

DAVID NEEDLE, DVM DACVP

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EDUCATION

Fellowship: Tuberculosis Michigan State University, East Lansing MI	2014-2015
Anatomic Pathology Residency Michigan State University, East Lansing MI	2014
DVM Tufts University Cummings School of Veterinary Medicine, Grafton MA	2011
Post-baccalaureate Premedical Program Columbia University, New York NY	2006
BA, History Tufts University, Medford MA	2003

WORK EXPERIENCE

Associate Clinical Professor MCBS, COLSA, UNH, Durham NH	2020-current
Pathology Section Chief NHVDL, UNH, Durham NH	2018-current
Senior Veterinary Pathologist NHVDL, UNH, Durham NH	2015-current
Assistant Clinical Professor MCBS, COLSA, UNH, Durham NH	2015-2020
Resident in Anatomic Pathology DCPAH, MSU, East Lansing MI	2011-2014
Course director, Histology, in Vetward Bound CVM, MSU, East Lansing MI	2012-2013
Graduate Intern in Anatomic Pathology Genzyme, Framingham MA	2009
Student Projectionist TCSVM, Grafton MA	2008-2011
NIH Summer Training grant - histology of <i>Octopus bimaculoides</i> Tufts Cummings School of Veterinary Medicine, North Grafton MA	2008
Veterinary Technician Edgewater Animal Hospital, Edgewater NJ	2005-2007
Intern in Marine Mammal Laboratory The New York Aquarium, Brooklyn NY	2004-2005
Veterinary Assistant Ridgewood Veterinary Hospital, Ridgewood NJ	2003

AWARDS & NOMINATIONS

Nominated for Course Hero , Woodrow Wilson National Fellowship Foundation	2019
University Distinguished Fellowship , The Graduate School at MSU	2014-2015
Pathology Department Award in Anatomic Pathology TCSVM	2011
NIH Summer Training Grant , TCSVM	2008
Cum Laude , Tufts University	2003
High Thesis Honors , Tufts University	2003

LICENSURE and ACCREDITATION

Diplomate of the American College of Veterinary Anatomic Pathology	2016-current
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PROFESSIONAL MEMBERSHIPS

NH Veterinary Medical Association	2016-current
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American Association of Veterinary Laboratory Diagnosticians	2015-current
American College of Veterinary Pathologists	2016-current
Wildlife Disease Association	2018-current
Northeast Wildlife Disease Cooperative	2016-current

POSTGRADUATE TEACHING EXPERIENCE

BMS 712: "Experiences in Applied Veterinary Diagnostics" UNH COLSA MCBS	2020-current
BMS 704: "Pathologic Basis of Disease" UNH COLSA MCBS	2016-current
BMS 712: "Grand Rounds" UNH COLSA MCBS	2016-2020
BMS 623: "Histology" UNH COLSA MCBS	2018
Veterinary Student Lunchtime Histopathology Reviews Lead 2-4 elective multihead microscope sessions per semester	2013–2015
Course Director, Histology, in Vetward Bound Designed and lectured a 16-hour course on histology for pre-veterinary college students from underserved populations	2012–2013
Teaching assistant College of Veterinary Medicine, MSU PDI 630: Diagnostic pathology clerkship for DVM students PDI 631: Elective necropsy clerkship for DVM students PDI 551: General Pathology course for 2 nd year DVM students PDI 553: Systemic Pathology course for 2 nd year DVM students Shark dissection laboratory	2011–2014
Histology Tutor Tufts Cummings School of Veterinary Medicine	2008–2009

UNDERGRADUATE ADVISING

2015-2016: 32 students over two semesters
 2016-2017: 92 students over two semesters
 2017-2018: 80 students over two semesters
 2018-2019: 94 students over two semesters

INDEPENDENT STUDY DIRECTING

Lindsay March: Diseases of North American Porcupines	2016
Kitty Savage: Mucinous adenocarcinoma in an alpaca	2017
Vivienne Burnell: Distemper in mesocarnivores in NH and VT	2017
Kylee Wrath: group B <i>Streptococcus</i> necrotizing fasciitis in dogs	2017-2018
Hannah Coffin: Cutaneous epitheliotropic lymphoma in a fennec fox	2017-2018
Isaac Traynor: Parasitic diseases in a wallaby and black bear	2017-2018
Abigail Blanchard: Diseases of Canada lynx from Maine	2017-2018
Laryssa Kucman: Atypical protothecosis in a cat	2018
Joshua T. Smith: Staphylococcus in animals in New England	2017-2019
Sharlene Amadore: Staphylococcus in animals in New England	2017-2019

