English Text: <u>a A</u>

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| Instructor: Sandra Laursen Institution: U Colorado Boulder Department: E&ER | Use |
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| Description: Complete version, for review by users. Sections 1-10 are locked (required); sections 11-30 are optional. | |
| Survey start date: 2010-12-01 Survey end date: 2010-12-01 | He |

Visibility: Private

Instructions to students:

Teachers value students' feedback and take it into account when improving their courses. Please be as precise as you can in your answers. Please choose "not applicable" for any activity you did not do. You may find one or more questions at the end of each section that invite an answer in your own words. Please comment candidly, bearing in mind that future students will benefit from your thoughtfulness. Remember that this is an anonymous survey: your teacher will never know what any individual student has written.

You may see the following note next to some questions:

"D" — Department question. The department head can view the responses to these questions.

Gains in THINKING AND WORKING LIKE A SCIENTIST: APPLICATION OF KNOWLEDGE TO RESEARCH WORK.

| 1. How much did you GAIN in the following areas as a result of your most recent research experience? | no gains a | a little gain | moderate gain | good gain | great gain r | not applicable |
|--|------------|---------------|---------------|-----------|--------------|----------------|
| 1.1 Analyzing data for patterns. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.2 Figuring out the next step in a research project. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.3 Problem-solving in general. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.4 Formulating a research question that could be answered with data. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.5 Identifying limitations of research methods and designs. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.6 Understanding the theory and concepts guiding my research project. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.7 Understanding the connections among scientific disciplines. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1.8 Understanding the relevance of research to my coursework. | 0 | 0 | 0 | 0 | 0 | 0 |

PERSONAL GAINS RELATED TO RESEARCH WORK

2. How much did you GAIN in the following areas as a result of your most recent research experience?

| 2.1 Confidence in my ability to contribute to science. | 0 | 0 | 0 | 0 | 0 | 0 |
|---|---|---|---|---|---|---|
| 2.2 Comfort in discussing scientific concepts with others. | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.3 Comfort in working collaboratively with others. | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.4 Confidence in my ability to do well in future science courses. | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 Ability to work independently. | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.6 Developing patience with the slow pace of research. | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.7 Understanding what everyday research work is like. | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.8 Taking greater care in conducting procedures in the lab or field. | 0 | 0 | 0 | 0 | 0 | 0 |

Gains in SKILLS

| 3. How much did you GAIN in the following areas as a result of your most recent research experience? | no gains a little gain moderate gain good gain great gain not applicable | | | | | |
|--|--|---|---|---|---|---|
| 3.1 Writing scientific reports or papers. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.2 Making oral presentations. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.3 Defending an argument when asked questions. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.4 Explaining my project to people outside my field. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.5 Preparing a scientific poster. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.6 Keeping a detailed lab notebook. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.7 Conducting observations in the lab or field. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.8 Using statistics to analyze data. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.9 Calibrating instruments needed for measurement. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.10 Working with computers. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.11 Understanding journal articles. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.12 Conducting database or internet searches. | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.13 Managing my time. | 0 | 0 | 0 | 0 | 0 | 0 |

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

| 4. During your research experience HOW MUCH did you: | none | a little | some | a fair amount | a great deal | not applicable |
|---|------|----------|------|---------------|--------------|----------------|
| 4.1 Engage in real-world science research | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.2 Feel like a scientist. | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.3 Think creatively about the project. | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.4 Try out new ideas or procedures on your own. | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.5 Feel responsible for the project. | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.6 Work extra hours because you were excited about the research. | 0 | 0 | 0 | 0 | 0 | 0 |

| 4.7 Interact with scientists from outside your school. | 0 | 0 | 0 | 0 | 0 | 0 |
|--|---|---|---|---|---|---|
| 4.8 Feel a part of a scientific community. | 0 | 0 | 0 | 0 | 0 | 0 |

These questions ask about your research experience.

