

The following are excerpts from successful OSR Student Research and Travel proposals. These answers are compiled from various successful applications from previous years and some sections have more than one example. All of the identifying project details have been changed/removed in these examples. These examples are meant to provide you with the amount of details that are required for each section of the proposal. The actual project details for questions 1-3 are fictional. Please use these examples to guide you in completing your Student Research and Travel Grant.

If you need additional assistance or have questions about your proposal, please contact Dr. Amorette Barber, Director of the Office of Student Research (barberar@longwood.edu) or (osr@longwood.edu).

PART 2: PROPOSAL INFORMATION

****It is essential that all of your answers use language suitable for a reader outside of your discipline. Please make sure you clearly define specific terms and avoid the use of jargon.****

1. Purpose of project: What is the research question or purpose of the project for which you are seeking funding? How will you go about undertaking the project (i.e. what method or approaches will you use?). (250 words max)

Example 1 (this is fictional and is written as an example- this is not a real research question or topic):

Previous research has shown that eating a diet rich in green leafy vegetables results in longer neck length in giraffes. However, the effect of eating other fruits and vegetables on neck length is unclear. My research question is to investigate whether eating other fruits and vegetables (tomatoes, watermelons, and carrots) alters neck length in giraffes. I selected these foods because giraffes commonly eat these foods in the wild. To address my research question, I will measure the neck length of giraffes fed various diets for one year. I will also measure the expression of genes related to neck length (Tall gene 1 and Tall gene 2) using a technique called RT-PCR. There will be five groups of giraffes that will be fed different diets as follows: dried straw, green leafy vegetables, tomatoes, watermelons, or carrots. Neck length and expression of genes will be measured once a month for one year and I will compare the neck length and expression of genes that control neck length across the five groups.

Example 2 (this is fictional and is written as an example- this is not a real research question or topic):

In this essay I will blend previous literary analysis and contemporary ideas about fairy tales in order to demonstrate the enduring popularity of the Hansel and Gretel tale as well as its adaptivity. For my project, I will complete a researched literary analysis where I close read a text to establish my thesis, which is that the true horror in *Hansel and Gretel* is not the disturbing acts that the Witch performs but rather the fear that Hansel and Gretel have of losing the innocence of childhood as they become adults. I will present my research at the Virginia Association for Fairy Tales in March 2021 to experts within the field of fairy tales and I will receive feedback from professionals about my thesis.

Example 3 (this is fictional and is written as an example- this is not a real research question or topic):

Growing research into the negative effects of BPA has led to the development of numerous substitute compounds. Many of these substitutes are structurally similar to BPA itself and may act in a similar manner on the body, but research into many BPA substitutes is limited. The purpose of this project is to investigate the effect of a subset of BPA substitute compounds on the immune system, specifically T cells. The specific aims of this research are to determine: 1) Do the selected BPA substitutes affect CD4+ T cell differentiation? and 2) Do the selected BPA substitutes have estrogenic activity in CD4+ T cells, similar to that of BPA itself?

2. Background: What does the literature say about your topic? The literature is the scholarly writing (i.e. peer-reviewed articles, scholarly books, conference proceedings, etc.) on a topic. (150 words max)

Example 1 (this is fictional and is written as an example- this is not a real research question or topic):

The work of Dr. Suzy Smith has demonstrated that the neck length of giraffes can be altered in different environments (Smith et al., 2016). Improved nutrition can alter neck size and Dr. Green's work has shown that increasing the intake of leafy vegetables has a positive effect on neck length in giraffes (Green et al., 2013; Green et al., 2018). More recently, it was found that compared to giraffes fed dried straw, giraffes that ate leafy vegetables had increased expression of specific genes related to neck length (Tall gene 1, Tall gene 2)). My work builds on these findings by investigating if other dietary changes (i.e., tomatoes, watermelon, and carrots) are correlated to having long necks. The unique part of looking at the dietary changes described above is that although there is research on the effect of leafy vegetables, there is little conducted research on the effects of these foods.

