

## Goldwater Scholarship Research Essay

**RESEARCH ESSAY:** Not to exceed 3 pages, using Ariel or Times New Roman font no smaller than 12-point, and 1" margins on all sides. The essay should include appropriate bibliographic information and references. It may include diagrams, figures, charts, etc.

The essay should be carefully thought-out and well researched. It should discuss a significant issue or problem in your field of interest.

The Goldwater Foundation expects you to work closely with your faculty or research mentor/s as you develop and finalize your essay.

**Covid-19 Considerations:** The Goldwater Foundation is acutely aware that Covid-19 has delayed, canceled, or severely restricted many traditional research experiences. Rather than viewing the situation brought about by Covid-19 as a setback, the Foundation sees this as an opportunity that enables students to understand that research does not just exist within a traditional research lab but encompasses all the steps that create and disseminate new knowledge.

Faculty and students are encouraged to think broadly and look for collaborative work that might include in-depth literature reviews, analysis of existing data sets, computation studies, among others. Additionally, the research essay might propose a new experiment that tackles an important and interesting question in your field of interest. We also anticipate that there will be students who use this opportunity to pursue independent research (e.g. a student who is developing a data-driven website that tracks global Covid cases to study the impact of travel restrictions or a student who is investigating the efficacy of novel cleaning methods for N95 masks).

**Helpful notes from Goldwater Foundation:** In all cases, you should demonstrate "ownership" of the research discussed in the essay. Selection committees want to see that you "think and behave like scientists." One way for you to demonstrate this is for you to put forward ideas for new research based either on what you have been doing or to suggest entirely new (i.e., not based upon your current/past research experiences) lines of study explaining, at least in part, how the skills you have acquired are useful to the research proposal. "Showing correlation between what's been done (skills that have been acquired" and what is to be done (new line of work) will strengthen the overall essay."

As with any research proposal, the essay should put forward a question, present the relevant literature, present a hypothesis, outline the research methodology and discuss anticipated results."

Whether building upon previous/ongoing research in which you have engaged OR putting forward a proposal for research in which you have not already been involved but in which you are interested, the essay should convey your interest and ability to carry out the project.

Space in the research essay should be used judiciously. Balance the various elements of the essay so that no one section dominates the essay. Include a bibliography/references that includes up-to-date, refereed journal articles. Use diagrams and figures only as appropriate.

**If building upon past/current research in which you have been engaged, the essay should include:**

- a description of the issue or problem,
- a discussion of the research methodology
- a discussion of your findings
- a description of YOUR contributions to the research and the specific skills/expertise you developed
- a description of future work your data suggests or work that still needs to be done to complete the current project, and
- an interpretation of obtained/expected results

**If you are developing an idea in which you have NOT previously engaged, the essay should include:**

- a description of an idea for a research project that could have a significant impact on an issue or problem of interest to you
- a description of the methodology that you would use, and
- a discussion (and interpretation) of anticipated results

The content and style of the essay will be important to the success of your application. You should assume that the reader is knowledgeable in the STEM fields and will have the expertise to read, review, and understand the complexities of your research and field of specialty. If the essay involves research in which you are or were involved, you should indicate if you are or were the sole researcher or if you collaborated with others.