

Education

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| 2015 – 2019 | Ph.D. Biological Education, Population Genetics University of Northern Colorado, Greeley Advisor: Mitchell McGlaughlin |
| 2010 – 2012 | M.S. Biological Science, Population Genetics University of Northern Colorado, Greeley Advisor: Mitchell McGlaughlin |
| 2007 – 2009 | B.S. University of Northern Colorado, Greeley Cellular and Molecular Biology |
| 1992 – 1997 | Colorado State University, Ft. Collins Anatomy & Physiology |

Work Experience

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| Present | Chief Operating Officer, CannaGen |
| Present | Chief Science Officer, True Cut |
| Present | Associate Lecturer, University of Colorado |
| Present | Laboratory Director/Consultant, Madison Labs |
| Present | Principal Research Director, Board Member, and Course Developer Agricultural Genomics Foundation (501(c)3 non-profit) |
| Present | Affiliate Faculty, University of Northern Colorado |
| 2021 - 2024 | Director of R&D and Education, Shore Organics/420 Organics |
| 2020 - 2021 | Adjunct Faculty, University of Northern Colorado |
| 2019 - 2020 | Freelance Consulting, CCLabCorp Inc. |
| 2019 - 2020 | Research Coordinator, Mile High Labs |
| 2015 - 2019 | Graduate Lecturer & Lab Coordinator, University of Northern Colorado |
| 2012 - 2015 | Genetics Lab Manager , Denver Botanic Gardens |
| 2009 -2012 | Herbarium Coordinator, University of Northern Colorado |

Teaching Experience

University of Colorado, Boulder (Instructor)

- Advanced Cannabis Science (EBIO 4220) online, Spring 2025- present
- Basic Cannabis Science (EBIO 3000) online, Fall 2024 – present
- Modern Cannabis Science (EBIO 4460) online, Fall 2020 – Fall 2024

Shore Organics/420 Organics (Instructor)

- Comprehensive NJ Training Program online, Fall 2022- Summer 2024

University of Northern Colorado (Instructor)

- Introduction to Genetics (BIO 220) online, Fall 2020
- Advanced Human Physiology & Anatomy (BIO 246) Summer 2019

University of Northern Colorado (Assistant Instructor)

- Conservation Biology (BIO 462), Fall 2018

University of Northern Colorado (Graduate Teaching Assistant)

- Human Anatomy & Physiology Lab (BIO 245) 2010-2012 & 2016-2019
- Advanced Human Anatomy & Physiology Lab (BIO 246) 2010-2012 & 2016-2017
- Introduction to Biology (BIO 110) 2015

Gardens on Spring Creek (Instructor)

- Introduction to Botanical Art & Illustration, Summer 2015
- Color Theory, Spring 2015

Grants & Awards

2023 **Stockton University**, Hemp Plastic Research Award \$250,000 (2023)

2012 – 2019 **University of Northern Colorado**

Graduate Dean's Citation for Excellence (2019)

Graduate Dean's Citation for Outstanding Dissertation (2019)

Graduate Student Association. Research/Conference Grant \$600 (2019)

Graduate Student Association. Research/Conference Grant \$600 (2019)

Graduate Student Association. Research/Conference Grant \$150 (2019)

School of Biological Sciences. Research/Conference Grant \$500 (2018)

Graduate Student Association. Research/Conference Grant \$300 (2018)

Graduate Student Association. Research/Conference Grant \$600 (2017)

Gerald Schmidt Memorial Biology Scholarship Award \$375 (2016)

Graduate School. Hutchinson-Lahman Travel Award \$400 (2016)

Graduate Student Association. Research/Conference Grant \$348 (2015)

Graduate Student Association. Research/Conference Grant \$208 (2012)

2017 **Society for In Vitro Biology**, Workshop on Cannabis Best Practices and Regulations Conference invitation and travel award \$1000

2014 **Desert Ecosystem Analysis & Restoration**, Genetic diversity of *Sclerocactus glaucus*. \$6,839

2011 **Colorado Native Plant Society**, Myrna P. Steinkamp Grant \$1000

Publications

Schwabe, A.L., Johnson, V., Harrelson, J. and McGlaughlin, M.E., 2023. Uncomfortably high: Testing reveals inflated THC potency on retail Cannabis labels. *PLoS One*, 18(4), p.e0282396.

