K. Alice Lindsay
Laboratory Manager, Ross Bio-Active Matter Lab
243 Physics, Department of Physics, Syracuse University
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Education

August 2004–May 2011
Cornell University, Ithaca, New York
Master of Science (M.Sc.), summa cum laude
Horticultural Biology: greenhouse management, plant propagation
Thesis: Examining Bud Origin in *Saintpaulia* Floral Chimeras

August 1997–June 2001
Hood College, Frederick, Maryland
Bachelor of Arts (B.A.), cum laude
Communication Arts: journalism, Spanish literature

Experience

September 2020-present
Laboratory Manager, Ross Bio-Active Matter Laboratory
Department of Physics, Syracuse University, Syracuse New York
Design, create, and quality control sequence plasmid expression DNA for both bacterial and eukaryotic cell expression; cell culture maintenance, protein purification, microscopy and image analysis. Mentor and instruct students in high school, undergraduate, and graduate levels to provide continuity in the lab. Collaborate with researchers in other laboratories. Organize and assist with bi-annual BioBootCamp. Procure goods and services necessary to meet project goals. Maintain a total laboratory inventory to track chemicals, consumables, equipment and other laboratory items. Ensure compliance with EHSS and MTA offices. Manage data backups. Arrange for regular laboratory equipment maintenance.

January 2020-September 2020
Greenhouse Coordinator, Integrated Pest Management Specialist
Department of Biology, Syracuse University, Syracuse New York
Oversee plant growth and development for investigators using plant model organisms in greenhouse and growth chamber settings. Develop, execute and serve as the primary Integrated Pest Management (IPM) plan specialist. Monitor for and execute IPM strategies for pest outbreaks. Perform routine monitoring of greenhouse and growth chamber spaces. Develop and enforce greenhouse and growth chamber facility guidelines for sanitation and safety. Train students in greenhouse safety per National Worker Protection Standard (WPS) guidelines. Learn greenhouse system operation from the greenhouse manager.

May 2019-September 2020
Laboratory Manager, Plant Ecology Laboratories
Department of Biology, Syracuse University, Syracuse New York
Investigate plant carbon allocation through their relationship with mycorrhizal fungi in various nutrient profiles, inoculation types, and grazer presence/absence. Operate and maintain specialized equipment for measuring various aspects of plant photosynthesis and nutrient allocation (LICOR, Gasman, C:N Analyzer). Execute protocols related to post-harvest colonization analysis: microscopic examination of stained roots, hyphal/spore extractions. Teach students basic lab skills and assist with their project progress. Inventory and order lab supplies. Serve as laboratory safety officer and act as liaison with Environmental Health and Safety Services (EHSS) office.

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October 2019-
December 2019

Consultant, Molecular Techniques
Whipps Laboratory, Fish and Wildlife Disease Genetics
Department of Environmental and Forest Biology
SUNY-ESF, Syracuse, New York
Instruct incoming Laboratory Manager in qPCR techniques for parasite detection/quantification in zebrafish.

March 2016-
May 2019

Laboratory Manager; Senior Research Support Specialist
Whipps Laboratory, Fish and Wildlife Disease Genetics
Department of Environmental and Forest Biology
SUNY-ESF, Syracuse, New York
Identify, fingerprint, detect and/or quantify fish and wildlife hosts and their parasites using molecular techniques: DNA extraction, PCR/plasmid purification, sequencing, bacterial vector cloning, restriction (enzymatic) digest, DNA fingerprinting (MSATs), qPCR, multiplex PCR detection, and gel electrophoresis. Teach students basic lab skills and molecular techniques to assist in project goals. Maintain zebrafish laboratory facility; practice zebrafish husbandry (breeding, basic care). Inventory and order lab supplies.

January 2016-
March 2016

Laboratory Technician II, Frank Laboratory
Department of Biology, Syracuse University, Syracuse New York
Investigate nutrient content of grassland samples for a project established in 1988 to study the effect of grazers on the coevolved plant-grazer-soil-microbe system found in Yellowstone National Park.

