

# Year 1 Evaluation Report Bridges to the Baccalaureate Program at San Juan College

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Prepared for:



San Juan College Bridges to the Baccalaureate Program

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## Introduction

In August 2004 the National Institutes for Health (NIH) funded a Bridges to the Future program proposal submitted by Dr. Eric Miller, Professor of Chemistry at San Juan College (SJC), which established the Bridges to the Baccalaureate Program at SJC. The project, funded through June 30, 2007, has an overall goal **to introduce students to the culture of science, build awareness of career opportunities, and provide a seamless transition to a four-year institution.** The SJC program's objectives for the four-corners region of New Mexico, in combination with the aims provided by the NIH Bridges to the Future program, are to:

- (1) Increase the number of underrepresented minority biomedical scientists.*
- (2) Improve the ability of education institutions to train and graduate underrepresented minority students in the biomedical sciences.*
- (3) Develop and expand collaborative partnerships that support and facilitate underrepresented minority student transfers at key points in the educational pipeline.*
- (4) Introduce students to the culture of science, build awareness of career opportunities, and provide a seamless transition to a four-year institution.*
- (5) Select, prepare and engage 10 students in an eight-week summer program of research.*
- (6) Introduce student researchers to national and regional biomedical research projects and programs.*

This report is meant to provide the SJC Bridges program with an evaluation of its initial endeavors and a reflection upon the successes and challenges experienced throughout its first program year. The report is organized into 8 sections. The first and largest section, San Juan College Bridges' Program Activities, describes program undertakings and data collection conducted during Year 1, along with analyses of this data whenever possible. The following sections examine each of the six program objectives listed above. Finally, a conclusions and recommendations section provides the SJC Bridges program staff with the evaluation team's summary of critical undertakings during this first year as well as suggestions for addressing some potential program challenges.

As the program is in its first year of funding, it is neither expected nor normally effective for such a project to have all methods and programs fully implemented. Rather, a thoughtful approach to program development and goal refinement is necessary throughout the program to ensure that aims and objectives are applicable and addressed in an appropriate manner. It is critical for SJC Bridges to revisit program aims and objectives at this point in the program so that they may further ensure that methods currently employed are efficient, timely, and congruent with program objectives.

## San Juan College Bridges' Program Activities

The SJC Bridges abstract describes the overall nature and intent of program activities:

*“The project will introduce community college students to the culture of science, build awareness of career opportunities, and provide a seamless transition to a four-year institution. Student needs will be addressed through efforts to improve their skills by providing challenging curricula, outstanding mentoring and active research experiences. San Juan College will incorporate the key elements of a successful program: relevant and timely academic advice, a community environment, strong mentoring and early involvement in research. SJC proposes to partner with New Mexico State University (NMSU) Bridges Program and the New Mexico Biomedical Research Infrastructure Network (BRIN) to provide guest lecturers for a monthly seminar series on campus, to enable students and faculty mentors to visit research institutions, to collaborate on research projects and to host a combined NMSU and SJC research poster session and summer end celebration at NMSU the last week of July. Students will be afforded the opportunity to participate in the summer research program at San Juan College's campus or at NMSU in Las Cruces.”*

### Research Seminar Series

The SJC Bridges p

roposal to the NIH describes the objective of the monthly research seminars series:

*“Conduct a monthly seminar/lecture series from September to April during each academic year to introduce, encourage, develop, and recruit 50 underrepresented students to pursue baccalaureate degree curricula, research internships and career opportunities in the biomedical science disciplines”.*

The proposal further describes intended activities, to be conducted by the Project Director in order to achieve this objective:

- (1) *“Preplan the lecturer schedule by September each year.*
- (2) *Coordinate presentation themes/topics with BRIN and NMSU program representatives to promote collaboration among 4-year institutions.*
- (3) *Coordinate promotion of the lecture series with staff and instructors.”*

Figure 1 presents the title and date of research seminars held at San Juan College during Year 1. The precise number of attendees was not recorded consistently. However students were asked to provide contact information at the two most recent seminars (Thursday, February 24, 2005 and Friday, April 15, 2005), therefore the number of students who “signed-in” is reported for these two seminars. SJC Bridges intends to continue to utilize this sign-in process during Year 2 to further track attendance.

**Figure 1: Research Seminar Series  
Titles, Dates, and Number of Student Sign-ins at Year 1 San Juan College Seminars**

Seminar Title	Date Held	# of Students Who Signed in
Undergraduate Research Opportunities at SJC and Across the State	September, 2004	NA
Intro to Drug Discovery Research and the Biological Research Infrastructure Network	Friday, October 29, 2004	NA
Intro to Biology and Biochemistry Summer Research Opportunities for Native American Students at NMSU	Tuesday, November 30, 2004	NA
Molecular Mechanisms of Drought, Tolerances, Heat Tolerances, and Wound-Healing Processes in Plants	Thursday, January 27, 2005	NA
Medicinal Plants of the Southwest	Thursday, February 24, 2005	37
Cell Division: Harnessing Instability	Friday, April 15, 2005	39

The topics of the 6 research seminars held at SJC during Year 1 varied across scientific disciplines. Seminars were held on Tuesday (1), Thursday (2) or Friday (2). During the last two sessions, sign-in sheets were implemented which reveal that at least 37 students attended the “Medicinal Plants of the Southwest” seminar and at least 39 attended the “Cell Division: Harnessing Instability” seminar.

**On-line Survey of Seminar Attendees**

In May 2005, the evaluation team sent an email to approximately 50 students who had provided their email addresses on research seminar sign-in sheets. This email invited students to participate in a 5-minute, anonymous, on-line *Seminar Attendees Survey* (available in the Appendix), which asked students to assess seminars they had attended and to recommend improvements for upcoming seminars. Unfortunately, about 17 (34%) students provided email addresses that are managed by SJC. These SJC email addresses are not accessible to students in between semesters; hence all students who listed SJC-managed email accounts on the sign-in sheets did not receive the email (which was sent after spring semester classes had ended). Additionally, a number of other email addresses were inaccurate, as revealed by emails being returned to the sender. As a result, only 8 (16%) students participated in the on-line survey in May of 2005. Due to the limited number of responses to the on-line survey, a brief summary of findings from data collected in May 2005 is presented. The seminars which students were asked about in this survey include those listed in Figure 1.

*Participant Background Information:* More than half of the respondents to the on-line seminar survey were minorities, with the following race/ethnicities reported: American Indian students (3), White students (3), and Hispanic students (2). All but one respondent had attended SJC for 2 or more years and had taken between 19 and 110 credit hours. Respondents’ majors included: Biology (3), Accounting (1), Chemical Engineering (1), Liberal Arts (1), Pre-Pharmacy (1), and Pre-Med/Pre-Pharmacy (1).

“Overall, how interesting did you find the seminar(s) you attended?”: Students were asked to rate their response to this question on a 4-point scale from “Not all Interesting” to “Very Interesting”. All respondents selected ratings in the top half of the scale with 37.5% (3) responding “Somewhat Interesting” and 62.5% (5) responding “Very Interesting”.

“How much did your attendance at the seminars influence your future plans?”: Figure 2 reports the number and percent of students selecting each response on a 4-point scale from “Not at all True” to “Very True” when asked to rate their agreement with the statements regarding the seminars impact on their interest in four specified areas.

**Figure 2: Research Seminars Series On-Line Survey  
Attendance at Seminars' Influence on Your Future Plans (N=8)  
Frequency of Response (#) & Valid Percent (%)**

<i>The Seminars increased my interest in...</i>	Not at all True		A little True		Somewhat True		Very True	
	#	%	#	%	#	%	#	%
...Pursuing a 4-year degree in <i>Science</i>	1	12.5%	2	25.0%	2	25.0%	3	37.5%
...Pursuing a 4-year degree in <i>Biomedical Science</i>	1	12.5%	2	25.0%	4	50.0%	1	12.5%
...Being involved in <i>Science-related Research</i>	2	25.0%	1	12.5%	2	25.0%	3	37.5%
...Being involved in <i>Science-related Experimentation</i>	0	0%	3	37.5%	3	37.5%	2	25.0%

Across all 4 questions, more than half of the students responded “Somewhat True” or “Very True”. The most students answered “Very True” that the seminars increased my interest in ‘pursuing a 4-year degree in science’ (37.5%) and ‘being involved in science-related research’ (37.5%). These results reveal a very strong impact of these seminars on student interests in pursuing careers and degrees in science/biomedical science.

*Open-ended Responses:* Respondents were asked to respond to a series of open-ended questions at the end of the on-line survey. The excerpts below from each of the 7 students who provided a response to these questions reveals a common concern regarding the facilities where the seminars were as well as an overall satisfaction with the seminars.

***What suggestions do you have for improving the SJC Undergraduate Research Seminar Series?***

*“I think the presentations that I participated in were done well and were able to create a learning environment for all levels of student interest.”*

*“There could have been better facilities for the researcher to present their information, usually the seminars were fairly packed.”*

*“It was very good. All topics are interesting, as long as they are very detailed.”*

*“I would have liked for the seminars to be more involved with the audience; other than a couple of little things the seminars were very informative and useful.”*

*“The San Juan College Undergraduate Research Seminar series is ok the way it is. I am not sure what can be done to improve it.”*

***What topics are you interested in?***

*“Medicinal product both traditional and synthesized”*

*“Genetics and Medicine”*

*“Cell Biology, Anatomy of the Human Body and Pathology”*

***How could the series be changed to better benefit students like you?***

*“Larger rooms so everyone may have a seat rather than standing or sitting on the floor.”*

*“The programs could invite the student to a weekend or week of actively observing the research site, lab, etc.”*

*“More seminars about many different topics.”*

*SJC Research Intern Attendance: The Summer Research Intern – Pre Survey* (discussed in more detail later in this section) asked the 2004-05 interns which seminars they had attended. Half of the interns had

attended more than 1 seminar and 1 intern had attended 1 seminar. The number of interns attending each seminar were, from most to least recent, 'Cell Division: Harnessing Instability'(6), 'Medicinal Plants of the Southwest' (4), 'Molecular Mechanisms of Drought, Tolerances, Heat Tolerances, and Wound-Healing Processes in Plants' (2), 'Intro to Biology and Biochemistry Summer Research Opportunities for Native American Students at NMSU' (2), 'Intro to Drug Discovery Research and the Biological Research Infrastructure Network' (2). This intern attendance shows a steady increase in the number of interns going to seminars from the first to the last seminar of the 2004-05 academic year. and reveals an apparent increase among interns as participants in these seminars.

### **Summer Research Internship**

SJC Bridges objectives regarding the summer research internship program, as stated in their proposal to the NIH, are to:

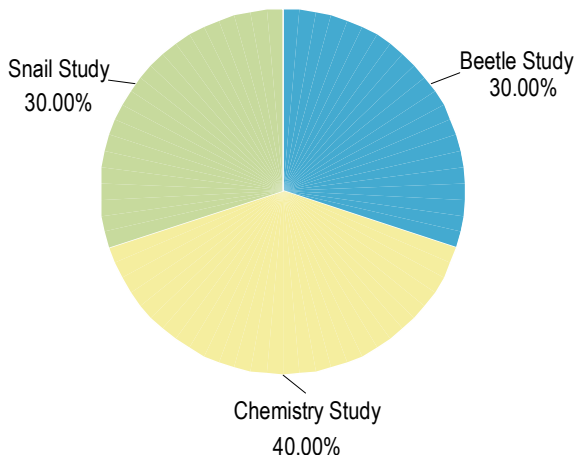
*“Select, prepare and engage 10 underrepresented students in an eight-week summer program of biomedical research at San Juan College. Students and faculty mentors will travel to NMSU during the final week to present a summary poster of their summer’s research work and to tour NMSU’s campus and facilities...Students and faculty mentors will attend a national scientific meeting or an ethnic-peer scientific meeting annually”.*

During the summer of 2005, the 10 research interns were assigned to 3 different studies, each one led by a faculty advisor. One group of interns, referred to as the Chemistry Group, was researching, “Behavior of Organic Ionic Liquids Related to the Imidazolium Family of Compounds”, supervised by Dr. Miller. A second group, referred to as the Beetle Group’s research investigation was entitled, “Investigation of the migratory behaviors of two species of Coleoptera, the five-striped beetle (*Disonycha*, spp.) and a metallic wood boring beetle (Family Buprestidae) infesting coyote willows (*Salix exigua*) in northwestern New Mexico”, supervised by Dr. Hyder. The final group of interns, supervised by Dr. Adams and called the Snail Group, has a research topic entitled, “Electrophysiological Characterization of Respiratory Motor Nuerons in the Pulmonate Snail”.

