Welcome to the

Green Chemistry Connections

Amy S. Cannon, Ph.D.
Executive Director
Co-Founder, **Beyond Benign**
@Amy_Cannon

Irv Levy
Senior Faculty Advisor
Chair of the Green Chemistry Commitment Advisory Board
Beyond Benign

Natalie O'Neil, Ph.D.
Program Manager, Higher Education
Beyond Benign
@natjoneil

Today's Agenda

12:00 – 12:10 **Welcome** – Amy, Irv & Natalie

12:10 – 12:30 **Networking & Introductions**

BYOR (Bring your own resource or request) to the Green Chemistry Community

12:30 – 12:55 **Intro & short talks from Toxicology for Chemists Fellows**
12:55 – 1:00 Short break
1:00 – 1:15 **Intro & short talk from Inorganic Faculty Fellow**
1:15 – 1:55 Breakout Room Discussions
1:55 – 2:00 Wrap up and What's Next

NEXT Green Chemistry Connection – September 9, 2020 12 – 2 PM ET

What does it take to bring an idea or an innovation to full adoption?

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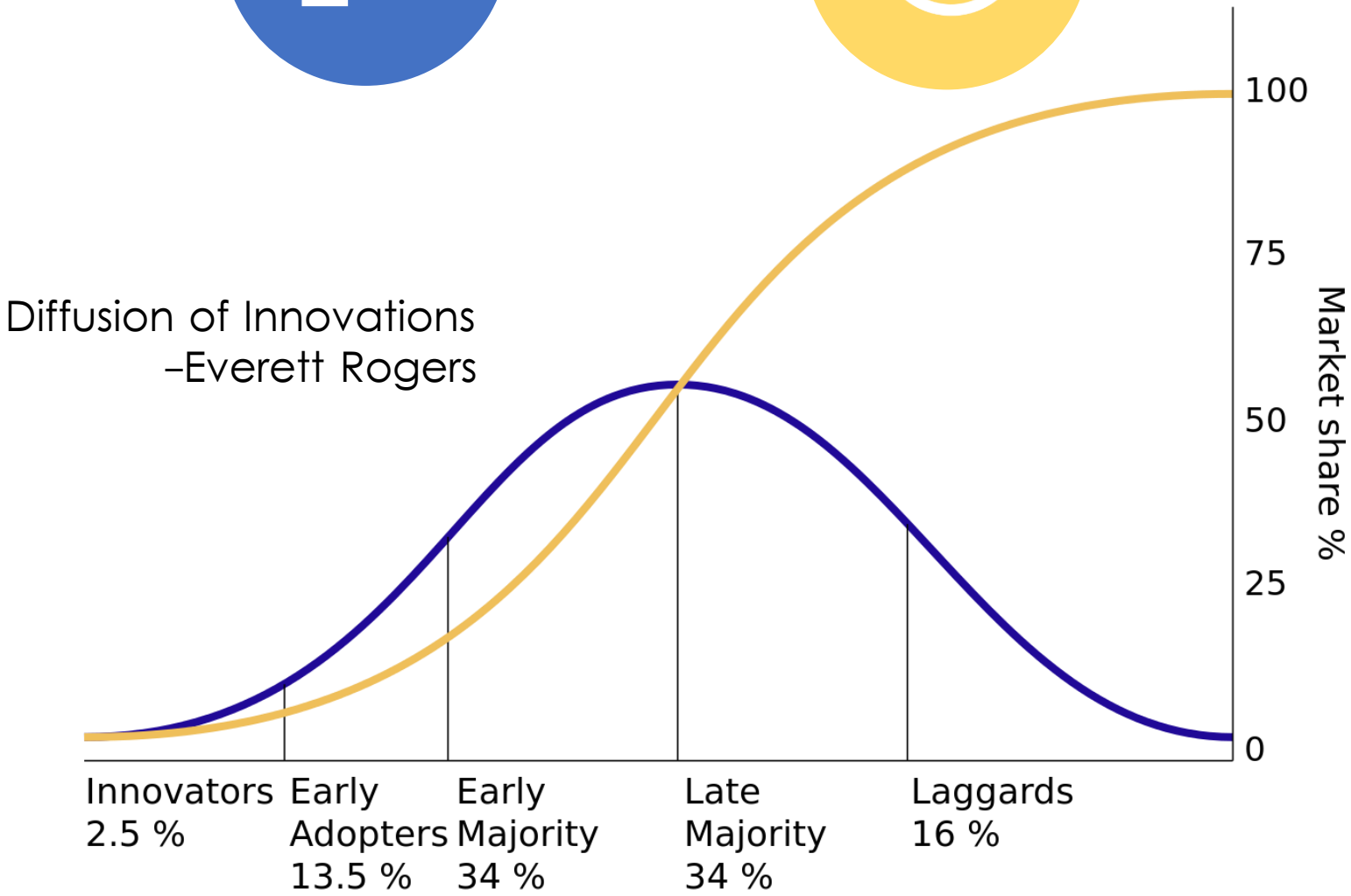
Diffusion of Innovations
–Everett Rogers
100
75
50
25
0
Market share %
Innovators
2.5 %
Early
Adopters
13.5 %
Early
Majority
34 %
Late
Majority
34 %
Laggards
16 %

Benefits of social networks in education reform

- Communication systems
- Knowledge transfer
- Access to expertise
- Leadership development
- Social capital
- Risk taking

Social networks are the primary vehicles for the dissemination of innovations

3rd Annual GCC Summit
Hosted online
Key Findings

RESOURCES

GREEN CHEMISTRY CONNECTIONS

Monthly meetings of the community

SUPPORT

GREEN CHEMISTRY COMMITMENT
beyondbenign.org

70 signers **globally**, including: 64 in North America; and in the following countries: Brazil (1), Columbia (1), Thailand (1), Nigeria (2), Australia (1)

12 R1 Institutions
9 R2 Institutions
4 R3 Institutions
40 PUI Institutions
5 Community Colleges

https://www.beyondbenign.org/he-green-chemistry-commitment/
https://www.beyondbenign.org/he-whos-committed/

Each institution adopts the **Student Learning Objectives differently**, and through **different timelines** towards the Commitment to Green Chemistry education.