| 5. Please rate the following: | Not applicable | Poor | Fair | Good | Excellent | |
|---|----------------|------|------|------|-----------|--|
| 5.1 My working relationship with my research mentor | 0 | 0 | 0 | 0 | 0 | |
| 5.2 My working relationship with research group members. | 0 | 0 | 0 | 0 | 0 | |
| 5.3 The amount of time I spent doing meaningful research. | 0 | 0 | 0 | 0 | 0 | |
| 5.4 The amount of time I spent with my research mentor. | 0 | 0 | 0 | 0 | 0 | |
| 5.5 The advice my research mentor provided about careers or graduate school. | 0 | 0 | 0 | 0 | 0 | |
| 5.6 The research experience overall. | 0 | 0 | 0 | 0 | 0 | |
| 5.7 Please comment on any of these aspects. | | | | | | |
| | | | | | | |

Research experience

| 6. As part of my most recent research experience | yes | no | | |
|--|-------------------|----------|-------|----------------|
| 6.1 I presented a talk or poster to other students or faculty | 0 | 0 | | |
| 6.2 I presented a talk or poster at a professional conference | Θ | 0 | | |
| 6.3 I attended a conference | 0 | 0 | | |
| 6.4 I wrote or co-wrote a paper that was published in an academic journal | 0 | 0 | | |
| 6.5 I wrote or co-wrote a paper that was published in an undergraduate research journal | 0 | 0 | | |
| 6.6 I will present a talk or poster to other students and faculty | 0 | 0 | | |
| 6.7 I will present a talk or poster at a professional conference | 0 | 0 | | |
| 6.8 I will write or co-write a paper to be published in an academic journal. | Θ | 0 | | |
| 6.9 I will write or co-write a paper to be published in an undergraduate research journal. | 0 | 0 | | |
| 6.10 I won an award or scholarship based on my research | 0 | 0 | | |
| Research experience | | | | |
| Rate how much you agree with the following statements. | Strongly disagree | Disagree | Agree | Strongly agree |
| 7.1 Doing research confirmed my interest in my field of study. | 0 | 0 | 0 | 0 |

| 7.2 Doing research clarified for me which field of study I want to pursue. | 0 | 0 | 0 | 0 |
|--|---|---|---|---|
| 7.3 My research experience has prepared me for advanced coursework or thesis work | 0 | 0 | 0 | 0 |
| 7.4 My research experience has prepared me for graduate school. | 0 | 0 | 0 | 0 |
| 7.5 My research experience has prepared me for a job. | 0 | 0 | 0 | 0 |

Research experience

| 8. Compared to your intentions BEFORE doing research, HOW LIKELY ARE YOU NOW to: | not more likely | a little more likely | somewhat more likely | much more likely | extremely more likely | not applicable |
|---|--------------------|----------------------------|-------------------------|------------------------|--------------------------|-------------------|
| 8.1 enroll in a Ph.D. program in science, mathematics or engineering? | 0 | 0 | 0 | 0 | 0 | 0 |
| 8.2 enroll in a masters program in science, mathematics or engineering? | 0 | 0 | 0 | 0 | 0 | 0 |
| 8.3 enroll in a combined M.D/Ph.D program | 0 | 0 | 0 | 0 | 0 | 0 |
| 8.4 enroll in medical or dental school? | 0 | 0 | 0 | 0 | 0 | 0 |
| 8.5 enroll in a program to earn a different professional degree (i.e. law, veterinary medicine, etc.) | 0 | 0 | 0 | 0 | 0 | 0 |
| 8.6 pursue certification as a teacher? | 0 | 0 | 0 | 0 | 0 | 0 |
| 8.7 work in a science lab? | 0 | 0 | 0 | 0 | 0 | 0 |
| 8.8 Other. Please state your intended degree and, compared to your intentions BEFORE doing research, HOW LIKELY YOU ARE NOW to enroll in a graduate program leading to an advanced degree. | | | | | | |

9. Future career plans

9.1 How did your research experience influence your thinking about future career and graduate school plans? Please explain.