### **Summer Research Intern – Pre Survey**

During Year 1, summer research interns were asked to complete two surveys: one a few days into their internship program (*Summer Research Intern – Pre Survey*) and another after the completion of the program (*Summer Research Intern – Post Survey*). Both surveys can be found in the Appendix. These survey were used jointly to gather background/demographic information and to measure any changes from the beginning to the end of the program in interns’ perceptions of their skill in a variety of science-related areas, their interest in science-related careers, and their opinion of their research internship. While all 10 interns completed the *Pre Survey*, 1 intern did not complete the *Post Survey* therefore comparisons between the 2 surveys only contain 9 interns’ survey data.

**Figure 3: Research Intern Pre Survey  
Research Group (N=10)**



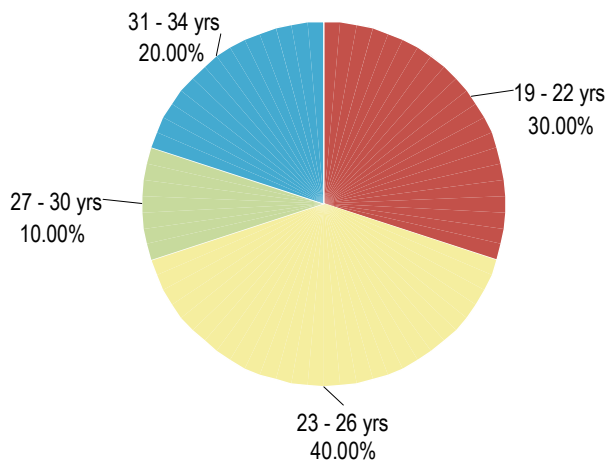
As the number of students did not divide equally among the research groups, the Chemistry study had one more participant (4) than the Snail Study (3) and the Beetle Study (3).

*Experiences Being Mentored in Science:* Half of the 10 interns reported that they had been mentored in science by a science faculty/instructor at SJC prior to this internship. Four of these 5 students who had been mentored by faculty/instructors at SJC also reported having been mentored by other individuals in science (high school teachers (3) and another professional (1)). Additionally, 1 student who had not reported being mentored by a faculty/instructor at SJC, mentioned that he/she had been mentored by a high school teacher.

*Career Interests:* Students were asked to indicate all biomedical science careers they are interested in. The most commonly reported career interests among interns were: Biomedical Engineer (40%), Neurologist (40%), Biochemist (30%), Zoologist (30%), Biophysicist (20%), Geneticist (20%), Medical Doctor (20%), Microbiologist (20%) and Physiologist (20%).

*Prior Career/Academic Pursuits:* At least 4 interns had previously attended another institution of higher education (including 2 at UNM and 1 each at NMSU and Fort Lewis College). These students reported that they switched to SJC as they felt they were not successful and/or they wanted to be closer to home. Additionally 1 student had been enlisted in the Navy prior to enrolling at SJC.

**Figure 4: Research Intern Pre Survey  
Age of Interns (N=10)**



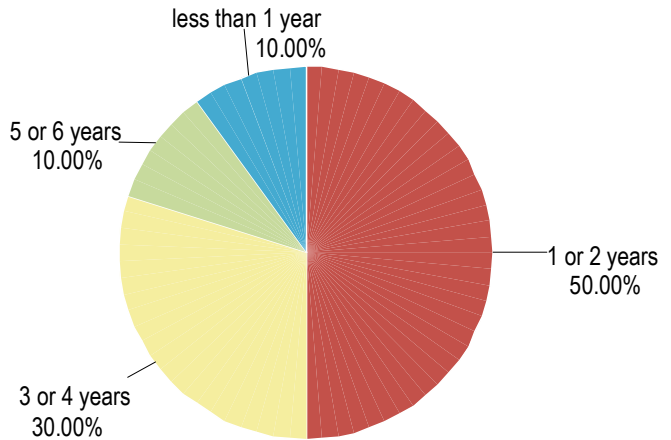
A little less than a third (30%) of the SJC Year 1 interns were typical college-aged students (19-22 years old). The remaining students were older, and therefore less traditionally aged students.

*Interns' Gender:* There were an equal number (5) of female and male SJC research interns during Year 1.

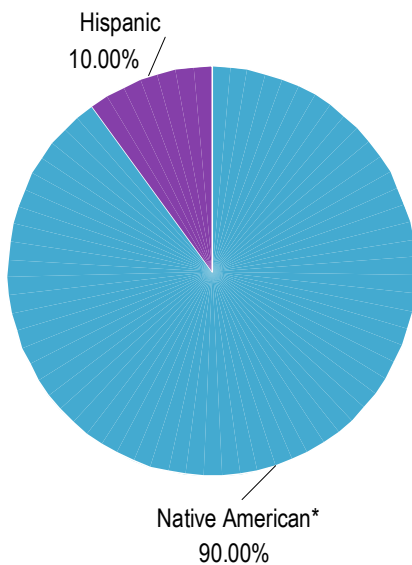
*SJC Program Enrolled in:* Eight of the 10 interns were enrolled in Associate programs: 4 in engineering; 2 in biology; and 1 in general science. One intern was enrolled in the Nursing program and 1 did not respond to this question.

**Figure 5: Research Intern Pre Survey  
“How many years have you attended SJC?”  
(N=10)**

Half of the research interns had attended SJC for 1 or 2 years, while more than one-quarter (30%) had attended for 3 or 4 years. Furthermore, 1 student attended SJC for 5 or 6 years. On the other hand, 1 student had been enrolled at SJC for less than 1 year.



**Figure 6: Research Intern Pre Survey  
Ethnicity of Interns (N=10)**



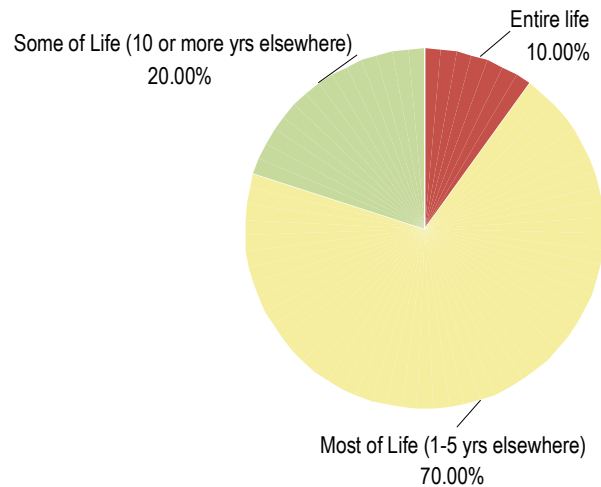
All but one of the 10 research interns was Native American. The remaining intern was Hispanic.

*High School Attended:* All of the research interns attended high school in the Four Corners region; with all but one in New Mexico. Three interns attended Farmington High School in Farmington, NM; 6 attended other high schools in the Four Corners region of New Mexico including Bloomfield High School, Gallup High School, and Shiprock High School; 1 intern attended Chinle High School in Chinle, AZ.

*\*One student selected both “Native American” and “White” ; for purposes of this graph, student reported as “Native American”*

*Immediate Family Members with a college Degree:* Half of the research interns reported that a member of their immediate family had a college degree. Of these students, 2 reported that both their parents had college degrees while the other 3 reported that either their mother or their father had a college degree.

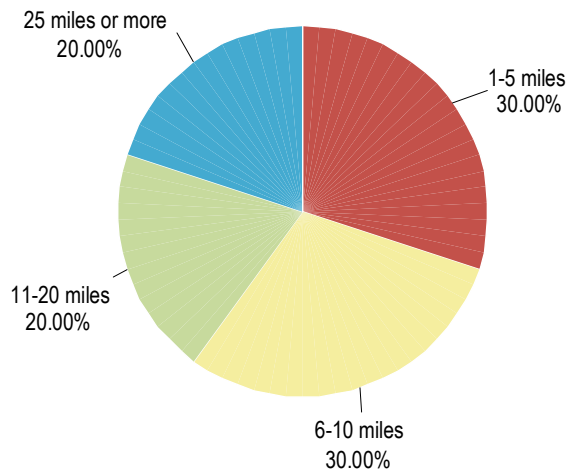
**Figure 7: Research Intern Pre Survey  
“How many years have you lived in the  
Four Corners?”\* (N=10)**



*\*Note that interns were asked how many years they lived in the Four Corners; data was combined with age to derive Figure 7.*

1 of the 10 research interns had lived in the Four Corners areas for their entire life; 7 for most of their life (1-5 years elsewhere) and 2 for some of their life (10 or more years elsewhere).

**Figure 8: Research Intern Pre Survey  
“How many miles away from  
SJC do you live?” (N=10)**

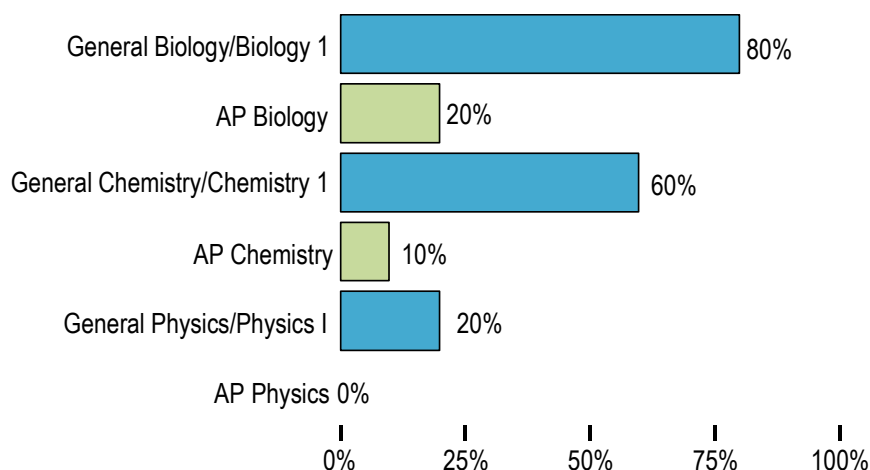


More than half (60%) of the 10 research interns live within 10 miles of campus. Two students lived 25 miles or more away from campus.

*“Do you tend to go home (parents house/community) for the weekend?”: All but one of the 10 research interns responded “yes” to this question, revealing that the majority of interns most likely have maintained close ties to their family and community.*

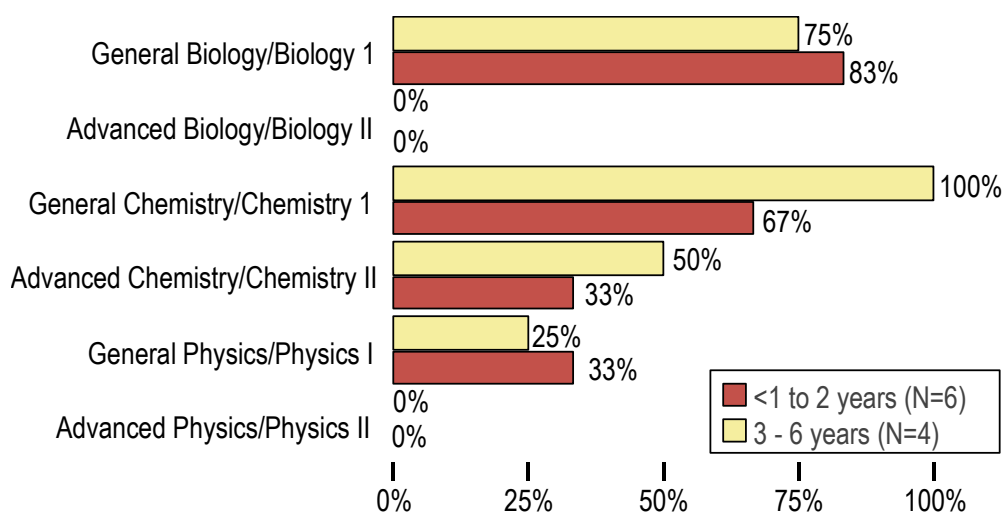
*Classes Taken in High School and College:* Figures 9 and 10 report the percent of interns who have taken a number of science classes in high school and college. Data on classes taken in college is reported by the length of time students have attended SJC.

**Figure 9: Research Intern Pre Survey  
Percent of Students who Took Classes in High School (N=10)**



The number of SJC research interns who have taken high school science classes declined steadily from Biology to Chemistry to Physics for both General level courses and Advanced Placement courses with 8 (80%) interns having taken General Biology and 2 (20%) having taken AP Biology, compared to 2 (20%) interns having taken General Physics and none having taken AP Physics.

**Figure 10: Research Intern Pre Survey  
Percent of Students who Have Taken Class at College Level  
By Years Attended SJC (N=10)**



All 4 interns who have attended SJC for 3-6 years have taken General Chemistry, and 3 had taken General or Advanced Biology. Two of the students who have attended SJC for 3-6 years were in the Chemistry Research Group and have also taken Advanced Chemistry/Chemistry II.

*Number of SJC Bridges Research Seminars Attended:* Four interns had not attended any of the SJC Bridges Research Seminars; 3 had attended 1 or 2 seminars, while the remaining 3 interns had attended 3 or 4 seminars.

