

Division of Chemistry Office Hour

- Chemistry of Life Processes
- Macromolecular, Supramolecular, and Nanochemistry

September 23, 2022

Synopsis of the Chemistry of Life Processes Program in the Division of Chemistry

The Chemistry of Life Processes (CLP) Program supports fundamental, experimental and computational studies at the interface of chemistry and biology. Such studies should promote the fundamental understanding of the molecular underpinnings of life processes. The proposed research should be based on innovation(s) in chemistry and address an important question about a biological process.

Proposals should make clear both the original contribution to the chemistry knowledge that is being pursued and how the research project will directly address a biologically relevant question.

The scope of the program is broad, reflecting the power of chemistry and diversity of biology. Subject areas include bioorganic and bioinorganic chemistry; chemical biology; lipids, membranes, and membrane-proteins; and protein, enzyme, nucleic acid and carbohydrate chemistry. Research projects must use or create innovations in chemistry that advance the understanding of biological function. Chemical methods development is also acceptable when such methods are applied to answering specific biological questions. Other topics of interest include: the development and application of bio-orthogonal chemistry for probing cellular function; biomolecular design and synthesis aimed at understanding biological function; the use of theory, computation, modeling, and simulation as applied to the chemical aspects of biological systems; and chemical aspects that underlie the function of the brain.

Note: The CLP Program is not interested in projects that are disease-related or that have drug discovery/design/development goals.

Several Resources for the Identification of Best Funding Sources for a Project

- Carefully read the NSF Program Synopses found on the webpages of the Programs (Links to all CHE programs are here: <https://www.nsf.gov/funding/programs.jsp?org=CHE>; link to a specific Program (SYN, as example) is here: <https://beta.nsf.gov/funding/opportunities/chemical-synthesis-syn-0>)
- Look up awards made by these programs (see bottom link called “Browse projects funded by this program” on each Program’s website, e.g. you would find these results by following the link on the CLP website: <https://www.nsf.gov/awardsearch/advancedSearchResult?ProgEleCode=6883&BooleanElement=Any&BooleanRef=Any&ActiveAwards=true#results>)
- 3) Identify the people who have the best research closest to your project (e.g., best group/s who synthesizes DNA labels) and see where they get funding from the Acknowledgments in their papers or in their public presentations.
- 4) Seek advice from a mentor in your research area, be it at your Institution or another one.
- 5) Sign up to the Newsletter of the Division of Chemistry such that you learn about upcoming NSF funding opportunities: https://nsf.gov/news/news_summ.jsp?cntn_id=298705&org=CHE&from=news
- 6) Volunteer to serve as reviewer for NSF Chemistry Programs: https://www.surveymonkey.com/r/CHEM_NSF?sm=Zu33yLGzBm0CsSQj%2fO7qL8x8B20D0BEKJDZyRVWoAIE%3, which will give you the chance to review and learn from proposals considered by these programs
- 7) Check ACS for (early career) faculty workshops that include sessions on research project design and proposal writing.
- 8) Find PIs who have received NSF awards from Chemistry Programs you target and may be willing to provide feedback on your project and/or share funded proposals.

- Contact PDs in the Program to which you consider submitting an application for funding

It would be useful to provide the PD(s) with a concise and clear white paper that includes:

- what is the research gap or need that will be filled
- what falsifiable hypotheses will be tested
- what experiments could disprove the hypotheses
- why the efforts are important/needed
- who will be the researchers who will look forward to see your results and consider them when doing their own research
- what the expected innovations in chemistry are
- what specific biological problem will be impacted
- how broadly applicable the research results would be to address similar or more advanced systems.

The more specific this information is, the better it is; for example, stating that biologists may use a tool the PI creates is not as useful as giving the names of a few scientists who work in a research area that will be directly impacted by the outcome.

How to Learn and Stay Informed about the Division of Chemistry

- <https://www.nsf.gov/div/index.jsp?div=CHE> (Links to subscribe to the Division of Chemistry Newsletter, volunteer to become a reviewer, and subscribe to NSF News are on the bottom right section of the webpage.)
- <https://www.nsf.gov/> (Awards/Search Awards/ Advanced Search;
Program Element Code 6883 for Current and/or Expired CLP awards
Program Element Code 6885 for Current and/or Expired MSN awards)