10. Other gains

10.1 Did you make other gains from doing research that we didn't mention? If so, please briefly describe these.

The following questions ask about aspects of the research program.

| 11. How satisfied were you with the following aspects of the research program? | Not applicable. | Very dissatisfied | Somewhat dissatisfied | Somewhat satisfied | Very satisfied |
|--|--------------------|----------------------|-----------------------|--------------------|----------------|
| 11.1 The application process. | 0 | 0 | 0 | 0 | 0 |

| 11.2 Information available to help me choose a research project. | 0 | 0 0 | 0 | 0 |
|---|------------------------------|----------------------------|-----------------------|----------------|
| 11.3 Ease in locating a research mentor | 0 | 0 0 | 0 | 0 |
| 11.4 Ease in securing a research position. | 0 | 0 0 | 0 | 0 |
| 11.5 Lab or field equipment. | 0 | 0 0 | 0 | 0 |
| 11.6 Support and guidance from program staff. | 0 | 0 0 | 0 | 0 |
| 11.7 Support and guidance from my research mentor. | 0 | 0 0 | 0 | 0 |
| 11.8 Support and guidance from other research group members. | 0 | 0 0 | 0 | 0 |
| 11.9 Research group meetings. | 0 | 0 0 | 0 | 0 |
| 11.10 Financial support. | 0 | 0 0 | 0 | 0 |
| 11.11 Field trips. | 0 | 0 0 | 0 | 0 |
| 11.12 Group social activities. | 0 | 0 0 | 0 | 0 |
| Training Sessions | | | | |
| 12. How MUCH did the following activities support your learning? | Did not do this acti | ivity Not at all A little | A good amount | : A great deal |
| 12.1 Workshop(s)on science writing and presentation. | 0 | 0 0 | 0 | 0 |
| 12.2 Training in library/internet/database search methods. | 0 | 0 0 | 0 | 0 |
| 12.3 Safety training | 0 | 0 0 | 0 | 0 |
| 12.4 Ethics seminar(s) | 0 | 0 0 | 0 | 0 |
| 12.5 Training in human or animal subjects regulations. | 0 | 0 0 | 0 | 0 |
| Institutional Review Board | | | | |
| 13. IRB. | Not applica | able/don't know | Yes. | No |
| 13.1 Were you required to get Institutional Review Board (IRB) certification to conduct research? | | 0 | 0 | 0 |
| | | | | |
| 14. What year are you in college? | Freshman/rising sophomore | Sophomore/rising junior | Junior/rising senior. | Senior Other |
| 14.1 l am a: | 0 | 0 | 0 | 0 0 |
| How did you find out about research opportunities of | on campus? | | | |
| 15. I found out about research opportunities from: | yes | no | | |
| 15.1 I knew this institution offered research opportunities to undergraduates before coming here | 0 | 0 | | |
| 15.2 in class | 0 | 0 | | |
| 15.3 an academic advisor | 0 | 0 | | |
| 15.4 an announcement (flyer, poster, email, website, etc.) | 0 | 0 | | |

| 15.5 a presentation given by professors or students about their research | 0 | 0 | |
|--|---|---|--|
| | | | |

15.6 Other (please specify):

| | | |
|--|------|--|

What motivated you to do research?

| 16. I WANTED TO DO RESEARCH TO: (select all that apply) | yes | no | |
|--|-----|----|--|
| 16.1 explore my interest in science | 0 | 0 | |
| 16.2 gain hands-on experience in research | 0 | 0 | |
| 16.3 clarify which field I wanted to study | 0 | 0 | |
| 16.4 clarify whether graduate school would be a good choice for me | 0 | 0 | |
| 16.5 clarify whether I wanted to pursue a science research career | 0 | Θ | |
| 16.6 have a good intellectual challenge | 0 | 0 | |
| 16.7 work more closely with a particular faculty member | 0 | 0 | |
| 16.8 participate in a program with strong reputation | 0 | 0 | |
| 16.9 get good letters of recommendation | 0 | 0 | |
| 16.10 enhance my resume | 0 | 0 | |
| 16.11 Other (please specify) | | | |
| | | | |
| | | | |

