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**The Role of Companion Animals as Sentinels  
for Predicting Environmental Exposure Effects  
on Aging and Cancer Susceptibility in Humans  
A Hybrid Workshop**

500 Fifth St., N.W.  
Keck 100, Washington, D.C. 20001

Webcast link: <http://bit.ly/NASEMcompanionanimals>

<b>December 1, 2021</b>	
<b>7:30 am</b>	<b>Registration and Breakfast</b> <i>Outside Keck 100 &amp; E-Street Conference Room</i>
<b>8:00 am</b>	<b>Welcome and Workshop Overview</b> <i>Linda Birnbaum, Planning Committee Chair and Emeritus Director, National Institute of Environmental Health Sciences (NIEHS) and National Toxicology Program (NTP)</i>  <i>Ned Sharpless, Director, National Cancer Institute (NCI)</i>
<b>8:30 am</b>	<b>Session I: History and Current State of the Science of Environmental Exposure Effects on Aging and Cancer Susceptibility</b> <i>Co-Moderators: Bill Farland, Colorado State University Emeritus &amp; Danielle Carlin, NIEHS*</i>  <b>State of the Science and Overview</b> <ul style="list-style-type: none"> <li>○ <b>Environmental Exposure and Cancer</b> <ul style="list-style-type: none"> <li>○ Gary Ellison, NIEHS/NCI</li> </ul> </li> <li>○ <b>Environmental Exposure and Cancer in Companion Animals</b> <ul style="list-style-type: none"> <li>○ Audrey Rupple, Virginia Tech</li> </ul> </li> <li>○ <b>Aging Targets for Environmental Exposure</b> <ul style="list-style-type: none"> <li>○ Marcia Haigis, Harvard University</li> <li>○ Cheryl Walker, Baylor College of Medicine*</li> </ul> </li> </ul> <b>Canine Genetic Systems and Relevance for Human Cancers</b> <ul style="list-style-type: none"> <li>○ Elaine Ostrander, National Human Genome Research Institute</li> </ul>
<b>10:15 am</b>	<b>Break</b>
<b>10:30 am</b>	<b>Session I: History and Current State of the Science of Environmental Exposure Effects on Aging and Cancer Susceptibility</b> <i>Co-Moderators: Bill Farland, Colorado State University Emeritus &amp; Danielle Carlin, NIEHS*</i>  <b>Aging and Cancer Susceptibility</b> <ul style="list-style-type: none"> <li>○ James DeGregori, University of Colorado Cancer Center</li> </ul>

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	<p><b>What are the Gaps in Human Cancer Prevention and Control That May Be Addressed Through Companion Animal Research, and Vice Versa?</b></p> <ul style="list-style-type: none"> <li>○ Peter Rabinowitz, University of Washington*</li> </ul> <p><b>Session 1 Panel Discussion</b></p>
12:15 pm	<p><b>Lunch Break with Virtual Poster Session</b> E-Street Conference Room &amp; Zoom link: <a href="https://nasem.zoom.us/j/95073801945">https://nasem.zoom.us/j/95073801945</a></p>
1:30 pm	<p><b>Session 2a: Methods and Current Studies</b> Moderator: Myrtle Davis, Bristol Myers Squibb</p> <p><b>Exposome and Health</b></p> <ul style="list-style-type: none"> <li>○ Gary Miller, Columbia University</li> </ul> <p><b>Biomonitoring of Chemical Exposure in Companion Animals</b></p> <ul style="list-style-type: none"> <li>○ Kurunthachalam Kannan, New York University</li> </ul> <p><b>Assessing the Exposome Using Wearable Sensors: Challenges and Opportunities</b></p> <ul style="list-style-type: none"> <li>○ Yuxia Cui, NIEHS*</li> </ul> <p><b>Ongoing Canine Population Studies</b></p> <ul style="list-style-type: none"> <li>○ Matthew Breen, North Carolina State University</li> </ul>
3:00 pm	<b>Break</b>
3:20 pm	<p><b>Session 2a (cont'd): Methods and Current Studies</b> Moderator: Myrtle Davis, Bristol Myers Squibb</p> <p><b>Ongoing Canine Population Studies (cont'd)</b></p> <ul style="list-style-type: none"> <li>○ Rod Page, Colorado State University</li> <li>○ Daniel Promislow, University of Washington</li> <li>○ Richard Lea, University of Nottingham</li> </ul> <p><b>Session 2a Panel Discussion</b></p>
5:30 pm	<p><b>Adjourn Day 1</b> <b>Evening Reception with In-Person Poster Session</b> E-Street Conference Room &amp; Balcony</p>
<b>December 2, 2021</b>	
7:30 am	<p><b>Breakfast</b> E-Street Conference Room</p>
8:00 am	<p><b>Session 2b: Relevance of Companion Animal Exposures to Human Cancer and Aging</b> Moderator: Nicole Deziel, Yale University</p>

