



Program Title: Working With A Scientist Program  
Summative Evaluation Report

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## EXECUTIVE SUMMARY

This summative evaluation report focuses on the impact that the Working with a Scientist Program at the University of Texas at El Paso (UTEP) had on its student participants. Student participants were recruited from regional high schools that are categorized as Title I schools, due to the large population of low income students that they serve. The participants engaged in mentored research activities a UTEP every other Saturday during the spring semester and on weekdays during the summer. Their mentors were professional scientists from different STEM disciplines, such as Chemistry, Immunology, Geology, Engineering, etc. During their program experience the students also engaged in cogenative dialogues (cogens) with their team members and mentors; cogens are interactive discussions among individuals with shared goals that allow for all voices to be heard in a respectful and reflective environment. Cogens were expected to positively impact the students beyond the impact of the research experience alone.

The evaluation components included in this report focus on assessing the different gains that the participants made during their research experience, and also the students' perceptions of the 'self', 'others' and the 'group' during group discussions, or cogens at two time periods: soon after the beginning of program participation and at the end. In addition, high school and academic performance of students was analyzed to see whether program participation effects carried over to their academic life. Therefore, measures used included: 1) participant survey modeled after the Undergraduate Research Student Self-Assessment (URSSA), 2) participant survey that focused on program fellows' perceptions of their group discussions, and 3) academic records.

Summative evaluation results show that:

- The research internship experience had a positive effect on students' scientific self-efficacy and scientific identity
  - 85% of participants made great or good gains in areas related to their ability to apply knowledge to research work. Areas included: *figuring out the next step in a research project, identifying limitations of research methods and designs, understanding the relevance of research to their coursework, understanding the connections among scientific disciplines, formulating a research question that could be answered with data, and understanding the theory and concepts guiding their research project.*
  - Over 85% of students made great or good personal gains related to research, such as in: *confidence in their ability to contribute to science, comfort in discussing scientific concepts with others, comfort in working collaboratively with others, confidence in their ability to do well in future science courses, and ability to work independently.*
  - Approximately 85% or more of students reported making great or good gains in research related skills such as, *making oral presentations, defending an argument when asked-research related questions, explaining their project to people outside their field, preparing a scientific poster, conducting observations in the lab or field, understanding journal articles, conducting database or internet searches and in managing their time.*
  - Over 90% of participants indicated that they *engaged in real-world science research* a great deal or fair amount of time during their research internship time.
  - Approximately 90% or more of participants indicated that during their time in the internship they *thought creatively about their project, tried out new ideas or procedures on their own, and felt responsible for the project* a great deal or fair amount of time.

- 85% of participants spent a great deal or fair amount of time during their research internship *feeling a part of the scientific community*.
- Overall, participants rated the research internship very positively
  - Over 95% of participants indicated that their *working relationship with their research lab scientists* and *the research experience overall* were excellent or good.
  - Over 90% of students reported that their *working relationship with their research group members* and *the amount of time they spent with their research lab scientists* were excellent or good.
- The research internship impacted participants' future goals
  - Over 90% of participants strongly agreed or agreed that their research experience *prepared them for advanced coursework in science, motivated them to attend college, and prepared them for college*
- Participants were very satisfied with the support they received while in the program
  - Almost 90% of participants were very satisfied with the *support and guidance from program staff* and also with the *support and guidance from their lab research scientists*.
- The impact that cogens have on students' perceptions of themselves, others and their groups while engaged in a research experience is not yet clear.
  - Cohort 1 participants who engaged in cogens seemed to have had a more positive perception of others during group discussion, while participants who did not engage in cogens seemed to have had a more positive perception of themselves.
  - However, cohort 3 participants engaging in cogens seemed to have had more positive perceptions of themselves during group discussions.
- Students' likelihood of maintain a good GPA and going on to graduate may be positively impacted by engaging in and completing mentored research experiences that include cogens.
  - Research internship participants from cohort 1 who engaged in cogens maintained a good GPA during their last year in high school and 100% graduated. On the other hand, participants who completed the internship but did not engage in cogens suffered a decrease in GPA their last year, and had a lower retention rate of 93%. The 93% graduation rate, was nonetheless 10% higher than that of students who did not engage in the research internship or cogens.

## BACKGROUND

The NSF funded Working with a Scientist Program (WWASP) reached its final year of funding in 2017. The program had two main goals. The first goal was to increase the effectiveness of informal education in STEM by employing *cogenerative dialogues* (cogens) during the students’ program experience. Cogens are interactive discussions among different individuals with a shared interest/goal, and are reflective of their collective experiences. The second goal of WWASP was to provide selected students the opportunity to get involved in early research experiences while being guided by professional scientists in order to increase the students’ interest in STEM. The research experiences took place during the spring and summer months in a research intensive Minority Serving Institution setting. Students were engaged in activities for approximately three hours every other Saturday during the spring months, and for six hours each weekday for six weeks during the summer. The professional scientists who guided the student participants through their experience included faculty and graduate research assistants. It should be noted that the program offered the participation opportunity only during the first three years of funding; thus, the evaluation for each of those years focused on assessing the program’s implementation of activities and progress towards meeting the objectives as they related to each cohort of participating students. The present report, on the other hand, takes a closer look at the overall effect of the program on the entire group of participants. Specifically, the report covers 1) the impact that cogens had on students’ perceptions of the self, others and the group overall during group discussions; 2) the benefits to participating students of engaging in the research experience, and 3) how taking part in a cogens/research experience impacted the students’ retention rates and academic performance.

Importantly, the program opened up the opportunity to only juniors from regional high school campuses that are served with Title I, Part A funding (see Table 1 below). In order for a school to received Title I, Part A funding, three factors are considered and calculate: 1) Population and poverty data of children, age 5–17, as reported through the US Census Bureau, 2) Foster care student counts, and 3) Counts of students in neglected facilities. Note that during the first year of operations, WWASP recruited students only from one school (Irvin High School), which of the three is the school with the highest percent of low income students (see Table 1). However, in order to increase the number of applicants, two other high schools, Chapin and Andress, were targeted the next two years as well. As Table 1 shows, Chapin and Andress high schools also have a very high percentage of low income students, which is quite significantly higher than that of the City of El Paso and State of Texas populations overall. Moreover, review of the high school records revealed that of the 114 students who participated in the program’s research internship activities (whether for some time or the entirety of the program), 81 (or 71%) were coded as economically disadvantaged. Thus, the program met the objective of targeting and serving a vastly underserved population.