*Open-Ended Questions:* Interns were asked to respond to 4 open-ended questions. These questions, along with a classification of the types of answers given and samples of responses are provided below:

**What is appealing to you about a career in science and/or biomedical science?:** All 10 interns responded to this question by noting that they enjoyed the process of discovering new things and/or they found science fascinating. Additionally, 3 interns mentioned that they were drawn to science by its ability to positively impact the world around them, including the environment and energy use. Examples of student responses to this question include:

*“Having the opportunity to be on a leading edge of discovery and re-discovery in biology, medicine, physics, and other science areas.”*

*“The ability to solve issues to make a better future.”*

*“Discovery of new things and knowledge of how certain things work.”*

**What concerns do you have about a career in science and/or biomedical science?:** All but one intern responded to this question. Three interns noted that they did not have any concerns, saying things like:

*“Nothing at all. The field is endless with new opportunities available.”*

Three interns mentioned that they were concerned with identifying a specific area of science to focus on. An example of this response follows:

*“Choosing a more specific area to concentrate on.”*

Three interns were concerned with job security in science (1 also reported concern with the area of science he/she should focus on). One intern who was worried about job security wrote:

*“What jobs will open once I finish my degree? What professions will I be able to choose from?”*

Lastly, 1 intern mentioned being concerned about *“The exposure to chemicals and how to avoid complications from the chemicals”*.

**What challenges have you faced in pursuing your interests in science?:** The 9 interns who responded to this question gave a broad range of responses that addressed a variety of social and academic areas. One response did not discuss challenges; instead he/she described previous career experiences. Two interns mentioned that both time and money have challenged them, for example:

*“... the needs of my family and the ability to support myself financially.”*

Three interns wrote about academic challenges, which included *“pulling ideas together in lectures”*, *“applying my knowledge in labs”* and *“math”*.

One respondent addressed the nature of science knowledge as being constantly updated and revamped:

*“The constant updating and change in the science community it's going to be challenging but I'm up to it.”*

Lastly, one intern noted that he/she was challenged by *“my Navajo beliefs”*. It is possible that more interns share this view, but did not feel that the survey was an appropriate and/or acceptable venue for expressing this concern. This intern concern regarding Navajo beliefs is very notable and should be kept in mind as SJC Bridges furthers their work with Native American students.

**How did you become involved in the Summer Research Program?:** All 10 interns reported that they had learned of the SJC Bridges summer research internship directly or indirectly from a SJC instructor or advisor. Seven interns reported hearing about the program from an instructor, personally or during a class announcement, 2 interns heard about the program from a relative/friend, and 1 intern's advisor informed him/her about the program during advising week.

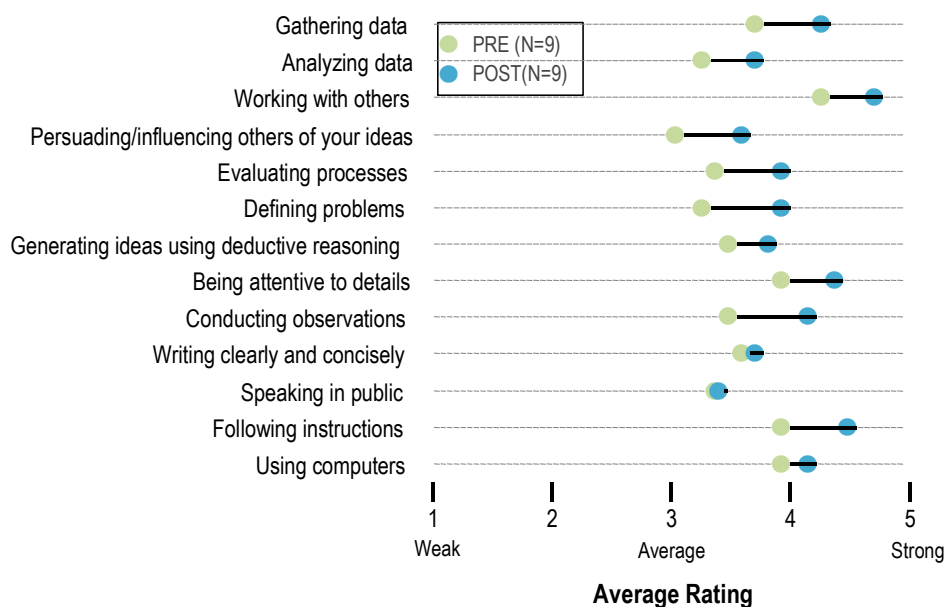
## Summer Research Intern - Post Survey

Research interns completed the *Summer Research Intern – Post Survey* during the last week of their summer internship. This survey contained a number of questions that were also asked on the *Pre Survey* to measure changes in ratings of their skill level in a number of scientific research skills and changes in their interest in pursuing a career in science. Furthermore, interns were asked to rate a number of aspects of their internships and respond to questions regarding their experiences as a minority at SJC. As 1 intern did not complete a *Post Survey*, Figures 11 to 18 report data from the 9 interns who completed both surveys.

### *Pre Survey and Post Survey Answer Comparison*

Figure 11 reports the interns’ average ratings of each of 13 scientific research skills both before and after their SJC Summer Research Internship. It is important to keep in mind that these numeric ratings correspond to a scale from weak (1) to average (3) to strong (5).

**Figure 11: Research Intern Pre and Post Survey Comparison  
Change in Self Rating of Scientific Research Skills**

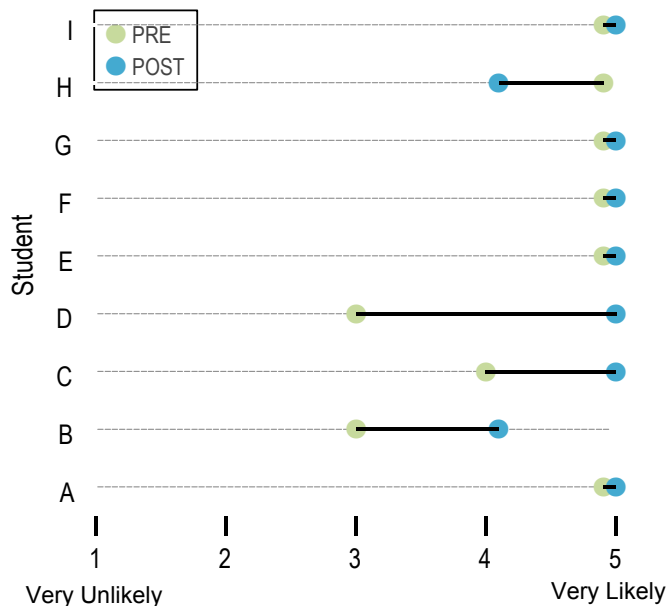


On the *Pre Survey*, the mean rating of skill level among interns was highest for ‘Working with others’ (4.3), ‘Being attentive to details’ (4.0), ‘Following instructions’ (4.0) and ‘Using computers’ (4.0). Interns again rated their skill level “*after your summer as a Research Intern*”; these *Post Survey* ratings revealed the greatest change in the following areas: ‘Defining Problems’ (+0.7), ‘Conducting observations’ (+0.7), ‘Persuading/influencing others of your ideas’ (+0.6), ‘Evaluating processes’ (+0.6), and ‘Following instructions’ (+0.6). On the other hand, interns’ mean ratings of their skill in the changed the least for: ‘Speaking in Public’ (+0.0), ‘Writing clearly and concisely’ (+0.1), and ‘Using computers’ (+0.2).

Figure 12 reports each interns’ response to the question “How likely is it that you will pursue a career in *Science*?” on both surveys. It is important to keep in mind that these numeric ratings correspond to a scale from “Very Unlikely” (1) to “Very Likely” (5).

**Figure 12: Research Intern Pre and Post Survey Comparison  
Change in Likelihood of Pursuing a Career in *Science* by Student**

*How likely is it that you will pursue a career in Science?*

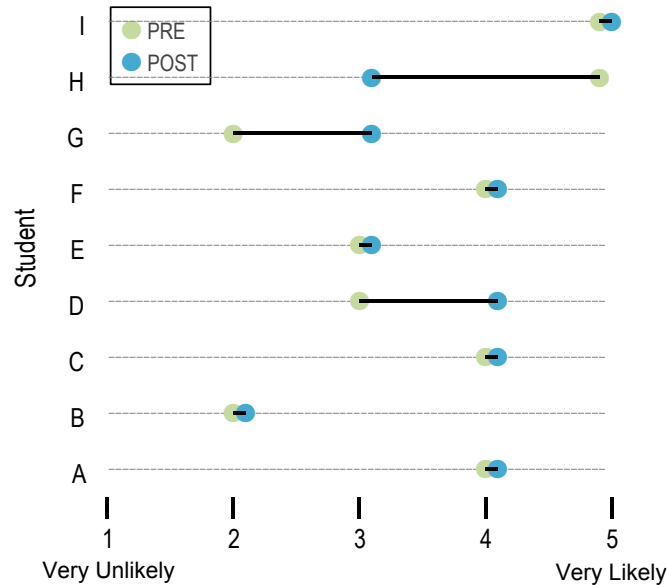


Five of the 9 interns responded that it was “Very Likely” that they will pursue a career in science on both the *Pre Survey* and the *Post Survey*. Of the 4 students who were less certain about their career plans, 3 of them reported an increase between the Pre Survey and the Post Survey, indicating that the internship had a positive impact on their desire to pursue a career in science. Student H reported a decrease from 5 or “Very Likely” to 4 in his/her likelihood of pursuing a career in science.

Figure 13 reports each interns’ response to the question “How likely is it that you will pursue a career in Biomedical *Science*?” on both surveys. It is important to keep in mind that these numeric ratings correspond to a scale from “Very Unlikely” (1) to “Very Likely” (5).

**Figure 13: Research Intern Pre and Post Survey Comparison**  
**Change in Likelihood of Pursuing a Career in *Biomedical Science* by Student (N=9)**

*How likely is it that you will pursue a career in Biomedical Science?*



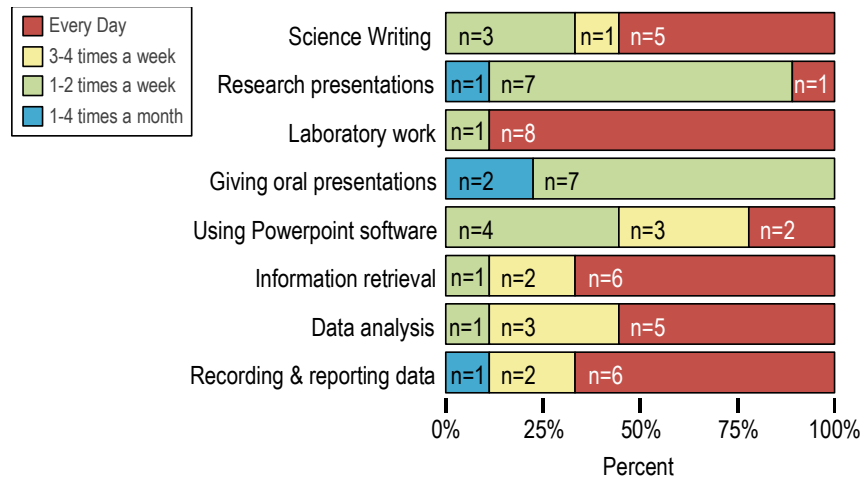
Overall, interns reported being less likely to pursue a degree in *Biomedical Science* than in *Science* both before and after their internship. Two-thirds (6) of the 9 interns reported no change in their likelihood of pursuing a career in biomedical science from the *Pre Survey* to the *Post Survey*. Of the remaining interns, G and D each reported a 1-point increase in their interest from 2 to 3 and 3 to 4 respectively. As with interest in pursuing a career in *science*, student H’s interest in pursuing a career in *biomedical science* decreased, though his/her interest decreased more dramatically (from “Very Likely” to a neutral rating) in *biomedical science*.

***Evaluation of Experience as Summer Research Intern***

Interns were asked to answer 5 sets of questions regarding their experiences as an intern and their evaluation of a variety of facets of their internship.

Figure 14 reports interns’ responses when asked how frequently their laboratory/fieldwork provided the opportunity for them to enhance their skills in areas that the SJC proposal aimed to focus on in regards to the summer research internship.

