GUIDANCE FOR STUDENTS APPLYING TO THE
NSF GRADUATE RESEARCH FELLOWSHIP PROGRAM

1. What matters?
The written statements, research experience, and the overall academic record are critical. Less
important are faculty letters and GRE scores, although either of these things can help shore up a
weaker academic record or help explain unusual circumstances. In general, students should have
a GPA of 3.50 or greater. Most successful applicants will have GPA’s above 3.80 with one or
more papers published or in press. Applicants with somewhat weaker academic records who
have demonstrated unusual research success or have unusual personal experiences can also
succeed.

2. What should the personal statement do?
The personal statement should be 2 pages, single-spaced. It should describe a narrative of your
engagement in and motivation for pursuing a Ph.D. in the natural sciences. The best statements
articulate a clear, original view of how science works and how this relates to your thinking or
vision. The statement should also address the “broader impacts”—activities that you have
engaged in that speak to education and/or outreach. If you have been a tutor, or worked in an
elementary school to bring science to children, this is the place to talk about this. Explain why
teaching and outreach matter to you and to the world. Be sure to mention how you plan to
continue or build on these activities in the future—have a plan to “stay relevant.” Avoid common
or generic statements such as, “I have been curious since I was a small child.” Don’t tell them a
Discovery channel TV show was the impetus to go into science. Avoid being overly-dramatic or
claiming enthusiasm without demonstrating it. Write with engaging style and don’t be afraid to
include a little appropriate humor, but remember that you are writing for a “mature audience.”

3. What should the research experience statement do?
Again, this statement should be 2 pages, single-spaced. This portion should provide a clear
discussion of your research experiences. The text should focus on the ideas explored by each
experience—pay attention to the hypothesis that was tested and be sure to provide sufficient
background that the significance of each research project is clear. Avoid lists, or focusing too
much on the specific techniques employed. Try to connect the kinds of experiences to the overall
theme or direction. The statement should not be of the form “I did this thing and then next year I
did this thing.” Try to establish some coherency to your experiences, without seeming contrived.
Even if you have mentioned it elsewhere, be sure to emphasize outcomes here: presentations,
publications, and other external validations of the significance of your work. Be sure to use first
person, singular: “In the next phase of my career, I explored…”

4. What should the research proposal do?
Again, you only have 2 pages, single-spaced. Choose a topic that you know a lot about, most
likely an extension of a research project that you have already done. The readers understand that
you may not actually DO this project as a thesis, so don’t worry about that. The purpose is to
demonstrate your understanding of how you would design a scientific investigation. The section
MUST be in good proposal form, with clear significance outlined, specific hypotheses to be
tested and/or specific aims. The significance section is critical to setting up why the work matters.
Be sure to include important controls and what you will do if you don’t get the result you expect.
Consider a section titled “Anticipated Results” or “Alternative Interpretations”—this helps to make the case that you understand that science is a process of interpretation and refinement of ideas. Include 2-5 critical references (they may be in smaller type at the bottom). You should also have a single sentence attesting to the originality of the idea: This original proposal was conceived and written by me. Avoid proposals that are overly ambitious or naïve; have an expert take a look at your idea and give you feedback. Don’t give excessive technical detail—the readers are experts, they know how most of these techniques work. Again, avoid slipping into passive voice or first person, plural. Write “I will demonstrate that…” instead of “We will demonstrate that…” The latter suggests that you are merely plugging yourself into established ideas in a particular laboratory—you don’t yet conceive of yourself as a developing independent scientist.

Overall, an NSF GRFP application should “hold together.” Each section should help reinforce perspectives and experiences about science. In the end, the reader should emerge with a good sense of who you are and why science will benefit from you pursuing a Ph.D. Panels judge the PERSON and their capacity, not so much the project itself.