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TITLE:  Interdisciplinary Breast Cancer Training Program

PRINCIPAL INVESTIGATOR:  Coral A. Lamartiniere, Ph.D.

CONTRACTING ORGANIZATION:  The University of Alabama at Birmingham
Birmingham, Alabama 35294-0111

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The goal of the University of Alabama at Birmingham Interdisciplinary Breast Cancer Training Program (IBCTP) is to educate and train predoctoral students in a multidisciplinary environment with a focus on breast cancer research. The aims are to 1) recruit predoctoral trainees to the Interdisciplinary Breast Cancer Training program; 2) assure that predoctoral trainees obtain a broad-based breast cancer education and carry out interdisciplinary breast cancer research; 3) administer this program with sufficient oversight to ensure high-quality education and training, efficient completion of degree requirements, and productive research careers. Our faculty is drawn from 11 departments/affiliations. Our training program is designed to prepare and motivate trainees to pursue careers in the fields of breast cancer causation, prevention, diagnosis, therapy and education. In academic year 2000-2001, we had 2 predoctoral students successfully complete their course work and laboratory rotations, and have recruited an additional 2 students for 2001-2002. The IBCTP hosted 6 outside scientists to present seminars on breast cancer related research and to talk to the predoctoral trainees. The interdisciplinary Breast Cancer Causation and Regulation course received a “very good” evaluation.
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INTRODUCTION

The goal of the University of Alabama at Birmingham Interdisciplinary Breast Cancer Training Program (IBCTP) is to educate and train predoctoral students in a multidisciplinary environment with a focus on breast cancer research. Our faculty is drawn from 11 departments/affiliations. The aims are to 1) recruit predoctoral trainees to the IBCTP; 2) assure that predoctoral trainees obtain a broad-based breast cancer education and carry out interdisciplinary breast cancer research; 3) administer this program with sufficient oversight to ensure high-quality education and training, efficient completion of degree requirements, and productive research careers. Our training program is designed to prepare and motivate trainees to pursue careers in the fields of breast cancer causation, prevention, diagnosis, therapy and education.

KEY ACCOMPLISHMENTS

Specific Aim 1) To recruit predoctoral students to UAB’s Department of Defense Interdisciplinary Breast Cancer Training Program (IBCTP).

In the first year we had 11 x 17 inch breast cancer recruitment posters printed. These were mailed to universities and colleges in the U.S. We also set up a web site (http://main.uab.edu; click onto Graduate School; Programs of Study; Administration and Business; Basic Life and Biomedical Sciences; Breast Cancer Training Program). To students that inquire about the IBCTP, we send out letters, information about the IBCTP and UAB, and graduate school applications. Applications were reviewed by the admissions committee, and selected applicants offered the opportunity of visiting UAB for an interview.

For academic year 2000-2001, 4 applicants (from 10 completed applications) were interviewed and fellowships offered to 2 students (Craig Rowell and Angie McDonald). Mr Rowell has successfully completed the first year with a 3.35 GPA. Ms. McDonald was academically in good standing after the first quarter, but withdrew from graduate studies for personal reasons (Her husband’s job was transferred to Maine.). We subsequently identified Ms. Chantelle Bennetto, a second year predoctoral student interested in breast cancer research for support via the IBCTP. She has a 3.68 GPA.

For academic year 2001-2002, 5 applicants were interviewed (from 37 applications) and fellowships offered to 3 students (Mubina Nasrin, Damon Bowe and Kristina Wyatt). Ms. Nasrin and Mr. Bowe accepted and are presently enrolled in the IBCTP. Ms. Wyatt accepted, but two weeks prior to start of classes she informed us that she was going to attend another university (reason: to get away for the immediate influence of her parents). Unfortunately, it was too late to offer the fellowship to another student.

Aim 2. To assure that predoctoral trainees obtain a broad-based breast cancer education and gain experience in interdisciplinary breast cancer research.
Interdisciplinary education is facilitated by faculty from 11 departments/programs in the form of specialty and core courses including, Breast Cancer Causation and Regulation, Biological Chemistry and Cellular Physiology, Pathophysiology and Pharmacology of Disease, Molecular Medicine and Functional Genomics, Principles of Toxicology, Breast Cancer Seminars, 3 laboratory rotations and electives. Interdisciplinary research is promoted via laboratory rotations, and require primary- and secondary-research foci. Students select their mentors in the second year and, in the third year they will identify dissertation committees that will reflect interdisciplinary research.

In addition to structured lectures, the IBCTP supports a breast cancer seminar series whereby we have experts in cancer causation and regulation come to our campus and provide seminars and meet with our students. This expands the education and training of our predoctoral trainees, and provides them with the opportunity of meeting future employers. This has received a most favorable response from students and faculty. The list of seminar speakers is provided in the Appendix.

