

- Wellisch, H. H. 1984. Conrad Gessner: a bio-bibliography. IDC AG, Zug, Switzerland.
- Zanobio, B. 1974. Pietro Andrea Gregorio Mattioli. *Dictionary of Scientific Biography* 9:178–180.
- Zophy, J. W. 1997. *A short history of Renaissance Europe: dances over fire and water*. Prentice Hall, Upper Saddle River, New Jersey, USA.

Acknowledgments

I thank Anne-Marie Drouin-Hans, Université de Bourgogne, and Jean-Marc Drouin, Musée Nationale d'Histoire Naturelle, Paris, for their comments. All illustrations in this article are from E. L. Greene (1983), *Landmarks of Botanical History*, reproduced courtesy of the Hunt Institute for Botanical Documentation, Carnegie Mellon University, Pittsburgh, Pennsylvania.

*Frank N. Egerton
Department of History
University of Wisconsin-Parkside
Kenosha WI 53141
E-mail: frank.egerton@uwp.edu*

How To Write A Successful Doctoral Dissertation Improvement Grant Proposal

The Doctoral Dissertation Improvement Grant (DDIG) Program of the National Science Foundation <<http://www.nsf.gov/bio/progdes/bioddig.htm>> provides funding in several biological disciplines including ecology, animal behavior, evolutionary biology, and systematics. To be eligible, a doctoral student must have achieved candidacy and be enrolled in a U.S. institution of higher learning. DDIGs are available to students of all nationalities. Grants range in size and duration, but are generally a few thousand to \$12,000; grant duration can extend up to 24 months. Additional funding is available for those proposing collaborative research with foreign institutions. Although they are not comparable in scale to regular NSF grants, these funds can represent a significant resource for a doctoral student. In addition, the Program represents an outstanding opportunity for graduate students to gain skills in proposal writing and to establish a track record with an important funding agency. Finally, getting a DDIG looks great on a CV.

Between 25% and 30% of all DDIG proposals are funded. In the world of Federal grant funding, these are excellent odds. You can be successful if you follow some straightforward guidelines.

Read the directions

During the latest round of funding, nearly 10% of all applications were returned without being reviewed. Follow, to the letter, all instructions regarding font size, margins, statement length, etc. After you upload your proposal on Fastlane it is possible to print it out. Do this so that you can check to make sure that your proposal will look as you intend it to when it reaches your reviewers. There is no excuse for mistakes in formatting your proposal. Similarly, there is no excuse for submitting past the deadline. Proposals are not considered submitted until done so by your sponsored research office. Be aware of your own institution's requirements and lead times for submission.

Be organized

Your proposal will be reviewed by three people, each of whom will have about 25 proposals to judge during a short period. Imagine that you are dealing with a weary, time-challenged reader and you have the correct idea. Break your proposal into sections whose titles are logical and reveal the flow of your proposal. A reader should be able to skip from section to section easily to find what they want to see. Finally, typos are annoying to your reviewers; eliminate them.

Show that you understand the larger context for your research

Many proposals are taxon-centric or, in other ways, are focused on a small subspecialty. Your proposal will be read and judged by people whose interests are not the same as yours. You need to connect what you do to a larger field of interest in the proposal abstract, in the introduction, and in the closing significance section. This should be done in a meaningful way; throwaway statements are easily detected.

Connect specific hypotheses to testable predictions

Many proposals contain objectives or goals, but no specific hypotheses. Other proposals contain irrefutable predictions, or predictions that will not really be tested by the research activities proposed. Vagueness and lack of careful thought is the kiss of death.

Then connect results from completed and proposed experiments and analyses back to the larger context

It is a proposal for an "improvement"

Proposals written by first- and second-year students have lower odds of success. However, submitting a proposal early in a student's program does allow fine-tuning

a proposal through the review-and-resubmit process. Regardless of when it is submitted, a proposal needs to describe clearly what you have done so far and how funding of a DDIG will *add* something important to your dissertation.

Include preliminary data

Related to the last point, it is critical to include preliminary data. Show the panel that you have been successful at achieving some of the goals of your dissertation research. Simply presenting data is not adequate. They must be connected to specific hypotheses and predictions.

Use all eight pages

Do not leave yourself open to the criticism that you neglected to include something even though you had space left over. In addition, cite adequately to show you are aware of important literature. This is not a suggestion to be verbose; be economical and concise always.

“Broader impacts” matter

All proposals are rated based on their intellectual merit as well as their broader impacts. The latter criterion is playing an increasing role in funding decisions at NSF. Statements regarding broader impacts should be put under their own section headers in the abstract and significance sections. All DDIG proposals contribute to the education of the junior PI; say this. If you include undergraduates or underrepresented groups, say so. If you do any outreach, or lecture publicly, say so. If the research has practical or management implications, say so. If the research involves collaboration with other institutions, say so.

Do not obsess over the budget request

Panelists rarely, if ever, discuss the budget. These are small grants. The point is the science.

Simply make sure that the request makes sense, as explained in the budget justification.

Acknowledgments

Thanks to M. Bowers, M. Courtney, A. Tessier, and S. Twombly for comments and encouragement.

*David K. Skelly
School of Forestry and
Environmental Studies
Yale University
370 Prospect Street
New Haven, CT 06511
(203) 432-3603
Fax: (203)432-3929
E-mail: david.skelly@yale.edu*

Errata. *ESA Bulletin* 84(2) April 2003

- *On page 49*, cover figure legend, line 6: “Jon Keeley” should be replaced by “Tony Caprio, U.S. National Parks Service.”

- *On pages 89 and 90*, “A history of the ecological sciences, Part 9: Albertus Magnus, a scholastic naturalist,” change “Tilmann 1971” to “Albertus Magnus 1999” at the following locations:

Page 89, column 1, paragraph 4, line 13; column 2, paragraph 2, lines 4, 6, 12, and 20; paragraph 3, lines 2 and 3.

Page 90, column 1, paragraph 1, line 7; paragraph 2, line 9; paragraph 4, lines 4, 10, and 14; column 2, paragraph 1, lines 2, 6, 10, 20, and 27.