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## EDUCATION

- 2017            Ph.D. Chemistry  
University of Massachusetts Boston, Department of Chemistry  
Biological Chemistry Track  
Dissertation: Characterizing chemical identity thinking
- 2011            B.S. Biochemistry  
University of Delaware, Department of Chemistry & Biochemistry

## PROFESSIONAL EXPERIENCE

- 2021 – present                    *Associate Director*  
Office for Undergraduate Research & Artistry  
Colorado State University
- 2020 – present                    *Consultant & CEO*  
Empowered Consulting LLC
- 2019 – 2021                        *Research Scientist*  
Institute for Learning and Teaching  
Colorado State University
- 2017 – 2019                        *Postdoctoral Fellow*  
The Institute for Learning and Teaching  
Colorado State University
- 2011 – 2012                        *Implementation Specialist Intern*  
Agilent Technologies

## FUNDING

CAREER: Critically examining chemistry culture to support adoption of multiculturally inclusive practices. National Science Foundation Award #2146363. Funding received: \$749,401. **PI.**

Collaborative Research: Characterizing the emerging field of departmental change and empowering an inclusive network of practitioners. National Science Foundation Award #2315407. Funding received: \$82,648. **Co-PI.**

Workshop: Exploring Academic Unit Change at Two-Year Colleges. National Science Foundation Award #2230271. Funding received: \$211,261. **Co-PI.**

Understanding the Impacts of Departmental Action Teams on Sustainable Departmental Culture Change and on Undergraduate Student Experiences, Success, and Outcomes. National Science Foundation Award #2021110. Funding received: \$299,986. **Co-PI.**

## **CONSULTING WORK**

May 2023 – present **Client: Reed College**

Role: Facilitator

Scope of work: Planning and facilitating meetings for the chemistry department around their vision and action plan for creating a more inclusive climate for students, staff, and faculty.

Sept. 2022 – present **Client: Oklahoma State University**

Role: Evaluator

Scope of work: Collecting data and providing feedback for the ON-RaMP program, a year-long post-baccalaureate program designed to engage students in research to prepare them for STEM careers.

January 2022

**Client: Appalachian State Inclusive Excellence Team**

Role: Facilitator for professional development

Scope of work: Planned and co-facilitated a full-day workshop on how to apply the Departmental Action Team (DAT) model for supporting change in education at App State.

Fall 2021

**Client: American Physics Society Forum on Education (APS FEd)**

Role: Facilitator

Scope of work: Planned and facilitated meetings to support FEd executive board in re-envisioning its purpose within the larger physics society.

July 2021 – present

**Client: Equity Labs**

Role: Facilitator

Scope of work: Facilitator for Equity Labs professional development, a program developed to support engagement in equitable and inclusive practices in the workplace.

Feb. 2021 –  
May 2022

**Client: APS Inclusion, Diversity, and Equity Alliance**

Role: Facilitator

Scope of work: Facilitator for an Online Learning Community of teams from university physics departments promoting equitable change in their departments.

- February 2021      **Client: APS Inclusion, Diversity, and Equity Alliance**  
 Role: Plenary speaker  
 Scope of work: “Using the Change Dashboard to plan for organizational change.” 30-minute plenary given at their spring conference.
- 2021 – present      **Client: Chemistry and Biochemistry REU Site to Prepare Students for Graduate School and an Industrial Career – Brigham Young University**  
 Role: Program evaluator  
 Scope of work: Evaluation of the recruitment and participant selection process and impact of the program.
- 2020 – 2022      **Client: THRIVE Project – University of Missouri**  
 Role: Researcher  
 Scope of work: Collecting and analyzing data to determine impact of Faculty Learning Communities that are part of the THRIVE Project, contributing a literature review of inclusive teaching practices, mentoring graduate students in education research methods.
- Spring 2020      **Client: Chasteen Consulting**  
 Role: Contract consultant  
 Scope of work: Provided organizational change expertise for the development of a national site visit protocol.

