

Summary Page for NSF proposals

Each NSF Summary Page, which cannot be over one page in length (or 4,600 characters with spaces), will contain an overview, a statement on the intellectual merit of the research, and a statement of broader impacts. Written in the third person and publication-ready, your project summary describes the activities that would result if your proposal got funded. This will be your first chance to impress the reviewers. If this page is not written according to the NSF guidelines, your proposal will be returned without [review](#). The sections are:

Overview

The overview will contain the long-term objectives, followed by the aims that support those objectives. It is the introduction that will illustrate the importance of the project in terms of its effect and impact. As seen in the following example, the author begins with the objectives, followed by the aims and the methodology.

Example

*One long-term objective of this project is to understand the development of the ability of organs peripheral to the suprachiasmatic nucleus (SCN) to synchronize with the external environment. The first aim supports this objective with a systematic analysis of when during development an entrainable circadian rhythm is present in the developing eye, ear, nose, heart, and pronephros of the model organism, *Xenopus laevis*. We first test for the onset of circadian rhythm in each organ within the context of the embryo by assaying for rhythmic expression of circadian genes in a light/dark (LD) cycle. Next, the ability of each organ to intrinsically generate circadian rhythms is tested by assaying for rhythmic circadian gene expression in organs cultured in vitro in constant darkness (DD). Lastly, the ability of each organ to directly entrain to light is tested by culturing organs in vitro for two days in LD followed by three days in a DL cycle and assaying for rhythmic gene expression that correlates with the anti-phase light regime. Quantitative Real Time PCR will be used to measure gene expression in all these experiments.*

Intellectual Merit

This section will address what is currently known and, more importantly, what is not known in the field. This shows how the proposal will fill an important gap in existing knowledge. Specifically, the NSF requires that you address how the proposed activities will advance knowledge in your own scientific field and across other fields in creative and transformative ways. The qualifications of the Principal Investigator (PI) and the institutional resources are also key elements in this section. As noted in the example below, the PI begins this section with the importance of the study, speaks about innovation and the rationale on why the study should take place. This is followed by the qualifications of the PI to undertake the study.

Example

*Since glycoproteins of moderate size can now be synthesized in homogeneous form by native chemical ligation techniques, **there is a great demand for their synthetic building blocks**, i.e. thioester (glyco) peptides and glycopeptides with an N-terminal cysteine. **An original concept** based on the photochemical acylation of thiols and glycosylamines under mild reaction conditions will be established in order to afford thioester peptides and glycopeptides. Thioester peptides are prone to C-terminal epimerization during standard acylation conditions. In contrast, their photochemical generation under neutral or weakly basic conditions is expected to produce minimal amounts of epimerized byproduct, which **will contribute to improved reaction yields**, and thus to the overall reaction yield of glycoproteins synthesized by native chemical ligation. **The P.I.'s recent research results demonstrate** that photochemical acylation condition minimizes aspartimide formation and thus increases the product yield. The P.I. endeavors a novel and broadly applicable, photochemical approach to make these important peptide derivatives better accessible to the scientific community. Developing novel methods for the efficient synthesis of thioester peptides and glycopeptides has cross-disciplinary implications. Not only does it expand the synthetic methodologies available to organic chemists, but biophysicists, glycobiologists, spectroscopists, and pharmacologists will also benefit from the improved accessibility of pure, homogeneous glycoproteins in large quantities.*

Broader Impacts

The Broader Impacts statement is an important part of the Summary Page and will heavily affect your chances of being funded. According to the NSF criteria, this section is about understanding and promoting teaching, training, research and learning, while at the same time advancing the participation of underrepresented groups. A description of how science and technology will be enhanced, as well as the broad societal impacts should be included in this section. The following example, which effectively states the impact that will be had on undergraduate education and research and how the university will support lab experiences for minority students.

Example

This proposal is a vehicle for providing an opportunity for undergraduates to become immersed in basic research full time for ten weeks during the summer (impact on 8-12 undergraduate students over three years). The University of Wisconsin at Whitewater has a strong commitment to undergraduate research. Also, programs are in place to support undergraduate research through small intramural grants awarded to students as well as programs that support hands on lab research experience for minority students (WISCAMP and McNair programs). This proposal builds on these programs and provides support for students that have been trained in the laboratory in the fall and spring semesters to continue their research full time for 10 weeks of the summer and become immersed in their project.