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PRINCIPAL INVESTIGATOR: Suzanne Ostrand-Rosenberg, Ph.D.

CONTRACTING ORGANIZATION: University of Maryland Baltimore County
Baltimore, Maryland 21250

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13. ABSTRACT (<i>Maximum 200 Words</i>) The goal of this Training Program is to direct talented undergraduates into careers in breast cancer research. The program, called <u>Breast Cancer Undergraduate Research Experience</u> (BCURE), is a joint program between The University of Maryland Baltimore County (UMBC) and the University of Maryland, Baltimore Medical School (UM,B). The centerpiece of BCURE is a full-time, 10-week summer research experience in the laboratory of an established investigator (mentor) working in breast cancer research. Ten UMBC and UM,B faculty, whose research programs focus on breast cancer, serve as mentors. The Program Director is a well-respected breast cancer investigator who has personally trained >50 undergraduates. Trainees also participate in a Breast Cancer Course and an optional Biomedical Research Ethics course. Trainees present their projects at laboratory meetings, program conferences, UMBC Undergraduate Research Day, as well as at national and international meetings, if appropriate, and in research activities such as journal clubs and seminars. They meet regularly with the Program Director and formally present their research at Breast Cancer Research Day. BCURE trainees include UMBC and non-UMBC undergraduates and represent the diverse population in the Baltimore area. The program includes eight trainees per summer.				
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INTRODUCTION

The development of successful approaches for the prevention and treatment of breast cancer is completely dependent on well-trained, creative, and highly motivated research scientists studying breast biology and breast cancer. It is, therefore, critically important to direct our most talented young investigators into breast cancer research. The goal of the BCURE program is to direct undergraduate students into careers in breast cancer research. Students frequently focus on a particular research question based on an early, successful research experience in that area. By exposing undergraduate students to breast cancer research early during their studies, and giving them an outstanding research experience, we optimize the chances they will focus their research career on breast cancer. There is an existing large pool of UMBC undergraduate students who are academically talented and highly motivated and anxious to be involved in biomedical research. This program will provide these talented undergraduates with opportunities to participate in breast cancer research within the context of their undergraduate education. They will gain valuable experience in a specific area of breast cancer research and focus, and possibly solve, important research questions. In addition, the trainees will be exposed to other areas of breast cancer research through a special Breast Cancer Course and Breast Cancer Research Day. These events will enable students to gain a perspective on the breadth and depth of breast cancer research, and may suggest additional research areas for them to pursue as graduate students and/or post-doctoral fellows, or when they start their own laboratories as independent investigators. Our training faculty (mentors) are well-respected investigators in various areas of breast cancer research, and come from university, medical school, and cancer center settings. They have experience training undergraduates, and are enthusiastic about working with them. They are also very aware of the requirements for training undergraduates vs. graduate or post-doctoral students.

BODY

Key Research Accomplishments:

For the summer 2001 BCURE program:

- ▶ Advertised the BCURE program on the UMBC website and announced it in many undergraduate sciences classes
- ▶ Interviewed applicants and selected eight, high-achieving students to be the first BCURE class (2001 class)
- ▶ Designed the BCURE summer lecture class and made arrangements for five experts in breast cancer to present their work for the trainees
- ▶ Assigned eight BCURE students for 2001 to their mentors by matching research interests and personalities
- ▶ Held the first BCURE meeting which served as an orientation for the BCURE 2001 trainees
- ▶ Met regularly throughout the summer of 2001 with the trainee group. Each trainee presented the status of their project at each meeting
- ▶ Regularly contacted the mentors throughout the summer of 2001 to find out how each BCURE trainee was performing and if there were any problems

- ▶ Trainees presented their research projects in poster format at the end-of-the-summer undergraduate research “fest” at UMBC in August 2001
- ▶ Two of the eight trainees continued to work in their mentors’ research laboratory throughout the academic year (2001-2002)
- ▶ Trainees presented the final version of their projects in poster format at “Breast Cancer Research Day,” an annual event featuring the trainees and an outside speaker/expert in breast cancer. (See “Reportable Outcomes”)

For the summer 2002 BCURE program:

- ▶ Advertised the 2002 BCURE program throughout UMBC in undergraduate classes and on the university website
- ▶ Contacted potential mentors at UMBC and UM,B to ascertain they remained enthusiastic about hosting BCURE students for the summer of 2002
- ▶ Reviewed written applications of potential students; interviewed approximately 15 students; selected eight students as BCURE 2002 trainees
- ▶ Organized summer 2002 breast cancer course and arranged for five breast cancer researchers to present their work for the trainees

Reportable Outcomes:

- ▶ Eight undergraduate trainees worked for 10 weeks each with faculty mentors studying basic questions in breast cancer.
- ▶ Two trainees continued working in their mentors’ laboratory during the academic year (2001-2002)
- ▶ One trainee received an American Association for Cancer Research (AACR) travel award to attend their annual conferences for 2002 and 2003. She attended the 2002 conference in San Francisco.
- ▶ All trainees presented their final projects in poster format at the annual “Breast Cancer Research Day.” This event is a university-wide function at which an outside expert in breast cancer research presents his/her work and interacts with each student.

CONCLUSIONS

The first year of the BCURE program for training undergraduates in breast cancer research has been extremely successful. The program attracted a group of high-achieving and highly motivated students. All trainees had enjoyable and productive research experiences. The mentors were satisfied with the students’ efforts. In discussion with students at the end of the summer and on Breast Cancer Research Day in May of 2002, about half of the trainees said they were seriously considering incorporating research into their future career goals.

REFERENCES: None

APPENDICES:

Appendix 1: Trainees for the summer 2001 program.

Appendix 2: Faculty mentors for the summer 2001 program.