**Table 1. Low Income Percent and Title I Status for Served Student Population**

Name	Low Income Percent	Title I Status
State of Texas*	15.9%	
MSA City of El Paso	20.9%	
Chapin HS	47.92%	Title I
Andress HS	57.03%	Title I
Irvin HS	80.80%	Title I

Source: Texas Education Agency, Division of Grants Administration, Campuses Served with Title I, Part A Funding. Fiscal Year 2016

\*Persons in Poverty Percent, US Census Bureau 2016

In order to be eligible to apply, the students in the three high schools had to meet eligibility criteria that included being juniors with a 3.0 GPA or greater. Each year, thirty six students were selected from among dozens of applicants to participate in research experiences in four different STEM labs at the university. All the labs were overseen by faculty from the Colleges of Science or Engineering.

## METHODS and ANALYSES

A three group experimental design was used the first year of the program to assess the impact of the program. One group of students did not get any part of the treatment (the research experience or the cogens); this was the complete control group. From the 36 students that were selected to take part in the research experiences during the first program year, half of the students, along with the scientist mentors, were randomly assigned to the cogens group (the research-cogens group) and the other half were assigned to a research control group (engaged in the research experience but not the cogens). The design allowed for a better assessment of the impact of the program on the students' academic performance and school retention. Note that during year 2 and 3 of the program all student participants engaged in the research-cogens experiences. No control groups were utilized during the two years; therefore, no comparisons are presented in this report for those two cohorts of participants.

Through the three years that the program opportunity was offered to students, different methods were used to assess the program's impact on the students. The methods included: 1) a participant survey (based on the Undergraduate Research Student Self-Assessment (URSSA) that measured the gains made by participants through the engagement in research activities (e.g. personal and professional gains, gains in research skills, scientist identity, etc.) (see Appendix A), 2) a pre- and post-program 'group discussion' survey that included questions about how the participants' perceived themselves, others and the whole group during group discussions/dialogues (see Appendix A), and 3) review and analysis of participants' academic records, with a comparison of the first group of research internship cogens group to the control groups (research internship non-cogens group and the non-internship control group).

During their time in the program, participants spent the greatest amount of time engaged in research activities. Therefore, to assess the different gains that the students made during their engagement in the research experience, the URSSA survey was administered to the participants at the end of their research internship experience<sup>1</sup>. URSSA asked participants to indicate how much they had gained in certain areas related to the following: applying knowledge to research work, personal gains connected to the research experience, skills gained from the research experience, and changes in attitudes and behaviors as researchers. Participants used a 5 point-scale (No Gain (1), A Little Gain (2), Moderate Gain (3), Good Gain (4), and Great Gain (5)) to indicate their answers. The students also rated the quality of certain components of the research experience (with mentor, lab partners, time spend doing research, etc.). Finally, the survey included other questions in regards to their research experience (e.g. question about the quality of the relationship with their mentor and other lab partners, and level of satisfaction with program components). Note that, independent sample t-tests were used to compare the participants who

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<sup>1</sup> Development and testing of URSSA was funded by the National Science Foundation through its Divisions of Chemistry and Undergraduate Education, the Biological Sciences Directorate, and the Office of Multidisciplinary Affairs, under grant #CHE-0548488. Additional support was provided by the Biological Sciences Initiative and the NIH Scholars program, both at CU Boulder, through their grants from the Howard Hughes Medical Institute and the National Institutes of Health. The instrument has been validated in assessing student outcomes related to student research (for more information on the instrument, please visit the URSSA website hosted at <http://www.colorado.edu/eer/research/undergradtools.html>).

experienced the cogens to those who didn't during the first year of the program research experience, and these were described in detail in a previous report. In summary, no significant differences were found between the groups in gains made, suggesting that both groups benefitted equally from the research experience. Therefore, for this report descriptive analyses were used to analyze the URSSA data of all the student participants together. This allowed for a better understanding of the number of participants who made gains in specific research related areas due to the opportunity that was provided by the program to take part in such activities.

Since student participants also engaged in one to two hours per week on cogens, it was also important to get an understanding of participants' perceptions of cogens activities. To this end, a Cogenerative Dialogue Heuristic instrument was used which was developed by Dr. Kenneth Tobin, an expert on cogenerative dialogues who is also a consultant to the program (see Appendix C). Specifically, the purpose of the Cogenerative Dialogue Heuristic instrument was to provide an assessment of how students perceived themselves, others, and their groups overall during cogens time. Survey items, for example, included: *My talk is respectful* (about the self); *Others in my group show respect for one another* (about others in the group); and *There is harmony with discussions in the group* (about the group). The group discussion survey was administered to participants soon after the beginning of program participation (after the second time that students met with their labs and held discussion) during the spring semester and again the last day of their research internship in the summer to see if their perceptions had changed. Paired sample t-tests were used to analyze the data for each cohort of students and results are discussed.

Students' academic performance assessment focused on high school retention and term average GPA for all the students. Students from the year 1 cohort were in three different groups: the research internship cogens group, the research internship non-cogens group, and the no internship control group. Although for years 2 and 3 of the program no comparison groups were used, the academic performance of students who participated those years, was also analyzed using descriptive statistics and is presented in this report.

## RESULTS

### URSSA

As mentioned in the methods and analyses section, the Undergraduate Student Self-Assessment (URSSA) was administered to students at the very end of their program participation to gauge the gains that they had made from taking part in the experience, as well as other impacts of the experience. In total, 88 participants completed the URSSA. The participants were first asked to indicate how much they had gained in specific areas related to the application of knowledge to research work (see Table 1). Results show that over 85% of participants indicated that they made great or good gains in the specific areas of: *figuring out the next step in a research project, identifying limitations of research methods and designs, understanding the relevance of research to their coursework, understanding the connections among scientific disciplines, formulating a research question that could be answered with data, and understanding the theory and concepts guiding their research project*. In fact, the area in which the lowest percentage of participants indicated making great or good gains was in *analyzing data for pattern*; yet, the percentage of students who made great or good gains in the area (over 75%) was, nonetheless, impressive.