May 2015–
March 2016

Laboratory Technician II, Fridley Laboratory
Department of Biology, Syracuse University, Syracuse New York
Conduct research in Succession across Latitudinal Gradients Network (SLaGNet) project; provide research support for plant ecology laboratory projects.

October 2012–
May 2015

Laboratory Technician II, Althoff/Segraves Laboratories
Department of Biology, Syracuse University, Syracuse New York
Conduct independent research. Assist lab members in molecular systematics, population genetics, and evolutionary ecology using molecular techniques. Assist in lab management: order laboratory supplies, perform routine equipment maintenance and lab cleanup. Maintain greenhouse and common garden experimental plants. Assist with insect rearing. Conduct field studies. Maintain laboratory website. Collect, enter and proof data. Curate specimen inventory.

Certifications and Training

Completed	Certification
2020	DEC Pesticide applicator/technician certification
2020	National Worker Protection Standard: Web-Based Training for Trainers of Agricultural Workers and Pesticide Handlers. EPA WPS TTT W/H 00030
2018	OVPRED500: Zebrafish Online Husbandry Education, University of Alabama
2012	Chemical Hygiene Plan and Hazardous Waste Management, Syracuse University

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Laboratory Research Projects

Ross Bio-Active Matter Laboratory (2020-present)

- Optimized and executed protein purification protocols for various motor proteins, cross-linkers and microtubule-severing enzymes (K401-Biotin/iLid/Micro, K560GFP, MAP65/GFP, pMALc5xMBPsfGFPp60, PRC1).
- Optimized and executed protocols for folding and purification of DNA to form fluorescently-labeled nanorockets.
- Performed gliding assays with K560GFP, a motor protein. Imaged gliding microtubules using spinning disk microscope, performed data analysis using FIJI.
- Performed severing assays with pMALc5xMBPsfGFPp60, a human katanin. Currently working with C-terminal tail (CTT) peptide sequences to observe the inhibition of severing. Imaged severing microtubules using Total Internal Reflection Fluorescence (TIRF) microscopy, performed data analysis with FIJI and Kaleidagraph.

Whipps Fish and Wildlife Disease Genetics Laboratory (2016-2019)

- Optimized primers for 15 MSAT loci; generated and analyzed MSATs for 2,000+ samples to DNA fingerprint New England and Eastern Cottontail rabbits for a population structure and conservation study.
- Performed plasmid vector cloning and sequencing of 18S fragments to determine individual identification of apicomplexan parasites (*Eimeria*) present in rabbit fecal float samples.
- Optimized and conducted PCR/qPCR analysis to determine level of parasitic infection (*Pseudoloma, Myxidium*) in zebrafish samples.
- Conducted sequence analysis of myxozoan parasites through amplification of 18S fragments from various fish/herpetological hosts (frog, fish salamander) and locations (Mexico, Vietnam, Oklahoma).
- Conducted molecular analysis (sequencing, restriction digest) of various wildlife (rabbit, coyote, fox, raccoon) for species identification.
- Performed in-house detection (PCR, gel electrophoresis) of parasites of various wildlife species: *Neospora caninum* in coyote; protist blood parasites of wild turkey and passerines.
- Conducted in-house genetic sex identification of rail and other passerine species. Developed M13-FAM tagging protocol for fragment analysis of species with similar ZW/ZZ alleles.

Frank Laboratory (2016)

- Ran 1,000+ grass samples through C:N analysis for a project focused on the effect of grazers on the coevolved plant-grazer-soil-microbe system found in Yellowstone National Park.

Althoff/Segraves Laboratory (2012-2015)

- Optimized primers for eight loci; generated and analyzed MSATs for 400+ *P. decipiens* from 23 Eastern US populations for a study on host-associated differentiation (HAD) (see publication 3).
- Optimized five primers for graduate student research on *A. ervi.*
- Initiated a study on clonal vs. insect pollination of *Y. aloifolia* using AFLP markers.
- Conducted sequencing analysis of *T. corruptrix* mtDNA; other moth species for phylogenetic resolution.

