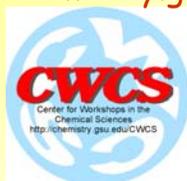


Center for Workshops in the Chemical Sciences (CWCS)

Organizer: Lawrence J. Kaplan (Williams College)
Co-organizers: David M. Collard (Georgia Tech)
Jerry Smith (Georgia State)
Patricia Hill (Millersville State U.)

<http://chemistry.gsu.edu/cwcs>



Division of Undergraduate Education
National Science Foundation

Session 1 - David Collard, Presider

08:05:00	David Collard	Center for Workshops in the Chemical Sciences (CWCS): Promoting innovation in chemical education through workshops and community building
08:25:00	Jason Powell	CWCS: Revitalizing introductory chemistry and spawning an interdisciplinary forensic science minor
08:45:00	Victoria Collins	Forensic science as a freshman seminar course: Activities and assignments
09:05:00	Barbara Wheeler	Practical forensic microscopy: The importance of teaching developing chemists and forensic scientist when and how to use a microscope
09:25:00		break
09:40:00	Christina McCartha	Integration of CWCS workshop material into the chemistry curriculum at Newberry College
10:00:00	Nathan Bower	Comparison of art-chemistry and forensic science for fostering critical thinking skills in the chemistry curriculum
10:20:00	David Brown	Influence of CWCS workshops on the transformation of a chemistry curriculum
10:40:00		Discussion

Session 2 - Patricia Hill, Presider		
Start Time	Presenter	Title
14:05:00	Patricia Hill	Chemistry and art: Fostering faculty development
14:25:00	Michael Henchman	Why chemistry and art?
14:45:00	Michael Columbia	General education course in the physical sciences based on chemistry and art
15:05:00	Erich Uffelman	Science of 17th century Dutch art and the CWCS Chemistry in Art workshops
15:25:00		break
15:40:00	Robert Richman	Teaching science of art in Italy
16:00:00	William Charlton	Teaching chemistry of art in a community college
16:20:00	Deberah Simon	Exploring polymers in artists materials though the ages
16:40:00		discussion

Monday Workshop: Forensics

Wednesday Workshop: Chemistry and Art

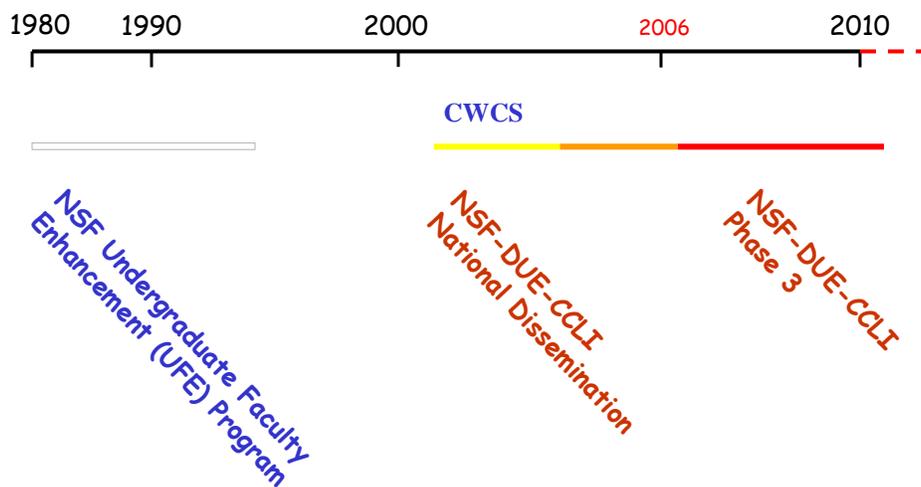
**Center for Workshops
in the Chemical Sciences (CWCS):
Promoting innovation in chemical education
through workshops and community building**

