Ella Taagen

Quantitative Geneticist · Data Visualization Expert · USA & EU citizen

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Education

Cornell University — *Ithaca, NY, USA*

Ph.D. in Plant Genetics — *2017 - expected 2022*

- Minors: Plant Molecular Biology and International Agriculture and Rural Development

University of Washington — *Seattle, WA, USA*

B.S. in Molecular, Cellular, Developmental Biology — *2012 - 2016*

- Minor: Nutritional Sciences

Research Experience

Simulating controlled recombination in polyploid genomes — *Cornell University*

Ph.D. | advisor Dr. Mark Sorrells — *2017 - Present*

- Leveraging simulation and bioinformatics tools to better understand the potential for controlled recombination to reveal currently inaccessible genetic diversity and increase control over the inheritance of preferred haplotypes.
- Exploring the biological constraints of meiotic recombination and prediction-based decisions in a plant breeding context.

Fine-mapping grain morphology gene in wheat — *Cornell University*

Ph.D. | advisor Dr. Mark Sorrells — *2017 - Present*

- Applying traditional population development strategies, along with cutting-edge tools in genomics and transcriptomics to better understand the landscape of causal variation based breeding decisions.
- Fine-mapping and characterizing temporal expression profile of grain morphology gene.

Small grains breeding and value chain engagement — *Washington State University*

Post-baccalaureate | advisor Dr. Stephen Jones — *2016 - 2017*

- Surveyed and engaged supply chain stakeholders when setting breeding objectives.
- Delivered lab and field support for graduate student breeding projects sourced from a broad base of genetic diversity.

Circadian rhythm and mechanism of growth-phase transitions in Arabidopsis — *University of Washington*

Undergraduate | advisor Dr. Takato Imaizumi — *2016-2017*

- Assessed mechanistic sequence of genes involved in vegetative to reproductive growth transition and characterized circadian rhythm gene.
- Showcased at undergraduate research symposium.

Center for Global Infectious Disease Research, tuberculosis — *Seattle, WA*

Undergraduate lab assistant | Dr. David Sherman — *2013 - 2014*

- Supported communication between researchers and prepared and maintained solution stocks for the lab.
- Developed a standardized protocol for unique growth media based experiment

Expertise

Genetics	quantitative genetics, allopolyploid genetics, genome to phenome modeling, reference genome database mining and navigation, fine-mapping, QTL mapping, GWAS, RNA-seq analysis, research-based summary statistics
Programming	R, R tidyverse and ggplot, markdown, Linux command line, LaTeX
Bioinformatics	reproducible analyses, Git, multi-omics data, management of whole transcriptome sequencing (17 Gb genome)
Statistics	experimental design, analysis of variance, generalized linear and mixed model, principle component analysis, multi-dimensional data analysis, model comparisons, supervised statistical learning
Plant breeding	mapping population development (>7,000 lines), tissue culture/ growth chamber/ greenhouse/ field, cereal crossing techniques, marker assisted and phenotypic selection, value chain extension
Molecular Biology	DNA/RNA extraction, primer design/optimization, PCR, gel electrophoresis, agrobacterium transformation
Transferable	skillful data visualization, data cleaning and analysis, interdisciplinary communication, independent learner, creative problem solver, cross-functional team and project management, hire/ on-board/ mentor, industry professionalism, relationship building, listserv/ social media management

Publications

1. **Taagen, E.**, Bogdanove, A. J. & Sorrells, M. E. Counting on Crossovers: Controlled Recombination for Plant Breeding. **(2020)** Trends in Plant Science
2. **Taagen, E.**, Bogdanove, A. J. & Sorrells, M. E. Achieving Controlled Recombination with Targeted Cleavage and Epigenetic Modifiers. **(2020)** Trends in Plant Science
3. Sweeney, D. W., Sun, J., **Taagen, E.** & Sorrells, M. E. Genomic Selection in Wheat. (Woodhead Publishing, **(2019)** in Applications of Genetic and Genomic Research in Cereals, 273-302
4. Song, Y.H. *et al.* Molecular basis of flowering under natural long-day conditions in Arabidopsis. **(2018)** Nature Plants

Awards & Scholarships

2020	**Borlaug Scholar**, National Association of Plant Breeders	*USA*
2020	**3rd Place**, C7 Plant and Animal Genome conference poster competition	*San Diego, CA, USA*
2019	**Awardee**, Cornell IARD winter interim travel grant	*India*
2018	**Awardee**, ASA, CSSA and SSSA Congressional Visit Day travel grant	*Washington DC*
2018	**Future Leader in Science**, ASA, CSSA and SSSA	*USA*

Presentations

Topic: Counting on Crossovers: fine-mapping a kernel weight and morphology gene in wheat

2020	**Plant and Animal Genome Conference**, poster pdf	*San Diego, CA*
2019	**ASA/CSSA/SSSA annual meeting**, talk video link	*San Antonio, TX*
2019	**Cornell Plant Breeding and Genetics seminar**, talk video link, peer feedback: **4.8/5**	*Ithaca, NY*

Topic: Dissecting yield: fine-mapping grain weight and shape genes in spring wheat