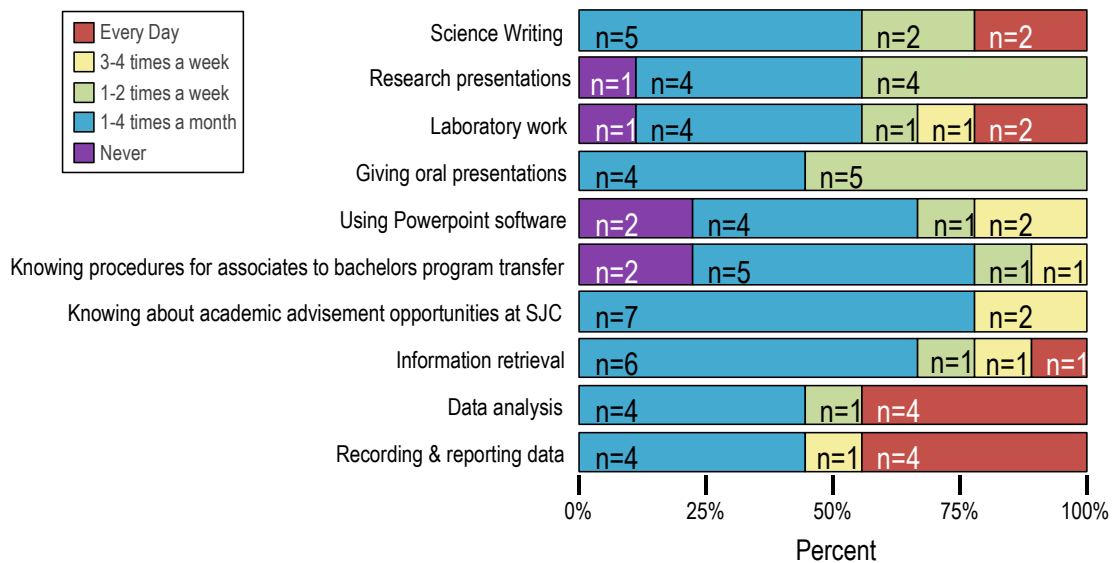
**Figure 14: Research Intern Post Survey**  
**“How often did your laboratory/field work provide the opportunity for you to enhance your skills in...” (N=9)**



All but 1 intern (89%) reported that their laboratory/fieldwork provided the opportunity for them to enhance their skills in the following at least 3-4 times a week or more: ‘Laboratory work’, ‘Information retrieval’, ‘Data analysis’, and ‘Recording & reporting data’. However, less than half of the interns felt that their laboratory/fieldwork provided the opportunity to enhance their skills in ‘Research presentations’ (11%) and ‘Giving oral presentations’ (0%) 3-4 times a week or more. Nearly all interns (89%) reported that they had the opportunity to enhance their skill 1-2 times a week for ‘research presentations’ and ‘Giving oral presentations’.

Figure 15 reports interns’ responses when asked how frequently they attended Biotechnology Enrichment Activities that provided the opportunity for them to enhance their skills in areas that the SJC proposal aimed to focus on in regards to the summer research internship.

**Figure 15: Research Intern Post Survey**  
**“How often did you attend Biotechnology Enrichment Activities organized by the SJC Bridges that enhanced your skills in...” (N=9)**



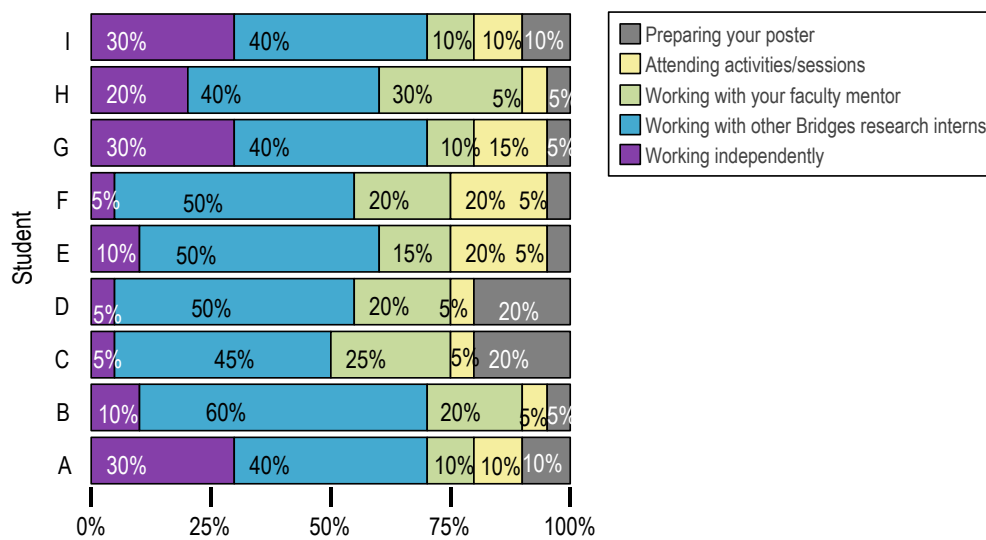
Seven of the 9 interns reported that they attended Biotechnology Enrichment Activities 1-4 times a month

or more often that enhanced their skills in all 10 areas on the survey. Two interns each reported not attending sessions that enhanced their skills in ‘Using PowerPoint software’ and ‘Knowing procedures for associate to bachelors program transfer’ and one intern each reported not attending sessions that enhanced skills in ‘Research presentations’ and ‘Laboratory work’. It is possible that these interns attended sessions, yet simply felt their skill level was not increased by attending.

Figure 16 reports how each intern reported spending their time as a Bridges research intern. Interns were given the 5 options below and asked to report the percent of their time spent doing each; an option to write in an “other” activity was given, yet none of the interns included other activities in their summary.

**Figure 16: Research Intern Post Survey**

**“During your summer as a Bridges research intern, what percent of your time was spent...” (N=9)**

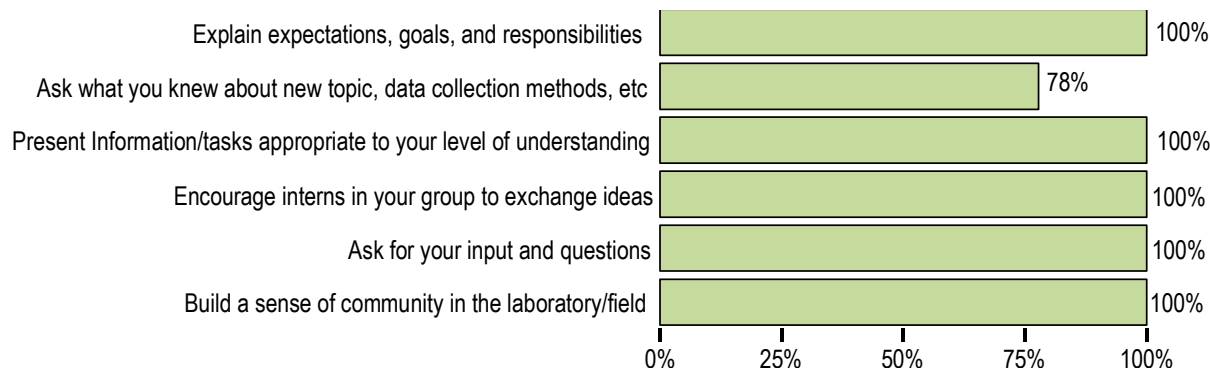


All interns indicated that the largest portion of their time (between 40% and 60%) was spent ‘Working with other Bridges research interns’. The next most frequent activities varied by intern between the remaining 4 categories.

Figure 17 reports the percent of interns who responded “usually” or “always” when asked how often their faculty mentor employed each of 6 strategies.

**Figure 17: Research Intern Post Survey  
Percent of Interns Responding “Usually” or “Always” (N=9)**

***“How often did your faculty mentor do the following:”***

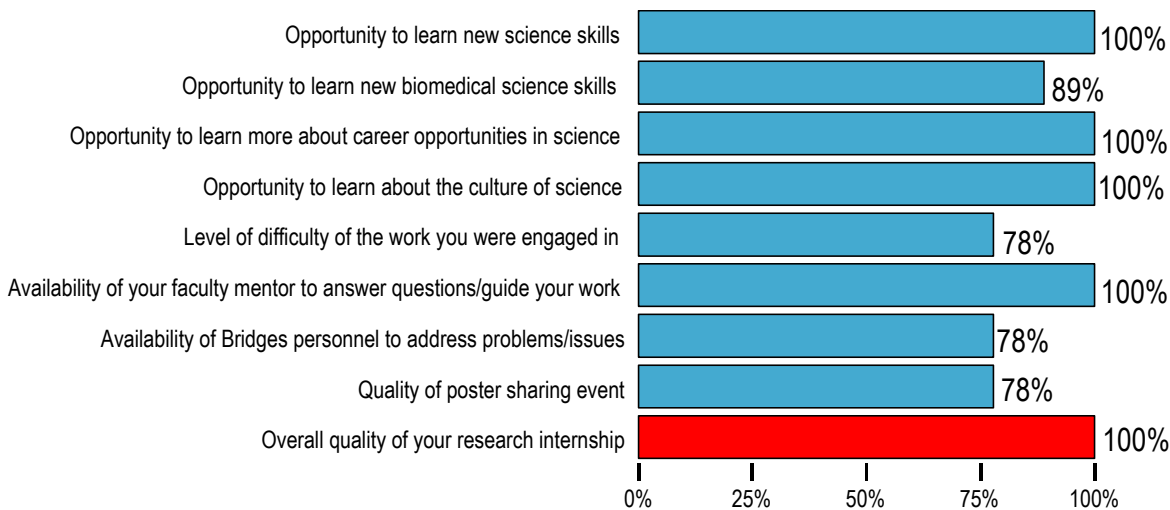


All 9 interns reported that their faculty mentor “usually” or “always” used 5 of the 6 strategies to ensure a successful internship. Two interns did not feel that their mentor “usually” or “always” ‘Asked what [they] knew about new topics, data collection methods, etc’.

Figure 18 reports the percent of interns who responded “good” or “excellent” to each of 8 questions about their summer research internship experience and the overall quality of their research internship.

**Figure 18: Research Intern Post Survey  
Percent of Interns Responding “Good” or “Excellent” (N=9)**

***“Please rate your overall summer research internship experience in the following area:”***



All the interns rated the following areas as “good” or “excellent”: ‘Opportunity to learn new science skills’, ‘Opportunity to learn more about career opportunities in science’, ‘Opportunity to learn about the culture of science’, ‘and ‘Availability of your faculty mentor to answer questions’/guide work’. Additionally, all 9 interns rated the ‘Overall quality of [their] research internship’ as “excellent”.

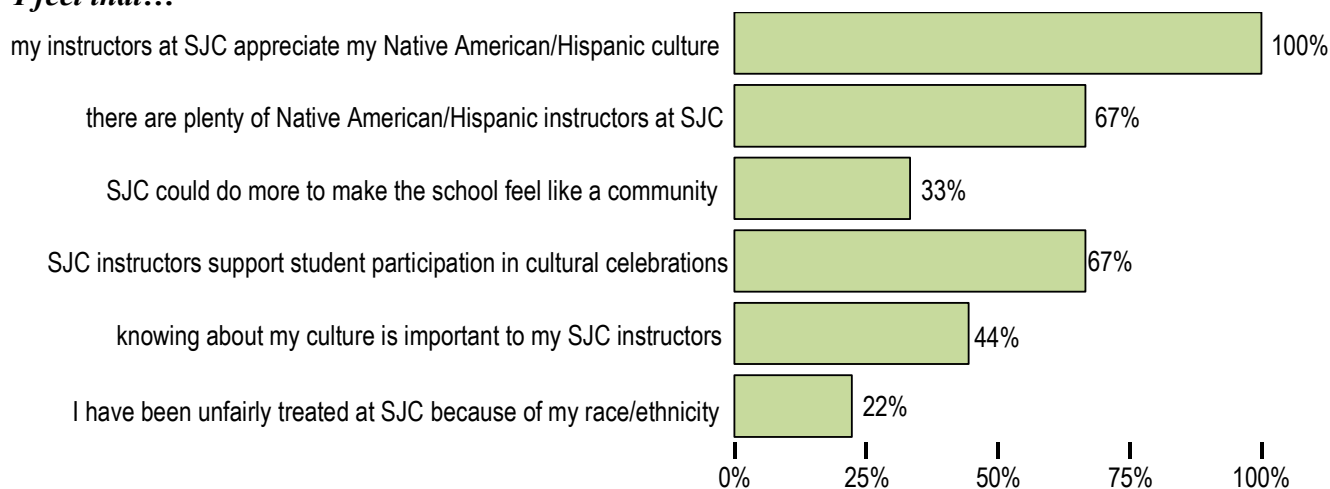
***Opinions Regarding Cultural Diversity at SJC***

Figure 19 reports the percent of interns who “agree” or “strongly agree” with 6 questions designed to measure interns’ opinions of cultural diversity at SJC. The question was prefaced by the statement “The

SJC Bridges Program is interested in knowing about your experiences with cultural diversity at SJC.”

**Figure 19: Research Intern Post Survey**  
**Percent of Interns who “Agree” or “Strongly Agree” (N=9)**

*“I feel that...”*



All 9 interns “agree” or “strongly agree” that ‘my instructors at SJC appreciate my Native American/Hispanic culture’. On the other hand, interns’ responses to the remaining questions reveal that SJC does face challenges in ensuring that minority students feel completely supported by the institution. For example, 2 interns “strongly agree” that ‘I have been unfairly treated at SJC because of my race/ethnicity’. Additionally, 2 students “strongly disagree” and 1 student “disagrees” that ‘there are plenty of Native American/Hispanic instructors at SJC’.