**David M. Collard (Georgia Tech)
Lawrence J. Kaplan (Williams College)
Cianán Russell (Purdue University)**

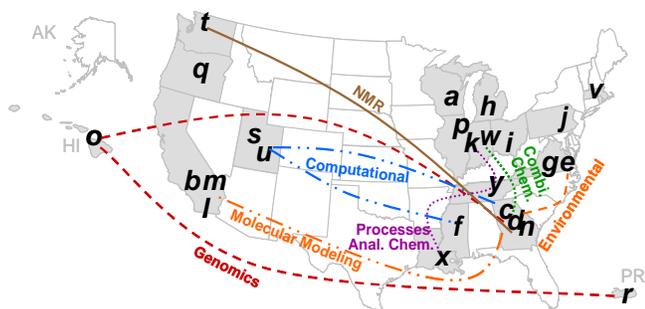
<http://chemistry.gsu.edu/cwcs>



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National Science Foundation



WORKSHOP SITES & TOPICS



- | | |
|------------------------------|--|
| Forensic Science (7) | An Introduction to Combinatorial Chemistry (3) |
| Chemistry of Art (6) | Process Analytical Chemistry (3) |
| Molecular Modeling (4) | Nuclear Magnetic Resonance Spectroscopy (8) |
| Green Chemistry (2) | Advanced Functional Organic Materials (1) |
| Environmental Chemistry (3) | Computational and Theoretical Chemistry (4) |
| Organometallic Chemistry (2) | Chem. Education: Supporting Lab Learning (3) |
| Modeling Biomolecules (1) | Teaching Guided-Inquiry Organic Labs. (2) |
| Metals in Biology (1) | Proteomics and Molecular Genetics (4) |
| Laser Technology (1) | Materials Science and Nanotechnology (2) |
| Polymer Chemistry (1) | Biomolecular Crystallography (2) |
| Surface Analysis (2) | |

WORKSHOP FORMAT

- Five-day intensive workshop
- Sunday check-in and reception
- 8(+) hours of instruction per day, M-F
- Strong emphasis on HANDS-ON EXPERIENCES: *laboratory work, computation, field trips, etc.*
- Workshop dinner with keynote speaker
- Environment to promote interaction between participants and with workshop instructors.
- [Pre/post-workshop evaluation](#)

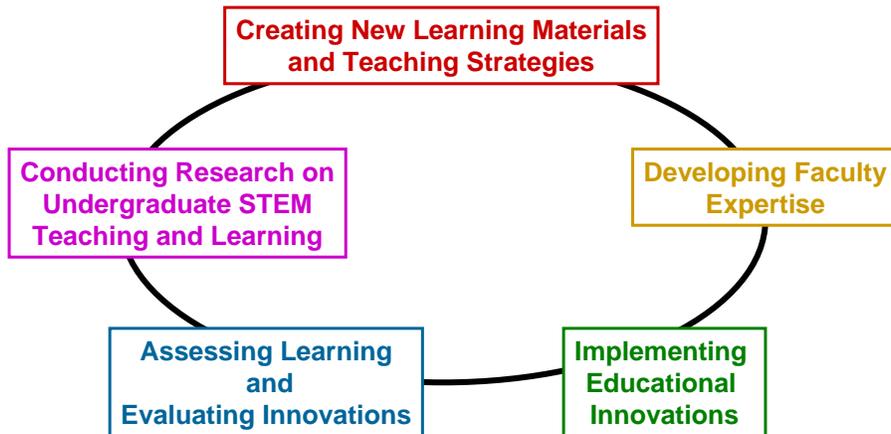


CWCS PROGRAM GOALS

- Provide opportunities for faculty development
- Topical workshops
 - Upgrade knowledge and practical skills
 - Introduce new disciplines (e.g., nanomaterials)
- Provide tried and tested pedagogies and materials
- Provide opportunities for networking
- [Development of Communities of Scholars](#)

CYCLIC MODEL FOR KNOWLEDGE PRODUCTION AND IMPROVEMENT OF PRACTICE IN UNDERGRADUATE STEM EDUCATION

NSF-CCLI Phase 3



PROPOSED COMMUNITIES OF SCHOLARS

Forensic Science

Forensic Science

Chemistry of Art

Chemistry of Art

Computational Chemistry

Molecular Modeling

Computational & Theoretical Chem.

