Dr. Valerie McKenzie

Associate Professor
Department of Ecology & Evolutionary Biology
University of Colorado Boulder
Boulder, Colorado USA 80309
(303) 492-7557, valerie.mckenzie@colorado.edu
https://mckenzielab.com

Appointments

2020- present	**Associate Chair of Graduate Studies**, Ecology & Evolutionary Biology (EBIO) University of Colorado Boulder
2017- 2018	**Interim Graduate Chair**, EBIO, University of Colorado Boulder
2017-present	**Associate Professor**, EBIO, University of Colorado Boulder
2009-2016	**Assistant Professor**, EBIO, University of Colorado Boulder
2008-2009	**Staff Scientist**, Disease Ecologist at the National Ecological Observatory Network (NEON), Boulder, Colorado
2006-2008	**Postdoctoral Research Associate**, EBIO, University of Colorado Boulder

Education

2005 **PhD., Ecology**: University of California Santa Barbara
Dissertation: Tropical amphibian parasite communities: the role of anthropogenic effects associated with land use.

2000 **MS., Zoolo**gy: University of Connecticut, Storrs, CT
Thesis: The parasites of Guatemalan reptiles and amphibians.

1997 **BS., Biology**: University of Connecticut, Storrs, CT
Honors thesis: Three new genera of tapeworms from the Australian sawshark, *Pristiophorus cirratus*.

Current Research Interests

- Symbiotic microbes of animals and host health
- Pathogen interactions with symbiotic animal microbes
- Symbiotic microbes and host immune system function
- Endangered species conservation
- Innovation of probiotic tools for animal conservation
- Invasive species and pathogen spillover
- Microbes and parasites as forensic indicators in wildlife trafficking

Recent Honors

Chair of Morris Animal Foundation Wildlife Scientific Advisory Board: 2020- 2021.
The Foundation invited me to lead the program after 3 years of service on the board.

CU Boulder Research and Innovation Office Faculty Fellows Program: 2019-2020.
This program selected 15 faculty from across the CU Boulder campus to participate in leadership training retreats, workshops, and events.

CU Boulder Faculty Mentor Award: 2019.

Research Grant Funding (Total funding as a PI = $4.2M)

- **NSF: Innovative Graduate Program: $499,997**, 2021-2024.
  Project title: FIRED UP: An immersive early field experience program to build community, support inclusivity, and foster large scale research ideas. **Lead PI: Valerie McKenzie**, coPIs: Lisa Corwin, Nancy Emery, Julian Resasco, and Scott Taylor.
  See https://www.ebiofiredup.com
- **NSF: Mid-Career Award, Integrative Organismal Systems: $358,369**, 2021-2024.
  Project title: MCA: Integrating immune system and microbiome function during amphibian development. **Lead PI: Valerie McKenzie**.
- **Colorado Division of Wildlife: $24,012**, 2021-2022.
  Project title: Boreal toad probiotics: continued studies on treatment approaches to reduce Bd disease. **Lead PI: Valerie McKenzie**.
- **US Fish & Wildlife Service: $199,516**, 2019-2022.
  Project title: A novel forensics tool using microbes to inform the provenance of animals in the wildlife trade. **Lead PI: Valerie McKenzie**.
- **Morris Animal Foundation: $141,594**, 2019-2021.
  Project title: Moving amphibian probiotics from the lab to wild populations under threat from disease. **Lead PI: Valerie McKenzie**.
- **Colorado Division of Wildlife: $105,000**, 2016-2019.
  Project title: Investigating probiotic tools for boreal toad conservation. **Lead PI: Valerie McKenzie**.
- **Templeton Foundation: $977,501**, 2013-2016
  Project title: Convergent evolution of the vertebrate microbiome.
  Lead PI: Valerie McKenzie, coPI Rob Knight
- **Keck Foundation: $1M**, 2013-2016.
  Project title: The Earth Microbiome Project.
  PI: Rob Knight, coPIs: Aaron Clauset, Robin Dowell, Noah Fierer, Jack Gilbert, Ryan Gill, Janet Jansson, Manuel Lladser, **Valerie McKenzie**
- **Bat Conservation International: $2,800**, 2013-2014
  Project title: To the bat cave: unraveling environmental influences on bat symbionts.
  Lead PI: Valerie McKenzie, Collaborator: Christine Avena (graduate student)
- **NSF - Population and Community Ecology Section: $400,000**, 2012-2014.
  Project title: Symbiotic microbial communities on amphibian skin and their role in disease resistance. **Lead PI: Valerie McKenzie**, coPI: Rob Knight.
- **Boulder County Open Space: $6,238**, 2011-2012.
  Project title: Distribution of an invasive species and an amphibian pathogen in the Front Range of Colorado. **Lead PI: Valerie McKenzie**. Collaborator: Anna Peterson (graduate student).
- **CU Innovative Grant Program, Faculty Seed Grant: $48,942**, 2010-2011.
  Project title: Symbiotic microbial communities on amphibian skin and their role in disease resistance. **Lead PI: Valerie McKenzie**
- **National Fish and Wildlife Foundation**: $60,000, 2009-2012.
  Project title: Restoring Colorado wetlands to benefit native amphibians.
  Lead PI: Valerie McKenzie, coPI: Pieter Johnson.

