

# CLAYTON LUDWIG

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## PROFESSIONAL PROFILE

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I am a geneticist specializing in plant breeding, *de novo* domestication, and crop development. I am well experienced in wet-lab and bioinformatic techniques, designing and executing experiments, and greenhouse operations. I am excellent in trouble shooting and repairing systems, process optimization, and integrating automation into workflows to streamline procedures. I am excited to work in the field, at the bench, and on the command line to develop and improve cultivars.

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## EDUCATION

### University of New Hampshire (UNH), Durham, NH

*PhD Genetics*

December 2023

P.I. - Dr. Thomas Davis

Dissertation: Developing Genetic Resources to Advance Quinoa Breeding and *de novo* Domestication of *C. berlandieri*

### University of Connecticut (UConn), Storrs, CT

*BS Horticulture*, GPA: 3.2

May 2014

### SUNY Cobleskill, Cobleskill, NY

*Studies in Agronomy*, GPA: 3.4

May 2012

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## CORE SKILLS

- Flow Cytometry
  - Molecular and computational biology
  - Working within model systems
  - Tissue and callus culture, plant regeneration
  - PCR and primer design
  - DNA isolation and analysis
  - Plant phenotyping
  - Crossing and hybridization
  - Next Generation Sequencing
  - Aseptic techniques
  - Bioinformatics in Linux systems
  - Programming in Bash, Python, and R
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## RESEARCH PROJECTS

### Breeding and Developing Genetic Resources Within the *Chenopodium* Genus to Advance Quinoa Breeding and the *de novo* Domestication of *C. berlandieri*

University of New Hampshire, P.I. Dr. Thomas Davis

2017-2023

- Screened germplasm for domestication-related traits of interest and established a breeding program.
  - Developed genetic and genomic resources in tetraploids and a diploid model species.
  - Presented work to technical audiences during conferences, to non-technical audiences during research awareness events, and provided research progress updates to colleagues and faculty.
  - **Data analysis tools:** BLAST, BWA, Ugene, IGV, Hifiasm, canu, Maker-Augustus, Busco, GetOrganelle, BLAT, MAFFT, Circos, Samtools/Bamtools, RepeatModeler, IQ-TREE, RAxML, FIJI, Docker, Microsoft Office
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## PROFESSIONAL EXPERIENCE

### UConn Marine Biotech Laboratory Research Specialist, Stamford, CT

2015-2017

- Performed and managed culture upkeep, stock solution preparation, equipment sterilization, and training.
- Designed, built, and wrote software for equipment purpose-built to spool sugar kelp “long lines” onto reels.

### Soundkeeper of Connecticut Vessel Captain, Norwalk, CT

2008-2013

- Oversaw daily operations, fleet management, and data collection submitted to the state for funding purposes.

### Clayton D. Ludwig & Associates, LLC, Principal, Darien, CT

2014-2017

- Launched sign making and rapid prototyping business.
- Custom design and development of equipment including mechanical components, PCB design, and programming.
- Processes include CNC, FDM 3D printing, plasma and laser cutting.

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## TEACHING EXPERIENCE

**Introductory Biology Lab**, University of New Hampshire

2017-2022

- Taught an inquiry-based lab covering cell structure, physiological processes, bioinformatics, and genetics.
- Introduced students to experimental design.
- Guided students through writing research reports and finding primary literature.

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## CONFERENCE PRESENTATIONS & PUBLICATIONS

**30<sup>th</sup> Plant and Animal Genomes Conference**, San Diego, CA

Jan 2023

Workshop talk and poster presentation: Breeding and Developing Genetic Resources Within the *Chenopodium* Genus to Advance Quinoa Breeding and the *de novo* Domestication of *C. berlandieri*.

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## FELLOWSHIPS

**University of New Hampshire Summer Teaching Assistant Fellowship (\$3200)**

Summer 2020

Designed and conducted a field experiment which included multiple species within the genus *Chenopodium* to evaluate performance and identify plants with traits of interest.

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