Modeling Biomolecules

Biological Chemistry

Genetics

Biomolecular Crystallography

NMR

Materials Chemistry

Materials and Nanotechnology

Functional Organic Materials

Chemistry

Laboratory Instruction

Supporting Lab Learning

Guided-Inquiry Organic Labs

Sustainable Technologies

Green Chemistry

Environmental Chemistry

Combinatorial Chemistry

Process Analytical Chemistry

WORKSHOP SUPPORT LEVEL

- CWCS provides grant to host institution
 - salary for workshop instructors
(+ subsistence and travel costs for non-resident instructors)
 - Materials and supplies
 - Student assistantship
 - Fringe benefits, indirect charges
- CWCS provides accommodation and food reimbursement for participants
- Travel costs are expected from participant's home institution. *Limited* funds for participant travel costs in hardship cases.
- **No tuition fees**

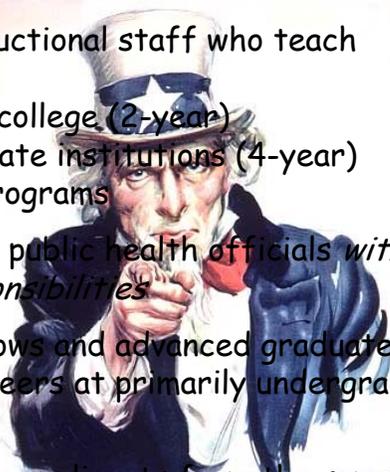
PARTNERSHIPS

CWCS as a vehicle for dissemination efforts associated with NSF-sponsored programs

- MID Project Workshops; Eileen Lewis-UC Berkeley
- NSF-STC in Materials and Devices for Information Technology Research (MDITR): *Functional Organic Materials*
- U. of Oregon *Green Chemistry* CCLI-MD Initiative
- ILI/CCLI *Surface Chemistry* at Kettering U.
- POGIL = Process Oriented Guided Inquiry Learning

WHO IS THE TARGET AUDIENCE?

- Faculty and instructional staff who teach undergraduates
 - community college (2-year)
 - undergraduate institutions (4-year)
 - graduate programs
- Conservators and public health officials *with significant educational responsibilities*
- Postdoctoral fellows and advanced graduate students committed to careers at primarily undergraduate institutions
- Multiple workshop applicants from the same institution encouraged



CWCS ADMINISTRATION



PI and Director
Jerry Smith
Department of Chemistry
Georgia State University
Atlanta, GA 30303



Co-PI and Co-director
Lawrence J. Kaplan
Department of Chemistry
Williams College
Williamstown, MA 01267



Co-PI and Co-director
David Collard
School of Chemistry & Biochemistry
Georgia Institute of Technology
Atlanta, GA 30332



Karen Brown
CWCS Coordinator
Department of Chemistry
Georgia State University

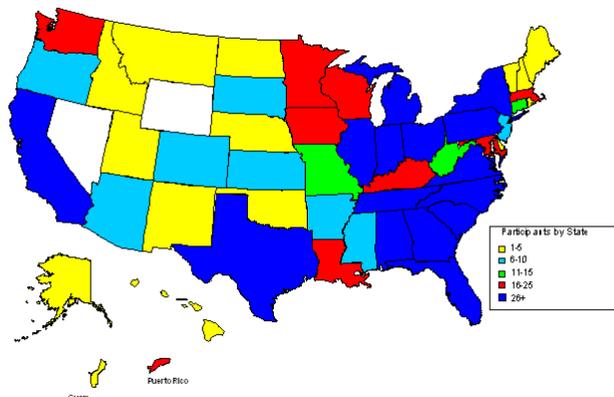
ADVISORY PANEL



WORKSHOP TOPICS (2000-06 offerings)