Table 1. Percentage of Participants who made Gains in Application of Knowledge to Research Work

Areas	No Gains	A Little Gain	Moderate Gain	Good Gain	Great Gain	NA
Analyzing data for patterns.		4.5	12.5	33.0	46.6	3.4
Figuring out the next step in a research project.			11.4	33.0	55.7	
Problem-solving in general.			18.4	21.8	59.8	
Formulating a research question that could be answered with data.		1.1	8.0	29.5	61.4	
Identifying limitations of research methods and designs.		3.4	11.4	26.1	59.1	
Understanding the theory and concepts guiding my research project.	1.1		8.0	23.9	67.0	
Understanding the connections among scientific disciplines.	1.1		9.1	34.1	54.5	1.1
Understanding the relevance of research to my coursework.	1.1	1.1	10.2	22.7	63.6	1.1

Students were also asked to indicate how much they had gained in personal areas related to research work (see Table 2). Impressively, over 85% of students made great or good gains in all areas listed, with the greatest percentage of students (approximately 95%) gaining a better *understanding of everyday research work is like* and *in taking greater care in conducting procedures in the lab or field*.

Table 2. Percentage of Participants who made Personal Gains Related to Research Work

Areas	No Gains	A Little Gain	Moderate Gain	Good Gain	Great Gain	NA
Confidence in my ability to contribute to science.		3.5	9.3	30.2	55.8	1.2
Comfort in discussing scientific concepts with others.			10.5	24.4	65.1	
Comfort in working collaboratively with others		1.2	9.5	25.0	64.3	
Confidence in my ability to do well in future science courses.		2.3	8.1	25.6	64.0	
Ability to work independently.	2.4	1.2	5.9	27.1	63.5	
Developing patience with the slow pace of research.	2.3	2.3	9.3	24.4	61.6	
Understanding what everyday research work is like.		1.2	3.5	26.7	68.6	
Taking greater care in conducting procedures in the lab or field.		1.2	4.7	30.2	64.0	



A large percentage of students also indicated making gains in developing different research-related skills (see Table 3). Approximately 85% or more of students indicated making great gains in *making oral presentations, defending an argument when asked-research related questions, explaining their project to people outside their field, preparing a scientific poster, conducting observations in the lab or field, understanding journal articles, conducting database or internet searches* and in *managing their time*. Note, however, that approximately one in four participants indicated making no gains to moderate gains in *using statistics to analyze data*, which may in part be related to a lower percentage of participants indicating above (see Table 8) that they made great or good gains in *analyzing data for patterns* compared to the other areas related to applying knowledge to research.

Table 3. Percentage of Participants who made Gains in Developing Research-related Skills

Skills	No Gains	A Little Gain	Moderate Gain	Good Gain	Great Gain	NA
Writing scientific reports or papers.		1.2	15.1	29.1	54.7	
Making oral presentations.	1.2	2.3	11.6	22.1	62.8	
Defending an argument when asked research-related questions.		4.7	9.3	26.7	59.3	
Explaining my project to people outside my field.		2.3	8.1	27.9	61.6	
Preparing a scientific poster.			7.0	32.6	60.5	
Keeping a detailed lab notebook.	1.2	2.3	15.1	29.1	50.0	2.3
Conducting Observations in the lab or field.		1.2	11.6	31.4	53.5	2.3
Using statistics to analyze data.	1.2		23.3	20.9	54.7	
Calibrating instruments needed for measurement.		7.0	9.3	23.3	57.0	3.5
Working with computers.	1.2	4.7	14.0	24.4	53.5	2.3
Understanding journal articles.	2.4	2.4	9.4	35.3	49.4	1.2
Conducting database or internet searches.			11.6	34.9	53.5	
Managing my time.	1.2	2.3	9.3	31.4	55.8	

In order to gauge participants' scientific identity and whether they engaged in scientist-like behaviors during their experience, participants were asked how much time they spent thinking about research-related aspects and conducting scientific activities (see Table 4). Impressively, over 90% of participants indicated that they *engaged in real-world science research* a great deal or fair amount of time. In addition approximately 90% or more of participants also indicated that they *thought creatively about the project, tried out new ideas or procedures on their own*, and *felt responsible for the project* a great deal or fair amount of time. Moreover, 85% of participants spent a great deal or fair amount of time *feeling a part of the scientific community*. Participants reported spending less time interacting working extra hours because they were excited about their research. This, however, may be due to the fact that unlike university students who usually have open access to the labs that they volunteer/work in, the participants were only allowed to be in the labs during times designated by the program. The results suggest that the program may have jumpstarted the development of the participants' scientific identity. Based on the findings, the participants also seemed to have developed a greater understanding of the research work scientists do and the different types of activities that they engage in during their everyday lives.

Table 4. Percent of Participants who Spent Time Thinking and Behaving like Scientists

Items	None	A Little	Some	A Fair Amount	A Great Deal	NA
Engage in real-world science research?	1.1	1.1	5.7	20.5	71.6	
Feel like a scientist?		3.4	4.6	24.1	63.2	4.6
Think creatively about the project?		2.3	5.7	21.8	70.1	
Try out new ideas or procedures on your own?	4.5	1.1	11.4	19.3	63.6	
Feel responsible for the project?	2.3		9.1	21.6	67.0	
Work extra hours because you were excited about the research?	6.8	2.3	17.0	19.3	50.0	4.5
Interact with scientists from outside your school?	3.4	3.4	14.8	19.3	56.8	2.3
Feel a part of the scientific community?	2.3	3.4	8.0	25.3	59.8	1.1

Also important to the assessment of the research experience, was finding out how participants felt about different program components; therefore, they were asked to rate the quality of various components that were important to having a positive experience (see Table 5). Participants were asked to rate the components with a 4-point scale ranging from poor to excellent. Results show that the only component that was rated as excellent or good by slightly less than 90% of the participants was *the advice that their lab scientists provided about college*. Ninety percent or more of participants rated all the other components, such their *relationship with their lab scientists* and *other group members* and *the amount of time spent doing meaningful research*, as excellent or good. Importantly, over 95% of participants rated the *research experience overall* as excellent or good.