- **NSF - Ecology section, $372,911**, 2008-2011.
  Project title: Linking land use change, host diversity, and amphibian malformations.
  PI: Pieter Johnson, coPIs: Valerie McKenzie and Alan Townsend.
- **Colorado Division of Wildlife: $43,592**, 2008-2009.
  Project title: Effects of land use, invasions and disease on Colorado's Northern leopard frog (*Rana pipiens*). PI: Pieter Johnson, coPI: Valerie McKenzie.
- **World Wildlife Fund**: Kathryn Fuller Postdoctoral Fellowship 2008, runner-up finalist.

Publications

* Indicates last author position and research product of the McKenzie lab
McKenzie lab mentees: †graduate student, ⁺undergraduate, ¥post-doctoral researcher
Total 54 peer-reviewed publication, McKenzie GoogleScholarProfile

†Alexiev, A, †Chen, MY, †Korpita, TM, and **VJ McKenzie***. In review. Together or alone: evaluating the pathogen inhibition potential of bacterial cocktails against an amphibian pathogen.

Kueneman, JG, Bletz, M, Becker M, Gratwicke, B, Garcés, O, Hertz, A, Holden, W, Ibáñez, R, Loudon,A, **McKenzie, VJ**, Parfrey, L, Sheafor, B, Rollins-Smith, L, Richards-Zawacki, C, Voyles, J, and D Woodhams. ACCEPTED. Effects of captivity and rewilding on amphibian skin microbiomes. *Biological Conservation.*

†Chen, Melissa; ¥Kueneman, Jordan; González, Antonio; Humphrey, Greg; Knight, Rob and **VJ McKenzie***. ACCEPTED. Fungal-inhibiting bacteria on amphibian skin predict fungal infection and disease severity. *Molecular Ecology*.

†Chen, MY, †Alexiev, A, and VJ McKenzie. ACCEPTED. Bacterial biofilm thickness and fungal inhibitory bacterial richness both prevent establishment of the amphibian fungal pathogen *Batrachochytrium dendrobatidis*. *Applied and Environmental Microbiology.*

McKenzie, VJ and A. Weier. Book Chapter, "Invasive animal species and disease ecology." in *The Ecology of Infectious Diseases: Methods on evolution, biodiversity, and environmental interactions.* ACCEPTED.

†Alexiev, A., †Chen, M.Y. and **V.J. McKenzie***, 2021. Identifying fungal-host associations in an amphibian host system. *Plos One*, 16(8), p.e0256328.

Mcdonald, J.E., Harris, R.N., Doonan, J., Carryl, S., Sze, M., **McKenzie, V. J.**, and J.A. Gilbert. 2020. Host microbiomes and disease. In: *Microbiomes of Soils, Plants and Animals: An Integrated Approach*, Cambridge University Press: 122-153.

¥Song, S.J., Sanders, J.G., Delsuc, F., Metcalf, J., Amato, K., Taylor, M.W., Mazel, F., Lutz, H.L., Winker, K., Graves, G.R., Humphrey, G., Gilbert, J.A., Hackett, S.J., White, K.P., Skeen, H.R., Kurtis, S.M., Withrow, J., Braile, T., Miller, M., McCracken, K.G., Maley, J.M., Ezenwa, V.O., Williams, A., Blanton, J.M., **McKenzie, V.J.**, and R. Knight. 2020. Comparative analyses of vertebrate gut microbiomes reveal convergence between birds and bats. *MBio*, 11 (1).