Forensic Science (7)
Chemistry of Art (6)
Process Analytical Chemistry (3)
Molecular Modeling (4)
Environmental Chemistry (3)
Organometallic Chemistry (2)
An Introduction to Combinatorial Chemistry (3)
Nuclear Magnetic Resonance Spectroscopy (8)
Green Chemistry (2)
Advanced Functional Organic Materials (1)
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Modeling Biomolecules (1)
Chem. Education: Supporting Lab Learning (3)
Teaching Guided-Inquiry Organic Labs. (2)
Proteomics and Molecular Genetics (4)
Metals in Biology (1)
Laser Technology (1)
Materials Science and Nanotechnology (2)
Biomolecular Crystallography (2)
Polymer Chemistry (1)
Surface Analysis (2)

CWCS WORKSHOP PARTICIPANTS



2001-2006: 66 workshops
989 participants from 48 states (+ Guam, P.R., D.C.)

> ~~2007-2008~~ **2007-2008** - 152 participants, from 135 institutions.

CWCS Center for Workshops in the Chemical Sciences

Workshops for College and University
Chemistry Instructors and Faculty
2008 Schedule

Tentative 2008
Summer Workshop Schedule

The **Center for Workshops in the Chemical Sciences** (a DUE CCLI-ND NSF-sponsored initiative) provides 5-day workshops for faculty and instructional staff at 2- and 4-year colleges and universities, and individuals (postdocs, graduate students) who plan to embark on a college teaching career. The workshops are designed to provide a background and modern perspective on key areas of the chemical sciences *along with methods to introduce these topics into the undergraduate curriculum*. Participation (including registration and housing) is **FREE**. For more information and application materials please visit us at:



Please check our website for updates

Environmental Chemistry – May 25-30
Hampton University, Hampton, VA

Molecular Genetics – May 25-30
University of Hawaii, Hilo, HI

Chemical Education – June 15-20
University of Illinois, Chicago, IL

Introductory Forensic Science – June 15-20
Advanced Forensic Science – June 22-27
Williams College, Williamstown, MA

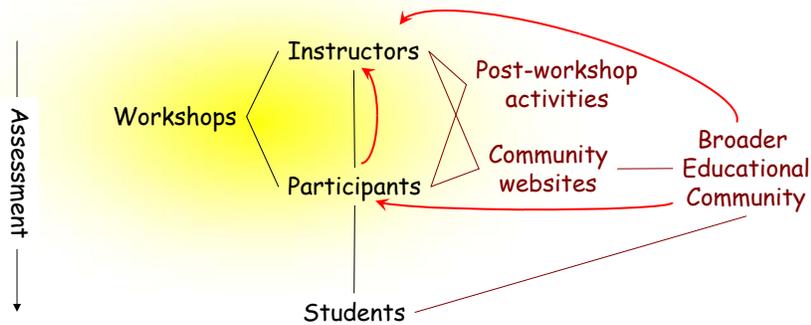
Crystallography – June 22-27
California State University-Fullerton, CA

Chemistry of Art – July 20-25
Millersville University – Millersville, PA

Combinatorial Chemistry – July 20-25
Miami University, Oxford, OH

www.chemistry.gsu.edu/CWCS

PROMOTING DEVELOPMENT OF COMMUNITIES OF SCHOLARS



JOB OPENING for a Program Associate to foster community development (suitable as a post-doctoral fellowship)

Online community
Regional topical communities
Single-college communities

Topical Content
(Pedagogy, proposal preparation, ethics, etc)

FSS Home Resources Events Curricular Material Community Members Contact

Forensic Science Scholars

Sponsors [CWCS Home](#) - [Communities Of Scholars](#) - Forensic Science Scholars - Resources - Books - Alphabetical List