Table 5. Participant Ratings of Research Experience Components

Items	Poor	Fair	Good	Excellent	NA
My working relationship with my research lab scientist		1.1	12.6	86.2	
My working relationship with research group members	2.3	4.5	15.9	77.3	
The amount of time I spend doing meaningful research		6.8	36.4	56.8	
The amount of time I spend with my research lab scientists		9.1	18.2	72.7	
The advice my research lab scientists provide about college	3.4	4.5	17.0	72.7	2.3
The research experience overall		3.4	13.6	83.0	

The survey also asked students to provide their level of disagreement or agreement with statements about impacts that the research experience may have had on their academic interests/intents (see Table 6). Results show that 13% of participants indicated that the statement, *doing research clarified for me which field of study I want to pursue*, did not apply to them, and approximately 16% disagreed or strongly disagreed with the statement. While it is not clear why they felt the statement did not apply to them, it may suggest that those students already had a clear idea of the field of study they want to pursue. On the other hand, over 90% of participants strongly agreed or agreed that their research experience *prepared them for advanced coursework in science*, *motivated them to attend college*, and *prepared them for college*.

Table 6. Level of Disagreement or Agreement with Impacts of Research Experience

Items	Strongly Disagree	Disagree	Agree	Strongly Agree	NA
Doing research clarified for me which field of study I want to pursue	2.3	13.6	23.9	46.6	13.6
My research experience has prepared me for advanced coursework in science		2.3	44.3	52.3	1.1
My research experience has motivated me to attend college		3.4	23.9	68.2	4.5
My research experience has prepared me for college		5.7	33.0	59.1	2.3

To gauge how participants felt about the program and research experience, they were also asked to indicate their level of dissatisfaction or satisfaction with different program and research experience components (Table 7). Results show that over 90% of participants were very or somewhat satisfied with all the different program and research experience components. Interestingly, the most variability in satisfaction was observed for the discussion group meetings which included the cogens.

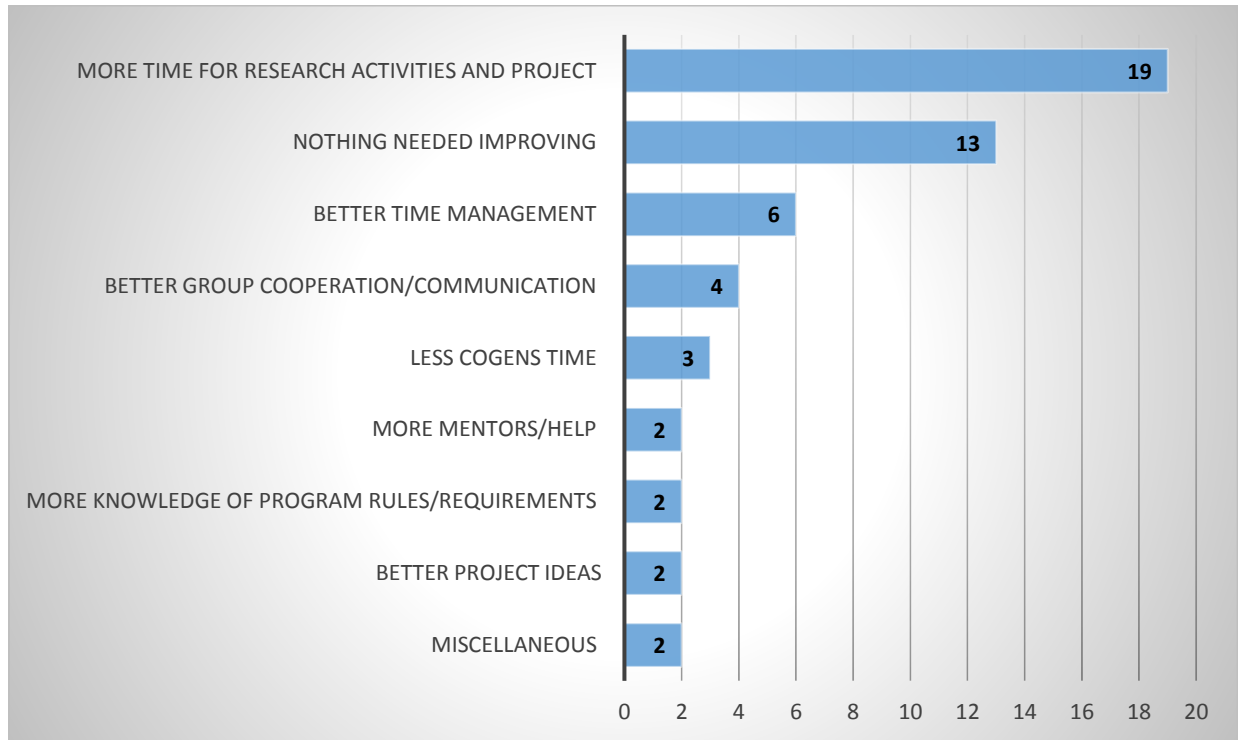
Table 7. Level of Dissatisfaction or Satisfaction with Program and Research Experience Components

Components	Very Dissatisfied	Somewhat Dissatisfied	Somewhat Satisfied	Very Satisfied	NA
Information available to help me choose a research project		3.4	36.4	60.2	
Ease in asking questions/talking with my lab research scientists			11.4	88.6	
Lab or field equipment		2.3	18.2	78.4	1.1
Support and guidance from program staff		2.3	15.9	81.8	1.1
Support and guidance from my lab research scientists			11.5	87.4	1.1
Support from other research group members	2.3	2.3	18.2	76.1	1.1
Discussion group meetings		5.7	26.1	68.2	1.1
The lab safety training I received	1.2		22.1	74.4	2.3

Finally, participants were asked, what would have made their research experience better? Forty-eight participants provided a total of 53 different responses. See Appendix C for complete list of responses. While a significant number of participants indicated that nothing needed to be improved, the greatest number of participants' responses reflected a desire for more time conducting research activities and for their research project (Figure 1). In addition, most of the other responses related to things that would make their research time more productive; for example, a number of participants indicated either that they would like to have managed their

time better, had better group cooperation/communication, had more mentors and assistance with the research project, or better research project ideas. While a few participants stated that less cogens time would have improved the program, this may have been related to instead wanting more time for research activities.