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	<p><b>Overview of Outdoor Air, Water, Ground</b></p> <ul style="list-style-type: none"> <li>○ Caleb "Tuck" Finch, University of Southern California</li> </ul> <p><b>A Comparative Assessment of SVOC Exposures in Domestic Dogs and Their Owners Using Silicone Passive Samplers</b></p> <ul style="list-style-type: none"> <li>○ Heather Stapleton, Duke University</li> </ul> <p><b>Indoor Products: Endocrine Disruptors, Flame Retardants, PFAS</b></p> <ul style="list-style-type: none"> <li>○ Jan Dye, Environmental Protection Agency*</li> </ul> <p><b>Radon Exposures</b></p> <ul style="list-style-type: none"> <li>○ Chad Johannes, Iowa State University</li> </ul> <p><b>Heavy Metal Exposures</b></p> <ul style="list-style-type: none"> <li>○ Norman Kleiman, Columbia University</li> </ul>
9:45 am	<b>Break</b>
10:00 am	<p><b>Session 2b (cont'd): Relevance of Companion Animal Exposures to Human Cancer and Aging</b> <i>Moderator: Nicole Deziel, Yale University</i></p> <p><b>Dietary and Feeding Exposures</b></p> <ul style="list-style-type: none"> <li>○ Joe Wakshlag, Cornell University</li> </ul> <p><b>Pesticides/Herbicides and Mixtures</b></p> <ul style="list-style-type: none"> <li>○ Elizabeth Ryan, Colorado State University</li> </ul> <p><b>Session 2b Panel Discussion</b></p>
12:00 pm	<p><b>Lunch Break with Virtual Poster Session</b> <i>E-Street Conference Room &amp; Zoom link: <a href="https://nasem.zoom.us/j/95073801945">https://nasem.zoom.us/j/95073801945</a></i></p>
1:15 pm	<p><b>Session 3: Accelerating Cross-species Comparisons: Opportunities and Challenges in Data Sources, Collection, Storage, Modeling, and Sharing</b> <i>Moderator: Roy Jensen, University of Kansas*</i></p> <p><b>Human Exposure Assessment</b></p> <ul style="list-style-type: none"> <li>○ Rena Jones, NCI</li> </ul> <p><b>Data and Sample Collection/Storage and Sharing/Data Integration of Human and Companion Animal Data</b></p> <ul style="list-style-type: none"> <li>○ Amy K. LeBlanc, NCI</li> <li>○ Marta Castelhana, Cornell University</li> <li>○ Anne Thessen, University of Colorado Anschutz Medical Campus</li> </ul>
2:40 pm	<b>Break</b>