CWCS

Adams, Thomas F. *Crime Scene Investigation*, 2nd ed ([link to Amazon](#))
 Prentice-Hall, 2003
 0131397974

Baden, Michael, *Dead Reckoning: New Forensic Science* ([link to Amazon](#))
 Simon & Schuster, 2001
 0684867583

Baden, Michael, *Unnatural Death* ([link to Amazon](#))
 Random House, 1989
 0394569822

Bakos, Susan Crain, *Appointment for Murder* ([link to Amazon](#))
 Pinnacle Books, 1989
 1558172386

Balding, David J., *Weight-of-Evidence for Forensic DNA Profiles* ([link to Amazon](#))
 Wiley, 2005
 0470867647

Barnett, Peter D., *Ethics in Forensic Science: Professional Standards for the Practice of Criminalistics* ([link to Amazon](#))
 CRC Press, 2001
 0849308607

Barzun, Jacques and Taylor, W. H., *Catalogue of Crime* ([link to Amazon](#))
 Harper and Row, 1989
 0060157968

Bass, Bill and Jefferson, Jon, *Death's Acre: Inside the Legendary Forensic Lab/The Body Farm/Where the Dead Do Tell Tales* ([link to Amazon](#))
 Putnam, 2003

Books
 Literature
 Case Studies JFK
 Suppliers Lindberg Baby
 Links Napoleon
 OJ Simpson
 Oklahoma Bombing
 Tylenol
 Woodchipper

AB C D E F G H I J K L M N O P Q R S T U V W X Y Z

FSS Home Resources Events Curricular Material Community Members Contact

Forensic Science Scholars

Sponsors [CWCS Home](#) - [Communities Of Scholars](#) - Forensic Science Scholars - Resources - Case Studies - Kennedy Assassination

CWCS

Case Kennedy Assassination - Introduction
[Links](#) [Literature](#)



CWCS Links
 CWCS Home
 About CWCS
 Workshops

FSS Home Resources Events Curricular Material Community Members Contact	
<h2 style="margin: 0;">Forensic Science Scholars</h2>	
Sponsors  	CWCS Home - Communities Of Scholars - Forensic Science Scholars - Resources - Case Studies - Kennedy Assassination <div style="text-align: center;"> Case Kennedy Assassination - Links Introduction Literature </div> <p>John McAdams maintain a very fine site with many pictures and video clips http://mcdams.posc.mu.edu/home.htm</p> <p>The Texas Monthly presents a balanced introduction to the issues surrounding the assassination. http://www.texasmonthly.com/ranch/jfk/</p> <p>An excellent, very comprehensive site about the assassination - but you have to register. http://www.imastrand.com/</p> <p>This site claims to be "the most comprehensive and detailed evaluation on the Internet. We provide sound bites, text, photographs, scanned documents, video, articles and exclusives." http://pages.prodigy.net/whiskey99/</p> <p>The Zapruder film http://www.jfkmurdersolved.com/zapruder.htm</p> <p>Review the Zapruder film frame by frame http://www.assassinationresearch.com/zfilm/</p> <p>The author of this site claims the Zapruder film is a fabricated hoax http://www.assassinationscience.com/johncostella/jfk/intro/</p> <p>A neat site with many pictures and a timeline of those tragic days http://www.fiftiesweb.com/kennedy/kennedy-assassination-22.htm</p>
CWCS Links CWCS Home About CWCS Workshops	