## BOOKS

**Ngai, C.**; Corbo, J. C.; Falkenberg, K.; Geanious, C.; Quan, G. M.; Pawlak, A.; Pilgrim, M.E.; Reinholz, D. L.; Smith, C.; Wise, S. (2020). *Facilitating Change in Higher Education: The Departmental Action Team Model*. Glitter Cannon Press.

Dori, Y., **Ngai, C.**, Szteinberg, G. (Eds.) (2023). *Advances in Chemistry Education Series: Digital Learning and Teaching in Chemistry*. Royal Society of Chemistry. DOI: 10.1039/9781839167942

## PEER-REVIEWED PUBLICATIONS

**Ngai, C.**, Pilgrim, M. E., Reinholz, D. L., Falkenberg, K., Geanious, C., Corbo, J. C., Wise, S. B., Smith, C. E., Stone-Johnstone, A. (2023). Guiding principles for change in undergraduate education: An analysis of a departmental team’s change effort. *Physical Review Physics Education Research*, 19. DOI: 10.1103/PhysRevPhysEducRes.19.020107

- Siegel, M. A., Bae, Y., Morton, T. R., **Ngai, C.**, Khajeloo, M., Mahapatra, S. C., Sharma, R., Nilon, C., Schul, J. (2022). Ch. 22: Faculty learning communities as a route to inclusive excellence in STEM. In S. M. Linder, C. M. Lee, S. K. Stefl, & K. A. High's (Eds.) *Handbook of STEM Faculty Development*. Information Age Publishing.
- Cravens, A. E., Jones, M. S., **Ngai, C.**, Zarestky, J., Love, H. B. (2022). Science facilitation: Navigating the intersection of intellectual and interpersonal expertise in scientific collaboration. *Humanities and Social Sciences Communications*, 9(1), 1-13, DOI: 10.1057/s41599-022-01217-1
- Wise, S. B., **Ngai, C.**, Corbo, J.C., Gammon, M.A., Rivard, J.K., & Smith, C.E. (2022). Toward Institutionalizing Successful Innovations in the Academy. *To Improve the Academy: A Journal of Educational Development*, 41(1), DOI: 10.3998/tia.481
- Reinholz, D. L., Pilgrim, M., Stone-Johnstone, A., Falkenberg, K., Geanious, C., **Ngai, C.**, Corbo, J. C., & Wise, S. (2021). Focus on outcomes: Fostering systemic departmental improvements. *To Improve the Academy: A Journal of Educational Development*, 40(2), DOI: 10.3998/tia.154
- Ngai, C.**; Corbo, J. C.; Quan, G. M.; Falkenberg, K.; Geanious, C.; Pawlak, P.; Pilgrim, M. E.; Reinholz, D. L.; Smith, C.; Wise, S. (2020). Developing the Departmental Action Team Theory of Change. In K. White, A. Beach, N. Finkelstein, C. Henderson, S. Simkins, L. Slakey, M. Stains, G. Weaver, & L. Whitehead's (Eds.) *Transforming Institutions: Accelerating Systemic Change in Higher Education*. Pressbooks.  
<http://openbooks.library.umass.edu/ascnti2020/chapter/ngai-et-al/>
- Ngai, C.**; Pilgrim, M. E.; Reinholz, D. L.; Corbo, J. C.; Quan, G. M. (2020). Developing the DELTA: Capturing cultural changes in undergraduate departments. *CBE-Life Sciences Education*.
- Reinholz, D. L.; Pawlak, A.; **Ngai, C.**; Pilgrim, M. E. (2020). Departmental action teams: Empowering students as change agents in academic departments. *International Journal for Students As Partners*, 4(1), 128-137.
- Quan, G. M.; Corbo, J. C.; Finkelstein, N. D.; Pawlak, A.; Falkenberg, K.; Geanious, C.; **Ngai, C.**; Smith, C.; Wise, S.; Pilgrim, M. E.; Reinholz, D. L. (2019). Designing for institutional transformation: Six principles for department-level interventions. *Physical Review Physics Education Research*. DOI: 10.1103/PhysRevPhysEducRes.15.010141
- Reinholz, D. L., **Ngai, C.**, Quan, G., Pilgrim, M. E., Corbo, J. C., & Finkelstein, N. (2018). Fostering sustainable improvements in science education: An analysis through four frames. *Science Education*. DOI: 10.1002/sce.21526