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<b>3:00 pm</b>	<p><b>Session 3 (cont'd): Accelerating Cross-species Comparisons: Opportunities and Challenges in Data Sources, Collection, Storage, Modeling, and Sharing</b> <i>Moderator: Roy Jensen, University of Kansas*</i></p> <p><b>Data, Samples, and Modeling</b></p> <ul style="list-style-type: none"> <li>○ Angela Hughes, Mars Petcare</li> <li>○ Adam Boyko, Embark Veterinary, Inc./Cornell University</li> <li>○ Mark Dunn, American Kennel Club</li> </ul> <p><b>Session 3 Panel Discussion</b></p>
<b>5:00 pm</b>	<p><b>Adjourn Day 2</b> <b>Evening Reception with In-Person Poster Session</b> <i>E-Street Conference Room &amp; Balcony</i></p>
<b>December 3, 2021</b>	
<b>8:30 am</b>	<p><b>Breakfast</b> <i>E-Street Conference Room</i></p>
<b>9:00 am</b>	<p><b>Session 4: Equity, Ethics, and Policy</b> <i>Moderator: Wendy Shelton, Virtual Beast/Colorado State University</i></p> <p><b>Ethical Considerations: Research Subject Protections, Citizen Science Issues, and Shared Health</b></p> <ul style="list-style-type: none"> <li>○ Lisa Moses, Harvard Medical School*</li> </ul> <p><b>One Health Approaches in Arctic Indigenous Communities</b></p> <ul style="list-style-type: none"> <li>○ Frank A. von Hippel, University of Arizona</li> </ul> <p><b>Aligning Healthcare for a Bonded Family Society</b></p> <ul style="list-style-type: none"> <li>○ Michael Blackwell, University of Tennessee, Knoxville*</li> </ul> <p><b>Session 4 Panel Discussion</b></p>
<b>10:45 am</b>	<p><b>Break and Pick up Box Lunches</b> <i>E Street Conference Room</i></p>
<b>11:00 am</b>	<p><b>Facilitated Discussions with Planning Committee Members</b> <i>E Street Conference Room</i></p> <p><u>Objectives:</u></p> <ul style="list-style-type: none"> <li>➤ Review key messages from the workshop discussions, including identifying potential next steps, promising areas for future action, and opportunities for collaboration.</li> </ul> <ul style="list-style-type: none"> <li>○ TABLE 1: Bill Farland, Colorado State University, Emeritus</li> <li>○ TABLE 2: Nicole Deziel, Yale University</li> </ul>

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	<ul style="list-style-type: none"> <li>○ TABLE 3: Wendy Shelton, Virtual Beast/Colorado State University</li> <li>○ TABLE 4: Daniel Promislow, University of Washington</li> <li>○ TABLE 5: Matthew Breen, North Carolina State University</li> <li>○ TABLE 6: Rod Page, Colorado State University</li> <li>○ VIRTUAL TABLE: Danielle Carlin, NIEHS and Roy Jensen, University of Kansas* <ul style="list-style-type: none"> <li>○ Zoom link: <a href="https://nasem.zoom.us/j/96994380813">https://nasem.zoom.us/j/96994380813</a></li> </ul> </li> </ul>
11:45 am	<p><b>Session 5: Identifying Research Gaps and Setting a Research Agenda: Recommendations and Next Steps for the Path Forward</b>  Moderator: Linda Birnbaum, NIEHS, NTP, Emeritus</p> <p><b>Report Backs from Facilitated Discussions and Workshop Reflections</b>  (each with 5 minutes for report back summaries and workshop reflections, followed by open discussion among workshop participants)</p> <ul style="list-style-type: none"> <li>○ Bill Farland, Colorado State University, Emeritus</li> <li>○ Nicole Deziel, Yale University</li> <li>○ Wendy Shelton, Virtual Beast/Colorado State University</li> <li>○ Daniel Promislow, University of Washington</li> <li>○ Matthew Breen, North Carolina State University</li> <li>○ Rod Page, Colorado State University</li> <li>○ Danielle Carlin, NIEHS*</li> <li>○ Roy Jensen, University of Kansas*</li> </ul> <p><b>Concluding Remarks and Next Steps for the Field</b></p> <ul style="list-style-type: none"> <li>○ Linda Birnbaum, NIEHS, NTP, Emeritus</li> </ul>
1:00pm	<b>Adjourn</b>

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