FSS Home Resources Events Curricular Material Community Members Contact	
<h2 style="margin: 0;">Forensic Science Scholars</h2>	
Meetings Workshops 2007 Spring ACS 2007 Fall ACS 2008 BCCE	
Sponsors  	CWCS Home - Communities Of Scholars - Forensic Science Scholars - Resources - Case Studies - Kennedy Assassination <div style="text-align: center;"> Case Kennedy Assassination - Literature Introduction Links </div> <p>Anonymous, Reexamination of acoustic evidence in the Kennedy assassination. Committee on Ballistic Acoustics, National Research Council , Science (1982), 218(4568), 127-33.</p> <p>Artwohl R R, JFK 's assassination. Conspiracy, forensic science, and common sense . JAMA: the Journal of the American Medical Association (1993), 269(12), 1540-3.</p> <p>Breo, D. L., JFK's Death - The Plain Truth from the MDs Who Did the Autopsy , J. American Medical Association 267(20), 2794-2803 (May 27, 1992).</p> <p>Breo, D. L., JFK's Death, Part II - Dallas MDs Recall Their Memories , J. American Medical Association 267(20), 2804-2807 (May 27, 1992).</p> <p>Breo, D. L., JFK's Death, Part III - Dr. Finck Speaks Out: 'Two Bullets, From the Rear' , J. American Medical Association 268(13), 1748-1754 (October 7, 1992).</p> <p>Guinn, Vincent P., JFK assassination: bullet analyses, Analytical Chemistry (1979), 51(4), 484A-486A, 488A, 492A-493A.</p> <p>Haines D E, Spitzka and Spitzka on the brains of the assassins of presidents , Journal of the history of the neurosciences (1995), 4(3-4), 236-66.</p> <p>Lattimer, J. K., Additional Data on the Shooting of President Kennedy , J. American Medical Association 269(12), 1544-1547 (March 24/31, 1993)</p> <p>Leopold R L; Friedman J; Lindemann E; Dillon H, The Kennedy assassination , Pennsylvania medicine (1966), 69(7), 55-6.</p>
CWCS Links CWCS Home About CWCS Workshops	

FSS Home	Resources	Events	Curricular Material	Community Members	Contact
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Forensic Science Scholars

[CWCS Home](#) - [Communities Of Scholars](#) - Forensic Science Scholars - Events - Meetings - ACS National/Spring 2007




CWCS Links

- [CWCS Home](#)
- [About CWCS](#)
- [Workshops](#)



American Chemical Society
233rd National Meeting
Chicago, March 25-29, 2007
Sessions 2 and 4, Forensic Science

Abstract visibility options: [Show](#) / [Hide](#) all

Tuesday morning, March 27, 2007
Session 2 – Forensic Science, McCormick Place North -- Room N230B, Level 2

(1591)
[\[expand\]](#) Forensic chemistry: A CWCS workshop and the birth of a community of scholars.
L. J. Kaplan
 Department of Chemistry, Williams College, 47 Lab Campus Drive, Williamstown, MA 01267, Fax: 413-597-4116, Lawrence.J.Kaplan@williams.edu

(1592)
[\[expand\]](#) It all started in the Goat Room: Reflections from a forensic science workshop.
C. V. Gauthier
 Florida Southern College, 111 Lake Hollingsworth Drive, Lakeland, FL 33801, Fax: 863-680-3970, cgauthier@flsouthern.edu

FSS Home	Resources	Events	Curricular Material	Community Members	Contact
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Forensic Science Scholars




CWCS Links

- [CWCS Home](#)
- [About CWCS](#)
- [Workshops](#)

This site is developed with the support of the
The Center for Workshops in the Chemical Sciences.



FSS will soon start providing information about outstanding forensic science websites; about presentations made at national meetings; information about curricular initiatives including courses, programs, and majors in forensic science; forensic science research programs; databases of educational materials; and workshops on incorporating forensic science into the undergraduate curriculum.



News

American Chemical Society



233rd National Meeting
 Chicago, March 25-29, 2007
 Sessions 2 and 4, Forensic Science

[detailed info >>](#)

[CWCS](#) | [Communities of Scholars](#) | [NSF](#)
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HOW, AND WHY, WILL YOU PARTICIPATE IN A COMMUNITIES OF SCHOLARS?