**Interviews/ Laboratory Observations and Focus Groups of Summer Research Interns**

***Pre-Internship Interviews/Observations***

Two members of the evaluation team visited SJC during the first week of the 2005 summer research internship to meet with interns, discuss their initial perspectives of the internship, and get a sense of their roles in their respective laboratories/fieldwork positions. The evaluation team members, also referred to as observers, visited separately with groups of interns throughout the day of their visit. Each member of the evaluation team provided a write-up of his or her observations and perceptions; a third evaluation team member has summarized these write-ups below.

*Beetle Group:* The Beetle Group was composed of two female students and one male student, all in their early to mid twenties. These 3 interns are all Native American. One intern had attended SJC for 1 semester prior to beginning his/her internship, while the remaining two have attended SJC for 2 years. The students are enrolled in 3 different programs at SJC, including Associates of Biology, Associates of Science, and Associates of Nursing.

Due to difficulty in locating the species of Beetle the group was intending to study, the students had experienced a delay in beginning their intended research. However, a similar Beetle had been located by chance and hence the students were beginning their research which would include: counting and measuring the collected specimen; measuring the beetle’s sense of smell and recognition of different willows; and conducting fieldwork by placing beetles at a local waste treatment plan. One observer noted, “This group did not appear to work as a team, and were not as enthused about their projects. Perhaps they did not see the ‘big picture’ or it was not a topic they were interested in. One intern had hoped to work on the medicinal properties of southwestern plants”.

*Chemistry Group:* All interns in the Chemistry Group are pursuing an Associate Degree in engineering at SJC (2 chemical engineers, 1 civil engineering, and 1 electrical engineering). Two interns have attended SJC for 1 year, 1 has attended for 4 years and another for 5 years. The average age of this group is notably higher than the other groups with two students in their thirties and two in their mid to late twenties. The group consisted of 2 males and 2 females; all are Native American.

During the day that the evaluation team visited SJC, interns in the Chemistry group were testing silicon tetrachloride; their work included operating a machine, using specialized software to capture results, exporting data to excel, as well as graphing and summarizing data. Both observers noted that the Chemistry Group required higher-level skills than the Beetle and Snail groups. One observer described the academic experiences of these students, “the interns in this group were mostly older than those in the other groups. Two members of the group were already accepted into a four-year Engineering program...In fact all four interns were pretty set on pursuing a four-year degree with a career in engineering.” Both observers described this group of interns as very knowledgeable about their work and why it was being conducted. Furthermore, “Their faculty advisor gave them a lot of independence, and yet supervised them when embarking on new procedures or equipment. They worked well as a team, with each sharing what they knew with the others”. One possible concern mentioned by both observers was that the male students tended to be disproportionately conducting the experiments/procedures and the female students disproportionately recording and reporting. It is important to mention that one observer noted, “They had already been working together for a couple weeks and knew each other from class, so the division of labor may have been for expediency and not related to any gender role”.

*Snail Group:* The Snail group consisted of one female and two males. This group is the most ethnically diverse, with one Native American, one Hispanic, and one Native American/Anglo student. Like the Beetle Group, the interns in the Snail Group are all in their early to mid twenties. One student has attended SJC for 1 year, another for 3 years, and the last for 4 years. While 1 member of the Snail Group did not report on the *Pre Survey* what type of program he/she is enrolled in at SJC, the two others are pursuing Associate degrees with one further noting that he/she is pursuing a degree in Biology.

Interns in the Snail Group were practicing their dissection skills on the day of the evaluation team’s visit using electron microscopes to study the neurological makeup of beetles (from the Beetle Group). Their advisor had not been able to obtain the snails needed for their research due to the snails being determined to be an invasive species in New Mexico. While the students “appeared to be a little frustrated at the snail problem”, according to one observer, “their professor had located a similar snail in the backyard of a local resident and they were looking forward to studying this variety of snail”. The students each had their own microscope and readily shared their findings with one another. According to one observer, “The lab work was a definite interest to all three students and again they were grateful for the opportunity to get paid for doing something so challenging in the Farmington area”.

Overall, the evaluation found that interns were working steadily, mostly engaged in their work, and collaborating effectively with one another. One member of the evaluation team observed that all interns appeared engaged in their work and excited about the remainder of their experiences. The other observer noted that the Beetle Group did not appear as cohesive or enthused as the remaining two groups. Despite the fact that 2 of the groups were awaiting equipment/supplies, most interns did not let this hamper their enthusiasm or work ethic. Furthermore, one observer noted that about half of the students commuted from the Navajo reservation to SJC for their internship. This observer, who is Native American, wrote “I can appreciate this kind of direct outreach to provide concrete experiences for native students who live and participate in their tribal communities”.

### ***Post-Internship Interviews***

The interviewer had originally intended to travel to Farmington on Wednesday, July 27<sup>th</sup> to interview students and view their posters at San Juan College during a family night. However, the school was in the process of painting the science building and the poster session was cancelled. Instead, the interviewer drove to Las Cruces on Saturday, July 30<sup>th</sup> to speak with students prior to the NMSU poster session. Dr. Miller arranged for the students to meet with the interviewer at 3:30PM in the lobby of the hotel where they were staying. All but one of the student interns participated; a group interview was conducted in an out of the way corridor of the hotel, which had a large table and enough chairs for everyone. The location was not ideal, but was private and the group was not interrupted by noise or activity. The following summarizes the interviewer's findings.

Students reported a generally positive experience with the research experience and mentioned how unique it was for SJC to provide such an opportunity. They felt their faculty mentors were good resources and were available when they needed assistance while leaving them to conduct work independently. All interns met once a week as a group during their internship and shared what they were doing, or discussed a mutual problem. The interns seemed quite comfortable with each other and the interviewer. They appeared to have formed a common bond during the summer working in the lab. Although the bond appeared stronger within the teams, there was also an across team degree of comfortableness, as if they were pioneers paving the way for other interns at SJC.

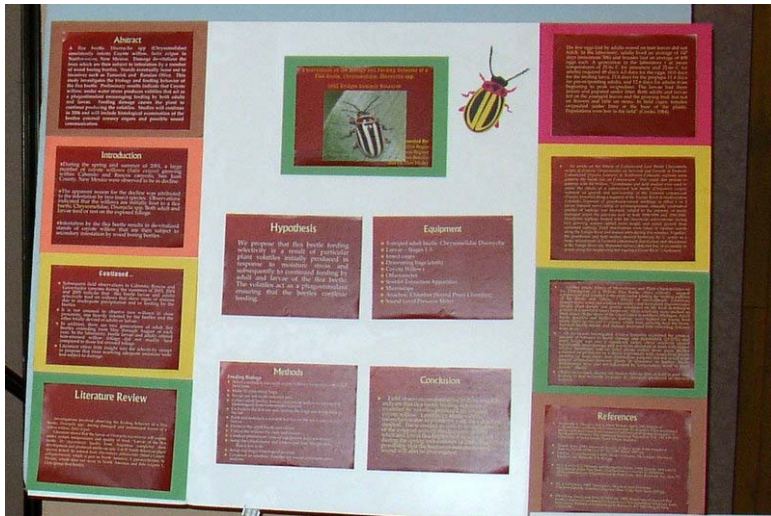
There was not a feeling that the experience had changed their plans for future education, although there was a strengthening of interest in pursuing careers in science, with one intern indicating a new interest in being a medical technologist. They spoke of the NMSU lab tour with positive tones, knowing that their internship gave them the ability to be able to use the equipment in the lab. The interns felt good that they were allowed to explore the lab and touch things, without someone telling them to keep their hands off. It was perceived as recognition that they had "graduated" to be able to work in a college lab.

Some suggestions for the project's next year were to order the equipment sooner and have it ready before the interns arrive. Also, to start the summer internship earlier and have it last longer. It was obviously too short a time for them, and there was a little frustration at not being able to complete the work they had started. Some of this was no one's fault, and they were not laying blame, but making a constructive suggestion. There was also a recommendation to have a seminar on DNA, since two of the research projects involved DNA and the students felt they could have benefited from knowledge in this area.

The interviewer asked for their opinion concerning the instructor quality at SJC and the college's support of Native students. Most felt that the college was very supportive of Native students, and instructor quality was good. They liked the fact that their instructors were always available and approachable. The only negative comments had to do with the need for more course offerings. One interesting comment was how beneficial it is for learning in a classroom, where you can be taking a class with your friend's mother, grandfather and your younger sister. They felt this provided a much more diverse and richer environment for studying than having all 19 year olds in the class.

Many of these students seemed to grow substantially during the summer, learning to approach science from a much more "can do" attitude. They were very comfortable with the science of their projects and felt that they had learned something very useful. Figure 20 presents a photograph of posters produced by the Beetle Group and the Snail Group respectively as part of the culmination of their research and a poster presentation at NMSU. A photograph of the Chemistry Group's poster was not available.

**Figure 20: Research Intern Poster Presentation  
Photographs of Posters Created by the Beetle Group (left) and Snail Group (right)  
Summer 2005**



Beetle Group's Poster



Snail Group's Poster

**Telephone Interview of Faculty/Administrators at Partner Institutions**

SJC Bridges' last objective described in its proposal to the NIH is to:

*“develop and expand collaborative efforts with regional four-year institutions to provide for seamless transition to baccalaureate program”*

The proposal further states that the Project director will:

*“contact four-year universities in the Four Corners regional to develop partnerships that support and facilitate Bridges student transfers to baccalaureate programs”.*

Telephone interviews of faculty/administrators at partner institutions will be conducted during Year 2 in order to assess the implementation level and impact of these collaborations on the SJC Bridges Program.

**SJC Student Graduates and Transfers**

In order to best assess the impact of the SJC Bridges program, the evaluation team has been working to collect longitudinal data on the following:

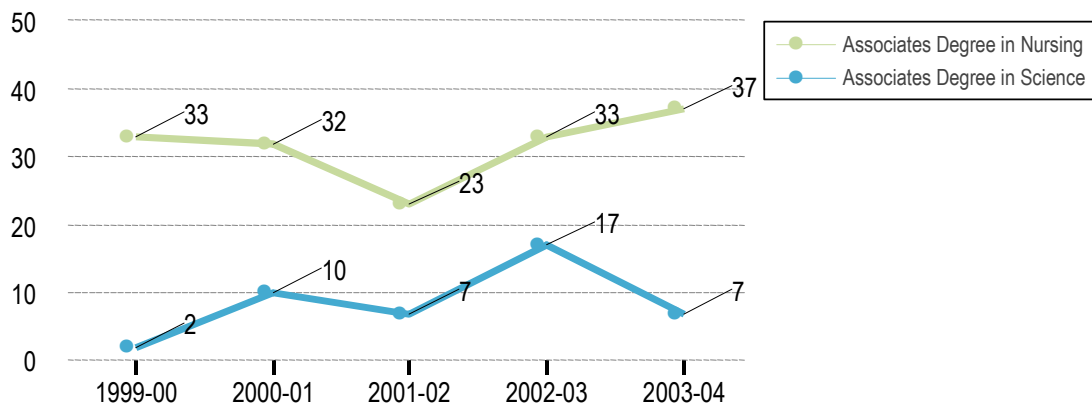
- a) Number, ethnicity and gender of students pursuing an associate's degree in Science at SJC.
- b) Number, ethnicity and gender of students graduating from SJC with Associate Degree in Science.
- c) Number, ethnicity and gender of students transferring from SJC to a four-year institution and pursuing a degree in a biomedical related major/field.

To date, the evaluation team has been unable to collect a) and c) from the SJC Office of Institutional Research and Planning. The evaluation team will work in partnership with SJC Bridges staff to obtain this data in the future.

Figure 21 reports the number of Biomedical degrees awarded by SJC from the 1999-00 to 2003-04 Academic year. The figure reports the number of Associate of Science degrees (designed for students who

plan to transfer to other colleges/universities to acquire advanced degrees) awarded as well as the number of Associate Degrees in Nursing (students who complete this degree are eligible to take the National Council Licensing Examination (NCLEX-RN) for licensure as a Registered Nurses (RN) and may continue to a baccalaureate degree in nursing (BSN), which is offered at some four-year institutions).

**Figure 21: Degrees Awarded by San Juan College  
Biomedical Degrees Awarded by Type of Degree (1999-00 to 2003-04 Academic Year)**



Source: San Juan College 2004 Fact Book: <http://www.sjc.cc.nm.us/documents/AboutSJC/Fact%20Book%202004.pdf>

The number of Associate Degrees in Nursing awarded by SJC fell steadily from 33 in 1999-00 to 23 in 2001-02 before increasing to 37 in 2003-04 for an overall increase of 12% across the 5 years. On the other hand, the number of Associate of Science Degrees awarded fluctuated more often across the 5 years with a low of 2 in 1999-00 and a high of 17 in 2002-03. Overall, there appears to be a positive trend in the number of Associate of Science Degrees awarded.