Example 2 (this is fictional and is written as an example- this is not a real research question or topic):

Hansel and Gretel has been widely commented on since its publication in Grimm's Fairy Tales in 1812 by pop culture and literary scholars. The most common readings are focused on the loss of the innocence of childhood and other psychological readings. Other commentators zero in on the symbolic nature of the patriarchal home seen as a haven to protect children from the world outside of the home; yet others examine the fairy tale as a piece that looks particularly at child abuse and abandonment. Finally there are a number of scholars who have examined the theme of the presence of a hostile stepmother after a father remarries.

Example 3 (this is fictional and is written as an example- this is not a real research question or topic):

BPA is found in many everyday items, including food packaging, plastics, and receipts (Xu et al, 2016). As an estrogen-mimicking compound, BPA can bind to estrogen receptors and have similar effects on the body as natural estrogen. Estrogen has been shown to affect the immune system, modulating the activity of all types of T cell, including CD4 T cells (Roy et al, 2009). BPA has been linked to the development of autoimmune diseases, and to cancer (Kharrazian, 2014). Growing research into these negative effects of BPA has led to the development of numerous substitute compounds, many of which are structurally similar to BPA, and may have similar effects on the human body (Ji et al, 2021). Little research has been done into the effects of these substitute compounds on the immune system.

References

- Ji Z, Liu J, Sakkiah S, Guo W, Hong H. 2021. BPA Replacement Compounds: Current Status and Perspectives. *ACS Sustainable Chemistry & Engineering*. 9(6):2433–2446.
- Kharrazian D. 2014. The Potential Roles of Bisphenol A (BPA) Pathogenesis in Autoimmunity. *Autoimmune Diseases*. 2014:1–12.
- Roy JR, Chakraborty S, Chakraborty TR. 2009. Estrogen-like endocrine disrupting chemicals affecting puberty in humans--a review. *Medical Science Monitor*. 15(6):RA137-45.
- Xu J, Huang G, Guo T. 2016. Developmental Bisphenol A Exposure Modulates Immune-Related Diseases. *Toxics*. 4(4):23.

3. Significance: What is the significance of your project to your field? How is your research or creative inquiry project novel and what will it add to your discipline? (150 words max)

Example 1 (this is fictional and is written as an example- this is not a real research question or topic):

Giraffes are used as model organisms in the laboratory setting, meaning that there is extensive knowledge of their physiology and observations can be applied to human processes. Therefore, this research may relate to neck length in humans and may also provide insight into how neck length can be altered through diet. As stated before, there is a lot of research on neck length and how it may be altered by eating green leafy vegetables, but there isn't a lot known about how the neck length is associated with eating other fruits and vegetables. My project will help to fill this gap and provide some insight into how diet alters the neck length in giraffes, and perhaps may be translated to humans as well.

Example 2 (this is fictional and is written as an example- this is not a real research question or topic):

Loss of innocence and rite-of-passage are much discussed contemporary issues as shown in the classic piece of literature, *Hansel and Gretel*. My research shows how frightening a rite-of-passage event can be, as shown by Hansel and Gretel having to fight and kill the

witch that tricked and then tried to eat them. Hansel and Gretel's responsibilities as independent children who were forced to be alone in the woods made them have to quickly lose their sense of innocence. By pushing the witch into the oven, Hansel and Gretel destroyed their own identity as children and they lost the innocence associated with child hood. My reading of the fairy tale brings new light to the text by examining how *Hansel and Gretel* presents itself as a fairy tale about a mean witch that lures children out of the woods but with further analysis, it is the quick loss of innocence and ascent into adulthood that is the true horror.

Example 3 (this is fictional and is written as an example- this is not a real research question or topic):

There has been significant research done into the effects of estrogen on the human body, including how it effects the immune system. Similarly, research has been conducted on the effects of many estrogen mimicking compounds, including BPA. However, there has been little if any research done into the effects of the many substitute compounds that have been developed to replace BPA in the manufacturing of everyday products. My research will help elucidate the effects of 5 of these BPA substitute compounds on an important subset of immune system cells, T-cells. It is known that estrogen plays a role in T cell differentiation, but the effect of BPA substitute compounds on T cell differentiation is unknown. Given that BPA is an estrogen mimicking compound, and many BPA substitutes are structurally similar to BPA itself, it is reasonable to predict that BPA substitutes may have an effect on T cell differentiation.