¥Kueneman, J.G, Bletz, M.C., **McKenzie, V.J.**, Becker, C.G., Joseph, M., Abarca J.G., Archer, H., †Arellano, L., Bataille, A., Becker, M., Belden, L., Crottini, A., Geffers, R., Haddad, C.F.B., Harris, R.N., Holden, W., Hughey, M., Jarek, M., Kearns, P.J., Kerby, J.L., Kielgast, J., Kurabayashi, A., Longo, A., Loudon, A., MedinaM., Nuñez, J.J., Perl, R.G.B., Pinto-Tomás, A., Falitiana, C., Rabemananjara, C.E., Rebollar, E.A., Rodríguez, A., Rollins-Smith. L., Stevenson, R., Tebbe, C.C., Vargas Asensio, G., Waldman, B., Walke, J.B., Whitfield, S.M., Zamudio, K., Zúñiga

Chaves, I., Woodhams, D.C. and M. Vences. 2019. Community richness of amphibian skin bacteria correlates with bioclimate at the global scale. *Nature Ecology & Evolution*, 3(3):381-389.

[¥]Song, S., Sanders, J.G., Baldassare, D.T., Chaves, J.A., Johnson, N.S., Piaggio A.J., Stuckey, M.J., Novakova, E., Metcalf, J.L., Chomel, B.B., Aguilar-Setién, A., Knight, R., and **V.J. McKenzie***. 2019. Is there convergence of gut microbes in blood-feeding vertebrates? Invited for special issue in *Philosophical Transactions of the Royal Society B*, 374 (1777):20180249.

West, A.G., Waite, D., Deines, P., Bourne, D.G., Digby, A., **McKenzie, V.J.**, and M.W. Taylor. 2019. The microbiome in threatened species conservation. *Biological Conservation*, 229: 85-98.

Resasco, J., Bitters, M.E., Cunningham, S.A., Jones, H.I., **McKenzie, V.J.**, and K.F. Davies. 2019. Experimental habitat fragmentation disrupts nematode infections in Australian skinks. *Ecology*, 100 (1): e02547.

McKenzie, V.J., Kueneman, J.G. and Harris, R.N., 2018. Probiotics as a tool for disease mitigation in wildlife: insights from food production and medicine. Invited for Special Issue: The Year in Ecology and Conservation Biology. *Annals of the New York Academy of Sciences*, 1429 (1): 18-30.

Amato, K.R., Sanders, J.G., Song, S.J., Nute, M., Metcalf, J.L., Thompson, L.R., Morton, J.T., Amir, A., **McKenzie, V.J.**, Humphrey, G. and Gogul, G., 2018. Evolutionary trends in host physiology outweigh dietary niche in structuring primate gut microbiomes. *The ISME Journal*, p.1.

[¥]Prest, T.L., Kimball, A.K., [†]Kueneman, J.G. and V.J. **McKenzie***, 2018. Host-associated bacterial community succession during amphibian development. *Molecular Ecology*, 27(8), pp.1992-2006.

Abarca, J.G., Vargas, G., Zuniga, I., Whitfield, S.M., [¥]Woodhams, D.C., Kerby, J., **McKenzie, V.J.**, Murillo-Cruz, C. and Pinto-Tomás, A.A., 2018. Assessment of bacterial communities associated with the skin of Costa Rican amphibians at La Selva biological station. *Frontiers in Microbiology*, 9.

[¥]Kueneman, J.G., Weiss, S. and **V.J. McKenzie***, 2017. Composition of micro-eukaryotes on the skin of the Cascades frog (*Rana cascada*e) and patterns of correlation between skin microbes and *Batrachochytrium dendrobatidis*. *Frontiers in Microbiology*, 8, p.2350.

Metcalf, J.L., Song, S.J., Morton, J.T., Weiss, S., Seguin-Orlando, A., Joly, F., Feh, C., Taberlet, P., Coissac, E., Amir, A. and Willerslev, E., Knight R, **McKenzie VJ**, and L. Orlando 2017. Evaluating the impact of domestication and captivity on the horse gut microbiome. *Scientific Reports*, 7(1), p.15497.

Thompson LR, Sanders JG, McDonald D, Amir A, Ladau J, Locey KJ, Prill RJ, Tripathi A, Gibbons SM, Ackerman G, Navas-Molina JA, Janssen S, Morton JT, Jiang Lingjing, [¥]Song SJ, Owens SM, **McKenzie VJ**, Fierer N, Fuhrman JA, Clauset A, Stevens RL, Shade A, Pollard KS, Goodwin KD, Jansson JK, Gilbert JA, and R Knight. 2017. A communal catalogue reveals Earth's multiscale microbial diversity. *Nature*, 551(7681).

