

Green Chemistry and Commerce
Council Innovators Roundtable
Meeting
May 6, 2009

ACS Green Chemistry Institute
Pharmaceutical Roundtable

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Outline

- Background/Mission
- Membership
- Strategic Priorities
- Activities
- Future Work
- ANSI
- ***www.acs.org/greenchemistry***

ACS Green Chemistry Institute Pharmaceutical Roundtable

- Background
 - Founded in 2005 with a grant from Pfizer, a matching ACS grant and three member companies plus the ACS GCI
 - Lilly, Merck, Pfizer
- Mission: To encourage innovation while catalyzing the integration of green chemistry and green engineering in the pharmaceutical industry.
- Meets quarterly, including one meeting in EU.
 - Governed by two co chairs
 - Julie Manley is ACS GCI representative/”business manager”
 - Follow business plan
 - Strict adherence to antitrust rules

ACS GCIPR Membership

- **Members** Any corporation, or subsidiary, division or unit thereof, significantly engaged in the manufacture and marketing of finished dosage form ethical pharmaceutical or biological products under his or its own brand names for the cure, alleviation, mitigation, treatment, prevention or diagnosis of disease, and significantly engaged in pharmaceutical, biopharmaceutical or biological research and development of new molecular entities or new therapies, preventative, or in vivo diagnostics, or new systems of therapy, prevention, or diagnosis and who will continue to conduct such research and development.
- Annual member fees: $AGR > \$10B/yr = \$25000/yr$, $AGR < \$10B/yr = \$15000/yr$.

ACS GCIPR Associate Membership

- **Associates.** Associates shall be corporations, or subsidiaries, divisions or units thereof, not eligible for membership under Members above, who are:
- Significantly engaged in research and development on their own behalf or as a provider of contract research and development services to companies meeting the definition of Member, directly related to the development or production of ethical pharmaceutical or biological products for the cure, alleviation, mitigation, treatment or prevention of disease.
- Significantly engaged in the manufacture of intermediates, active pharmaceutical ingredient, or finished dosage form ethical pharmaceutical or biological products
- Annual associate fees: AGR > \$10B, membership fee = \$20000
AGR < \$10B, membership fee = \$15000
- Associates have voice but no vote, get all work products that member level companies receive.

Current Membership as of March

26, 2009



Prospective Companies



Four ACS GCIPR Strategic Priorities

Source: ACS GCIPR Business Plan, Rev 3. December 2008

- **Strategic Priorities**

- **Informing and Influencing the Research Agenda:** To monitor and identify new research opportunities with implications for more efficient process development and production. To influence the technical agendas of federal/international funding agencies by defining needs and advocating investment in specific areas of green chemistry and engineering innovation. To encourage external funding support for research in academic and government laboratories that will have direct value to the pharmaceutical industry.
- **Defining and Delivering Tools for Innovation:** To identify, design, and provide tools available to member companies to promote green chemistry and engineering innovation within the industry. To provide a centralized resource for accumulating alternatives, sharing tools, maintaining the toolbox, and minimizing duplication of effort

Four ACS GCIPR Strategic Priorities

Source: ACS GCIPR Business Plan, Rev 3. December 2008

- **Educating Leaders:** To educate and influence today's and tomorrow's pharmaceutical leaders on the business value and scientific merit of green chemistry and engineering and its application in the pharmaceutical industry.
- **Collaborating Globally:** To provide green chemistry and engineering expertise to pharmaceutical corporations worldwide by utilizing the GCI network of international affiliates and researchers and by sharing best practices among our members.
 - These priorities have been identified by the member companies and are supported by the objectives of ACS Green Chemistry Institute® and ACS.