Schwabe, A.L., Naibauer, S.K., McGlaughlin, M.E. and Gilbert, A.N., 2022. Human olfactory discrimination of genetic variation within Cannabis strains. *Frontiers in Psychology*, p.6818.

Schwabe, A.L., Hansen, C.J., Hyslop, R.M. and McGlaughlin, M.E., 2021. Comparative genetic structure of *Cannabis sativa* including federally produced, wild collected, and cultivated samples. *Frontiers in Plant Science*, p.2098.

Vergara, D., Huscher, E.L., Keepers, K.G., Pisupati, R., **Schwabe, A.L.**, McGlaughlin, M.E. and Kane, N.C., 2021. Genomic evidence that governmentally produced *Cannabis sativa* poorly represents genetic variation available in state markets. *Frontiers in Plant Science*, 12, p.668315.

Schwabe, A.L. and McGlaughlin, M.E., 2019. Genetic tools weed out misconceptions of strain reliability in *Cannabis sativa*: implications for a budding industry. *Journal of Cannabis Research*, 1(1), pp.1-16.

Schwabe, A.L., 2019. A multifaceted approach to address variation in *Cannabis sativa*. University of Northern Colorado. University of Northern Colorado Dissertation.

- Rudolph, H.A., **Schwabe, A.L.** and Soleimanibarzi, N., 2018. "How Do You Know if They Help?" Implementing Multiple Student-Centered Learning Opportunities in Human Anatomy and Physiology Undergraduate Labs. *HAPS Educator*, 22(3), pp.253-261.
- Rudolph, H.A., **Schwabe, A.L.** and Johnson, V., 2018. "It Started Because of a Snow Day!" Making Online Videos as Customized Learning Tools. *HAPS Educator*, 22(1), pp.69-72.
- Rudolph, H.A. and **Schwabe, A.L.**, 2017. "Yes! Use Your Cell Phones!" Active Learning with Technology in an Anatomy and Physiology Lab. *HAPS Educator*, 21(3), pp.75-79.
- Schwabe, A.L.**, Neale, J.R. and McGlaughlin, M.E., 2015. Examining the genetic integrity of a rare endemic Colorado cactus (*Sclerocactus glaucus*) in the face of hybridization threats from a close and widespread congener (*Sclerocactus parviflorus*). *Conservation Genetics*, 16, pp.443-457.
- Schwabe, A.L.**, Hubbard, A.R., Neale, J.R. and McGlaughlin, M.E., 2013. Microsatellite loci development for rare Colorado *Sclerocactus* (Cactaceae). *Conservation Genetics Resources*, 5, pp.69-72.
- Schwabe, A.L.**, 2012. Analysis of microsatellites from *Sclerocactus glaucus* and *Sclerocactus parviflorus* to assess hybridization levels and genetic diversity. University of Northern Colorado Masters Thesis.

Selected Presentations

- 2025 Presenter: Cannabis Genomics Conference, Berlin Germany (virtual).
- 2025 Panelist: Is Weed Really Getting Stronger? MJ Unpacked, Atlantic City NJ.
- 2025 Presenter: SUNY Cannabis Conference, Niagara Falls NY.
- 2024 Presenter: Curious About Cannabis Master Class, Live Webinar
- 2024 Presenter: Hemp/Cannabis Symposium, Southern Illinois University, Carbondale IL.
- 2024 Panelist: Cannabis Research, MJ Unpacked, Atlantic City NJ.
- 2024 Panelist Cannabis Quality, MJ Unpacked, Atlantic City NJ.
- 2024 Presenter: Cannabis Genomics Conference, Barcelona Spain.
- 2024 Presenter: CANN International Cannabis Chemistry Journal Club live webinar.
- 2024 Presenter: Cannabis Public School, live webinar.
- 2023 Presenter: Curious About Cannabis Master Class, Live Webinar
- 2023 Poster: Emerald Conference, San Diego CA.
- 2022 Presenter & Panelist: CaliSensi Cannabis Growers' Cultivation Conference, Aptos CA.
- 2022 Presenter: Curious About Cannabis Master Class, Live Webinar
- 2022 Presenter: Delta 8 Expo in Partnership with CBD Expo Tour, Orlando FL.
- 2021 Panelist: Delta 8 Expo in Partnership with CBD Expo Tour, Orlando FL.
- 2021 Presenter: Curious About Cannabis Master Class, Live Webinar
- 2021 Presenter: International Cannabinoid Derived Pharmaceuticals Summit, Boston MA.
- 2020 Presenter: Curious About Cannabis Master Class, Live Webinar
- 2019 Poster: Association for Chemoreception Sciences Annual Meeting, Bonita Springs FL.
- 2019 Presenter: Cannabis Aroma, Institute of Cannabis Research Conference, Pueblo CO.
- 2019 Presenter: Cannabis Genetics, Institute of Cannabis Research Conference, Pueblo CO.
- 2019 Presenter: Doctoral Defense, University of Northern Colorado, Greeley CO.
- 2018 Presenter: Botany 2018 Conference, Rochester MN.
- 2018 Presenter: University of Northern Colorado, Greeley CO.
- 2018 Poster: University of Northern Colorado, Greeley CO.
- 2018 Presenter: Cannabis Research Interest Group, University of Northern Colorado, Greeley CO.
- 2018 Presenter: Café Botanique, Denver Botanic Gardens, Denver CO.