Barnhart, K., Forman, M.E., Umile, T.P., [¥]Kueneman, J., **McKenzie, V.J.**, Salinas, I., Minbiole, K.P. and Woodhams, D.C., 2017. Identification of bufadienolides from the boreal toad, *Anaxyrus boreas*, active against a fungal pathogen. *Microbial Ecology*, 74(4), pp.990-1000.

McKenzie, V.J., Song, S.J., Delsuc, F., Prest, T.L., Oliverio, A.M., Korpita, T.M., Alexiev, A., Amato, K.R., Metcalf, J.L., Kowalewski, M. and Avenant, N.L. et al., 2017. The effects of captivity

on the mammalian gut microbiome. *Integrative and ComparativeBiology*, 57(4), pp.690-704.

Bletz, M.C., Archer, H., Harris, R.N., **McKenzie, V.J.,** Rabemananjara, F.C., Rakotoarison, A. and Vences, M., 2017. Host ecology rather than host phylogeny drives amphibian skin microbial community structure in the biodiversity hotspot of Madagascar. *Frontiers in Microbiology*, 8, p.1530.

Piovia-Scott, J., Rejmanek, D., [¥]Woodhams, D.C., Worth, S.J., Kenny, H., **McKenzie, V.J.**, Lawler, S.P. and Foley, J.E., 2017. Greater species richness of bacterial skin symbionts better suppresses the amphibian fungal pathogen *Batrachochytrium dendrobatidis*. *Microbial Ecology*, 74(1), pp.217-226.

[†]Avena, C.V., Parfrey, L.W., Leff, J.W., Archer, H.M., Frick, W.F., Langwig, K.E., Kilpatrick, A.M., Powers, K.E., Foster, J.T. and **McKenzie, V.J.***, 2016. Deconstructing the bat skin microbiome: influences of the host and the environment. *Frontiers in Microbiology*, 7, p.1753.

[†]Kueneman, J.G., Woodhams, D.C., Harris, R., Archer, H.M., Knight, R. and **McKenzie, V.J.***, 2016. Probiotic treatment restores protection against lethal fungal infection lost during amphibian captivity. *Proc. R. Soc. B*, 283(1839), p.20161553.

Hyde, E.R., Navas-Molina, J.A., [¥]Song, S.J., [†]Kueneman, J.G., Ackermann, G., Cardona, C., Humphrey, G., Boyer, D., Weaver, T., Mendelson, J.R. and **McKenzie, V.J.**, et al. 2016. The oral and skin microbiomes of captive komodo dragons are significantly shared with their habitat. *mSystems*, 1(4), pp.e00046-16.

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[†]Kueneman, J.G., [¥]Woodhams, D.C., Van Treuren, W., Archer, H.M., Knight, R. and **V.J. McKenzie*,** 2016. Inhibitory bacteria reduce fungi on early life stages of endangered Colorado boreal toads (*Anaxyrus boreas*). *The ISME Journal*, 10(4), p.934.

Loudon, A.H., Venkataraman, A., Van Treuren, W., Woodhams, D.C., Parfrey, L.W., **McKenzie, V.J.**, Knight, R., Schmidt, T.M. and Harris, R.N., 2016. Vertebrate hosts as islands: dynamics of selection, immigration, loss, persistence, and potential function of bacteria on salamander skin. *Frontiers in Microbiology*, 7, p.333.

[¥]Woodhams, D.C., Bletz, M., [†]Kueneman, J. and **V.J. McKenzie***, 2016. Managing amphibian disease with skin microbiota. *Trends in Microbiolog*y, 24(3), pp.161-164.

Rebollar, E.A., Antwis, R.E., Becker, M.H., Belden, L.K., Bletz, M.C., Brucker, R.M., Harrison, X.A., Hughey, M.C., [†]Kueneman, J.G., Loudon, A.H. and **McKenzie, V.J.**, 2016. Using "omics" and integrated multi-omics approaches to guide probiotic selection to mitigate chytridiomycosis and other emerging infectious diseases. *Frontiers in Microbiology*, 7, p.68.