Figure 22 reports the majors of students receiving an Associate of Science Degree between 1999-00 and 2002-03 (data not available for 2003-04).

**Figure 22: Degrees Awarded by San Juan College  
Majors of Students Receiving Associate of Science Degrees (1999-00 to 2002-03 Academic Years)**

MAJOR	1999-00	2000-01	2001-02	2002-03	TOTAL
Biology	0	0	0	7	7
Chemistry	0	1	0	0	1
Computer Science	1	3	3	2	9
Engineering	1	4	1	2	8
General Science	0	0	2	2	4
Mathematics	0	1	1	1	3
Pre-Medical Sciences	0	1	0	3	4

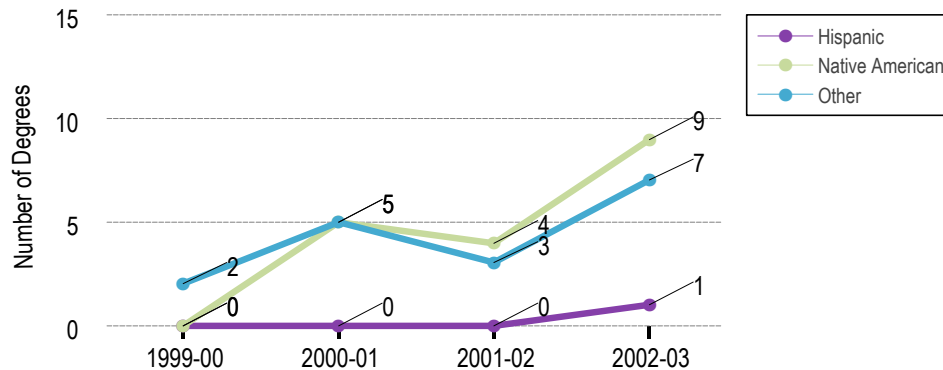
\*Associate of Science Degrees are also offered for majors in Agriculture, Business Computing, Geology, and Physics; however no students received these degrees during reported years.

Source: Bridges to the Baccalaureate Program at San Juan College's Research Plan

During the 4 reported years, the most Associate of Science Degrees were awarded to students who majored in Computer Science (9), Engineering (8), and Biology (7). The number of Biology majors rose from 0 in 1999-00 to 7 in 2002-03; similarly the number of Pre-Medical Sciences majors also increased from 0 in 1999-00 to 3 in 2002-03.

Figure 23 presents the number of Associate of Science Degrees awarded by student ethnicity from 1999-00 to 2002-03.

**Figure 23: Degrees Awarded by San Juan College  
Associate of Science Degrees Awarded by Ethnicity (1999-00 to 2002-03)**

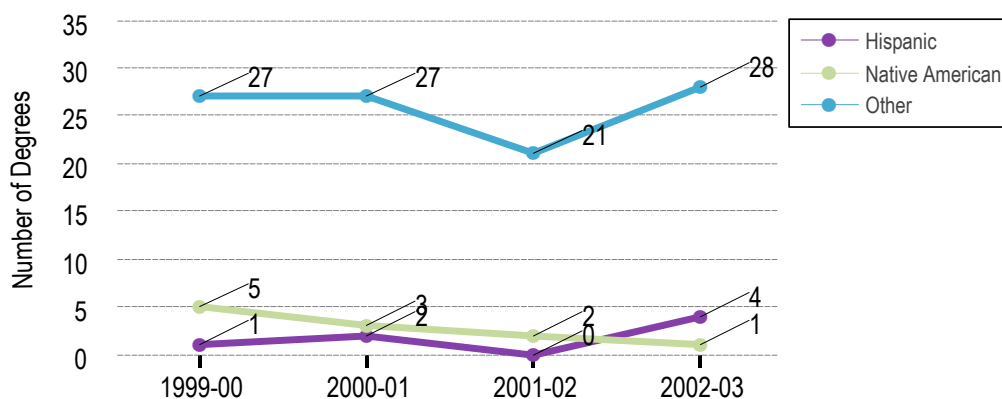


Source: San Juan College Factbook 2004

Between 1999-00 and 2002-03 the number of Associate Degrees awarded rose across all ethnic groups with degrees awarded to ‘Native’ students increasing from 0 to 9, degrees awarded to ‘Other’ students (students who were not underserved minorities) increasing from 2 to 7, and degrees awarded to ‘Hispanic’ students increasing the least, from 0 to 1.

Figure 24 presents the number of Associate Degrees in Nursing awarded by student ethnicity from 1999-00 to 2002-03.

**Figure 24: Degrees Awarded by San Juan College  
Associate Degrees in Nursing Awarded by Ethnicity (1999-00 to 2002-03)**



Source: San Juan College Factbook 2004

Across all 4 reported years, the number of ‘Other’ students (not underserved minorities), receiving an associate degree in nursing was more than 5 times higher than the number of ‘Native’ or ‘Hispanic’ students. This is especially noteworthy given that ‘Native’ students received more Associate of Science degrees than ‘Other’ students in 2002-03 (see Figure 14). Additionally, while the number of ‘Other’

students receiving Associate Degrees in Nursing has risen slightly from 27 in 1999-00 to 28 in 2002-03, the number of 'Native' students receiving this degree has declined steady every year from 5 in 1999-00 to only 1 in 2002-02. The number of 'Hispanic' students receiving an Associate Degree in Nursing rose from 1 in 1999-00 to 4 in 2002-03, which exceeded the number of Associate of Science Degrees (1) awarded to 'Hispanic' students that year (see Figure 14).

## **Objective 1: Increase the number of underrepresented minority biomedical scientists.**

The NIH Bridges to Future program at SJC aims to increase the number of underrepresented minority students enrolling at SJC, graduating, and transferring to a four-year institution.

The number of associate degrees in science awarded to Native students at SJC rose notably from none in 1999-00 to 9 in 2002-03, a much larger increase than the number of degrees awarded to non-minority students and Hispanic students. In 1999-00, Hispanic students did not receive any associate degrees in science, while in 2002-03, only 1 student received this degree.

On the other hand, both Native and Hispanic students are receiving far fewer associate degrees in nursing than non-minority students. Between 1999-00 and 2002-03, the number of non-minority students receiving an associate degree in nursing was more than 5 times the number of Native or Hispanic students. Moreover, the number of 'Native' students receiving an associate degree in nursing has declined steady every year from 5 in 1999-00 to only 1 in 2002-03. The number of Hispanic students receiving an Associate Degree in Nursing rose from 1 in 1999-00 to 4 in 2002-03, hence exceeding the number of Associate of Science Degrees awarded in 2002-03. The great shortage of Native students pursuing degrees and careers in nursing is an area which is being addressed in the state of New Mexico by programs like the UNM Health Sciences Center mentoring program for Navajo area nurses, but may require additional focus at SJC, perhaps by establishing a collaboration with this program if this has not already been done.

At this time, complete data on the number of students pursuing associate degrees in science and transferring to four-year institution is not available by students' gender and ethnicity. The evaluation team intends to work closely with SJC Bridges program staff to obtain these data, as it is critical in helping determine the impacts of the bridges program.

It is important to note that the effects of the Bridges program are not likely to be represented in enrollment, graduation, and transfer data until a few years into the program. Moreover, complete effects of the SJC Bridges program in terms of interest in, enrollment in, graduation from, and transfers from SJC biomedical sciences programs will most likely not be seen until after the program has ended.

Additionally, SJC Bridges should begin to think about how programs introduced by and other changes implemented because of SJC Bridges will be sustained following program funding. While this is a not currently a pressing concern, it is usually helpful for programs to begin thinking early on about how their impact will be institutionalized and otherwise sustained after program funding ends.

## **Objective 2: Improve the ability of education institutions to train and graduate underrepresented minority students in the biomedical sciences.**

The SJC Bridges project intends to work with faculty to serve as mentors to Native Americans and other minority students in pursuing careers in science and specifically biomedical research. According to the SJC proposal, “Activities may consist of sharing research materials or workshops on mentoring and career encouragement”.

The science faculty at SJC is quite small (the directory listed about 7 people as instructors of biology, chemistry, or other biomedical-related sciences). While this small number limits potential participants, it also allows for a large impact if SJC Bridges is able to impact all instructors and their philosophies, teaching methodologies, etc. in a way that is beneficial to underrepresented minority students. The *Summer Research Intern – Pre Survey* revealed that 5 summer research interns had been mentored by science faculty/instructors at SJC prior to their internships.

The SJC *Summer Research Intern – Post Survey* revealed that all responding interns feel that their SJC instructors appreciate their culture. However, responses to a number of other questions intended to gauge interns’ perceptions of the function of cultural diversity at SJC reveal some areas of concern for the institution. Two interns felt that they had been unfairly treated at SJC because of their race/ethnicity and 3 interns disagree that ‘there are plenty of Native American/Hispanic instructors at SJC’.

During the group interview conducted at the completion of the summer research internship, most of the nine participating students reported that they felt SJC is very supportive of Native students and that instructor quality at SJC is strong. The interns were pleased that their instructors were always available and approachable. The one negative comment concerned the need for more course offerings. It is interesting to note that one student commented that is very beneficial for learning when you can take classes with your friend’s mother, grandfather and your younger sister as this provided a much more diverse and richer environment for studying than having all 19 year olds in the class.

SJC Bridges spent approximately \$94,000 on equipment and maintenance during Year 1 of its funding; which had a number of direct benefits such as exposing interns to this equipment and providing interns with the opportunity to improve/gain skills using laboratory equipment and technology. The following equipment was purchased by SJC in order to support the summer research internship program: sputter/carbon coater and critical point dryer for preparing insects specimens for Scanning Electron Microscopy; gas chromatograph mass spectrograph (small part of purchase accounted for by Bridges funds); Triple GEO XT Explorer; Micromanipulator; Audio amplifier; Data Logger; and additional miscellaneous supplies. In addition to benefiting the 10 research interns who gained experience utilizing some, or all, of this equipment during their internship, this equipment will increase the capacity of SJC to serve all students by providing additional resources for SJC faculty and students.

**Objective 3: Develop and expand collaborative partnerships that support and facilitate underrepresented minority student transfers at key points in the educational pipeline.**

Collaboration is another key component of the project. SJC Bridges staff hopes to work with the BRIN program and NMSU to promote collaboration among the four-year institutions. The evaluation team plans to interview these collaborators during Year 2 in order to ensure that parties have had sufficient time to establish working relationships and begin collaborating. Data on the degree of collaboration between faculty as well as institutions will be collected. The focus will be on documenting the structural, leadership and interpersonal elements of the collaborations that are formed.

The SJC Bridges proposal describes its plans to create collaborative partnerships:

“SJC proposes to partner with New Mexico State University (NMSU) Bridges Program and the New Mexico Biomedical Research Infrastructure Network (BRIN) to provide guest lecturers for a monthly seminar series on campus, to enable student and faculty mentors to visit research institutions, to collaborate on research projects and to host a combined NMSU and SJC research poster session and summer end celebration at NMSU the last week of July. Students will be afforded the opportunity to participate in the summer research program at San Juan College’s campus or at NMSU in Las Cruces...NMSU has been selected as the partner four-year institution because of its extensive history in managing programs designed to nurture interest and persistence among Native American students in pursuing post-secondary education...According to NMSU statistics, the Bridges program is retaining its Native American students in the Bachelor of Science degree pipeline at nearly twice the national rate...BRIN [a consortium of the following research universities: New Mexico State University, University of New Mexico, New Mexico Institute of Mining and Technology, New Mexico Highlands University and Eastern New Mexico University] has been selected as a partner for the Bridges to the Future program because membership in the network will provide opportunities for San Juan College faculty and students to participate in scientific conferences and workshops. Students will garner a greater understanding of biomedical research projects and employment opportunities in the state of New Mexico.”

SJC and NMSU hosted a joint poster session and banquet at the end of July for SJC Research Interns. Additionally, 3 presenters of Research Series Seminars were faculty from NMSU and 1 seminar focused on introducing attendees to BRIN. Lastly, according to the SJC Bridges Year 1 Progress report, 1 SJC student was accepted to conduct research at NMSU.