Kylee Wrath: Marine mammal morbidity and mortality 2008-2018	2018-2019
Abigail Blanchard: Postmortem examination of mesocarnivores	2019
Devyn Enwright: Caprine and ovine morbidity and mortality 2006-2018	2019
Samantha Leef: Comparative histology of cephalopod statocysts	2018-2019
Abigail Flynn: Biphasic peripheral odontogenic fibroma hemangiosarcoma	2019
Danielle Woodman: Legg-Calve-Perthes disease in a cat	2019
Amanda Patev: Poultry Diagnostic Results at the NHVDL from 2008 – 2019.	2020
Devyn Enwright: Cultures from 156 Sheep & 204 Goats at the NHDVL, 2012-2019	2020
Kaylah Cairns: Mastitis Pathogens in Conventional Versus Organic Dairies	2020
Kaylah Cairns: Diagnostic Findings in 386 North American Porcupines	2020
Lily Clark: NHVDL Antibigram	2020
Shannon Proppert: NHVDL Antibigram	2020
Alyssa Grieg: NHVDL Antibigram	2020
Alex Deacon: NHVDL Antibigram	2020
Jiyoon Park - Diagnostic Findings of Wild Moose Submission to NHVDL from 2017-2019	2020

SERVICE

Department and College

UNH Pre-Veterinary Program, admissions presentation and tours	2016-2019
Biomedical Science - MVS option curriculum committee, member	2015-present
COLSA Open House, Biomedical Sciences Major: MVS option	2015-present

External and Professional

Northeast Wildlife Disease Cooperative, member and pathologist	2015-present
American College of Veterinary Pathology Public Service committee, participant	2017
Journal Reviewer:	
Veterinary Pathology	2017-present
Journal of the American Veterinary Medical Association	2016-present
Histopathology slide reviews, TCSVM	2017-present

Seminar Series and Collaborative Networks

WON NH – Wildlife and One Health Network of NH seminar series, creator & organizer	2019-present
One Health Microbial Ecology collaborative, creator & organizer:	2018-present
NHVDL, Dartmouth Hitchcock, Concord Hosp., Exeter Hosp., Cheshire Med Ctr.	

PROFESSIONAL CONFERENCES AND WORKSHOPS

Northeast Association of Fish and Wildlife Agencies, annual meeting, virtual	2020
Northeast Association of Fish and Wildlife Agencies, annual meeting, Groton, CT	2019
NE USAHA, NE AAVLD concurrent meeting, Annapolis, MD	2019
NH Antimicrobial Stewardship Symposium, annual meeting, Concord, NH	2019
American College of Veterinary Pathology, annual meeting, Washington DC	2018
NH Antimicrobial Stewardship Symposium, annual meeting, Concord, NH	2018
Northeast Association of Fish and Wildlife Agencies, annual meeting, Burlington VT	2018
American College of Veterinary Pathology, annual meeting Vancouver, Canada	2017

Early Career Workshop for new faculty, UNH Research and Development	2017
Midwest Association of Veterinary Pathology, annual meeting Illinois	2014
American College of Veterinary Pathology, annual meeting Montreal, Canada	2013

FUNDED RESEARCH

Completed

2018 – UNH CoRE (Collaborative Research Excellence Initiative) 2018-2019 Interdisciplinary Working Group on Integrated Assessment and Research of Wildlife Disease, Health and Ecology