Holden, W.M., Hanlon, S.M., [¥]Woodhams, D.C., Chappell, T.M., Wells, H.L., Glisson, S.M., **McKenzie, V.J.**, Knight, R., Parris, M.J., and L. Rollins-Smith. 2015. Skin bacteria provide early protection for newly metamorphosed southern leopard frogs (*Rana sphenocephala*) against the frog-killing fungus, *Batrachochytrium dendrobatidis*. *Biological Conservation,* DOI: 10.1016/j.biocon.2015.04.007

[¥]Woodhams DC, Alford R, Archer HM, Becker M, Belden L, Bell SC, Bletz M, Davis L, Flechas V, Lauer A, Harris RN, Holden W, Hughey M, Ibañez R, [†]Kueneman JG, Reinert L, Rollins-Smith L, Roman-Rodriguez F, Walke J, Knight R, and **VJ McKenzie*.** 2015. Antifungal isolates database of amphibian skin-associated bacteria and function against emerging fungal pathogens: *Ecological Archives* E096-059. *Ecology*, 96(2), 595-595.

[†]Peterson, A. C. and **V.J. McKenzie***. 2014. Investigating differences across host species and scales to explain the distribution of the amphibian pathogen *Batrachochytrium dendrobatidis*. *PLoS ONE*, 9(9), e107441.

[¥]Woodhams, D. C., Brandt, H., Baumgartner, S., Kielgast, J., Küpfer, E., Tobler, U.,Davis, L.R., Schmidt, B.R., Bel, C., Hodel, S., Knight, R., and **V.J. McKenzie***. 2014. Interacting symbionts and immunity in the amphibian skin mucosome predict disease risk and probiotic effectiveness. *PLoS ONE*, 9(4), e96375

Loudon, A.H., [¥]Woodhams, D.C., Parfrey, L.W., Archer, H.M., Knight, R., **McKenzie, V.J.**, and R.N. Harris. (2014). Microbial community dynamics and effect of environmental microbial reservoirs on red-backed salamanders (*Plethodon cinereus*). *ISME Journal,* 8(4), 830-840.

[†]Kueneman, J.G., Parfrey L.W., [¥]Woodhams, D.C., Archer, H.M., Knight, R., and **V.J. McKenzie*** 2014. The amphibian skin-associated microbiome across species, space and life history stages. *Molecular Ecology*, 23(6), 1238-1250. (Invited for special issue entitled, "Nature's Microbiome".)

[†]Peterson, A.C., Richgels, K.L.D., Johnson, P.T.J., and **V.J. McKenzie***. 2013. Investigating the dispersal routes used by an invasive amphibian, *Lithobates catesbeianus*, in human-dominated landscapes. *Biological Invasions*. doi 10.1007/s10530-013-0442-y

McKenzie, V.J., Hall, W.E., and R.P. Guralnick. 2013. New Zealand mudsnails in Boulder Creek, Colorado: environmental factors associated with fecundity of a parthenogenic invader. *Canadian Journal of Zoology* 91: 30-36.

McMahon, T.A., Brannelly, L.A., Chatfield, M.W.H., Johnson P.T.J., Joseph, M.B., **McKenzie, V.J.**, Richards-Zawacki, C.L., and J.R. Rohr. 2012. The chytrid fungus, *Batrachochytrium dendrobatidis*, has non-amphibian hosts and releases chemicals that cause pathology in the absence of infection. *PNAS*. doi: 10.1073/pnas.1200592110

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McKenzie, V.J. and A.C. [†]Peterson. 2012. Pathogen pollution and the emergence of a deadly amphibian pathogen. *Molecular Ecology* 21: 5151-5154.

Johnson, P.T.J., Hoverman, J.T., **McKenzie, V.J.,** Blaustein, A.R., and K.L.D. Richgels. 2012. Urbanization and wetland communities: applying metacommunity theory to understand the local and landscape effects. *Journal of Applied Ecology*. doi: 10.1111/1365-2664.12022

Saviola, A.J., **McKenzie, V.J.**, and D. Chizar. 2012. Predatory behavior responses to chemical and visual stimuli in five species of colubrid snakes. *Acta Herpetologica* 7(1): 91-103.

McKenzie, V.J., Bowers, R.M., Fierer, N., Knight, R., and C.L. Lauber. 2011. Co-habiting amphibian species harbor unique skin bacterial communities in wild populations. *ISME Journal.* doi:10.1038/ismej.2011.129.

Johnson, P.T.J., **McKenzie, V.J.**, Peterson, A.C., Kerby, J.L., Brown, J., Blaustein, A.R., and Jackson, T. 2011. Regional decline of an iconic amphibian species: understanding multi-scale patterns of leopard frog declines in Colorado. *Conservation Biology*. DOI: 10.1111/j.1523-1739.2010.01645

McKenzie,V.J. and N. [+]Goulet. 2010. Bird community composition linked to human West Nile virus cases along the Colorado Front Range. *EcoHealth.* doi:10.1007/s10393-010-0360-8.

