ACTIVITIES REPORT FOR: Dominic LaRoche

1. Background Information

Department: Biostatistics
Degree sought: Doctoral Degree
Degree Start Date: 08/2015
Research interest/topic: Improving the analysis of RNA-Seq data through the theory of compositional data analysis
Keywords: Genetics, Methods, RNA-Seq, Statistics, Compositions
Research Advisor 1: Dean Billheimer
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Research Advisor 2:
Telephone:
Email:

Research Advisor 3:
Telephone:
Email:

2. Skills

Research Skills
Participated in formal coursework/training in research methods, practices, and/or instrumentation in your primary discipline.
Engaged in practical (i.e. hands-on laboratory and/or field experience) in conducting research.
Undertook additional formal coursework/training.
Participated in formal coursework/training in both the ethical and responsible conduct of research and ethical conduct related to the themes encompassed by your project (e.g., human subjects and animal use and care, radiation safety training, hazardous materials, etc.).

Courses/seminars taken in major discipline: 1
Courses/seminars taken outside of major discipline: 1
Courses/seminars taken that specifically covered interdisciplinary topics related to GRFP project: 1

Professional Skills
Authored, submitted or published research paper(s) in refereed journals.
Made presentation(s) at academic/scientific professional conferences, meetings, or departmental seminars.
Participated as a member of teams engaged in joint research, education, and/or outreach efforts.

Professional Skills
Undertook coursework/training to develop media-based or information technology-based communication skills.

Career Skills
Had an internship (an off-campus, research, educational, and/or work experience) in a nonacademic setting (e.g., industry, government)

3. International Experience

Took part in any international experiences during this reporting period: No

4. Achievements

Had any achievements to report for this period: Yes

Achievement Type	Achievement Description
Broader Impacts	Contributed to an outreach program for at risk high school students to get them interested in a career in data science and statistics.
Presentations	LaRoche, D.D., Michels, K., Sinari, S., Billheimer, D., and LaFleur, B. Relative frequency measurements: metrics for sample quality, sequencing integrity, and batch effects in targeted NGS. Joint Statistical Meeting, Chicago, Il. 2016. Poster Presentation.

5. Career Plans

Expected Graduation Date: 12/2017
Type of employment pursued: Government - Full time position
Other:

6. Internships

Took part in any internship(s) lasting 1 month or more: Yes

Company/Agency/Organization	Duration (in months)	Contributions
HTG Molecular Diagnostics	11 - 12	Research/Industrial Interaction; Nonacademic Interactions; Work with other nationalities

7. Other Financial Support

Received any fellowships (other than GRFP), scholarships, or grants during the period: Yes

Fellowship Offer	Year Awarded	Source of Support
Graduate Program Stipend	2016	Department of Biostatistics and Epidemiology, Mel and Enid Zuckerman College of Public Health

8. Stipend Feedback

Stipend comparison to stipends received at your organization: Greater Than Others

9. Additional Funding Opportunities

Have you received any Additioanl Funding Opportunity: No

10. Fellowship Year Summary

Fellowship Year Summary Uploaded: No

Fellowship Year Summary Text: During my first year on reserve on the National Science Foundation (NSF) Graduate Research Fellowship (GRFP) I have been working intensively on my dissertation while interning at a local Molecular Diagnostics Firm (HTG Molecular Diagnostics). I have presented the first part of my dissertation at the 2016 Joint Statistical Meeting in Chicago, IL. I have a paper accepted for the 2017 Compositional Data Analysis Workshop in Italy and I will be travelling there this summer to present. I was able to attend the R-Studio Conference in January and attend a 2-day workshop on developing web applications for implementation of statistical models and visualizations. I have also continued my volunteer work with an outreach program designed to introduce careers in statistics and data science to local, at-risk, high-school students. I have not been able to make as much progress as I had hoped on my dissertation and I now expect I will be ready to defend by December of 2017.

My internship at HTG Molecular Diagnostics has provided first hand experience with the sorts of analytical challenges in RNA-Seq my dissertation is aimed at improving. It has also provided me with access to raw RNA-Seq data on biological samples which is expensive to obtain. This has allowed me to test theoretical developments in a "real-world" setting. They have also provided travel funding for me to present my dissertation work and attend instructional workshops. I plan to continue this internship through 2017.

In an effort to encourage under-privileged high school students to pursue degrees in the statistical sciences I continued my participation in an outreach program initiated by a fellow graduate student. As part of this program I visited two high schools in southern Arizona which serve primarily poor and minority students and gave interactive presentations to 4 classes in which we tried to encourage students to pursue a college degree in the statistical sciences and fielded questions about college, careers in science, and graduate school. Our goal is to make careers in science feel attainable for these students who have no first hand knowledge of how to pursue science as a career.