**Objective 4: Introduce students to the culture of science, build awareness of career opportunities, and provide a seamless transition to a four-year institution.**

SJC held 5 research seminars during Year 1 with varied subjects across scientific disciplines. These seminars are meant to involve faculty and guest lectures from biology, chemistry, computer science, psychology and allied health fields; intended topics include methods, techniques, results, conclusions from research programs, career opportunities, summer internships, etc. Year 1 seminars had a variety of topics, which appeared to interest students based on the on-line survey findings and ensure strong attendance. During the last two sessions, sign-in sheets had been implemented which revealed that at least 37 students attended the “Medicinal Plants of the Southwest” seminar and at least 39 attended the “Cell Division: Harnessing Instability” seminar. While SJC was not able to conduct a seminar each month as planned, it does appear from the initial on-line survey, completed by 8 students, half of whom are minorities, that the 5 seminars were successful. The evaluation team intends to conduct another on-line survey during the Fall of 2005 in order to increase participation and to observe a seminar during Year 2. The goal of these seminars, to introduce, encourage, develop and recruit 50 underrepresented students to pursue baccalaureate degree curricula, should remain a strong focal point during planning and implementation of further seminars.

The following data on the seminars was proposed for collection in the SJC Proposal:

- a) Number of seminars, topics, presenters, dates and times and number of students attending.
- b) Names of students attending, their class, major, usefulness of information, level of difficulty, reason for attending, suggestions for upcoming seminars and email contact information.
- c) Once a year invite students attending these seminars to respond to an online survey asking their degree of knowledge, interest and desire to pursue a baccalaureate degree in science, and specifically biomedical research. Solicit feedback on the quality and content of the lecture series, as well as suggestions for improvement.

SJC Bridges implemented (a) and (c) by the second to last seminars of Year 1. However, not all data listed in (b) was collected at any of the seminars, therefore of SJC Bridges may wish to consider whether or not this missing information would benefit the project. If so, a simple sheet to be completed by each attendee could be developed in collaboration with the evaluation team.

## **Objective 5: Select, prepare and engage 10 students in an eight-week summer program of research.**

The SJC Summer Research Intern's survey responses reveal very positive ratings of the internship with all 9 interns who completed the *Post Survey* rating their overall internship experience as "excellent". Interns were also very satisfied with many aspects of their internships, including 'Opportunity to learn new science skills', 'Opportunity to learn more about career opportunities in science', 'Opportunity to learn about the culture of science', and 'Availability of your faculty mentor to answer questions'. Many interns also experienced increases in their interest in pursuing a degree in science and/or biomedical science; only 1 intern reported a decrease in interest in pursuing a career in either science or biomedical science.

Interns were asked to rate their skill level in a variety of science-related areas on both the *Pre Survey* and *Post Survey*. Many areas, including 'Defining Problems', 'Conducting observations', 'Persuading/influencing others of your ideas', 'Evaluating processes', and 'Following instructions' showed strong growth across interns. However, there were no or very small changes in interns' ratings of 'Speaking in Public', 'Writing clearly and concisely', and 'Using computers', revealing that greater emphasis may need to be placed on helping next year's interns improve these skills.

Survey data, student interviews, focus groups, document review, and other correspondences reveal that SJC met the following objectives detailed in its proposal during the first summer of internship:

- (1) *Create an application form and selection process for participation*
- (2) *Schedule weekly enrichment activities to enhance computer usage skills, science writing, research presentations, laboratory training, oral presentation skills, usage of PowerPoint software, procedures for academic transfer from associate programs to bachelors programs, academic advisement, and skill development*
- (3) *Coordinate closing ceremony events and tour of NMSU with Bridges Program coordinator.*
- (4) *Work with department administrative staff to process travel and per diem forms for students and faculty.*
- (5) *Match students with faculty mentors by April 1<sup>st</sup> of each year.*

SJC appears to have not yet met the following objective, though they are in the process of identifying an appropriate meeting and scheduling student and faculty attendance:

- (1) *Identify national and regional scientific meetings for student interns and faculty to attend.*

Interviews conducted at the onset and at the completion of the internship reveal that the majority of participants were excited about and engaged in their research. Students reported enjoying their internship, gaining a lot of scientific knowledge, and experiencing increases in their interest in biomedical careers. On the other hand, the observers noted that the Chemistry Group consisted of four students with solid plans to pursue a four-year degree and that the relationship of their research to biomedical science was not clear. Additionally, the post interviewer did not get the sense that the experience had strongly impacted students' future educational goals in terms of transferring to a four-year institution.

The evaluation team recommends that SJC track participating research interns as they pursue a higher education in order to gather feedback on the impact of their summer research experience and provide these students with any necessary mentoring or advising. The *Summer Research Intern – Post Survey* gathered contact information for students as well as a relative who would know how to reach them during the upcoming years when it is likely that students' addresses will be rather mobile.

**Objective 6: Introduce student researchers to national and regional biomedical research projects and programs.**

At the completion of the 2005 summer research internship at SJC, interns traveled to NMSU in Las Cruces, NM for a laboratory tour, joint poster presentation, and closing ceremony. During their summer work, interns had created a poster summarizing their research and findings. Photographs of 2 of the 3 posters are presented in Figure 20. During a group exit interview conducted by an evaluation team member in Las Cruces during the weekend of the poster presentation, interns reported that the laboratory tour was a positive experience for them as they enjoyed seeing the equipment and especially being able to touch the equipment; this seemed to the intern to be a validation of their summer experience and the laboratory skills they had gained. Most of the students reported enjoying the joint poster presentation with 7 of the 9 rating the event as “good” or “excellent”.

One student will be attending the New Mexico Experimental Program to Stimulate Competitive Research (NM EPSCoR) Annual Conference to be held in Albuquerque, NM in November, 2005. However, it does not appear likely that the remaining students will be attending a scientific conference.

## Conclusions & Recommendations

### *Summary of Findings*

The SJC Bridges to the Baccalaureate program has made considerable progress during its first year of funding in introducing students to the culture of science and building awareness of career opportunities in a way that provides a strong foundation for future program development and outcomes. Investments in the program's goals during this first year of funding include hosting 5 research series seminars, which drew a large number of diverse student attendees, organizing and implementing a summer research internship for 10 minority students and purchasing laboratory equipment.

An on-line survey of seminar attendees reveals a highly positive response to the seminars among respondents. More than half of the survey participants were minorities, indicating that the seminars were most likely reaching their target population. Additionally, all respondents found the seminars they had attended "somewhat interesting" or "very interesting". Perhaps the most notable finding from this survey is that more than half of the responding students reported that attending the seminars had increased their interest in pursuing a 4-year degree in science and in being involved in science-related research. These responses reveal that the seminars had a very strong impact on students.

Surveys, interviews, and observations involving summer research internship participants also reveal that this first group of interns perceived their internship as very successful. The interns were all underserved minorities; all but one intern is Native American and many live on the Navajo reservation. Interviews conducted by the evaluation team indicated that the participants were very excited by the opportunity to conduct scientific research in a laboratory environment without having to leave their community. Furthermore, despite some initial setbacks regarding the arrival of equipment and specimens, students found the internship very educational. All 9 interns who completed a survey during the final week of their internship rated their overall experience as "excellent". Additionally, many of the students reported that they felt their skill level in a number of science-related areas increased as a result of their internship and some reported increases in their likelihood of pursuing a 4-year degree and/or a career in science.

While the SJC Bridges' progress has been notable and continuous, the evaluation team recommends that program personnel consider the following suggestions. As the program proceeds in its second year of funding, continued focus on ensuring program objectives are met is necessary.

### *Recommendations*

*1. Host Research Seminars that address survey participant concerns.* Research seminars have been well attended by SJC students with nearly 40 students attending the last seminar during Year 1. Additionally, the on-line survey of attendees revealed that students enjoyed and benefited from the seminars. Many attendees reported that they experienced increases in their interest in science careers and/or pursuing a four-year degree in science as a result of the seminars. Given the strong attendance and support of students, SJC Bridges may wish to ensure that these seminars are held more frequently in order to continue impacting repeat attendees' interest in science while reaching out to additional students. Furthermore, on-line survey participants recommended that larger facilities be used, more interactions with student be included, and the opportunity be provided for students to visit laboratories/sites. Survey participants mentioned interest in the following topics for future seminars: Medicinal products, both traditional and synthesized; Genetics and Medicine; Cell Biology, Anatomy of the Human Body and Pathology.

*2. Place Emphasis for Summer 2006 Research Internship on areas of concern revealed during Year 1.*

The 2005 summer internship was very successful for interns as they gained laboratory skills and confidence, worked as a team, and had a positive science research experience. A few areas of concern arose during the 2005 summer internship, which the SJC Bridges program could address prior to the 2006 internships. Interns' Post Surveys reveal that in general, interns did not feel their skill level increased much in the following areas: 'Speaking in Public', 'Writing clearly and concisely', and 'Using computers'. Program personnel may wish to ensure that during their internships, students are often required to write summaries of their findings, give presentations to other students and faculty, and utilize computers. Changes will help ensure that skills in these 3 areas are addressed.

Interns suggested starting the summer internship earlier and having it last longer as interns felt the length of the internship was too short a time. Additionally, interns urged that everything possible be done to ensure that equipment, supplies, and specimen are ready at the start of the internship. Lastly, some of the 2005 interns appeared to have been committed to attending a 4-year institution and pursuing a career outside of biomedical science prior to beginning their research. In order to ensure that as many students as possible are exposed to new possibilities for their future, particularly those who are interested in a biomedical career, SJC Bridges could benefit from conducting additional pre-screening of participants to ensure this group is targeted. Lastly, due to a number of challenges, Bridges personnel were unable to schedule students to attend a national/regional meeting during the summer at which they would have presented their research. While this setback is understandable, it would be beneficial for students in 2006 to ensure this component is made available.

3. *Help Native American students deal with apparently conflicting views between science and culture.* One intern noted that he/she was challenged in pursuing interests in science by "my Navajo beliefs". Though only 1 student provided this response, it is likely that more interns and other student at SJC share this concern. This issue regarding Navajo beliefs and science is very notable and could be addressed by SJC Bridges in order to ensure the greatest program impact. Possible ways of helping students address concerns are to: 1) Host a seminar that deals directly with this issue, preferably conducted by a Navajo scientist; 2) Invite students to participate in a Focus Group facilitated by either a Navajo instructor or a Navajo student and 3) Identify/create and make available documents that discuss and address this topic. In relation to this recommendation, SJC Bridges could benefit from keeping in mind the question, "What do students report as their reasons for pursuing a career in biomedical research and is it different for Native American and other minority students?". In order to further address the unique interaction of Navajo beliefs and scientific ways, SJC and the evaluation team may wish to include related question on upcoming surveys and/or in related research seminar series.

4. *Increase SJC Bridges' number of collaborative partnerships.* SJC Bridges worked with NMSU to coordinate a closing ceremony and laboratory tour at the completion of the 2005 summer internship and with NMSU/BRIN to schedule research seminars. These partnerships appears beneficial to the Bridges program in providing additional resources and expertise. In their proposal to the NIH, Bridges personnel also indicated plans to collaborate with NMSU and BRIN to enable student and faculty mentors to visit research institutions and collaborate on research projects. While some collaboration goals have been met, particularly in association with NMSU, SJC Bridges may wish to pursue deeper collaborations during Year 2 if deemed beneficial to the program. Additionally, SJC may wish to pursue a partnership with a research institution that is located in closer proximity to Farmington, such as UNM, in order to ease the distance students and faculty would need to travel.

## **Appendix**

## San Juan College Undergraduate Research Series Seminars On-Line Survey

### About this Survey

The Department of Chemistry at San Juan College sponsored five research seminars this past school year on a variety of topics. The seminars are designed to promote undergraduate research opportunities for students interested in biomedical sciences, biology, chemistry and materials science careers. We would like your opinion regarding the seminars so that we can improve them for next year.

THE SURVEY SHOULD NOT TAKE MORE THAN 5 MINUTES AND IS COMPLETELY ANONYMOUS.

Thank you for your help!

- 
1. Please check below all seminars you attended:

**(Check all that apply)**

- Intro to Biology and Biochemistry Summer Research Opportunities for Native Students at NMSU (11/30/04)
- Molecular Mechanisms of Drought, Tolerances, Heat Tolerances, and Wound-Healing Processes in Plants (1/27/05)
- Medicinal Plants of the Southwest (2/24/05)
- Cell Division: Harnessing Instability (4/15/05)
- Introduction to Drug Discovery Research and the Biological Research Infrastructure Network (10/29/04)

2. Overall, how interesting did you find the seminar(s) you attended?

**Select one**

- Not at all Interesting
- A little Interesting
- Somewhat Interesting
- Very Interesting

3. How much did your attendance at the seminars influence your future plans?  
**The Seminars increased my interest in...**

	Not at all True	A little True	Somewhat True	Very True
a. Pursuing a 4-year degree in Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
b. Pursuing a 4-year degree in a Biomedical Science	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
c. Being involved in Science-related Research	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
d. Being involved in Science-related Experimentation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

4. What suggestions do you have for improving the San Juan College Undergraduate Research Seminar Series? What topics are you interested in? How could the series be changed to better benefit students like you?