Johnson, P.T.J., Townsend, A.R., Cleveland, C.C., Glibert, P., Howarth, R.W., **McKenzie, V.J.**, Rejmankova, E., and M. Ward. 2010. Linking nutrient enrichment and disease emergence. *Ecological Applications* 20(1): 16-29.

Johnson, P.T.J. and V.J. McKenzie. 2008. Effects of environmental change on helminth infections in amphibians: exploring the emergence of *Ribeiroia* and *Echinostoma* infections in North America. In *The Biology of Echinostomes*, eds. B. Fried and R. Toledo. Springer Science.

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McKenzie, V.J. and J.N. Caira. 1998. Three new genera of tapeworms from the longnose sawshark, *Pristiophorus cirratus*, with description of their modes of attachment to the spiral intestine. *Journal of Parasitology* 84 (2): 409-421.

Teaching at CU Boulder

- **Conservation Biology** (EBIO/ENVS 3040)
  Large undergraduate course (enrollment 70), 4 credits, three lectures per week and a recitation.
- **Parasitology** (EBIO 3630)
  Upper division undergraduate course (enrollment 32), 4 credits, three lectures per week and an extensive laboratory with preserved and live parasites specimens.
- **New graduate student seminar:** (EBIO 6000)
  This 1 credit graduate seminar supports the acclimation of new graduate students with a focus on community building, inclusive pedagogy, and diverse career visiting speakers.
- **Parasites and Pathogens** (EBIO 6120)
  Graduate seminar, 2 credits, involves literature review on class driven topics and development of a meta-analysis group project.
- **Host-associated Microbes** (EBIO 6120)
  Graduate seminar, 2 credits, involves literature review on class driven topics and group work on existing datasets.

- **Conservation Medicine** (EBIO 4800/5800)
  Cross-listed undergraduate and graduate level course (enrollment 22), 3 credits, three lectures per week. This course explores the connections between global change and emerging infectious disease in humans and wildlife.
- Guest lecturer in **Entomology, Disease Ecology**, **Community Ecology**

Mentorship at CU Boulder

Graduate Mentees:

2017-present **Tim Korpita**, advanced to candidacy for PhD. Research focus: Probiotic innovations for Colorado boreal toads under threat from a fungal pathogen.

2021-present **Brendan Hobart**, PhD degree track. Research focus: Linking local temperature variation to landscape synchrony of chytrid infection in amphibians

2022 **Dr. Alexandra Alexiev, PhD.** Dissertation: Investigating the symbiotic fungi and bacteria on the skin of Colorado Boreal toads (*Anaxyrus boreas boreas*) and their interactions with the amphibian pathogen *Batrachochytrium dendrobatidis*. Starting postdoc at Oregon State U.

2021 **Dr. Melissa Chen, PhD.** Dissertation: The structure and function of amphibian skin-associated microbiota. Currently a postdoc at University of British Columbia.

2019 **Dr. Christine Avena, PhD**. Dissertation: The ecology of the bat microbiome. Currently a research scientist at Kaleido Biosciences.

2017 **Dr. Lisette Arellano, PhD.** Dissertation: Understanding parasite ecology at multiple scales: patterns and drivers from two host-parasite systems. Currently the Community Science Program Manager for the Golden Gate National Park Conservancy.

2015 **Dr. Jordan Kueneman, PhD**. Dissertation: Ecology of the amphibian skin-associated microbiome and its role in pathogen defense. Currently a postdoc at Cornell University.

2013 **Anna Peterson, MA.** Thesis: The North American bullfrog (*Lithobates catesbeianus*): dispersal and disease reservoir potential of a problematic invasive species in the Colorado Front Range. Completed PhD at U Tennessee Knoxville, and currently and ORISE Fellow at the Centers for Disease Control.

Undergraduate mentees:

2019 **Gena Rumsey**, *Summa cum laude*. Honors thesis: Methods of testing skin microbiomes of *Anaxyrus boreas* in the face of *Batrachochytrium dendrobatidis*.

2018 **Sofia Corley**, *Magna cum laude*. Honors thesis: Measuring progress: methods of success in endangered species conservation programs.

2016 **Abigail Kimball**, *Summa cum laude*. Honors thesis: Skin microbiome diversity across *Anaxyrus boreas* developmental stages.

2016 **Cerrise Weiblen**, *Summa cum laude*. Honors thesis: Genetic variation in *Janthinobacterium lividum*: an examination of the violacein operon.

