives searching for a cancer cure?** The Murphy Foundation thinks so. That's why we are committed to developing the skills and attitudes of peak personal performance in scientists and health professionals. As the day's celebration ended, Dr. Waters reminded the cancer survivors: "Do not underestimate how your lives, your stories inspire scientists like me to perform and to reach farther, re-dedicating ourselves to the cancer fight." A fitting commentary to the Murphy Foundation's efforts promoting community-wide health awareness to reduce cancer risk among the citizens of Parke County.

## Murphy Foundation Upgrades Website to Highlight Both Research and Education



**Education** – The Murphy Foundation has updated its website to provide visitors with a more expansive look at both research and education. "We see ourselves working in a research-education space," said **Emily Chiang, PhD**, Research Associate. "We need not just tip-top research, but also tip-top performance in educating our colleagues and the public." The improved website features a wide range of content, from scientific publications, to stories about health research news written in language for the lay public, to one-of-a-kind specialized training opportunities for DVMs in the biology of aging. You can even explore the writings of our intellectual heroes – such as **Ralph Waldo Emerson** and educational psychologist **Jerome Bruner** – who have inspired our thinking.

**In Celebration, In Memorium** – In 2011, the Murphy Foundation celebrated the 75<sup>th</sup> birthday of Bridget Murphy Quinn by establishing **The Director's Fund Honoring Bridget Murphy Quinn.** The Director's Fund supports the Foundation's repository of biological specimens to advance cancer prevention research, and also provides fellowship support for young scholars who are training at the Murphy Foundation. This year also marked the passing of a special person with close ties to the Foundation. **John E. Waters**, father of the Murphy Foundation's Executive Director, passed away in February. Mr. Waters avidly supported the Foundation's work as a member of the Bedrock Group. A fund established in memory of Mr. Waters supports the Foundation's research and education mission in the fields of aging and cancer. A sincere thanks to all those who generously contributed to these funds throughout the year.

## Kudos

**Murphy Foundation Flies High on Altitude Media** – This fall, the Murphy Foundation's unique scientific approaches and accomplishments took to the skies. An interview with Dr. Waters was featured in "**The Executive Report Innovator Series**", **broadcasted this September and October on the Business Talk Channel of more than 40,000 Delta Air Lines flights.** In the interview, Dr. Waters used accessible language to explain the novelty and promise of our research approach to successful aging – trusting exceptionally long-lived pet dogs to lead the way. To hear how we're re-shaping how scientists think about aging, download the MP3 recording at our website [www.gpmcf.org/GPMCFinNews.html](http://www.gpmcf.org/GPMCFinNews.html).

Gerald P. Murphy  Cancer Foundation

INNOVATIVE RESEARCH FOR PERSONALIZED CANCER PREVENTION

Dear Friends,

December 2011

In 2011, the Murphy Foundation had what I would call a “challenging” year. Our work on ovaries and longevity is *challenging* conventional wisdom on what is the best length of time to keep ovaries. Our work on personalized wellness is *challenging* the notion that more of “good things” is really better for you. And our work on peak personal performance is *challenging* scientists and health professionals to renew themselves to achieve new angles of vision. At the Murphy Foundation, **our mission is to serve as thought leaders** – advancing new ways of thinking about what you need to become a healthier you.

We are inspired by our progress and your faith in us to perform at the highest possible level. Each year at this time, my team and I appraise our accomplishments by asking the question posed by philosopher William James: “**Does the world, with our additions, rise or fall in value?**” It is these high expectations that stretch our imaginations and motivate us to succeed.

This issue of **Foundation Update** highlights the considerable progress that we have made in 2011. This body of work is the product of dedicated investment in specific areas of research and education that we believe hold great promise. While grants and contracts fund the majority of our work, our needs cannot be met without the individual gifts that you make to support us. You make our ideas come to life. ***You make the challenging happen.*** With each dollar that you generously invest in the Murphy Foundation, we move ahead – ever closer to the goal of living the longest and healthiest that we can. To each of you, let me say how grateful we are to serve you in this pursuit.

Best Holiday Wishes,  
David J. Waters, DVM, PhD

*Please detach and return in the envelope enclosed, with checks payable to “GPMCF”*

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