Community Membership

Who are community members?

Community Leaders

Who are community leaders?

What is the role of the leaders?

Resources (illustrative examples, experiments, demos)

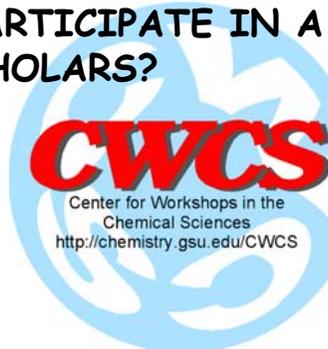
- Who will contribute these?
- Review process?
- Intellectual property issues?

Interaction (online, in-person)

- How do we encourage interaction and adoption of exemplary teaching materials and methods?

<http://chemistry.gsu.edu/cwcs>

Program Associate Opening



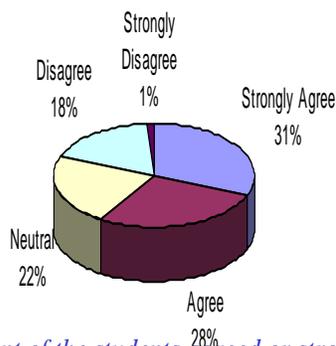
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Center for Workshops in the ADVISORY PANEL Chemical Sciences

- To initiate the development of the Community, a series of symposia at the Chicago and Boston ACS meetings and at the BCCE meeting are being sponsored to highlight the many successful implementations of materials and methods derived from CWCS workshops into the instructional activities of participants.
- These symposia will be supplemented by both physical and virtual reunions of former CWCS participants and instructors.

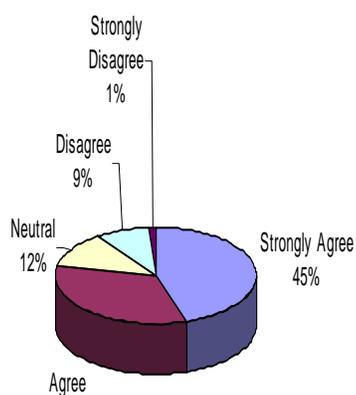
Center for Workshops in the Chemical Sciences



Nearly 60 percent of the students agreed or strongly agreed that the CWCS workshop materials incorporated into their course were relevant to their career goals.

(Source: Student Impact Survey)

Center for Workshops in the Chemical Sciences



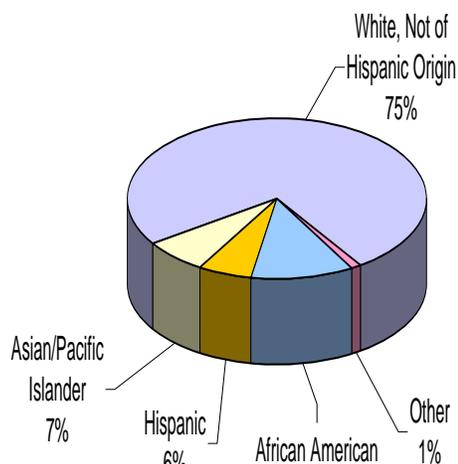
Nearly 80 percent of these surveyed students agreed or strongly agreed that the CWCS workshop material included in their class enhanced their learning of the course content

(Source: Student Impact Survey)

ADVISORY PANEL

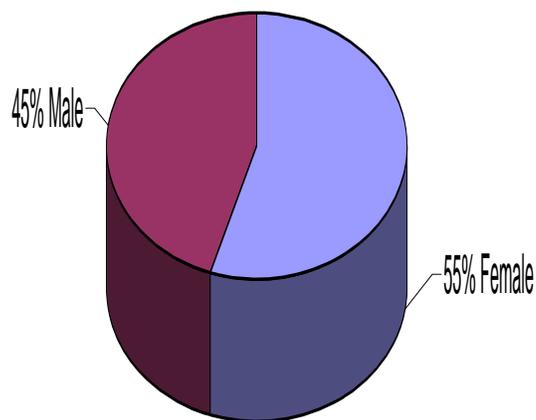
- One of the **main goals** of this meeting is to solicit input from you regarding the development of the Community i.e. what resources will be most helpful to you.