PEER-REVIEWED MANUSCRIPTS

Published

1. **Needle DB**, Marr JL, Park CJ, Andam CP, Wise AG, Maes RK, Wilkes RP, Anis EA, Sidor IF, Agnew D, Ellis JC, Tate P, Mathewson A, Benton C, Gibson R. Concurrent Infection of Skunk Adenovirus-1, *Listeria monocytogenes*, and a Regionally Specific Clade of Canine Distemper Virus in One Gray Fox (*Urocyon cinereoargenteus*) and Concurrent Listeriosis and Canine Distemper in a Second Gray Fox. *Pathogens* 2020, 9(7), 591.
2. Savage K, Sidor IF, Mailhot N, **Needle DB**. Pathology in Practice. *JAVMA*. 2020;257(1):49-52.
3. Smith, J. T., Amador, S., McGonagle, C. J., **Needle, D.**, Gibson, R., & Andam, C. P. (2020). Population genomics of *Staphylococcus pseudintermedius* in companion animals in the United States. *Communications Biology*, 3(1).
4. **Needle DB**, Agnew DW, Bradway DS, Nordhausen RW, Garner MM. Avian coxiellosis in nine psittacine birds, one black-browed barbet, and one paradise tanager. *Avian Pathol.* 2020;12:1-7.
5. Anis E, **Needle DB**, Stevens B, Yan L. and Wilkes RP. Genetic characteristics of Canine distemper viruses circulating in wildlife in the United States. *J Zoo Wildl Med.* 2020;50(4):790-797
6. **Needle DB**, Gibson R, Hollingshead NA, Sidor IF, Marra NJ, Rothenheber D, Thachil AJ, Stanhope BJ, Stevens BA, Ellis JC, Spanswick S, Murray M, Goodman LB. Atypical Dermatophytosis in 12 North American Porcupines (*Erethizon dorsatum*) from the Northeastern United States 2010-2017. *Pathogens.* 2019. 30;8(4)
7. Barth, BM... **Needle DB**... Claxton DF, et al. Sphingolipid Metabolism Determines the Therapeutic Efficacy of Nanoliposomal Ceramide in Acute Myeloid Leukemia. *Blood Adv.* 2019. 10;3(17):2598-2603
8. **Needle DB**, Wise AG, Gregory CR, Maes RK, Sidor IF, Ritchie BW, Agnew D. Necrotizing ventriculitis in fledgling Chimney swifts (*Chaetura pelagica*) associated with a novel adenovirus, chimney swift adenovirus-1 (CsAdV-1). *Veterinary Pathology.* 2019 Nov;56(6):907-914
9. **Needle DB**, Burnell VC, Forzan MJ, Dubovi EJ, Schuler KL, Bernier C, Hollingshead NA, Ellis JC, Stevens BA, Tate P, Anis E, Wilkes RP. Infection of eight mesocarnivores in New Hampshire and Vermont with a distinct clade of canine distemper virus in 2016–2017. *J Vet Diag Invest.* 2019 Jul;31(4):562-567. DOI: 10.1177/1040638719847510
10. Hendriske L, Kambli A, Kayko C, Canuti M, Rodrigues B, Stevens B, Vashon J, Lang A, **Needle DB**, Troyer R. Identification of a novel gammaherpesvirus in Canada lynx (*Lynx canadensis*). *Viruses.* *Viruses* 2019, 11(4), 363

11. **Needle DB**, Selig MK, Jackson KA, Delwart E, Tighe E, Leib SL, Seuberlich T, Pesavento PA. Fatal bronchopneumonia caused by skunk adenovirus 1 in an African 1 pygmy hedgehog. *Journal of Veterinary Diagnostic Investigation*. 2019. 31;1:103-106
12. **Needle DB**, Iglukova O, Miller AD. Biphasic malignant melanoma adenocarcinoma in the digit of a dog. *J Vet Diagn Invest*. 2018 Mar;30(2):315-318.
13. Christman, J. E., **Needle, DB**, Williams, K. J. (2017). Pathology in Practice: systemic bibersteiniosis in a ewe lamb. *Journal of the American Veterinary Medical Association*, 251(4), 405-407.
14. Agostinho Hunt, A. M., Gibson, J. A., Larrivee, C. L., O'Reilly, S., Navitskaya, S., **Needle, DB**, Abramovitch, R. B., Busik, J. V., Waters, C. M. (2017). A bioluminescent *Pseudomonas aeruginosa* wound model reveals increased mortality of type 1 diabetic mice to biofilm infection. *J Wound Care*;26(Sup7):S24-S33.
15. Thompson KA, Patterson J, Fitzgerald SD, **Needle DB**, Harrison T. (2016). Treatment of renal carcinoma in a binturong (*Arctictis binturong*) with nephrectomy and a tyrosine kinase inhibitor. *J Zoo Wildl Med*;47(4):1109-1113.
16. Sloup RE, Cieza RJ, **Needle DB**, Abramovitch RB, Torres AG, Waters CM. (2016). Polysorbates prevent biofilm formation and pathogenesis of *Escherichia coli* O104:H4. *Biofouling*;32(9):1131-1140.
17. **Needle DB**, Hollinger, C., Singer, L. M., Kiupel, M., Swenson, C. L., Mullaney, T. P. (2015). Pathology in Practice. Lymphomatoid granulomatosis of lung tissue and mediastinal lymph node in a dog. *JAVMA*;247(10):1113-6.
18. Zoll, W. M., **Needle DB**, French, S. J., Lim, A., Bolin, S., Langohr, I., Agnew, D. (2015). *Sarcocystis* spp. Infection in two Red Panda Cubs (*Ailurus fulgens*). *J Comp Pathol*;153(2-3): 185-9.
19. Johnson, B. K., Colvin, C. J., **Needle DB**, Mba Medie, F., Champion, P. A., Abramovitch, R. B. (2015). The Carbonic Anhydrase Inhibitor Ethoxzolamide Inhibits the *Mycobacterium tuberculosis* PhoPR Regulon and Esx-1 Secretion and Attenuates Virulence. *Antimicrobial agents and chemotherapy*;59(8):4436-45.
20. Kohnken R, **Needle DB**, French SJ, Patterson JS. (2014). What is your diagnosis - *Gallibacterium anatis* in an Adult Brahma Chicken. *J Avian Med and Surg*;28(4):343-347.
21. **Needle DB**, Hollinger C, Shelton GD, Fitzgerald SD. (2014). Necrotizing and Eosinophilic Masticatory Myositis in Farmed Mink: a Preliminary Description, *J Comp Pathol*;151(2-3):217-27
22. **Needle DB**, Mietelka KA. (2014). Pathology in practice - Juvenile Canine Parvovirus Cardiomyositis in Three Littermates. *JAVMA*;244(10):1155-7
23. **Needle DB**, McKnight C, Kiupel M. (2013). Chondroblastic Osteosarcoma in Two Related Spiny-Tailed Monitor Lizards (*Varanus Acanthurus*). *J Exotic Pet Med*;22(3):265-269
24. Pumphrey SA, Pizzirani S, Pirie CG, **Needle DB**. (2013). Glaucoma associated with uveal cysts and goniodysgenesis in American Bulldogs: a case series. *Vet Ophthalmol*;16(5):377-85
25. **Needle DB**, Krien S, Sharp CR. (2013). Pathology in practice - Left subclavian arterial thromboembolism and perirenal hemangiosarcoma in a dog. *JAVMA*;242(7);931-933