2013 **Alexandra Fresch**, *Summa cum laude*. Double major honors thesis in EBIO and Creative Writing: Human gardens: grotesque love and abject terror in a world of parasitic infection.

2013 **Julia Moy**, *Summa cum laude*. Honors thesis: Assessing the biogeography of parasites of the American bullfrog (*Lithobates catesbeianus*) in the native and introduced ranges.

2013 Summer: Mentor for SMART student, **Franklin Roman** from the University of Puerto Rico.

2012 **Robert Adams**, *Summa cum laude*. Honors thesis: A paleoparasitological study of 1300-year old human Nubian mummies.

2011 Summer: Mentor for SMART student, **Alexis Brown** from the University of Maryland Baltimore

2009 **Nicolas Goulet**, *Magna cum laude*. Honors thesis: Bird community composition linked to human West Nile Virus cases along the Colorado Front Range.

Postdoctoral mentees:

2016-2018 **Dr. Tiffany Prest**, currently a research scientist at DoD, DARPA.

2015-2017 **Dr. Jordan Kueneman**, 2018 Smithsonian Tropical Research Institute postdoctoral fellow, currently a postdoc at Cornell University.

2013-2015 **Dr. Doug Woodhams**, co-advised with Rob Knight, currently Assoc. Professor at U. Massachusetts Boston

2012-2014 **Dr. Se Jin Song**, co-advised with Rob Knight, currently Research Director for the Center for Microbiome Innovation at UCSD.

Service

EBIO Department and CU Campus Service

- Associate Chair of Graduate Studies (Fall 2020 - present)
- Re-designed graduate recruitment and admissions program around inclusivity
- Executive Committee member (2014, 2017, 2020-present)
- Interim Graduate Chair (Fall 2017)
- Colloquium committee faculty liaison (2019- present)
- Budget Committee (Fall 2014 - 2016)
- Learning Goals Committee (Spring 2015)
- Graduate Committee (5 terms between Fall 2010 – Fall 2018)
- Curriculum Committee (2009-2014)
- Merit Evaluation Committee (2013, 2018)
- Invited speaker for RIO grant advising panel for Mid-Career competition (2021)
- Graduate School Reviewer for Jing-Lu Harn Fellowship competition (2021)
- CU Innovative Seed Grant Panelist (2011)

Professional Service

- Steering Committee member for the 2022 Front Range Microbiome Symposium
- Host for 2024 American Society of Parasitologists conference in Denver, CO
- External Reviewer for the graduate program, Biology Dept and U. of Wisconsin Milwaukee
- Associate Editor for *Molecular Ecology* (2019-2022)
- Member of the Wildlife Scientific Advisory Board for Morris Animal Foundation (2017-2021); WSAB Chair position in 2021
- NSF Integrative Organismal Systems Panelist (2012)
- NSF Division of Environmental Biology Panelist (2014)
- Reviewer for many Journals and Grant Programs

Outreach

- Volunteer girls soccer coach YMCA, Boulder County United (2015-2022)
- Chytrid Hack Design Session, promoted by Conservation X Labs at the Smithsonian Conservation Biology Institute (October 2014)
- Parasite Family Day at the CU Natural History Museum (January 2013)
- Organizing member of the Americas Latinos Festival (2013 and 2014)
- Member of Colorado Partners in Amphibian and Reptile Conservation (2009-present)

Invited Speaker Presentations

McKenzie, V.J. (2022) “Microbes and wildlife in a rapidly changing world.” **Aspen Ideas Festival**, Aspen, Colorado USA.

McKenzie, V.J. (2021) “How to protect toads from a deadly disease? Smear them with purple goo.” Morris Animal Foundation in collaboration with **TEDx Mile High**.

McKenzie, V.J. (2020) "Ecology of the amphibian skin microbiome." Invited Plenary Speaker at the **New Zealand Microbial Ecology Consortium (NZMEC)**, Auckland, New Zealand.

McKenzie, V.J. (2019)"Fighting pathogens with purple rain." Invited Seminar Speaker at the Biology Dept, **Colorado State University**, Fort Collins, CO, Nov, 2019.

McKenzie, V.J. (2019)"Fighting pathogens with purple rain." Invited Speaker at the **CU Research and Innovation Office Ted-style Talks Event**, Dairy Arts Center, Oct, 2019.