Appendix 3: Expectations for BCURE Trainees for 2001

Appendix 4: BCURE speaker schedule for 2001

Appendix 1; Trainees for the summer 2001 BCURE Program

<u>Trainee</u>	<u>College Year Completed at the Start of the Program</u>
Ms. Annabelle Dando,	freshman year (UMBC)
Ms. Erika Danna,	sophomore year (UMBC)
Mr. John Jackson,	junior year (UMBC)
Mr. Tomacz Macura	junior year (UMBC)
Ms. Alina Predescu	sophomore year (UMBC)
Mr. Sunmeet Sawhney	sophomore year (UMBC)
Mr. Gregory Small	freshman year (UMBC)
Mr. Peter Wenger	sophomore year (Loyola College)

Appendix 2: Faculty mentors for the summer 2001 program.

<u>Faculty Mentor</u>	<u>Laboratory Location</u>
Dr. Tony Passaniti	Cancer Center, UM,B
Dr. Beth Pulaski	Biology Dept., UMBC
Dr. Don Creighton	Chemistry Dept., UMBC
Dr. Chein-I Chang	Dept. Electrical Engineering, UMBC
Dr. Sandra McLeskey	School of Nursing, UM,B.
Dr. Angela Brodie	Dept. Pharmacology, UM,B
Dr. Brad Carter	Dept. Surgical Oncology, UM,B.
Dr. Jim Mixson	Cancer Center, UM,B

BCURE Speaker Schedule Summer 2001

All sessions will convene at 9:00 A.M. in room 461 of the Biological Sciences Building at UMBC. The June 4 session will be an introductory meeting and will end at approximately noon - 12:30 P.M. All subsequent sessions will end at approximately 11:00 A.M. All participating BCURE Trainees are expected to attend all sessions. Please note that sessions have been scheduled for Mondays, Tuesdays, or Thursdays.

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|-------------------|---|
| June 4, Monday | Introductory meeting. Discussion of BCURE goals, student expectations, faculty expectations, parking at UM,B, and other miscellaneous administrative affairs. A laboratory safety video will be shown. A lecture entitled "Overview of Breast Cancer" will be given by Dr. Suzanne Rosenberg, UMBC. |
| June 19, Tuesday | Speaker: Dr. Tony Passaniti, UM,B
Topic: Anti-angiogenesis strategies to inhibit tumor growth |
| June 28, Thursday | Speaker: Dr. Brad Carter, UM,B
Topic: TBA |
| July 12, Thursday | Speaker: Dr. Don Creighton, UMBC
Topic: Estrogen Conjugates as Antitumor Agents |
| July 26, Thursday | Speaker: Dr. Angela Brodie, UM,B
Topic: Aromatase Inhibitors and Breast Cancer |
| Aug. 9, Thursday | Speaker: Dr. Sandra McLeskey, UM,B
Topic: Gene Expression in Tumor-Associated Endothelial Cells |

BCURE Program at UMBC
Summer 2001 - Expectations for BCURE Trainees

1. BCURE Trainees are expected to participate in summer laboratory research for a period of 10 weeks. This participation includes regular attendance in their host labs for at least 40 hours a week. Any deviations in student schedules including vacations and non-emergency medical and dental appointments must be approved by their Research mentors in advance.
2. A BCURE biweekly time sheet will be provided to record the time each student spends in the research lab. These sheets should be completed by the student, signed by the BCURE Research Mentor, and turned into Mrs. Sutphin within one week of the last day of the ten work day reporting period.
3. BCURE Trainees are expected to participate in all program activities especially those that are part of their host research laboratory, such as lab meetings/conferences, journal clubs, etc.
4. BCURE Trainees are expected to attend the BCURE program meetings at UMBC. BCURE Research Mentors will be informed of the BCURE Trainees' obligation to attend these meetings and the dates. Program Meetings will usually be held biweekly and are tentatively scheduled for: June 4, June 19, June 28, July 12, July 26, and August 9, 2001.
5. At the biweekly program meetings, BCURE Trainees are expected to present a brief overview of what they are doing in their labs and participate in the discussions of the presentations by the speakers.
6. At the end of the ten-week research internship, students are expected to write a summary of their research work, have the summary reviewed and approved by their research mentor, and submit the final summary to Dr. Rosenberg. This summary will serve as a foundation for the research poster that will be prepared over the academic year for presentation at the Spring 2002 BCURE Breast Cancer Research Fest at UMBC.
7. Trainees should be proud of their acceptance in the BCURE Program and are asked to remember that they represent the BCURE Program and UMBC during their participation in the program.
8. BCURE Trainees are expected to complete a Stipend Agreement form as part of their participation in the program. These forms will be distributed during the June 4 Orientation and Program Meeting.
9. Generally, BCURE Trainees will receive a \$3,000 summer stipend for their ten-week participation in the program and will receive an additional \$1,000 stipend after they participate in the Spring 2002 BCURE Breast Cancer Research Fest.
10. Generally, Trainees will receive their summer stipend through the UMBC payroll system in six payments of \$500 each paid on June 22, July 6, July 20, August 3, August 17, and August 31. Students are required to present their Driver's License and Social Security Card at the June 4 Orientation and Program Meeting and complete all required payroll information during the orientation to prevent any delay in receiving their stipend payments. Any Trainees who are not U.S. Citizens must present a current passport during the June 4 orientation.
11. BCURE Trainees should plan to continue their program participation over the 2001-2002 academic year in monthly BCURE Program Meetings or activities related to Breast Cancer. A tentative schedule of meetings and activities will be distributed at the August 9 Program Meeting.

IMPORTANT: It is the responsibility of the BCURE Trainee to inform Dr. Rosenberg or Mrs. Sutphin immediately if she or he is having any problems related to BCURE Program participation.