BOOKS & BOOK CHAPTERS

Kristen Fuda and Mary Katherine Lockwood. *Laboratory Manual for Human Anatomy and Physiology*, second edition. Contributing authors: Anne Ewert, David Needle, and Michael Goulet. Fountainhead Press, Southlake, TX 2019. ISBN: 978-1-64485-059-6

PRESENTATIONS, POSTERS & ABSTRACTS

Needle DB, et al. Diagnostic Findings in 300 Free-Ranging and Zoo-Housed North American Porcupines (*Erethizon dorsatum*) from US Northern Border States and Canada, 2000-2019. Northeast Association of Fish and Wildlife Agencies, annual meeting, 2020. Virtual (COVID-19).

Enwright D, **Needle DB**. Microbiology Culture Results from 156 Sheep & 204 Goats at the NHDVL from 2012-2019. Undergraduate Research Conference, University of New Hampshire, April 29th 2020, Durham, NH.

Caires K, **Needle DB**. Mastitis Pathogen Incidence Patterns in Conventional Versus Organic Dairy Operations in Northern New England. Undergraduate Research Conference, University of New Hampshire, April 29th 2020, Durham, NH.

Caires K, **Needle DB**. Diagnostic Findings in 300 Free-Ranging and Zoo-Housed North American Porcupines (*Erethizon dorsatum*) from US Northern Border States and Canada, 2000-2019. Undergraduate Research Conference, University of New Hampshire, April 29th 2020, Durham, NH.

Park JY, Monahan CF, **Needle DB**, Sidor IF. Diagnostic Findings of Wild Moose Submission to NHVDL from 2017- 2019. Undergraduate Research Conference, University of New Hampshire, April 29th 2020, Durham, NH.

Ball J, Mydosh J, Gibson R, **Needle DB**, Andam C. Species Diversity of Methicillin Resistant Staphylococcus from Domestic and Wildlife Animals. Undergraduate Research Conference, University of New Hampshire, April 29th 2020, Durham, NH.

Needle DB. Completed and Ongoing Diagnostic and Research Findings in Wildlife at the NHVDL. NH Fish & Game semiannual Wildlife Division meeting, December 11. 2019. Concord NH.

Needle DB. Postmortem Examination Techniques for Wildlife Rehabilitators. Wildlife Conference, October 19, 2019. Windham NH.

Needle DB. Interesting Diagnostic Cases and Study Results from Wildlife at the NHVDL. Wildlife Conference, October 19, 2019. Windham NH.

