Anna Schwabe, PhD | *Cannabis* scientist, researcher & educator
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Education

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

Present	Zennetix, Director of Operations
2022 - Present	True Cut Biosciences, Chief Science Officer
2020 - Present	Associate Lecturer, University of Colorado
2020 - Present	Principal Research Director, Agricultural Genomics Foundation 501(c)3
2025 - 2026	MyFlora DNA, Science Account Executive
2025 -2026	Madison Labs, Lab Director Consultant
2025	CannaGen, Chief Operating Officer
2020 - 2023	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

Selected Publications

Schwabe A. L. 2026. Landrace Strains: Populations Shaped by People and Place. *Fat Nugs Magazine*, Volume 28: Landrace Edition. p.28.

Schwabe, A.L. and Havill, J.S., 2026. A proposed framework for genetic verification and cultivar protection in cannabis. *Trends in Genetics*.

Schwabe, A.L. Schwabe, A., 2026. Knowing Species Matters: Taxonomy and Naming in Cannabis. *Demystifying Cannabis and Hemp: Myths, Mysteries, and Truths*, p.3.

Schwabe, A.L. and Vergara, D., The Debated Nomenclature of *Cannabis sativa*. In *The Cannabis Genome* (pp. 1-23). CRC Press.

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.

Full publication list available on Google Scholar

Selected Presentations

2025 Presenter: McGill University, Seminar Series, Montreal, Canada.
2025 Panelist: Cannabis Breeding Consequences, MJ Unpacked, St. Louis, MO.
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: Peer J, Journal of Cannabis Research, BMC Genomics, Scientific Reports, Trends in Genetics, International Journal of Drug Policy and AoB Plants

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Science Committee Member: MJUnpacked and the Emerald Conference at MJBizCon
Board Member: Agricultural Genomics Foundation (501(c)3 non-profit) and Institute of Cannabis Science (501(c)3 non-profit)
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

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.
Genetic Analysis: STRUCTURE, Maverick, GenAlEx, AMOVA, Arlequin, Genepop, PLINK, EDENetworks**,** FASTQC, Trimmomatic, Bowtie, MEGA, BEAST, DnaSP, R / RStudio, ggplot2, Excel
Software & Technology: Canva, Movavi, Wix, Biorender, iMovie, ChatGPT, Scite.ai, 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.
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.

Selected Popular Press Coverage

March 2022. *The Conversation.*
May 2019. *Nature.*

April 2019. *Marijuana Moment*.
December 2018. *Bloomberg Environment*.
June 2018. *Marijuana Moment*.
July 2018. *Wired*.
September 2018. *The Walrus.*

References

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