5. Your Race/Ethnicity:  
**(check all that apply)**

- American Indian
- Asian
- Black or African American
- Hispanic
- Native Hawaiian or Other Pacific Islander
- White

6. How many years have you attended SJC:

- 1 year  2 years  3 years  4 years  5+ years

7. Total number of Credit Hours taken at SJC:

8. Your major:

**Thank you for taking the survey.**

# Biomedical Research Intern Survey (PRE)

## San Juan College Bridges

### *Your Experience Doing Scientific Research*

#### 1) What science classes have you taken?

##### **A. High School Classes** *Please check all classes you took in high school:*

- |                       |   |                                     |  |
|-----------------------|---|-------------------------------------|--|
| <b>Biology</b>        | <input type="radio"/> General Biology/Biology 1     | <input type="radio"/> AP Biology    | <input type="radio"/> Other: _____     |
| <b>Chemistry:</b>     | <input type="radio"/> General Chemistry/Chemistry I | <input type="radio"/> AP Chemistry  | <input type="radio"/> Other: _____     |
| <b>Physics:</b>       | <input type="radio"/> General Physics/Physics I     | <input type="radio"/> AP Physics    | <input type="radio"/> Other: _____     |
| <b>Other Classes:</b> | <input type="radio"/> Anatomy/Physiology            | <input type="radio"/> Earth Science | <input type="radio"/> Physical Science |
|                       | <input type="radio"/> Other: _____                  | <input type="radio"/> Other: _____  | <input type="radio"/> Other: _____     |

##### **B. College Classes** *Please check all classes you have taken in college:*

- |                       |   |  |  |
|-----------------------|---|--|--|
| <b>Biology</b>        | <input type="radio"/> General Biology/Biology 1     | <input type="radio"/> Advanced Biology   | <input type="radio"/> Other: _____     |
| <b>Chemistry:</b>     | <input type="radio"/> General Chemistry/Chemistry I | <input type="radio"/> Advanced Chemistry | <input type="radio"/> Other: _____     |
| <b>Physics:</b>       | <input type="radio"/> General Physics/Physics I     | <input type="radio"/> Advanced Physics   | <input type="radio"/> Other: _____     |
| <b>Other Classes:</b> | <input type="radio"/> Anatomy/Physiology            | <input type="radio"/> Earth Science      | <input type="radio"/> Physical Science |
|                       | <input type="radio"/> Other: _____                  | <input type="radio"/> Other: _____       | <input type="radio"/> Other: _____     |

#### **C. What other experiences have you had doing science-related research? (Check all that apply)**

- Employment                                       Field Work                                       Other \_\_\_\_\_

### *Seminars Attended at San Juan College*

#### 2) Please check below the seminars that you attended this past year:

- Cell Division, Harnessing Instability (*April 15, 2005*)
- Medicinal Plants of the Southwest (*February 24, 2005*)
- Molecular Mechanisms of Drought, Tolerances, and Wound-Healing Processes in Plants (*January 27, 2005*)
- Intro to Biology/Biochemistry Summer Research Opportunities for Native Am. Students at NMSU (*November 30, 2004*)
- Biological Research Infrastructure Network (*October 29, 2004*)

### *Your Scientific Research Skills*

#### 3) Please rate your skill level in the following areas

	Weak	Average	Average	Strong
a. Gathering data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Analyzing data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Working with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Persuading/influencing others of your ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Evaluating processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Defining problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Generating ideas using deductive reasoning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



*Open-Ended Questions*

**7a) What is appealing to you about a career in *science and/or biomedical science*?**

**7b) What concerns do you have about a career in *science and/or biomedical science*?**

**8a) What challenges have you faced in pursuing your interests in science?**

**9) How did you become involved in this Summer Research Program?**

## 10) Demographic Information

*We also ask that you supply some background information about yourself. Please be assured that your responses to this entire survey will remain entirely confidential and known only to the external evaluator. Any reporting of data to SJC will be done in a way that does not individually identify you or your responses.*

Your Name: \_\_\_\_\_

a) What is your gender?     Female         Male

b) How old are you? \_\_\_\_\_

c) How many years have you attended SJC? \_\_\_\_\_

d) How many credit hours have you taken at SJC? \_\_\_\_\_

e) What program are you enrolled in at SJC?(Associates, Career Program, etc) \_\_\_\_\_

f) How many credits were you enrolled in last semester (Spring 2005)?  
\_\_\_\_\_

g) Which of the following categories best represents your ethnicity/race?

1) Race (choose one or more):

- |   |  |
|---|--|
| <input type="checkbox"/> American Indian or Alaska Native | <input type="checkbox"/> Asian                                     |
| <input type="checkbox"/> Black or African American        | <input type="checkbox"/> Native Hawaiian or Other Pacific Islander |
| <input type="checkbox"/> White                            |  |

2) Ethnicity (choose one):

- Hispanic or Latino     not Hispanic or Latino

h) Where did you go to high school (name of school, city and state)?  
\_\_\_\_\_  
\_\_\_\_\_

i) Does anyone in your immediate family have a college degree?     Yes     No  
If YES, what is their relationship to you?  
\_\_\_\_\_

j) How many years have you lived in the Four Corners? \_\_\_\_\_

k) How many miles away from SJC do you live? \_\_\_\_\_

l) Do you tend to go home (parent's house/community) for the weekend?     Yes         No

**Thank you for your help!!!**

## San Juan College Bridges Biomedical Research Intern Survey Post Summer 2005 Internship Survey

*Dear Research Intern: This survey is meant to determine the strengths and weaknesses of the San Juan College Bridges' Biomedical Research Internship program that you recently participated in. The information you provide will be used by Minnick & Associates to assess the program and provide San Juan College Bridges personnel with recommendations for future summer internship programs. Minnick & Associates will combine your data with other interns and will not release it to San Juan College Bridges in a way that identifies you as an individual.*

**Thanks for your honesty and help!**

### *Your Scientific Research Skills after your summer as a Research Intern*

<b>1) Please rate your skill level in the following areas:</b>	Weak		Average		Strong
<b>a. Gathering data</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Analyzing data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Working with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Persuading/influencing others of your ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Evaluating processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Defining problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Generating ideas using deductive reasoning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Being attentive to details	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Conducting observations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Writing clearly and concisely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Speaking in public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Following instructions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Using computers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### *Your Future in Science After your summer as a Research Intern*

#### **2) What Biomedical science careers are you interested in? (check all that apply)**

- |   |                                      |   |  |
|---|--------------------------------------|---|--|
| <input type="radio"/> Aquatic Biologist | <input type="radio"/> Biochemist     | <input type="radio"/> Biomedical Engineer | <input type="radio"/> Biophysicist                 |
| <input type="radio"/> Bone Biologist    | <input type="radio"/> Botanist       | <input type="radio"/> Cancer Researcher   | <input type="radio"/> Cell & Development Biologist |
| <input type="radio"/> Ecologist         | <input type="radio"/> Entomologist   | <input type="radio"/> Food Scientist      | <input type="radio"/> Forensic Scientist           |
| <input type="radio"/> Geneticist        | <input type="radio"/> Hematologist   | <input type="radio"/> Immunologist        | <input type="radio"/> Marine Biologist             |
| <input type="radio"/> Medical Doctor    | <input type="radio"/> Microbiologist | <input type="radio"/> Neurologist         | <input type="radio"/> Nutritionist                 |
| <input type="radio"/> Plant Biologist   | <input type="radio"/> Pharmacist     | <input type="radio"/> Physiologist        | <input type="radio"/> Public Health                |
| <input type="radio"/> Soil Scientist    | <input type="radio"/> Virologist     | <input type="radio"/> Zoologist           | <input type="radio"/> Other: _____                 |

#### **3a) How likely is it that you will pursue a career in science?**

- Very Unlikely Very Likely
- 1     2     3     4     5

#### **3b) How likely is it that you will pursue a career in biomedical science?**

- Very Unlikely Very Likely
- 1     2     3     4     5

	Never	1-4 times a month	1-2 times a week	3-4 times a week	Every Daily
<b>4) How often did <i>your laboratory/field work</i> provide the opportunity for you to enhance your skills in...</b>					
a. Science writing					
b. Research presentations					
c. Laboratory work					
d. Giving oral presentations					
e. Using PowerPoint software					
f. Information retrieval					
g. Data analysis					
h. Recording & reporting data					
<b>5) How often did you attend <i>Biotechnology Enrichment Activities</i> organized by the SJC Bridges that enhanced your skills in...</b>					
a. Science writing					
b. Research presentations					
c. Laboratory work					
d. Giving oral presentations					
e. Using PowerPoint software					
f. Knowing procedures for associate program to bachelor program transfers					
g. Knowing about academic advisement opportunities at SJC					
h. Information retrieval					
i. Data analysis					
j. Recording & reporting data					

**6) During your summer as a Bridges research intern, what percent of your time was spent...**

a. Working independently:	_____ %
b. Working with other Bridges research interns:	_____ %
c. Working with your faculty mentor:	_____ %
d. Attending activities/sessions:	_____ %
e. Preparing your poster:	_____ %
f. Other:	_____ %
	=100%

	Never	Almost Never	Sometimes	Usually	Always
<b>7) How often did your faculty mentor do the following:</b>					
a. Explain expectations, goals and responsibilities?					
b. Ask what you knew about new topics, data collection methods, etc.?					
d. Present information/tasks appropriate to your level of understanding?					
e. Encourage interns in your group to exchange ideas?					
f. Ask for your input and questions?					
g. Build a sense of community in the laboratory/field?					

	Poor	Fair	Average	Good	Excellent
<b>8) Please rate your overall summer research internship experience in the following areas:</b>					
a. Opportunity to learn new <i>science skills</i>					
b. Opportunity to learn new <i>biomedical science skills</i>					
c. Opportunity to learn more about career opportunities in science					
d. Opportunity to learn about the culture of science					
e. Level of difficulty of the work you were engaged in					
f. Availability of your faculty mentor to answer questions and guide your work					
g. Availability of Bridges personnel to address problems/issues					
h. Quality of poster sharing event					
i. Overall quality of your research internship					

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
<b>9) The SJC Bridges Program is interested in knowing about your experiences with cultural diversity at SJC.</b>					
<b>I feel that...</b>					
a. my instructors at SJC appreciate my Native American/Hispanic culture.					
b. there are plenty of Native Americans/Hispanic instructors at SJC.					
c. SJC could do more to make the school feel like a community.					
g. SJC instructors support student participation in cultural celebrations.					
h. knowing about my culture is important to my SJC instructors.					
i. I have been unfairly treated at SJC because of my race/ethnicity.					

---

**10) Contact Information:**

*As a participant in the SJC Summer Research Intern program, we'd like to contact you once a year to see what you're doing and ask for your feedback. If you are willing, please provide your contact information below. Your name and other contact information will NOT be reported with survey data to maintain your confidentiality.*

A1. Your Name: \_\_\_\_\_ A2. Your Email

Address: \_\_\_\_\_

B. In case we can't get in touch with you using your email address, please provide the permanent address of someone who will know how to contact you during the next few years.

1. Contact's Name: \_\_\_\_\_
2. Relationship to you: \_\_\_\_\_
3. Contact's Street Address: \_\_\_\_\_
4. Contact's City, State: \_\_\_\_\_
5. Contact's Phone Number: \_\_\_\_\_

**Thank you for your help!!!**

# SJC Research Post Internship Interview/Focus Group Protocol

*To Be Completed by Interviewer:*

SJC Research Intern Name/Number of Interns @ Focus Group: \_\_\_\_\_

Date of Interview: \_\_\_\_\_

Conducted by: \_\_\_\_\_

Description of Location of interview/level of privacy: \_\_\_\_\_

Other comments about setting, etc.: \_\_\_\_\_

**1) How has your opinion of a career in science and/or biomedical science changed as a result of your experience as a research intern this summer? *Probe: What aspects of a career in science and/or biomedical science are you more/less interested in? What careers are you interested in now that you didn't know about or weren't interested in prior to your internship?***

**2) How have your plans for your future education changed as a result of your experience as a research intern this summer? *Probe: What happened during your internship that influenced changes in your future education plan? If your plans are the same as they were prior to your internship, tell me about your plans for your future education and why you have chosen this path for your education.***

**3) What challenges did you face as a research intern this summer? *Probe: How did you overcome these challenges? If you weren't able to overcome these challenges, how do you think SJC could help future interns deal with the challenges you confronted?***

**4) What recommendations do you have for improving the SJC Bridges' summer research internship program? *Probe: Please tell me about how SJC could improve both your laboratory/fieldwork experience and the Biotechnology Enrichment Activities organized by SJC Bridges.***

**5) Tell me what you think SJC should know about Native American/Hispanic students' experiences at SJC? *Probe: Are there things SJC could change that would make your experience at SJC more positive?***

**6) How do you think SJC could increase Native American/Hispanic student attendance at and graduation from SJC? *Probe: Can you think of any specific requirements, rules, or other factors that may deter Native American/Hispanic students from enrolling at SJC and/or graduating from SJC?***