



2015 ACS GCI Pharmaceutical Roundtable Research Grant

Request for Proposals: Greener Continuous Chemistry & Engineering Technology

The ACS GCI Pharmaceutical Roundtable (Roundtable) is a partnership between the ACS Green Chemistry Institute® and pharmaceutical related corporations united by a shared commitment to integrate the principles of green chemistry and engineering into the business of drug discovery and production. Current members include Amgen, AstraZeneca, Boehringer-Ingelheim, Bristol-Myers Squibb, Codexis, Dr. Reddy's, Eli Lilly and Company, GlaxoSmithKline, Johnson & Johnson, Merck & Co., Inc., Novartis, Pfizer Inc, Roche, Sanofi, and ACS GCI. In 2006, the Roundtable members conducted a survey that identified areas in need of focused research to advance the principles of green chemistry and their application in the pharmaceutical industry. Ten chemical transformations and two process related operations were identified and published (D.J. Constable, P.J. Dunn, *et al.*, Key Green Chemistry Research Areas - a Perspective from Pharmaceutical Manufacturers, *Green Chemistry*, **2007**, *9*, 411 - 420). Following the green chemistry research areas, in 2011 the Roundtable members conducted a similar study to advance green engineering in the pharmaceutical industry. Ten green engineering research areas were identified and published (C. Jimenez-Gonzalez *et al.*, Key green engineering research areas for sustainable manufacturing – a perspective from pharmaceuticals and fine chemicals, *Org. Proc. Res. Dev.*, **2011**, *15*(4), 900-911.).

As efforts continue to support the outcomes of the survey, the Roundtable requests submission of proposals for development of ***Greener Continuous Chemistry & Engineering Technology***. Areas of interest include, but are not limited to 1) photo redox chemistry, 2) photochemistry, and 3) biocatalysis in flow. Proposals will be accepted from public and private institutions of higher education worldwide. Up to three grants are planned to be awarded. Each award is limited to \$50,000 for a grant period of 12 to 24 months. Proposals are due to the ACS GCI Pharmaceutical Roundtable on **August 28, 2015 at 5 p.m. (EDT)**, no exceptions. Proposals received after the deadline will not be considered. Submissions must be a pdf file submitted *via* email to gcipr@acs.org.

Full Proposal Format (Maximum 11 pages as described below + CVs)

A) Title Page (*1 page, 12 pt font, 1-inch margins*)

1. Project Title: Title should include the identification of the key research area(s).
2. Principal Investigator:
3. Title / Position(s):
4. Telephone Number(s):
5. Fax Number(s):
6. Postal Mailing Address:
7. E-Mail Address:
8. Research Group url:
9. Co-Investigators and Institution

B) Proposed Plan of Work (*10 pages, 12 pt font, 1-inch margins*)

1. Abstract: Summary statement of how the proposed work meets the overall criteria of *enhancing “greenness”, “safety” and “effectiveness” of Greener Continuous Chemistry & Engineering Technology* relative to current technologies. (500 words or less)
2. Background: Provide a brief assessment of the proposed project in the context of the current state of knowledge, demonstrating awareness of green chemistry improvements over current technology. (limit to 2 pages or less)
3. Objectives: Briefly state the project objectives.
4. Project Approach: Include specific aims, investigations planned, and preliminary results.
5. References
6. Project Timeline
7. Estimated Budget: The total amount requested would include all direct and indirect costs, including fringe benefits, student assistantships, etc; however, at this stage, we do not require a detailed budget. Total award is limited to \$50,000 for a grant period of 12 to 24 months.
 - a. Institutional overhead costs (indirect costs) are limited to 10% of the grant amount.
 - b. Funding is anticipated to start in December 2015, or later as agreed between the Principal Investigator and the Roundtable.
 - c. Post-doctoral associate salary and benefits are supported.
 - d. Graduate student stipend and benefits are supported. Proposals for support of advanced graduate students are highly favored.
 - e. PI salary supplements will not be supported.
 - f. Laboratory supplies and instrument use charges are supported.
 - g. No funds may be allocated for travel, equipment purchase or repair, or administrative support.
8. Current funding list for the PI including title of grant award, agency, award amount and duration – limit to 1 page or less
9. Brief facilities description for the PI – limit to one page or less
10. The PI should list any existing background intellectual property and/or collaborations they are aware of that might limit the freedom to operate any of the results arising from any research funded by ACS GCI.

C) Curriculum vitae of Project Team Members: Please submit a two page curriculum vitae of all project team members. (Does not count towards the page limit.)

Report Requirements

- As a collaborative research project, the Roundtable will work closely with the principal investigator and student(s) to provide industrial direction, when appropriate, in a manner that respects the independence of the researcher/student.
- Teleconferences with Roundtable members will be held to discuss project status, provide suggestions and feedback pertaining to reaction conditions/optimization, solvent selection and pharmaceutically relevant substrates.
- Written progress updates are due monthly from initiation of research.
- Updates are to include research milestones/significant outcomes, summary of progress to date noting any deviations from the proposal, and research plans for upcoming months.
- A final comprehensive report including research outcomes and final budget is due one month after the end of the grant period.
- The report must be submitted as an Adobe PDF document electronically to gcipr@acs.org. The report will be shared with the member companies of the Roundtable.
- The content of the report will be targeted for publication in a peer review technical journal within six months of the conclusion of the research.

Intellectual property, publication acknowledgement, and terms of the grant

- The primary purpose of this grant is to publish research to make information publicly available.
- Every patent, United States or foreign, that results from research funded (in part or in its entirety) by the ACS Green Chemistry Institute Pharmaceutical Roundtable Research Grant shall be immediately dedicated to the public, royalty free.
- Each publication prepared in connection with the ACS GCI Pharmaceutical Roundtable Research Grant shall make acknowledgement to the ACS GCI Pharmaceutical Roundtable Research Grant, in the following manner. "Acknowledgement is made to the ACS GCI Pharmaceutical Roundtable Research Grant for support (or partial support) of this research."
- Acceptance of a Roundtable Research Grant will be conditioned upon agreement by the grantee institution that in the event the principal investigator is unable for any reason to conduct the research proposed, the funds, if previously paid by the Roundtable, shall, upon demand, be returned in full to the Roundtable, and further, that in the event the PI is unable for any reason to continue with the research after it has commenced, this grant shall be terminated forthwith and the unexpended and unencumbered balance of any funds theretofore advanced shall be returned to the Roundtable.
- The grantee institution, by acceptance of this grant, provides assurance that support normally provided by the institution for research of the faculty member will not be diminished.
- Applicants may have only one research grant with the ACS GCI Pharmaceutical Roundtable at a time. Current research grant holders may apply for a new grant, provided the current grant will be closed by December 31, 2015. In order to close a grant, the required reports must be received and approved by the ACS GCI Pharmaceutical Roundtable.

For additional information:

Website: www.acs.org/gcipharmaroundtable

Email: gcipr@acs.org