- Reinholz, D.; Pilgrim, M.E.; Falkenberg, K.; **Ngai, C.**; Quan, G.; Wise, S.; Geanious, C.; Corbo, J.; Finkelstein, N. (2018). Departmental Action Teams: A five-year update on a model for sustainable change. *Reinvention Collaboration*.
- Ngai, C.**; Sevian, H. (2018). Probing the relevance of chemical identity thinking in biochemical contexts. *CBE-Life Sciences Education*, 17(4), ar58, 1-12. DOI: 10.1187/cbe.17-12-0271
- Sevian, H.; Hugi-Cleary, D.; **Ngai, C.**; Wanjiku, F.; Baldoria, J.M. (2018). Comparison of Learning in Two Context-based University Chemistry Classes. *International Journal of Science Education*, 40(10), 1239-1262. DOI: 10.1080/09500693.2018.1470353
- Clinchot, M; **Ngai, C.**; Huie, R; Talanquer, V; Lambertz, J; Banks, G; Weinrich, M; Lewis, R; Pelletier, P; Sevian, H. (2017). Better Formative Assessment. *The Science Teacher*, 69-75.
- Ngai, C.**; Sevian, H. (2017). Capturing Chemical Identity Thinking. *Journal of Chemical Education*. DOI: 10.1021/acs.jchemed.6b00387
- Banks, G., Clinchot, M., Cullipher, S., Huie, R., Lambertz, J., Lewis, R., **Ngai, C.**, Sevian, H., Szteinberg, G., Talanquer, V., Weinrich, M. (2015). Uncovering Chemical Thinking in Students' Decision Making: A Fuel-Choice Scenario. *Journal of Chemical Education*, 92(10), 1610-1618.
- Sevian, H.; **Ngai, C.**; Szteinberg, G.; Brenes, P.; Arce, H. (2015). Concepción de la identidad química en estudiantes y profesores de química: Parte I-La identidad química como base del concepto macroscópico de sustancia. *Educación química*, 26, 13-20.
- Ngai, C.**; Sevian, H.; Talanquer, V. (2014). What is this substance? What makes it different? Mapping progression in students' assumptions about chemical identity. *International Journal of Science Education*, 36, 2438-2461.
- Szteinberg, G.; Balicki, S.; Banks, G.; Clinchot, M.; Cullipher, S.; Huie, R.; Lambertz, J.; Lewis, R.; **Ngai, C.**; Weinrich, M; Talanquer, V.; Sevian, H. (2014). Collaborative Professional Development in Chemistry Education Research: Bridging the Gap between Research and Practice. *Journal of Chemical Education*, 91, 1401-1408.

## WORK IN PROGRESS

- Jones, M., Cravens, A., Zarestky, J., **Ngai, C.**, Love, H. (submitted). Facilitating psychological safety in science and research teams.

## NON-REFEREED WRITING

Wise, S., Corbo, J. C., **Ngai, C.**, Quan, G. (2021, April 30). Departmental change: Sustaining impacts. ASCN blog. <https://ascnhighered.org/ASCN/posts/242618.html>

Corbo, J. C., **Ngai, C.**, Quan, G. (2021, March 17). Departmental change: Engaging in a change initiative. ASCN blog. <https://ascnhighered.org/ASCN/posts/242205.html>

Quan, G., Corbo, J. C., **Ngai, C.**, Wise, S. (2021, February 9). Departmental change: Starting an initiative. ASCN blog. <https://ascnhighered.org/ASCN/posts/241780.html>

**Ngai, C.**, Corbo, J. C., Quan, G., Wise, S. (2021, January 8). Using project principles to anchor changing departments. ASCN blog. <https://ascnhighered.org/ASCN/posts/241158.html>

## PROFESSIONAL WORKSHOPS AND SEMINARS

December 2022 C. Ngai. "Managing our own assumptions and biases and ensuring that participants' needs are met throughout the research process." Learning Session webinar hosted by the Canadian Consortium of Science Equity Scholars (CCSES).