Center for Workshops in the ADVISORY PANEL Chemical Sciences



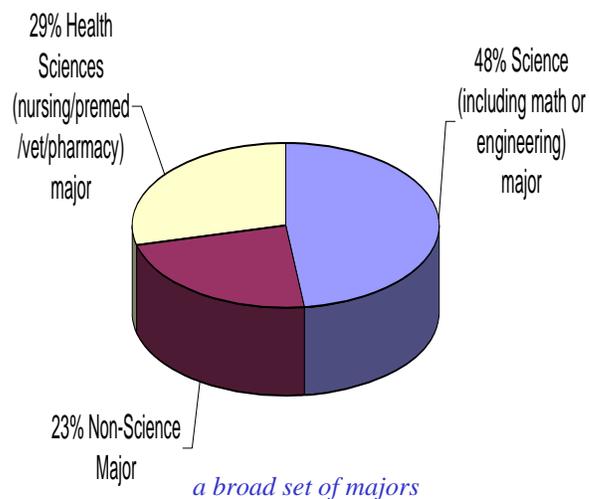
Student Surveys - Workshop Participants teach a racially-diverse set of students....(Source: LTE; participants' estimates of ethnicity of students they teach, n = 8835) Data Collected by Drs. Josue and Altamarino under the direction of Dr. Emelita Breyer

Center for Workshops in the ADVISORY PANEL Chemical Sciences



good student gender balance

Center for Workshops in the ADVISORY PANEL Chemical Sciences



a broad set of majors

Center for Workshops in the ADVISORY PANEL Chemical Sciences

Comment/Analysis

Results from the student surveys indicate that CWCS workshops are having a crucial, decisively positive impact on learning *at the individual student level* and that workshop materials are highly relevant to the career goals of the students

Center for Workshops in the ADVISORY PANEL Chemical Sciences

CWCS Community of Scholars Concept

Center for Workshops in the Chemical Sciences

ADVISORY PANEL

- The CWCS is charged with the development of a **Community of Scholars** consisting of the nearly 1,000 previous participants plus future workshop participants, instructors, and other interested parties with the goal of perpetuating the goals and impact of the Program over an extended period of time.

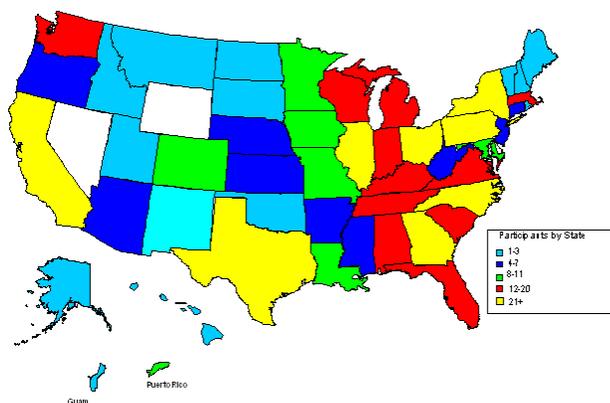
Material from workshop provided in a form readily incorporated into participant' s curricula

Short-term participant evaluation of workshop plus a **long-term impact study** customized to each workshop

ADVISORY PANEL

- Open or uncommitted slots are maintained in the workshop schedule for workshops contributed by the scientific community and NOT in the original proposal.
- Examples: *The Practical Aspects of Process Analytical Chemistry (PAPAC)* and the *Crystallography Workshops*
- *The CWCS Administration encourages the submission of ideas for workshops not in the formal schedule.*

CWCS WORKSHOP PARTICIPANTS' INSTITUTIONS



CWCS workshop participants represented 580 institutions