How much do you agree with the following statements?

| 17. Agree/disagree | Strongly disagree | Disagree | Agree | Strongly agree |
|--|-------------------|----------|-------|----------------|
| 17.1 I chose this college./university because it offers undergraduate research opportunities. | 0 | 0 | 0 | 0 |
| 17.2 I chose this college/university because of a specific research program. | 0 | 0 | 0 | 0 |

GRADUATE SCHOOL AND CAREER ACTIVITIES

| 18. How MUCH did the following program activities help clarify your career plans? | Did not do this activity | Not at all | A little A | A good amount | A great deal |
|---|--------------------------|------------|------------|---------------|--------------|
| 18.1 Session(s) offered on graduate school programs or careers. | 0 | 0 | 0 | 0 | 0 |
| 18.2 Information provided by the career counseling center. | 0 | 0 | 0 | 0 | 0 |
| 18.3 Field Trips | 0 | 0 | 0 | 0 | 0 |
| 18.4 Please comment on any of these activities. | | | | | |

| 19. Academic year research | Never participated | | 2 3 esters semesters | 4 or more semesters |
|---|-----------------------------|--------------------|---|---------------------|
| 19.1 How many times have you participated in ACADEMIC YEAR research? | 0 | | 0 0 | 0 |
| | | | | |
| 20. Summer research | Never partici | pated 1 summ | er 2 summers | 3 summers |
| 20.1 How many times have you participated in SUMMER research? | 0 | 0 | 0 | 0 |
| | | | | |
| 21. Research experience | Part of academic year | academic surr | uring Summe Imer: 5 6-8 wee s or less | |
| 21.1 For your most recent research experience, how long did you do research? | 0 | 0 | 0 0 | 0 |
| Activities | | | | |
| 22. Research activities | 1-5 hours 6-10 | hours 11-15 hou | rs 16 - 20 hours | 21 or more hours |
| 22.1 How many hours per week did you work at research-related activities in your most recent research experience? | 0 | 0 0 | 0 | 0 |
| 23. Hours with mentor | None 1 ho | ur 2 hours | 3 hours 4 o | or more hours |
| 23.1 On average, how many hours per week did you spend talking with your most recent research mentor? | 0 0 | 0 | 0 | 0 |
| | | | | |
| 24. Stipend | Not at all impo | rtant Slightly imp | oortant Important | Very important |
| 24.1 How important was the stipend or money you were paid in allowing you to do research? | 0 | 0 | 0 | 0 |
| 25. Researcher | yes | n |) | |
| | yes | | | |
| 25.1 Were you a "visiting rsearcher" doing research away from your home institution? | 0 | C |) | |
| away from your home institution? | 0 | C | ~ | |
| | | - |) | |

Feedback about Research Program

27. Feedback

27.1 What would have made your research experience better?

27.2 What would improve the undergraduate research program, overall?

Demographics

| 28. Gender | Male | Female | Your choi | ce label here |
|--|------|--------|-----------|---------------|
| 28.1 What is your gender? | 0 | 0 | | 0 |
| | | | | |
| Demographics | | | | |
| 29. What is your race? (choose all that apply) | } | /es | no | |
| 29.1 American Indian | | 0 | 0 | |
| 29.2 Asian | | 0 | 0 | |
| 29.3 Black or African American | | 0 | 0 | |
| 29.4 Native Hawaiian or other Pacific Islander | | 0 | 0 | |
| 29.5 White | | 0 | 0 | |
| 29.6 Other (please specify) | | | | |
| | | | | |
| | | | | |

Demographics

| 30. What is your ethnicity? | yes | no |
|--------------------------------|-----|----|
| 30.1 Hispanic or Latino/Latina | 0 | 0 |