Figure 1. What would have made the research experience better? (n=48, responses =52)



### Discussion Group Survey

As mentioned above, the ‘group discussion’ survey was administered to participants very soon after the beginning of program participation in the beginning of the spring semester then again the last day of their program activities in the summer. Participants first rated items that were related to how they perceive themselves during group discussion (see Table 8).

Table 8. Perception of Self During Group Discussion Items
<i>I strive to make sense of what others are saying.</i>
<i>I try to get others to contribute to what is being discussed.</i>
<i>I feel like I have the opportunity to speak as much as others to contribute to what is being discussed.</i>
<i>My talk is respectful.</i>
<i>When others talk, I listen to what they have to say.</i>
<i>When I talk, I build on what others have to say.</i>
<i>I try to learn from other’s talk.</i>
<i>I try to understand different perspectives.</i>

<i>I value different perspectives of those in my group.</i>
<i>I feel as if I belong with this group.</i>
<i>I maintain focus during dialogue.</i>
<i>My oral contributions are thoughtful.</i>
<i>As I listen to others, I attempt to put aside my own perspectives and understand theirs.</i>
<i>I am willing to consider others' ideas.</i>
<i>I value different perspectives.</i>

Participants used a 5-point scale that ranged from Never (1) to Always (5) to indicate their perception of each item's occurrence during group discussions. The ratings for all the items were then summed and averaged to get an overall average rating of self-perception for each student. Note that some students did not take part on the pre or post survey; thus, analyses focused only on the cases that had both data points. Paired sample t-test findings reveal mixed results (see Table 9). That is, the non-cogens group from the first cohort of participants had marginally significant increased ratings on 'self' perceptions during group discussions post program participation,  $t(13) = -2.11$   $p = .06$  (Table 9). However, the cogens participants from the third cohort had significantly more positive 'self' perceptions during group discussions post-program participation,  $t(23) = -2.19$ ,  $p < .05$ .

Table 9. Cohort 1: Discussion Survey, Perceptions of Self

Cohort	Cogens Group						non-Cogens Groups					
	Pre Mean	Post Mean	Mean Diff	SD Diff	t	p	Pre Mean	Post Mean	Mean Diff	SD Diff	t	p
<b>1</b> (n=14)* (n=13)	4.28	4.34	-.05	.433	-.44	.66	4.31	4.60	-.29	.513	-2.11	<b>.06</b>
<b>2</b> (n=33)	4.53	4.42	.10	.48	1.26	.28						
<b>3</b> (n=23)	4.54	4.71	-.17	.37	-2.19	<b>.04</b>						

\* n is for the no cogens group

The next group of survey items focused on perceptions of 'other's during group discussion (see Table 10). Paired sample t-test results show that only the cogens group of participants from the first cohort had marginally significant increased ratings of 'others' during the group discussions at the post program participation stage,  $t(12) = -1.93$ ,  $p = .07$  (Table 11).

Table 10. Perceptions of Others During Group Discussion	
	<i>Others in my group try to make sense of what I am saying.</i>
	<i>Others in my group try to get me to contribute during discussions.</i>
	<i>Others in my group have the opportunity to speak as much as I do.</i>
	<i>Others in my group show respect for one another.</i>
	<i>When I talk, others in my group listen to what I have to say.</i>
	<i>When others in my group talk, they build on what I have to say.</i>
	<i>Others in my group strive to learn from my oral contributions.</i>
	<i>Others in my group try to understand different perspectives.</i>
	<i>Others in my group value my perspective.</i>
	<i>Others in my group have a sense of solidarity.</i>
	<i>Others in the group maintain focus during dialogue.</i>
	<i>Others' oral contributions are thoughtful.</i>
	<i>Others set aside their perspectives when they listen to me.</i>
	<i>Others in my group are willing to consider my ideas.</i>
	<i>Others value different perspectives.</i>

Table 11. Cohort 1: Discussion Survey, Perceptions of Others

Cohort	Cogens Group						Non-Cogens Groups					
	Pre Mean	Post Mean	Mean Diff	SD Diff	t	p	Pre Mean	Post Mean	Mean Diff	SD Diff	t	p
<b>1</b> (n=14)* (n=13)	4.03	4.25	-.22	.417	-1.93	.07	4.24	4.31	-.07	.600	-.41	.69
<b>2</b> (n=33)	4.43	4.27	.162	.582	1.61	.12						
<b>3</b> (n=23)	4.47	4.52	-.06	.571	-.48	.64						

\* n is for the no cogens group

The last group of survey items focused on perceptions of the ‘group’ overall during group discussion (see Table 12). Paired sample t-test results show that none of the participants from the different cohorts (whether in the cogens or non-cogens groups) had more positive perceptions of the ‘group’ overall during group discussions post program participation (Table 13).

Table 12. Perceptions of Group During Group Discussions
<i>The group strives to have all voices heard.</i>
<i>Different perspectives are valued by the group.</i>
<i>The group strives to incorporate all perspectives.</i>
<i>There is a shared mood in the group.</i>
<i>There is harmony with discussions in the group.</i>
<i>Dialogue in the group is timely.</i>
<i>Dialogue on the group is appropriate.</i>
<i>Dialogue on the group is predictable.</i>
<i>During group discussions there is at least one review of what was accomplished.</i>
<i>Different perspectives from members of the group have contributed to my own learning.</i>

Table 13. Cohort 1: Discussion Survey, Perceptions of Group

Cohort	Cogens Group						Non-Cogens Groups					
	Pre Mean	Post Mean	Mean Diff	SD Diff	t	p	Pre Mean	Post Mean	Mean Diff	SD Diff	t	p
<b>1</b> (n=14)* (n=13)	4.42	4.40	.02	.277	-.30	.77	4.35	4.31	.04	.647	.25	.81
<b>2</b> (n=33)	4.42	4.38	.05	.657	.40	.69						
<b>3</b> (n=23)	4.50	4.52	.02	.652	-.14	.89						

\* n is for the no cogens group

## Academic Performance

Academic performance data, including term GPA and graduation information, for the program participants was provided by the El Paso Independent School District, the district that the participating high schools are part of. Note that program activities started during the spring semester and ended towards the end of the summer, and that the program targeted junior students. Therefore, the data analyzed included participants' cumulative GPA for the term prior program participation (fall semester of the beginning of participants' junior year) and GPA for what was expected to be participants' graduating term (spring semester of one year after participation). However, the GPA data for the expected graduating term of cohort 3 was not available at the time of this report since the term was still in progress; therefore, data for the fall semester of the participants' senior year was used instead.