4. Preparation: List relevant courses you have taken or experiences you have had and explain how they have prepared you to undertake the project. (150 words max)

Student Example 1:

Course A and Course B. Both courses helped to expand my view of research methods in my discipline and Topic A's impact on our lives in society. I've been able to study Topic A and Topic B in more detail in these classes and read literature on these topics to allow speculation in other areas of Topic A and develop more of an interest in the field.

Student Example 2:

- BIOL XYZ, BIOL XYZ, BIOL XYZ: These classes were an overall introduction to topic A, topic B, and topic C and have given me the foundational knowledge I will need to carry out this project.
- BIOL XYZ Course Name: In this course I studied topic B in more detail than in BIOL XYZ or BIOL XYZ. I can use the detailed knowledge I gained on topic B for this project.
- BIOL XYZ Course Name: Through this course I gained experience observing, identifying, and analyzing topic C and wrote a final paper on topic A that will be useful in the assessment portion of this project.
- I have worked in Dr. XYZ's lab for 2 semesters, which focused on This lab experience has prepared me to continue concepts discussed in previous research.

Student Example 3:

English XYZ, Course Title 1- I began to learn how to conduct literary analysis

English XYZ, Course Title 2 - Introduction to Specific Type of Literature, something that has influenced the rest of my Longwood career.

English XYZ, Course Title 3 - This class offered more ways of analyzing this specific type of literature.

English XYZ, Course Title 4 - This class taught me how to apply literary theory to literature and specifically to the texts I will analyze for my research project.

English XYZ, Course Title 5 - Prepared me to present my research in a professional manner.

English XYZ, Independent Study Spring of 2020, Name of Project (with Mentor's Name)- Continued study of specific topic.

Student Example 4:

Courses in Topic A and Topic B such as Class XYZ and Class XYZ were directly related to the content of this study. Additionally, participation in Topic C journal club helped me to be more comfortable with the literature, research methodology, and statistical analysis. Courses from my minor in Subject D such as Class XYZ and Class XYZ were relevant to the Topic C aspects of this study.

5. Benefits: How will you benefit academically and professionally from undertaking this research? (150 words max)

Student Example 1:

Participating in this research has helped me make that jump from a good classroom student to an individual who is prepared for graduate study. When I look back at this research, I do not love it because of the topic or execution. In fact, there are a lot of things I would do completely different if I had another chance. The experience is valuable to me because it solidified my love for research and inquiry. I love how unbiased research is if it is done right. It says what happened. That's it. No fabrication, no agenda, and no holding hands. It is something I value about the field and is the reason why I want to always be involved in it. Largely due to this research experience, the idea of going to graduate school and furthering my knowledge is appealing to me.

Student Example 2:

Upon completion of my undergraduate degree at Longwood, I plan to go into the field of animal behavior research and wildlife management. With the experience gained from this research, I will be able to apply skills in observing and identifying different animal behaviors to my graduate studies and future career. This will also benefit me in applying to graduate programs to show my experience and dedication to work intensive research projects in this specific field.

Student Example 3:

Attending this conference will not only allow me to share my findings with other experts in the discipline, but it will also allow me to network for future careers and graduate school. My current postgraduation plan is to work in my discipline for a period of time and then return to graduate school to earn my PhD. This conference allows me to see what topics people are most interested in and will give me ideas for future research interests for when I apply to graduate school.

Student Example 4:

Being able to present my research will allow me to develop professional skills such as explaining research, presenting in front of an audience of my peers and other professors, and listening to other presentations. This opportunity will also enhance my qualifications for graduate schools and programs while having research experience and allow me to take my experiences to graduate school.

Student Example 5:

I will benefit by getting hands-on experience with various aspects of experimental design. I will be conducting experiments, collecting and analyzing data, and reporting my results both in writing and orally. I will develop this work into my Senior Thesis paper and present my findings at the Longwood University Student Research Showcase and likely other conferences as well. Additionally, this experience will benefit my future plans in graduate school and my future career in genetics research by teaching me relevant scientific techniques.