

Education

- 1986-1990 BS, Marine Biology, Department of Biological Sciences, Florida Institute of Technology, Melbourne, FL.
- 1997-1999 MS, Veterinary Medical Sciences, Department of Biomedical Sciences, Virginia-Maryland Regional College of Veterinary Medicine (Virginia Tech), Blacksburg, VA. Thesis title, "Gross and Microscopic Observations on the Lingual Structure of the Florida Manatee (*Trichechus manatus latirostris*)."
- 1999-2004 PhD, Department of Pathobiology and Veterinary Science, University of Connecticut, Storrs, CT. Dissertation title, "Modulation of the marine mammal, human and mouse immune systems by *in vitro* exposure to organochlorine mixtures."
- 2004-2010 **Post-Doctoral Fellow**, NOAA's Oceans and Human Health Initiative and the University of Connecticut's Interdisciplinary Research and Training Initiative on Coastal Ecosystems and Human Health (I-RICH) program, Department of Pathobiology and Veterinary Sciences, University of Connecticut, Storrs, CT.

Professional Experience

- 2021-current **Photographer/Videographer/Drone Pilot**, College of Agriculture, Health and Natural Resources, Office of Communications, University of Connecticut, Storrs, CT.
- Capture ground and aerial drone images around the University of Connecticut Storrs campus to be used to promote activities and services within the College and across the University.
- 2019-current **Associate Research Professor**, Department of Pathobiology and Veterinary Science, University of Connecticut, Storrs, CT.
- Conduct hypothesis-based research in support of *in vivo* and *in vitro* studies investigating the toxic effects of anthropogenic pollutants and algal biotoxins on the health of aquatic wildlife and humans.
 - Development and implementation of immune assays to assess the health of managed-care and wild populations of marine mammals.
 - Assess relationships among contaminant exposure, immune function, and infectious diseases in wild populations of aquatic wildlife.
- 2012-2019 **Assistant Research Professor**, Department of Pathobiology and Veterinary Science, University of Connecticut, Storrs, CT.
- Conduct hypothesis-based research in support of *in vivo* and *in vitro* studies investigating the toxic effects of anthropogenic pollutants and algal biotoxins on the health of aquatic wildlife and humans.
- 2010-2012 **Assistant Professor-in-Residence**, Department of Pathobiology and Veterinary Science, University of Connecticut, Storrs, CT.
- Conduct hypothesis-based research in support of studies investigating the toxic effects of anthropogenic pollutants and algal biotoxins on the health of humans and aquatic wildlife.

Current Research Support

- **Levin, M (PI)**, Puryear, W (Co-PI), De Guise, S (Co-PI), Perkins, C (Co-PI). Dried blood spot cards as a tool to collect, archive, and measure whole blood contaminants and pathogens in stranded and free-ranging marine mammals. \$176,636. John H. Prescott Marine Mammal Rescue Assistance Grant Program. 01/25-12/25.
- Rodgers, M (PI), Brandt, J (Co-PI), Bolnick, D (Co-PI), Milligan-McClellan, K (Co-PI), **Levin, M (Co-PI)**. Assessing temperature mediation of PFAS impacts on coastal fish fitness to inform environmental management. Long Island Sound Study. \$709,000. 03/23-02/25.

Courses Taught

- Pathobiology; PATH 2800. Medical Cell Biology (Immunology section)
- Natural Resources and the Environment; NRE 5340. Ecotoxicology (Immunotoxicology section)
- Marine Sciences; MARN 3812. Seminar in Marine Biodiversity and Conservation (Aquatic Immunotoxicology section)

Research Interests

Over the last 25 years, I have focused on hypothesis-driven research, which has addressed the impact of environmental contaminants on the immune systems of aquatic wildlife, including oysters, lobsters, small-bodied fish, sea turtles, and marine mammals (cetaceans, pinnipeds, polar bears, and manatees). I have focused mainly on legacy contaminants (e.g. polychlorinated biphenyls, PCBs), emerging chemicals (e.g. perfluorinated compounds, PFOA/S), natural and refined oil

(e.g. BP Deepwater Horizon spill), and HAB biotoxins (e.g. domoic acid, brevetoxin, saxitoxin). Acute, sub-acute, or chronic exposure to these contaminants may increase an individual's susceptibility to a number of bacterial, viral, protozoal or fungal pathogens, resulting in morbidity or mortality at the individual or population level.