ACS GCIPR Major Accomplishments

Informing and Influencing the Research Agenda

- o Funded \$260,000 in research addressing the top green chemistry research areas. Prof. Michael J. Krische from the University of Texas at Austin and Prof. Chao-Jun Li from McGill University were awarded grants. Through 2008, the Roundtable has funded four research grants for a total of \$490,000.
<http://pubs.acs.org/isubscribe/journals/cen/86/i13/html/8613acsnews2.html>
- o Issued a request for proposals for the 2009 ACS GCI Pharmaceutical Roundtable Research Grant. Forty-eight pre-proposals were received from principal investigators representing 42 universities from 10 countries including Canada, China, India, Ireland, Mexico, Portugal, Spain, Tanzania, UK, and USA.
- o Over the course of three years since the inception of the ACS GCI Pharmaceutical Roundtable Research Grant Program, 105 research proposals have been received from 71 universities around the world.

Defining and Delivering Tools for Innovation

- o Developed a reagent selection guide to help scientists in the member companies determine which reagents for a given reaction are less hazardous while also achieving the intended scalability and wide utility desired.
- o Collaborated with Chemical Abstracts Service to incorporate green search criteria into their product line.
- o Presented progress of the solvent selection guide at the topical conference on Green Engineering and Sustainability in the Pharmaceutical Industry in Philadelphia, PA, USA. The presentation is publicly available at http://portal.acs.org/portal/fileFetch/C/WPCP_011424/pdf/WPCP_011424.pdf

Educating Leaders

- o Co-authored a new feature, Green Chemistry Highlights, in *Organic Process Research & Development* entitled “Green Chemistry Articles of Interest to the Pharmaceutical Industry”. The new Highlights summarize cutting-edge green chemistry research selected by process chemists in industry.
<http://pubs.acs.org/doi/abs/10.1021/op800175p>
- o Organized the UK green chemistry workshop for undergraduate students held at Churchill College, University of Cambridge, in September 2008. Twenty-seven students from a total of 15 universities from the UK and Belgium were provided an overview of green chemistry in the pharmaceutical industry with a particular focus on solvents, synthesis, and metrics.
- o Sponsored and helped organize the Topical Conference on Green Engineering and Sustainability

2009 Objectives - Summary

- Informing & Influencing the Research Agenda
 - Green Chemistry Articles of Interest
 - ACS GCIPR Research Grant
 - NSF GOALI proposal with MSU pending outcome (~\$550,000 over 3 yrs)
 - Funding for green chemistry in basic research.
- Educating Leaders
 - Influence publishers to include green chemistry metrics
- Defining and Developing Tools for Innovation
 - CAS project to implement green search capability
 - Metrics benchmarking exercise
 - Solvent selection guide / reagent selection guide
- Collaborating Globally
 - Biocatalysis, biopharm, and EU subgroups
 - Common data request form to use with suppliers
 - Influence solvent manufacturers to develop/make available greener alternatives

Encouraging Green Chemistry in Basic Research: Collaboration with NIGMS

- When all the arrows line up
 - Feb 6 Meeting with NIGMS
 - Feb 17 American Recovery and Reinvestment Act of 2009
 - Feb 18 GCIPR consulted for green chemistry wording & reviewers for potential grants
 - March 4 NIH Challenge Grants posted
 - <http://grants.nih.gov/grants/guide/rfa-files/RFA-OD-09-003.html>
- **06-GM-109 Green chemistry and engineering for drug discovery, development, and production.**

Development of chemical methodologies and tools to promote green chemistry and engineering innovation into drug discovery, development, and production. Contact: Dr. Miles Fabian, 301-594-3827, fabianm@nigms.nih.gov

2010 and Beyond

- Engagement with PhRMA
- Continued collaboration with NIGMS
- Membership expansion: small pharma/biotech/generic/Japanese, etc
- Additional Roundtables under evaluation
- ***www.acs.org/greenchemistry***
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Green Chemistry and Engineering Topical Conference



13th Annual Green Chemistry & Engineering Conference

Innovating For the Future: Progress on the Grand Challenges in the Chemical Enterprise

www.GCandE.org

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