### Cohort 1 Comparisons

Cohort 1 participated in the program during the 2014 spring and summer semesters. The data for cohort 1 was sorted and analyzed separately for each group (non-internship control group, research internship non-cogens group and research internship cogens group). In addition, since some students from the research internship groups (non-cogens and cogens) dropped from the program<sup>2</sup>, their data was also analyzed and included for comparisons.

Results show that the Research Internship Cogens participants' average GPA remained stable after program participation (Table 14), and 100% of students graduated. On the other hand, participants in the research internship non-cogens group suffered a 6.58 average point decrease in GPA post-program and they had a lower graduation rate (93%) than the cogens participants. In addition, the students who were not retained in the cogens group had only a slight drop in GPA, an average of 2.14. However, only 89% of the students who dropped from the cogens group graduated, approximately 10% less than those from the same group who were retained in the program.

Interestingly, participants in the research internship non-cogens group who dropped from the program suffered 2 points less of a decrease in GPA than the students from the same group who stayed in the program, and 100% of them went on to graduate, suggesting that their decision to drop the program may have eventually helped them to stay on target with school requirements/assignments. Note that the non-internship control group had significantly lower graduation rates than all four internship groups, and they also had a greater decrease in average GPA than the research internship cogens groups (whether retained in the program or not).

Table 14. Cohort 1: Cogens, non-Cogens and non-Internship Control Groups' Pre and Post-Program Mean GPA and Graduation Rates

<i>Group</i>	<i>N</i>	<i>Fall 2013 GPA</i>	<i>SD</i>	<i>Spring 2015 GPA</i>	<i>SD</i>	<i>Post/Pre-Program Mean Difference</i>	<i>% Graduated</i>
<i>Research Internship Cogens</i>	13	86.16	7.52	86.04	5.96	0.12	100%
<i>Research Internship Non-Cogens</i>	14	90.09	7.21	83.51	7.53	6.58	93%
<i>Un-retained Research Internship Cogens</i>	9	86.11	7.01	83.97	7.37	2.14	89%
<i>Un-retained Research Internship Non-Cogens</i>	6	89.03	7.11	84.45	7.45	4.58	100%
<i>Non-Internship Control</i>	18	81.73	7.19	78.49	7.65	3.24	83%

\*GPAs are based on a 100-point scale.

### Cohort 2

Cohort 2 took part in the program during the 2015 spring and summer semesters. Review of their academic performance pre and post-program participation shows that by the expected graduation term, participants' GPA had decreased an average of 3 points. While the decrease in GPA points was not large, and on average, the participants still had a high GPA, not all graduated.

<sup>2</sup> Retention analysis for this cohort and participants' reasons for dropping from the program were covered in a previous evaluation report.

Nonetheless, the 89% graduation rate is still substantially higher than the graduation rate of El Paso Independent District’s high schools, which according to the Public School Review is currently 75%.

Table 15. Cohort 2: Pre and Post-Program Mean GPA and Graduation Rate

<i>Group</i>	<i>N</i>	<i>Fall 2014 GPA</i>	<i>SD</i>	<i>Spring 2016 GPA</i>	<i>SD</i>	<i>Post/Pre-Program Mean Difference</i>	<i>% Graduated</i>
<i>Research Internship Cogens</i>	36	91.88	4.98	88.85	9.75	3.03	89%

\*GPAs are based on a 100-point scale.

### Cohort 3

Participants in cohort 3 engaged in the research internship during the 2016 spring and summer semesters. Similar to the first cohort of participants who engaged in the research internship cogens group, at the post-program stage they had maintained their high GPA, and 100% were enrolled during their expected graduation term. The findings suggest that all students from this cohort are on course to graduate by the end of the term.

Table 16. Cohort 3: Pre and Post-Program Mean GPA and Enrollment Rate

<i>Group</i>	<i>N</i>	<i>Fall 2015 GPA</i>	<i>SD</i>	<i>Fall 2016 GPA</i>	<i>SD</i>	<i>Post/Pre-Program Mean Difference</i>	<i>% Enrolled Spring 2017</i>
<i>Research Internship Cogens</i>	36	89.78	5.81	89.77	6.81	0.01	100%

\*GPAs are based on a 100-point scale.

## DISCUSSION

Overall, evaluation findings show that all students who engaged in the research internship made important research-related gains that may prove beneficial as they transition to college. For example, almost every students who participated in the research internship indicated that s/he made moderate to great gains in problem solving in general, understanding the connections among scientific disciplines, and understanding the relevance of research to their coursework. In addition, almost all the students also indicated being more confident in their ability do well in future science courses and to contribute to science, as well as in their ability to work independently and in working collaboratively with others. Almost all the internship participants also indicated making gains in important research and college related skills such as, writing scientific reports and papers, making oral presentations, using statistics to analyze data, conducting database and internet searches and managing their time. Importantly, the program also was a spring board for the participants’ scientific identity to develop. They reported engaging in science related activities and feeling like scientists a fair amount or great deal of the time during the internship. Moreover, a significant number of students reported that they would have liked to have more time to spend on research activities and their research project. Most impressive is that over 90% of the internship participants believed that the research experience motivated them to attend college and had prepared them for college.

Findings from the discussion group survey while mixed, are also revealing, especially as they relate to the first cohort of students. The non-cogens group of students seemed to have more positive perceptions of themselves during group discussion as time progressed in the program. On the other hand, the students in the cogens group had more positive perceptions of their group members, although not of the group overall. While the finding suggests that cogens may have helped students develop a greater appreciation and respect of others, the same results were not observed in cohorts 2 and 3. It's also interesting that the third cohort of students, who were all engaged in cogens had more positive perceptions about the self-post-program participation, yet their perceptions of others and the group overall did not change.