Peer-Reviewed Publications

1. McCosker, C, **Levin, M**, Puryear, W, Runstadler, J, Murray, K, Cammen, K. Gray Seal (*Halichoerus grypus*) Pups Fail to Mount Inflammatory Cytokine Response to Influenza A Virus. *J Wild Dis.* 2025. (*in press*).
2. Sims, M, Helal, Z, **Levin, M**, Rittenhouse, T, Hawley, J, Risatti, GR. Suburban Population of Bobcats (*Lynx rufus*) in Connecticut, USA, Tested Negative for SARS-CoV-2, November 2021-February 2022. 2023. *J Wild Dis.* Nov 4.
3. De Guise S, **Levin M**. Suppression of Th2 cytokines as a potential mechanism for reduced antibody response following PFOA exposure in female B6C3F1 mice. 2021. *Tox Letters.* Oct 15;351:155-162.
4. Perrault JR, **Levin M**, Mott CR, Boverly CM, Bresette MJ, Chabot RM, Gregory CR, Guertin JR, Hirsch SE, Ritchie BW, Weege ST, Welsh RC, Witherington BE, Page-Karjian A. Insights on Immune Function in Free-Ranging Green Sea Turtles (*Chelonia mydas*) with and without Fibropapillomatosis. 2021. *Animals (Basel).* 11(3) 861.
5. Yu Lei, Erin Bell, Sylvain De Guise, Jeffrey McCutcheon, **Milton Levin**, Baikun Li, James Rusling, David Lawrence, Gary Ginsberg, Jennifer Cavallari. Exposure, Health Effects, Sensing, and Remediation of Emerging Contaminants PFASs-Scientific Challenges and Potential Research Approaches. 2021. *Sci Total Environ.* Vol 780.
6. De Guise S, **Levin M**, Jasperse L, Herrman J, Wells RS, Takeshita R, Rowles T, Lori Schwacke. Long-Term Immunological Alterations in Bottlenose Dolphin a Decade after the Deepwater Horizon Oil Spill in the Northern Gulf of Mexico: Potential for Multigenerational Effects. 2021. *Environ Toxicol Chem.* Feb 17.
7. Kennedy S, Keogh M, **Levin M**, Castellini JM, Liana M, Fadely B, Ferrante A, Reah LD, O'Hara TM. Temporal and regional variation in maternal investment of immunity and *in utero* mercury exposure in Steller sea lions (*Eumatopias jubatus*) from Alaska. 2021. *Sci Total Environ.* Vol 775, 25/
8. Desforges JP, Bourque J, **Levin M**, Atwood TC, Sonne C, Dietz R, Jensen TH, Curry E, McKinney MA. Climate-associated drivers of plasma cytokines and contaminant concentrations in Beaufort Sea polar bears (*Ursus maritimus*). 2020. *Sci Total Environ.* Vol 745.
9. **Levin M**, Jasperse L, Desforges JP, O'Hara T, Rea L, Castellini JM, Maniscalco J, Fadely B, Keogh M. Methyl mercury (MeHg) *in vitro* exposure alters mitogen-induced lymphocyte proliferation and cytokine expression in Steller sea lion (*Eumatopias jubatus*) pups. 2020. *Sci Total Environ.* Vol 725.
10. Dietz R, Letcher RJ, Desforges JP, Eulaers I, Sonne C, Wilson S, Andersen-Ranberg EU, Basu N, Barst BD, Bustnes JO, Bytingsvik J, Ciesielski T, Drevnickh PE, Gabrielsen GW, Haarr A, Hylland K, Jenssen BM, **Levin M**, McKinney MA, Nørregaard RD, Pedersen KE, Provencher J, Styrihave B, Tartu S, Aars J, Ackerman JT, Rosing-Asvid A, Barrett R, Bignert A, Born EW, Branigan M, Braune B, Bryan CE, Dam M, Eagles-Smith CA, Evans M, Evans TJ, Fisk AT, Gamberg M, Gustavson K, Hartman AC, Helander B, Herzog MP, Hoekstra PF, Houde M, Hoydal K, Jackson AK, Jæger A, Kucklick J, Lie E, Loseto L, Mallory ML, Miljeteig C, Mosbech A, Muir DC, Nielsen ST, Peacock E, Pedro S, Peterson SH, Polder A, Rigét FF, Roach P, Saunes H, Sinding MS, Skaare JU, Søndergaard J, Stenson G, Stern G, Treu G, Schuur SS, Vikingsson G. Current state of knowledge on Biological Effects from Contaminants on Arctic Wildlife and Fish. 2019. *Sci Total Environ.* Vol 696.