December 2021 C. Ngai, A. Stephens. "Creating Conditions for Compassionate and Resilient Community Work." Webinar hosted by INTEREACH as part of a series on facilitation.

August 2021 C. Ngai, H. Love. "The Art & Science Behind Facilitation: Series Introduction." Webinar hosted by INTEREACH as part of a series on facilitation.

June 2021 C. Ngai, S. Wise, J. Corbo. "Utilizing a Principles-Focused Approach for Change Efforts." 90-minute interactive webinar. Hosted by the American Association for the Advancement of Science (AAAS) and Improving Undergraduate STEM Education (IUSE).

March 2021 C. Ngai, J. Corbo, G. Quan, S. Wise. "Facilitating change through the Departmental Action Team (DAT) Model." 90-minute interactive webinar. Hosted by the Accelerating Systemic Change Network (ASCN).

February 2021 C. Ngai, J. Corbo. "Department-level theories of change." Workshop hosted by the APS Inclusion, Diversity, and Equity Alliance.

- October 2020 C. Ngai, J. Corbo, G. Quan, S. Wise. "Facilitating change through the Departmental Action Team (DAT) Model." 60-minute interactive webinar. Hosted by the American Association of Physics Teachers and the Physics and Astronomy SEA Change project
- November 2019 C. Ngai, K. Falkenberg, J. Corbo, D. Reinholz. "DATs: Facilitated teams supporting change in departmental structures and culture." Interactive workshop. Professional and Organizational Development Network in Higher Education annual conference, Pittsburgh, PA

### PRESENTATIONS OF SCHOLARLY WORK

- July 2022 C. Ngai. "Increasing access to undergraduate research experiences: The OURA Lab." Oral presentation. Biennial Conference on Chemistry Education, Lafayette, IN.
- July 2022 C. Ngai. "Investigating chemistry culture from the perspective of PEERs." Oral presentation, part of session: Moving towards anti-deficit framing in our research and practice. Biennial Conference on Chemistry Education, Lafayette, IN.
- June 2019 C. Ngai, et al. "Characterizing (to promote and sustain) change: The departmental action team (DAT) theory of change." Poster presentation. Gordon Research Conference on Chemistry, Education, Research and Practice, Lewiston, ME.
- April 2019 C. Ngai, D. Reinholz. "Characterizing departmental culture and assessing change with the DELTA survey." Oral presentation. Transforming Institutions, Pittsburgh, PA.
- September 2016 C. Ngai, H. Sevian. "Examining the link between chemical identity thinking and biochemical contexts." Oral presentation. ECRICE, Barcelona, Spain.
- September 2016 C. Ngai, H. Sevian. "How students classify and differentiate substances: characterizing chemical identity thinking." Oral keynote presentation. EuCheMS, Seville, Spain.
- August 2016 C. Ngai, H. Sevian. "Exploring the relevance of chemical identity in biochemical contexts." Oral presentation. ACS Fall National Meeting, Philadelphia, PA.
- June 2015 C. Ngai, H. Sevian. "Understanding how students identify and distinguish substances: Development of the Chemical Substance Identification (CSI)



Survey.” Poster presentation. Gordon Research Conference on Chemistry, Education, Research and Practice, Lewiston, ME.

August 2014 C. Ngai, H. Sevan. “Chemical Identity: What is this substance?” Poster presentation. Gordon Research Conference on Green Chemistry, Hong Kong, China.