Although all the students who engaged in cogens were expected to have more positive perceptions about the self, others and the group overall, this was not the case. A possible explanation, however, is that the students' pre-program ratings of the different items were quite high. As mentioned in the methods section, the pre-survey was administered after the students had met twice for program activities. When individuals first meet and start working together, they may be more formal, cordial, inclusive and cautious in the way they act and talk around each other – and this may have influenced the pre-survey ratings. Thus, more research is needed to see how cogens affects individuals' perceptions of the self, others and groups overall.

Finally, the academic data findings from the first cohort of students show that there is a potential academic benefit for students who take part in research internships that include cogens, but who also complete the experience. Students who took part in the research internship that included cogens continued to perform well academically and all went on to graduate. However, the data also revealed that program retention for the research internship cogens group from cohort 1 may in some part be related to their high school graduation rate. That is, the students who dropped from the research internship cogens group had a lower graduation rate than all the other program participants. On the other hand, the students who dropped from the research internship cogens group had a higher graduation rate than students who did not take part in the research internship or cogens at all. The students from cohort 2 also showed similar academic performance and graduation rates to the students who dropped from the research internship cogens group. However, the students from cohort 3 had similar positive results to those of cohort 1 who completed the research experience and received the cogens treatment. Altogether, the findings suggest that the research internship alone may positively impact student graduation rates, and that completing the cogens experience along with the internship may magnify the effect without negatively impacting students' good standing GPA.

## Appendix A – URSSA

### Working With A Scientist Program

#### Research Experience Survey

First Name: \_\_\_\_\_ Middle Name: \_\_\_\_\_ Last Name: \_\_\_\_\_

Select the lab that you belong to:

- Lab 1
- Lab 2
- Lab 3
- Lab 4

Please be as precise as you can in your answers. Please choose ‘not applicable’ for any activity you did not do. You may find one or more questions at the end of some sections that invite an answer in your own words. Please be open and honest with your answers, keeping in mind that future students who participate in the program will benefit from your thoughtfulness. Remember that all your answers will be kept confidential; the program staff and program scientists will not know what any individual student has answered or written.

#### 1. Gains in Thinking and Working Like a Scientist: Application of Knowledge to Research

How much did you gain in the following areas as a result of your research experience?

	No gain	A little gain	Moderate gain	Good gain	Great gain	Not Applicable
a. Analyzing data for patterns	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Figuring out the next step in a research project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Problem-solving in general	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Formulating a research question that could be answered with data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Identifying limitations of research methods and designs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Understanding the theory and concepts guiding my research project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Understanding the connections among scientific disciplines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Understanding the relevance of research to my coursework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**2. Personal Gains Related to Engagement in Research**

How much did you gain in the following areas as a result of your research experience?

	No gain	A little gain	Moderate gain	Good gain	Great gain	Not Applicable
a. Confidence in my ability to contribute to science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Comfort in discussing scientific concepts with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Comfort in working collaboratively with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Confidence in my ability to do well in future science courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Ability to work independently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Developing patience with the slow pace of research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Understanding what every day research is like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Taking greater care in conducting procedures in the lab or field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**3. Gains in Skills**

How much did you gain in the following areas as a result of your research experience?

	No gain	A little gain	Moderate gain	Good gain	Great gain	Not Applicable
a. Writing scientific reports or papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Making oral presentations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Defending an argument when asked questions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Explaining my project to people outside the field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Preparing a scientific poster	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Keeping a detailed lab notebook	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Conducting observations in the lab or field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Using statistics to analyze data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Calibrating instruments needed for measurement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Working with computers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Understanding journal articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

l. Conducting database or internet searches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Managing my time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**4. The following questions ask about your overall research experience and about any changes in your attitudes or behaviors as a researcher.**

During your research experience HOW MUCH did you?	None	A little	Some	A fair amount	A great deal	Not Applicable
a. Engage in real-world science research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Feel like a scientist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Think creatively about the project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Try out new ideas or procedures on your own	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Feel responsible for the project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Work extra hours because you were excited about the research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Interact with scientists from outside your lab	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Feel a part of a scientific community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**5. These questions ask about your research experience**

Please rate the following	Poor	Fair	Good	Excellent	Not Applicable
a. My working relationship with my research lab scientists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. My working relationship with my research group members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. The amount of time I spend doing meaningful research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. The amount of time I spend with my research lab scientists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

e. The advice my research lab scientists provide about college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. The research experience overall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**6. These question continue to ask about your research experience**

Rate how much you agree or disagree with the following statements	Strongly disagree	Disagree	Agree	Strongly Agree	Not Applicable
a. My research experience has prepared me for advanced coursework in science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. My research experience has motivated me to attend college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. My research experience has prepared me for college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Doing research clarified for me which field of study I want to pursue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment on any of these statements.

**7. These questions also continue to ask about your research experience**

How satisfied were you with the following aspects of the research program?	Very dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Very satisfied	Not Applicable
a. Information available to help me choose a research project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Ease in asking questions/talking with my lab research scientists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Lab or field equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Support and guidance from program staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Support and guidance from my lab research scientists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Support from other research group members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Discussion group meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



h. The lab safety training I received	○	○	○	○	○
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Please comment on any of these aspects.

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**8. What motivated you to apply to take part in the program?**

I wanted to participate in this research experience to:	Select all that apply
a. Explore my interest in science	○
b. Gain hands on research experience	○
c. Clarify which field I wanted to study	○
d. Clarify whether college would be a good choice for me	○
e. Clarify whether I wanted to pursue a science research career	○
f. Have a good intellectual challenge	○
g. Work closely with scientists	○
h. Participate in a reputable program	○
i. Get good letters of recommendation	○
j. Enhance my resume	○
k. Other (please specify in the space below)	○

Other:

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**9. What would have made your research experience better?**

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Please note that this survey is based on the Undergraduate Research Student Self-Assessment (URSSA). Information on URSSA can be found at:

<http://www.colorado.edu/eer/research/undergradtools.html>

## Appendix B – URSSA Open-ended Responses

What would have made your research experience better?