Theory:
Have a working knowledge of the Twelve Principles of Green Chemistry.

Toxicology:
Have an understanding of the principles of toxicology, the molecular mechanisms of how chemicals affect human health and the environment, and the resources to identify and assess molecular hazards.

Laboratory Skills:
Possess the ability to assess chemical products and processes and design greener alternatives when appropriate.

Application:
Be prepared to serve society in their professional capacity as scientists and professionals through the articulation, evaluation, and employment of methods and chemicals that are benign for human health and the environment.

Case Studies of GCC Signers
2020

New – Green Chemistry Commitment Guide with examples from Signers on approaches

GCC Opportunities

- Contribute to Collective Voice
- Track Progress
- Shape the Commitment
- Collaborative Working Groups
- Professional Development
- Green Chemistry Curriculum
- Access GCC Member Benefits
- Networking and Collaborations

Help Shape the Green Chemistry Commitment

Irv Levy
Senior Faculty Advisor
Chair of the Green Chemistry Commitment Advisory Board
Beyond Benign
irv_levy@beyondbenign.org

Current Advisory Board Members

- John Arnold, Professor, Dept. of Chemistry, University of California, Berkeley
- Ed Brush, Professor, Dept. of Chemistry, Bridgewater State University
- Rich Gurney, Associate Professor, Dept. of Chemistry and Physics, Simmons College
- Dalila Kovacs, Associate Professor, Dept. of Chemistry, Grand Valley State University
- Irv Levy, Professor and Chair, Dept. of Chemistry, Gordon College
- Anne Marteel-Parrish, Creegan Chair in Green Chemistry, Dept. of Chemistry, Washington College
- Doug Raynie, Research Associate Professor, Dept. of Chemistry and Biochemistry, South Dakota State University
- Ryan Trovitch, Assistant Professor, Dept. of Chemistry & Biochemistry, Arizona State University
- Saskia VanBergen, Hazardous Waste and Toxics Reduction, WA State Department of Ecology
- John Warner, President and CTO, Warner Babcock Institute for Green Chemistry
- Wei Zhang, Associate Professor, Dept. of Chemistry, Director of the Center for Green Chemistry, University of Massachusetts Boston

REDUCING CHEMICAL WASTE IN SITU: SOLUSAVE

Green Chemistry Commitment SIGNER

John Russell | Leanna Smid | Joseph Kamangu | Diana Li

Virtual Resources

Select another topic

- General Chemistry
- Green Chemistry University Curriculum
- Organic Chemistry
- Toxicology
- Virtual Resources

Virtual Resources

A guide to using the Greener Alternatives Evaluation Matrix (DOZN™ 2.0) in Academic Settings for Safer Labs
An overview of DOZN™ 2.0, specific rules for utilizing the tool in academic settings, a template worksheet for students, and select reactions with DOZN™ 2.0 scoring to serve as introductory examples. DOZN™ 2.0 webinars

American Chemical Society Green Chemistry Institute
Online education resources for Green Chemistry & Engineering

Yale-UNIDO University Curriculum
27 lecture PowerPoints presentations
Supplementary reading and video recommendations
Curriculum Overview Webinar

Beyond Benign Green Chemistry Webinar Archive
31 webinars covering Analytical, Organic, General and Green Chemistry along with Toxicology and Green Chemistry metrics

Virtual Resources: https://www.beyondbenign.org/news-covid-19-updates/

Networking and Collaborations

BYOR

Bring Your Own Resource or Request

Introductions *(keep to 1–2 min per person)*

NAME

AFFLIATION

RESOURCE OR REQUEST

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Toxicology for Chemists Fellows 2020 – 2021

Doug Raynie
Associate Professor
South Dakota State University
Toxicology Fellowship (2020–2021)

Julian Silverman
Assistant Professor
Manhattan College
Toxicology Fellowship (2020–2021)

Break

Please be back by 1:05!

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Green Chemistry in Higher Education: Curriculum and Laboratory Resources

John De Backere
Assistant Professor, Teaching Stream
University of Toronto
Inorganic Faculty Fellowship 2020–2021

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What's Next

- NEXT Green Chemistry Connection – September 9, 2020 12 – 2 PM ET
  - Professor of Chemistry, Felicia Etzkorn, Virginia Tech.
    - Upper Level Green Chemistry Course
  - Professor of Chemistry, Ed Brush, Bridgewater State University
    - UN SDGs and racial equity in chemistry
  - Toxicology and Greener Labs

- Share your feedback and express your interest in sharing during a future Green Chemistry Connection: https://forms.gle/NGBDZS5xXsCQgHER7
- Departmental survey of general/inorganic chemistry laboratories: https://forms.gle/ZWoeLRwGvfMvQYJ27