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Greenhouse Research Projects

Plant Ecology Laboratories (2019-2020)

Germinate, grow, treat, harvest and analyze:

- 300+ *Populus tremuloides* seedlings for a study on plant carbon allocation through their relationship with mycorrhizal fungi in various nutrient profiles and inoculation types using both LICOR and Gasman (CO2 flux) analysis.
- Several species of invasive forbs and grasses for a study on carbon allocation in various nutrient profiles and inoculation types using Gasman (CO2 flux) analysis.
- 12+ native and invasive grass species from Yellowstone National Park for a study on carbon allocation in various nutrient profiles, inoculation types and grazer presence/absence using Gasman (CO2 flux) analysis.

Althoff/Segraves Laboratory (2012-2015)

- Grew and maintained 250+ *Yucca* plants in research greenhouses. Diagnosed and corrected issues related to environmental (light, temperature) regulation; nutrient uptake and pests.
- Maintained clover, alfalfa, oat and stinging nettle populations for aphid rearing.
- Conducted *Yucca* hybrid phenotype study to examine trait inheritance.

Master's Thesis Research (2010-2011)

- Maintained and grew 300+ African violets to flowering stage for phenotypic analysis to complete master's thesis research project.

Field/Experimental Garden Research Projects

Fridley Laboratory (2015-2016)

- Recorded seedling mortality, growth, light, and soil moisture; collected soil, root and herbaceous samples from SLaGNET project pools in three different sites (Syracuse University, Cary institute, Hutchison Memorial Forest).
- Recorded monthly chlorophyll readings for invasive shrub research.
- Performed titrations to assess carbon consumption from soil samples taken from a 20-year study in the UK.

Althoff/Segraves Laboratory (2012-2015)

- Maintained 150+ plants of six *Yucca* species at the Experimental Research Garden.
- Over two seasons, counted flowers, *P. decipiens, T. yuccasella*, and herbivorous insects daily for a host-plant use study (see publication 2).
- Collected and preserved flowers from all six *Yucca* species for morphology study.
- Performed reciprocal crosses of three *Yucca* species for hybridization study.
- Conducted portion of a scent study for the Raguso Laboratory at Cornell University.

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Insect Research Projects

Althoff/Segraves Laboratory (2012-2015)

- Reared *P. decipiens, A. ervi, T. yuccasella* and several different species of oat and pea aphid.
- Conducted mating and behavioral trials with *P. decipiens*; behavioral trials with *A. ervi.*
- Dissected and measured structures of 150+ male and female *P. decipiens* for morphology study. Dissected and observed structures of *T. yuccasella.*
- Photographed moth structures for standardization of dissection procedure; generated a dissection guide for students.
- Counted oviposition scars on Experimental Garden inflorescence stalks. Counted, extracted and preserved *P. decipiens* larvae for future studies.
- Participated in night observations of *P. decipiens* and *T. yuccasella.*

Supervision Experience

Ross Bio-Active Matter Laboratory (2020-present)

- As of April 2022: mentor, train and oversee seven graduate and ten undergraduate students; formerly supervised two Ph.D. students and one post-doc.

Plant Ecology Laboratories (2019-2020)

- Mentored, trained and supervised three graduate and five undergraduate students with laboratory techniques and greenhouse activities.

Whipps Fish and Wildlife Disease Genetics Laboratory (2016- 2019)

- Mentored, trained and supervised two Ph.D. and four undergraduate students with DNA extractions and other molecular techniques including PCR, qPCR, fragment purification and gel electrophoresis.

Althoff/Segraves Laboratory (2012-2015)

- Mentored, trained and supervised one graduate, three undergraduate and two high school students to successfully perform DNA extractions and generate MSATs through PCR.