Needle DB. Diagnostic vignettes from the NHVDL – from H&E to TEM. VT/NH Society of Histotechnology Meeting. May 4th, 2019, Manchester NH.

Leef S, Elswa S, **Needle DB**. A Developmental Study of Apoptotic Markers and Histamine Receptors in Cephalopod Statocysts. Undergraduate Research Conference, University of New Hampshire, April 26-7th 2019, Durham, NH

Wrath K, Sidor IF, **Needle DB**. Diagnostic Findings in 140 Marine Mammals Examined at the New Hampshire Veterinary Diagnostic Laboratory 2009-2018. Undergraduate Research Conference, University of New Hampshire, April 26-7th 2019, Durham, NH

Enwright D, **Needle DB**. Diagnostic Findings in Caprine and Ovine Submissions to the NHVDL 2006-2018. Undergraduate Research Conference, University of New Hampshire, April 26-7th 2019, Durham, NH

Amador S, McGonagle C, **Needle DB**, Gibosn R, Andam CM. Epidemiology of Staphylococcus Bacteria from Pets and Wild Carnivores in New England. Undergraduate Research Conference, University of New Hampshire, April 26-7th 2019, Durham, NH

David B. Needle, Robert Gibson, Wise AG, Maes RK, Sidor IF, Mathewson A, Benton C, Anis E, Wilkes RP. Concurrent infection of skunk adenovirus-1, *Listeria monocytogenes*, and a distinct clade of canine distemper virus in a Gray fox (*Urocyon cinereoargenteus*). Northeast Association of Fish and Wildlife Agencies, April 15, 2019, Groton, CT.

Anis E., **Needle DB**. Stevens B., Yan L. and Wilkes RP. Genetic characterization of canine distemper viruses circulating in wildlife in the United States. American Association of Veterinary Laboratory Diagnosticians (AAVLD) meeting, Kansas city, Missouri. October 2018

David B. Needle. Comparative Pathology and Emerging Infectious Diseases of Wildlife and Domesticated Animals. New England Veterinary Conference, September 28, 2018, Portland, ME.

David B. Needle, María J. Forzán, Edward J. Dubovi, Krysten L. Schuler, Nicholas A. Hollingshead, Chris Bernier, Julie C. Ellis, Brian A. Stevens, Patrick Tate, Eman Anis, Rebecca P. Wilkes. Infection with a divergent clade of canine distemper virus in ten mesocarnivores in New Hampshire and Vermont from 2016-2017. Northeast Association of Fish and Wildlife Agencies, April 17, 2018, Burlington, VT.

Brian Stevens, **David B. Needle**, Rob Gibson, Jennifer Vashon, Julie Ellis, Michael Yabsley, Ryan Troyer, Liam Hendrikse. Naturally occurring diseases in the Canada Lynx (*Lynx canadensis*) population of Maine. Northeast Association of Fish and Wildlife Agencies, April 17, 2018, Burlington, VT.

Inga F. Sidor, **David B. Needle**, Brian Stevens, Rob Gibson, Laura Goodman, Anil J. Thachil Sonja Ahlberg. Dermatophytosis in a North American Porcupine (*Erethizon dorsatum*). AAZV 24nd Annual Zoo & Wildlife Pathology Workshop, September 24, 2017, Dallas, TX.

D. Needle; F. Del Piero; R. Riis; R. Maes; A.; K. Mullaney; J. Ferracone; I. Langohr. A Histological and Molecular Study of Ocular Feline Infectious Peritonitis in Domestic Cats. World Small Animal Veterinary Association World Congress Proceedings, May 15-18, Bangkok, Thailand.

Needle DB, Del Piero F, Riis RR, Maes R, Wise A, Mullaney K, Langohr I. FIP Ophthalmitis: Histopathological, immunohistochemical, and RT-PCR findings in 35 cats. Annual Meeting of the American College of Veterinary Pathologists, November 16-20, 2013, Montreal Canada

Needle DB, Fitzgerald SD. Hypertrophic cardiomyopathy and disseminated Toxoplasmosis in a cat. Annual Summer Meeting of the Midwest Association of Veterinary Pathologists,. August 1-3, 2013, Wildlife Prairie Park, Peoria, IL

Anastasio J, Sharp CR, **Needle DB**. Histopathology of Lung Lobes in Cats with Pyothorax: 17 Cases (1987 – 2010) J Vet Emerg and Critic Care. 2012;22(s2):s3