2017 Presenter: Society of In Vitro Biology Conference, Raleigh NC.

2017 Presenter: Institute of Cannabis Research Conference, Pueblo CO.

Other Professional Activities

Reviewer For Peer J, Journal of Cannabis Research, BMC Genomics, Scientific Reports, and AoB Plants

Science Committee Member for MJUnpacked and the Emerald Conference at MJBizCon

Board Member for Agricultural Genomics Foundation Board Member

Memberships

- Rocky Mountain Society of Botanical Artists
- American Society of Botanical Artists
- Colorado Native Plant Society
- Botanical Society of America

Education, Research, and Management Skills

Teaching: course development for both synchronous and asynchronous instruction (Basic Cannabis Science, Advanced Cannabis Science, Modern Cannabis Science, Conservation Biology, Anatomy & Physiology, Introduction to Biology), creating syllabi, scheduling content, exam preparation, laboratory development, and individual tutoring and mentorship.

Communication: science communication, college course design, grant proposals and reports, public speaking, Macintosh and PC, Microsoft Office programs (Excel, PowerPoint, Word), scientific and public presentations using PowerPoint and Prezi.

Horticulture: Plant identification and taxonomy, soil science and management, irrigation and water management, pruning and trimming, pest and disease management, plant propagation techniques, nutrient management and fertilization, greenhouse management, integrated pest management (IPM), hydroponics and aquaponics systems, climate control and environmental monitoring, harvesting and post-harvest handling, organic farming practices, crop rotation and companion planting, plant physiology and growth regulation, seed saving and breeding, sustainable agriculture practices.

Quality & Compliance: Regulatory compliance, quality assurance, quality control, standard operating procedures (SOPs), auditing and inspections, good manufacturing practices (GMP), good agricultural practices (GAP), documentation and record-keeping, risk management, product testing and validation, compliance training and education, environmental health and safety (EHS), labeling and packaging compliance, ISO standards, internal and external reporting.

Laboratory: University level course development, protocol development, method validation, project management, science communication, team building and inclusion, data collection, experimental design & management, operating procedure development, data and statistical analysis, inventory management, interpersonal skills, initiative, analytical and critical thinking, collaborative projects, public speaking, leadership.

Software & Technology: Canva, Movavi, Wix, Biorender, iMovie, ChatGPT, Gamma, LearnWorlds, Graphy, Canvas, Blackboard, educational materials, marketing materials, promotional material, social media content creation.

Management: inventory, team leadership, team building and retention, budgeting, organizing, payroll, quality control, quality assurance, supervising, scheduling, marketing.

Selected Popular Press Coverage

March 2022. *The Conversation*.

[Lab tests show THC potency inflated on retail marijuana in Colorado.](#)

May 2019. *Nature*.

[Cannabis used in US research differs genetically to the varieties people smoke.](#)

April 2019. *Marijuana Moment*.

[Federally Produced Marijuana is Closer to Hemp than Commercial Cannabis, Study Shows](#)

December 2018. *Bloomberg Environment*.

[Pot Purveyors Seek Genetic Tweaks as Legal Cannabis Grows.](#)

June 2018. *Marijuana Moment*.

[Marijuana Strain Labeling Likely Misleading, Study Says.](#)

July 2018. *Wired*.

[That Purple Kush You're Toking Might BE a Genetic Imposter.](#)

September 2018. *The Walrus*.

[The High Life: Legalized Marijuana Goes Luxe.](#)

References

Professor Mitchell McGlaughlin

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