Scientific Publications

As author:

1. D.H. Achiriloaie, C.J. Currie, J. Michel, M. Hendija, **K.A. Lindsay**, N.M. Schwartz Bolef, G. Lee, M.J. Rust, J.Y. Sheung, M. Das, J.L. Ross, R.J. McGorty, R.M. Robertson-Anderson. Kinesin and Myosin Motors Compete to Drive Rich Multi-Phase Dynamics in Programmable Cytoskeletal Composites. In review: Biological Physics. https://arxiv.org/abs/2112.11260

2. Frank, Douglas A.; Becklin, Katie M.; Penner, Jacob F.; **Lindsay, Alice;** Geremia Chris J. Feast or famine: How is global change affecting forage supply for Yellowstone's ungulate herds? In review: Ecological Applications. EAP22-0039.

3. Sliwinski, Stephen; Schummer, Michael; **Lindsay, K.** ; Whipps, Christopher; Dunn, David; Wagner, Mathew. Morphological Differences and Migration Patterns of Greater and Lesser Snow Geese in New York State. In review: Wildlife Society Bulletin. WSB-21-153.

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4. Whipps, Christopher M., Chris T. McAllister and **K. Alice Lindsay.** Genetic Diversity of Cystodiscus Species in Amphibians in the Southern United States. Journal of Parasitology 2021 107(6). In Press. DOI: 1645/21-73.

5. Althoff, D. M., **Fox, K. A.** and Frieden, T. (2014), The role of ecological availability and host plant characteristics in determining host use by the bogus yucca moth *Prodoxus decipiens*. Ecological Entomology, 39: 620–626. doi: 10.1111/een.12141. http://onlinelibrary.wiley.com/doi/10.1111/een.12141/abstract

6. Darwell, C. T., **Fox, K. A.** and Althoff, D. M. (2014), The roles of geography and founder effects in promoting host---associated differentiation in the generalist bogus yucca moth *Prodoxus decipiens*. Journal of Evolutionary Biology, 27: 2706–2718. doi: 10.1111/jeb.12529**.**
http://onlinelibrary.wiley.com/doi/10.1111/jeb.12529/abstract

7. **Bulkeley, K. Alice Wood.** 2011. Examining Bud Origin in *Saintpaulia* Floral Chimeras: Increasing Axillary Bud Production Using Exogenous Cytokinins, and Examining Histogenic Layer Separation Through Adventitious Bud Generation to Establish Periclinal Chimerism.
http://newcatalog.library.cornell.edu/catalog/8270185

Acknowledged:

1. Cheeseman, A.E., Cohen, J.B., Whipps, C.M., Kovach, A.I., Ryan, S.J. 2019. Hierarchical population structure of a rare lagomorph indicates recent fragmentation has disrupted metapopulation function. Conservation Genetics. https://doi.org/10.1007/s10592-019--1206z

2. Cheeseman, A.E., Ryan, S.J., Whipps, C.M.**,** Cohen, J.B. 2018. Competition alters seasonal resource selection and promotes use of invasive shrubs by an imperiled native cottontail. Ecology and Evolution. 8(22):11122-11133 https://doi.org/10.1002/ece3.4580

3. Fridley, J.D. and Wright, J.P. 2018. Temperature accelerates the rate fields become forests. *Proceedings of the National Academy of Sciences USA* 115: 4702-4706. https://www.pnas.org/content/115/18/4702

4. Peneyra, S.M., Cardona-Costa, J., White, J., Whipps, C.M.**,** Riedel, E.R., Lipman, N.S., Lieggi, C. 2018. Transmission of *Pseudoloma neurophilia* in laboratory zebrafish (*Danio rerio*) when using mass spawning chambers and recommendations for chamber disinfection. Zebrafish. 15(1):63-72.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5792237/

5. Whipps, C.M.**,** Gavard, E.J., Cohen, J., Ryan, S.J. 2019. Gastrointestinal parasites of the New England cottontail (*Sylvilagus transitionalis*) and eastern cottontail (*Sylvilagus floridanus*) in the Hudson Valley, New York. Parasitology Research. 118(7), 2257-2262. http://link.springer.com/article/10.1007/s00436-019-06351-5

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Professional References

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