July 2014 C. Ngai, H. Sevan and V. Talanquer. “This Substance vs. That Substance: Exploring Chemical Identity,” Oral presentation. International Conference on Chemistry Education, Toronto, ON, Canada.

### INVITED TALKS

2019 C. Ngai. “Changing for good: The Departmental Action Team (DAT) model.” Departmental seminar, University of Northern Colorado. March 30, 2019.

2017 C. Ngai. “An Investigation of Chemical Identity Thinking.” Departmental seminar, University of Colorado Boulder, Colorado. November, 2017.

### PODCASTS

Hill, A., Ngai, C., Salomone, S., & Sawyer, S. (July 2022). Equity Is...Engineered. [Audio podcast episode]. In *Equity Meets Podcast*. <https://www.equity-labs.org/equity-meets-podcast/engineered>

### AWARDS AND SCHOLARSHIPS

August 2019 Commitment to Campus Professional Development Award – Colorado State University  
Awarded funds to travel to the Professional and Organizational Development (POD) 2019 conference to conduct a workshop on facilitation and disseminate research findings from the DAT project

September 2016 Young Chemists Crossing Borders (YCCB) Program Participant – ACS  
Awarded funds to travel to a top European chemistry conference (EuCheMS) as part of the YCCB program for the Northeastern Section of the American Chemical Society (ACS)

- May 2016 Sanofi Genzyme Doctoral Research Fellowship – University of Massachusetts Boston  
Funds awarded by Sanofi Genzyme to selected graduate students to focus exclusively on research during the academic year
- June 2014 Green Chemistry Gordon Research Conference Travel Award – GRC  
Awarded funds to travel to and present a poster at the Green Chemistry Gordon Research Conference in Hong Kong, HK
- September 2012 Distinguished Graduate Fellowship – University of Massachusetts Boston  
Awarded as an entry graduate student to the Chemistry department at the University of Massachusetts Boston, provided research assistantship funds for 1<sup>st</sup> and 5<sup>th</sup> year
- May 2011 Quaesita Drake Scholarship Recipient – University of Delaware  
Recognized as an academically strong female student in the department of chemistry

#### **TEACHING EXPERIENCE**

- 2021 Colorado State University  
Instructor – Active Learning course
- 2020 Colorado State University  
Instructor – Pedagogy for Learning Assistants
- 2018 Colorado State University  
Instructor – MCAT General Chemistry review course
- 2013 – 2015 University of Massachusetts Boston  
Teaching Assistant for General Chemistry labs
- 2014 University of Massachusetts Boston  
Teaching Assistant for Problem-Based Learning activities for chemistry majors freshman seminar
- 2010 University of Delaware  
Problem-based Learning Tutor – Intro to Biochemistry course

#### **RESEARCH EXPERIENCE**

- 2020 – 2022 University of Missouri

## The THRIVE Project

2017 – present	Colorado State University Departmental Action Team (DAT) Project
2012 – 2017	University of Massachusetts Boston Chemical Thinking Learning Progression (CTLP) Project

## SYNERGISTIC ACTIVITIES

2022 – present	Member of the National Academy of Sciences Roundtable on Systemic Change in Undergraduate Education
2020 – present	Reviewer for CBE Life Sciences
2018 – present	Reviewer for Chemistry Education Research and Practice
2018 – 2023	Board member – Younger Chemistry Education Scholars
2018 – 2021	Public Outreach Committee – International Younger Chemists Network
2014 – present	Reviewer for Journal of College Science Teaching
2015 – 2018	Grant Writer – i-Trek, Cambridge, MA
2013 – 2017	ACS Science Coach – Boston, MA
2011 – 2012	Creative Mentor – Wilmington, DE

## PROFESSIONAL ORGANIZATIONS

2020 – present	Facilitation Guild
2020 – 2021	American Educational Research Association
2019 – 2021	Professional and Organizational Development (POD) Network in Higher Education
2017 – 2021	International Younger Chemists Network (IYCN)
2012 – present	American Chemical Society (ACS)
2012 – present	ACS Division of Chemical Education