McKenzie, VJ (2019) " Discovering conservation tools in the amphibian skin microbiome," Invited seminar speaker at the **Scripps Fellows in Environmental Journalism**, Boulder, Colorado, Sept 2019.

McKenzie, V.J. (2019)"Why do diseases that affect wildlife seem to be on the rise?" Invited Speaker at **FERAL**, Denver, CO, May, 2019.

McKenzie, V.J. (2019)"Ecology of the amphibian skin microbiome." Invited Speaker at the **Front Range Microbiome Symposium**, Fort Collins, CO, April, 2019.

McKenzie, V.J. (2018)"Discovering conservation tools in the amphibian skin microbiome." Seminar Speaker at the **Morris Animal Foundation**, Denver, CO, May, 2018.

McKenzie, V.J. (2017)"Emerging disease affecting wildlife: from the global scale to the microbial scale." Seminar Speaker at the Dept of Bio-agricultural Sciences and Pest Management, **Colorado State University**, Fort Collins, CO, September, 2017.

McKenzie, V.J. (2017)"Emerging disease affecting wildlife: from the global scale to the microbial scale." Invited Tupper lecture at the **Smithsonian Tropical Research Institute** in Panama City, Panama, March, 2017.

McKenzie, V.J. (2017) "The effects of captivity on the vertebrate microbiome." Invited Speaker at the **American Society of Microbiology** plenary session titled “Conserving wild microbiomes: microbial contributions to the health and survival of endangered species” June 2, 2017 in New Orleans, LA (USA).

McKenzie, V.J. (2017) "Integrating host-associated and environmental microbes." Invited speaker for the Earth Microbiome Project Mini-Symposium at the Center for Microbial Innovation at the **University of California San Diego**, Nov 1, 2017.

McKenzie, V.J. (2017)"Discovering conservation tools in the amphibian skin microbiome." Invited Seminar Speaker for the Department of Integrative Physiology at **CU Boulder**, Feb 20, 2017.

McKenzie, V.J. (2017) "Emerging infectious diseases of wildlife: from the global scale to the microbial scale." Invited Seminar Speaker at the **University of Arizona**, School of Natural Resources and the Environment.

McKenzie, V.J. (2016) “The ecology of emerging wildlife disease from the global scale to the microbial scale,” Invited Speaker for the annual 'Dennis H. Chitty Lecture Series' at **University British Colombia**, Vancouver, BC Canada, September 2016.

McKenzie, VJ (2016) "Emerging disease affecting wildlife: from the global scale to the microbial scale," Invited seminar speaker at the **Scripps Fellows in Environmental Journalism**, Boulder, Colorado, January 28, 2016.

McKenzie VJ (2015) "Amphibian chytridiomycosis," Invited Speaker at the **International Workshop on the Pheromonicin Drug Development Platform**, organized by American Academy of Sciences member Dr. Margaret Riley (UMass). Meeting held in Beijing, China October 18-21.

McKenzie, VJ. (2015) "Ecology of the amphibian skin microbiome," Invited Plenary Speaker at the **Colorado Partners in Amphibian and Reptile Conservation** annual meeting, Greeley, Colorado.

McKenzie, V.J. (2014) "The ecology of emerging wildlife disease from the global scale to the microbial scale," Invited Colloquium Speaker at **University of Auckland**, Auckland, New Zealand.

McKenzie, V.J. (2013) "Wildlife disease, from the landscape scale to the microbial scale," Invited colloquium speaker at **University of Costa Rica**, San Jose, Cost Rica.

McKenzie, V.J. (2013) "Wildlife disease, from the landscape scale to the microbial scale," Invited colloquium speaker at **University of New Mexico**.

McKenzie, V.J. (2012) "Landscape-scale dynamics of amphibian parasites across human-altered ecosystems," Invited colloquium speaker at **Tulane University.**

McKenzie, V.J. (2012) "From tapeworms to microbes, versatility is key to a career in parasitology," Invited oral presentation. **American Society of Parasitologists**, Richmond, Virginia.

McKenzie, V.J. (2011) "Parasitic and infectious disease responses to changing global nutrient cycles," Invited speaker at **University of Colorado**'s Hydrologic Sciences Symposium.

McKenzie, V.J. (2011) "Landscape-scale dynamics of amphibian parasites across human-altered ecosystems," Invited colloquium speaker at **University of Northern Colorado** Biology Department.

McKenzie, V.J. (2007) "Parasitic and infectious disease responses to changing global nutrient cycles." Invited speaker at the Environmental Science Dept. colloquium series, March 2, 2007, **University of Colorado**.