I would manage my time better, and create a better communication because things could have been handed differently.
I'm not really sure if anything could've made it better.
I'm very satisfied with the program, it transcending this idea of a summer program.
If I had group members who would help more and use their time wisely instead of putting everything last minute and me doing all the work.
If I had known exactly what I was getting into & of course more time.
If I had managed my time in the lab better.
If my group members actually did work, help, or have some input and interest to learn something new.
If people knew the rules.
If we could have actually did what we planned and finish our experiments.
If we were able to continue with our experiments and finish our research it would've been better.
If we would've had more in mind about the choosing of the research.
Less cogen meeting because they wasted lab time that we clearly needed.
Less cogens would have made my research experience better.
Longer time!
Lunches & it being longer
Manage my time wisely so (illegible) can get into more (illegible) in our research.
Maybe going out on the field more often.
More helper for better understanding
More innovation and creativity when choosing a project
More mentors to help all of us understand more
More research time and preparation time
More time
More time in the lab would be a tremendous gain.
More time to complete project.
More time to conduct research
More time to do the work.
More time to maybe do more with our final projects.
More time would have been nice, been able to plan everything more efficiently.
More time, the research we conducted takes longer amounts of time, of which the program schedule was not sensitive to.
More time.
My experience could have been better if we could have done more experiments and hands on activity
My research experience would have been made better by working more with my group and asking a whole lot of more questions.

## WWASP Summative Evaluation Report

N/A
N/A, nothing
Not procrastinating
Nothing
Nothing I feel that it was the best it could've possibly been.
Nothing I think I am good and can learn all I can with the experience.
Nothing really, it was great.
Nothing would have made my research better. My teacher, Dr. Moore had this experience greater than I expected it to be.
Nothing, really it's been a great learning opportunity.
Nothing.
The food, but besides that it was the best just as it is.
The research was amazing itself. Interactions and connections with professionals made it fun! No changes needed.
The time we spent working in the lab. We were really close to reaching our goal, due to lack of time we could not finish.
To have fix the protocols.
Well maybe not so much cogent.
Working with my partner to get what we had to do and asking questions to help me understand.

## Appendix C – Discussion Group Survey

### Working with a Scientist Program: Discussion Group Survey (02/21/2015)

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_ Student ID#: \_\_\_\_\_

1. Select the lab that you belong to:
- Lab 1
  - Lab 2
  - Lab 3
  - Lab 4

2. While reading the statements below, keep in mind your own thoughts and actions during the after-lab group discussions. Please rate each statement by circling the answer that best reflects your perceptions about the after-lab group discussions (ranging from 'Never' to 'Always').

Statements	Never	Rarely	Sometimes	Most of the Time	Always
a. I strive to make sense of what others are saying.	1	2	3	4	5
b. I try to get others to contribute to what is being discussed.	1	2	3	4	5
c. I feel like I have the opportunity to speak as much as others in my group.	1	2	3	4	5
d. My talk is respectful.	1	2	3	4	5
e. When others talk, I listen to what they have to say.	1	2	3	4	5
f. When I talk, I build on what others have to say.	1	2	3	4	5
g. I try to learn from other's talk.	1	2	3	4	5
h. I try to understand different perspectives.	1	2	3	4	5
i. I value different perspectives of those in my group	1	2	3	4	5
j. I feel as if I belong with this group.	1	2	3	4	5
k. I maintain focus during dialogue.	1	2	3	4	5
l. My oral contributions are thoughtful.	1	2	3	4	5
m. As I listen to others, I attempt to put aside my own perspectives and understand theirs.	1	2	3	4	5
n. I am willing to consider others' ideas.	1	2	3	4	5
o. I value different perspectives.	1	2	3	4	5

3. Please provide any comments you may have concerning any of the statements or anything related to your discussions in the group that applies to your ratings.

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4. While reading the statements below, keep in mind other group members' behavior during the after-lab group discussions. Please rate each statement by circling the answer that best reflects your perceptions of occurrence (ranging from 'Never' to 'Always').

Statements	Never	Rarely	Sometimes	Most of the Time	Always
a. Others in my group try to make sense of what I am saying	1	2	3	4	5
b. Others in my group try to get me to contribute during discussions	1	2	3	4	5
c. Others in my group have the opportunity to speak as much as I do.	1	2	3	4	5
d. Others in my group show respect for one another.	1	2	3	4	5
e. When I talk, others in my group listen to what I have to say.	1	2	3	4	5
f. When others in my group talk, they build on what I have to say.	1	2	3	4	5
g. Others in my group strive to learn from my oral contributions.	1	2	3	4	5
h. Others in my group try to understand different perspectives.	1	2	3	4	5
i. Others in my group value my perspective.	1	2	3	4	5
j. Others in my group have a sense of solidarity.	1	2	3	4	5
k. Others in the group maintain focus during dialogue.	1	2	3	4	5
l. Others' oral contributions are thoughtful.	1	2	3	4	5
m. Others set aside their perspectives when they listen to me.	1	2	3	4	5
n. Others in my group are willing to consider my ideas.	1	2	3	4	5
o. Others value different perspectives.	1	2	3	4	5

5. Please provide any comments you may have concerning any of the statements or anything related to your discussions in the group that applies to your ratings.

WWASP Summative Evaluation Report

6. Think back to your group discussion time; please rate each statement below by circling the answer that best reflects your perceptions of occurrence (ranging from 'Never' to 'Always').

Statements	Never	Rarely	Sometimes	Most of the Time	Always
a. The group strives to have all voices heard.	1	2	3	4	5
b. Different perspectives are valued by the group	1	2	3	4	5
c. The group strives to incorporate all perspectives.	1	2	3	4	5
d. There is a shared mood in the group.	1	2	3	4	5
e. There is harmony with discussions in the group	1	2	3	4	5
f. Dialogue in the group is timely.	1	2	3	4	5
g. Dialogue in the group is appropriate.	1	2	3	4	5
h. Dialogue in the group is predictable.	1	2	3	4	5
i. During group discussions there is at least one review of what was accomplished.	1	2	3	4	5
j. Different perspectives from members of the group have contributed to my own learning.	1	2	3	4	5

7. Please provide any comments you may have concerning any of the statements or anything related to your group that applies to your ratings.

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8. Do you have any other comments or concerns about the Working with a Scientist Program, or suggestions for improving the program?

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***Thank you for your time!***