2019	**Grass Group**, Cornell University seminar series	*Ithaca, NY*
2018	**Cornell Plant Breeding and Genetics seminar**, talk video link, peer feedback: **4.6/5**	*Ithaca, NY*

Topic: Fine-mapping grain weight and shape QTL in spring wheat

2018	**ASA/CSSA annual meeting**, poster abstract	*Baltimore, MD*
2018	**Plant and Animal Genome Conference**, annual grant meeting talk	*San Diego, CA*

Outreach

-	**Twitter @etaagen**, audience: geneticists, breeders, graduate students	-
2018	**Grow NYC Variety Showcase**, audience: chefs, bakers, consumers	*NYC, NY*
2018	**ASA/CSSA/SSSA congressional visit days**, audience: congressperson and staff	*Washington DC*
2018	**Cornell Botanical Garden Judy's day**, audience: children and families	*Ithaca, NY*
2018	**Cornell small grains field days**, audience: farmers, seed companies, extension agents	*Ithaca, NY*

Teaching Experience

Methods of Plant Breeding curriculum design & guest lecture — *Cornell University*

Course PLBRG 4060 — *2019*

- Created and taught lecture and hands-on-learning for fine-mapping/cloning with Dr. Shantel A. Martinez
- View lecture & exercise

Graduate student mentor — *Cornell University*

Cornell Small Grains lab — *2018-2020*

- Hired, trained, and mentored three undergraduate research assistants

Mentorship & Management

Corteva and Cornell School of Integrative Plant Science (SIPS) networking — *Cornell University*

Coordinator — *2020 - Present*

- Built network and relationship pipeline with Corteva Global Academic Relations Manager and Cornell SIPS industry partnerships liaison.
- Developed system for matching 24 graduate students with Corteva scientists based on shared career interests.

Synapsis, Plant Breeding and Genetics GSA

Cornell University

President *2019-2020*

- Executed 2020 graduate student recruitment visitation for 15 students.
- Oversaw communication between current plant breeding and genetics students and faculty.
- Co-authored survey and visualized results to assess the SIPS graduate students satisfaction and concerns with unification of the five sections, career path exploration, mental health resources and inclusion initiatives.
- Served on the SIPS graduate student council.

Plant Breeding and Genetics faculty search committee

Cornell University

Committee member, graduate student representative *2019-2020*

- Screened and evaluated 54 applicant packages, and conducted full day interviews with top 3 candidates (research /teaching /chalk-talk).
- Facilitated graduate student meetings with top candidates and documented graduate student preferences for clear communication to faculty.

ASA, CSSA and SSSA annual leadership conference

San Antonio, TX

Accepted applicant *2019*

- Trained in STEM industry professionalism and charted conflict management strategies.
- Learned personal DiSC assessment and tools for engaging successfully with all DiSC personalities.

Jannink/Sorrells lab meetings

Cornell University

Coordinator *2018-Present*

- Streamlined meeting schedule and presentation rotations with access to centralized Google drive.
- Unified communication across listserv, Slack, and Zoom.

Graduate student mentor

Cornell University

Undergraduate plant science senior honors thesis *2018-2019*

- Trained talented young scientist and supervised honors thesis, titled *Fine-mapping wheat grain weight and length QTL on chromosome 2D.*
- Coached graduate school application and interview process, accepted to five plant sciences PhD programs.

Bonsai Professional Coaching Service

Virtual

Mentee *2018-2020*

- Partnered with leadership coach Loriana Sekarski to identify and apply personalized Clifton Strengths by Gallup.
- Top five strengths: *Learner, Achiever, Focus, Communication, Individualization*.

Graduate Women in Science

Cornell University

Executive of online communications *2017-2019*

- Operated digital outreach and authored biweekly newsletter for >400 listserv members.
- Devised and improved advocacy, educational, and social events based on polled membership interests.

Pioneer Symposium

Cornell University

Organizing committee *2017-2018*

- Coordinated symposium theme and speaker nominations, and established location to seat >200 attendees with technical support.
- Revitalized networking and panel event to highlight and discuss groundbreaking plant breeding innovations

Relevant Workshops

Enrolled	**Statistical Learning,** ten-week course	*edX Stanford Online*
2020	**Collaborative and Reproducible Data Science in R**, Cornell NTRES 6940	*Ithaca, NY*
2019	**Linux for Biologists,** Cornell University Institute of Biotechnology	*Ithaca, NY*
2019	**Cornell IARD,** tours of farms and research stations in Kerala and Telangana, 3 weeks	*India*
2018	**Finding Your Research Voice**, science communications and presentations	*Ithaca, NY*
2018	**Story Collider**, writing true, personal stories about science	*Ithaca, NY*
2018	***Breeding for Quantitative Traits in Plants***, book club facilitator	*Ithaca NY*
2017	**Tucson Plant Breeding Institute,** quantitative genetics bootcamp	*Ithaca, NY*

Affiliations & Memberships

- **National Association of Plant Breeders**, student member, 2020-Present
- **Theoretical and Applied Genetics**, peer reviewer, 2019
- **Crop Science Society of America**, student member, 2017-Present