11. Jasperse L, **Levin M**, Rogers K, Perkins C, Bosker T, Griffith, J, Sepulveda M, De Guise S. Parental Exposure to Deepwater Horizon Oil in Different Environmental Scenarios Alters Development of Sheepshead Minnow (*Cyprinodon variegatus*) Offspring. 2019. *Mar Environ Res.* 150:104762.
12. De Guise S, **Levin M**, Jasperse L, Risatti G, Wells R. T Helper Cell Subsets and Their Functions In Common Bottlenose Dolphins (*Tursiops truncatus*). 2019. *Front Immunol.* Vol 10:1578.
13. Desforges JP, Hall A, McConnell B, Rosing-Asvid A, Barber JL, Brownlow A, De Guise S Eulaers I, Jepson PD, Letcher RJ, **Levin M**, Ross PS, Samarra F, Vikingson G, Sonne C, Dietz R. Response to L. Witting: PCBs still a major risk for global killer whale populations. 2019. *Mar Mam Sci.* 35:1201-1206.
14. Jasperse L, **Levin M**, Rogers K, Perkins C, Bosker T, Griffith, J, Sepulveda M, De Guise S. Hypoxia and Reduced Salinity Exacerbate the Effects of Oil Exposure on Sheepshead Minnow (*Cyprinodon variegatus*) Reproduction. 2019. *Aquat Toxicol.* 212:175-185.
15. Jasperse L, **Levin M**, Rogers K, Perkins C, Bosker T, Griffith, J, Sepulveda M, De Guise S. Transgenerational effects of polycyclic aromatic hydrocarbon exposure on sheepshead minnows (*Cyprinodon variegatus*). 2019. *Environ Toxicol Chem.* 38(3): 638-649.
16. **Levin M**, Jasperse L, Gebhard E, Rousselet E, Walsh C. Lack of Cross-Reactivity of Human and Porcine Reagents to Quantify Manatee (*Trichechus manatus*) Cytokines. 2018. *Vet Immunol Immunopathol.* Sep;203:57-59.
17. Desforges JP, Hall A, McConnell B, Rosing-Asvid A, Barber JL, Brownlow A, De Guise S Eulaers I, Jepson PD, Letcher RJ, **Levin M**, Ross PS, Samarra F, Vikingson G, Sonne C, Dietz R. Predicting the global fate of killer whales from PCB pollution. 2018. *Science.* 361 (6409):1373-1376.
18. Jasperse L, **Levin M**, Tsantiris K, Perkins C, Ward JE, Smolowitz R, De Guise D. Comparative toxicity of Corexit® 9500, oil, and dispersed oil in the Eastern Oyster (*Crassostrea virginica*): Immunological and physiological effects. 2018. *Aquatic Toxicology.* 203:10-18.
19. Bagchi A, Batten AJ, **Levin M**, Allen KN, Fitzgerald MJ, Huckstadt LA, Costa DP, Buys ES, Hindle A MS. Intrinsic anti-inflammatory properties in the serum of two species of deep-diving seal. 2018. *J Exp Biol.* 221, jeb178491.

20. Desforges JP, Jasperse L, Jensen TH, Grøndahl C, Bertelsen M, De Guise S, Sonne C, Dietz R, **Levin M**. Immune function in Arctic mammals: Natural killer (NK) cell activity in polar bear, muskox and reindeer. *Vet Immunol Immunopathol*. 2018. Jan 195:72-75.

Media and Public Outreach

- 2023. HBO MAX Documentary, “After the Bite”, Contributing Videographer and Photographer. A 2018 fatal shark attack on a boogie boarder rocked visitors and residents in the idyllic summer community of Cape Cod, forcing them to respond to the encroachment of apex predators. The HBO Original documentary film *After the Bite* explores the far-reaching repercussions for this beach community when rapid changes in the natural world begin to clash with a cherished way of life. Our research on grey seals and influenza is featured in this documentary.
<https://www.hbo.com/movies/after-the-bite>
- 2021. UConn Magazine Feature Story, A Picture is Worth a Thousand Lectures;
<https://magazine.uconn.edu/2021/10/14/a-picture-is-worth-a-thousand-lectures/>
- 2011. National Geographic - Strange Days on Planet Earth -Part 4 of 4, Troubled Waters;
<https://www.youtube.com/watch?v=eVKIt3DLzsoy>