**Aim 3. To administer this institutional training program with sufficient oversight to ensure high-quality education and training, efficient completion of degree requirements, and productive research careers.**

The IBCTP Executive Committee oversees the interviewing and selection of prospective predoctoral students, the academic and research program, the progress of the trainees and the budget. The Executive Committee consist of representatives from 5 interdisciplinary research foci: Robert B. D’Asio (Cancer Pharmacology), Thearase Strong (Gene Therapy), Clinton Grubbs (Chemoprevention), Francis Kern (Mechanisms of Growth Control), Charles N. Falany (Cancer Causation), plus one student trainee (Mr. Craig Rowell), and Dr. Coral A. Lamartiniere (Program Director). This is an ongoing process.

The appendix contains the lectures for the Breast Cancer Causation and Regulation course for 2000 and 2001. Changes in this course take into consideration the course evaluation by the students and course director. The course in 2000 received a “very good” evaluation.

**REPORTABLE OUTCOMES**

We do have 4 students enrolled in the IBCTP. Please see the Appendix for credentials.

Two students did attend the 2001 American Association for Cancer Research Meeting in New Orleans.

The IBCTP did host 6 seminar speakers. The list of speakers is provided in the Appendix.

After one year, there are no publications by the students.
REQUEST FOR MODIFICATION

Our original request was to fund fellowships for 2 students for 4 years, and 3 students for 3 years, a total of 5 predoctoral students. With the large number of applicants (37 in 2001), this reinforces the high demand for the field of breast cancer research and leads us to propose the recruitment and admittance of more predoctoral students with the same fellowship allotments. At UAB, the norm is to award institutional fellowships to students for 1-2 years (and if necessary for additional years), and have future assistantships be provided by the mentor and his/her department. At UAB, the research faculty are reasonably well funded and are receptive to paying the stipends of trainees in order to have good graduate students do research in their labs. Furthermore, shortly after the DOD awarded this predoctoral training grant, UAB was awarded an NIH Specialized Program of Research Excellence (SPORE) in Breast Cancer (Dr. Kirby Bland, PI). With this, we have been able to attract more breast cancer researchers (12) and will continue to do so. This puts us in the position of having more potential breast cancer mentors for our trainees. Accordingly, we request the use of the allocated fellowships for the first 1-2 years of each student’s education/training, with the option of awarding renewal fellowships if necessary (if the mentor can not fund the fellowship). We fully expect that the mentors/departments will pick up the remaining cost via research assistantships. In this manner, we should be able to accept more trainees into the field of breast cancer research (up to a total of 10 Ph.D. students). We do not request additional money from the DOD Breast Cancer Program, simply more optimum use of the allocated fellowships.
APPENDIX

Student Credentials

IBCTP Faculty

IBCTP Seminar Speakers

2000 and 2001 Breast Cancer Caustion and Regulation lectures
### Students Enrolled in the University of Alabama at Birmingham Interdisciplinary Breast Cancer Training Program

<table>
<thead>
<tr>
<th>Student</th>
<th>Previous Degree Institution</th>
<th>Date of Entry</th>
<th>GPA</th>
<th>Verbal</th>
<th>Quantitative</th>
<th>Analytical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craig Rowell</td>
<td>BS (95) Lake Forest IL MS (00) UAB</td>
<td>2000</td>
<td>3.8</td>
<td>580</td>
<td>610</td>
<td>680</td>
</tr>
<tr>
<td>Chantelle Bennetto</td>
<td>BS (99) U. Saskatoon Canada</td>
<td>2000</td>
<td>4.0</td>
<td>510</td>
<td>660</td>
<td>710</td>
</tr>
<tr>
<td>Mubina Nasrin</td>
<td>MD (94) M.R. Medical College, India</td>
<td>2001</td>
<td>no GPA</td>
<td>690</td>
<td>650</td>
<td>670</td>
</tr>
<tr>
<td>Damon Bowe</td>
<td>BS (99) Bates College Maine</td>
<td>2001</td>
<td>3.5</td>
<td>590</td>
<td>580</td>
<td>710</td>
</tr>
</tbody>
</table>
University of Alabama at Birmingham Interdisciplinary Breast Cancer Training Program Faculty

New IBCTP Faculty and Affiliations
Susan Bellis, Ph.D., Physiology/Biophysics
Kirby I. Bland, M.D., Medicine
Donald Buchsbaum, Ph.D. Radiation Biology
David Chhieng, Ph.D., Pathology
Igor Dmitriev, Ph.D. Gene Therapy
Andra Frost, M.D., Pathology
William Grizzle, M.D., Ph.D. Pathology
Donald Hill, Ph.D., Chemoprevention
Victor Krasnykh, Ph.D., Gene Therapy
Yulia Maxuitenko, Ph.D., Southern Research Institute
Zhican Qu, Ph.D., Southern Research Institute
Bradley Yoder, Ph.D., Cell Biology

Previously listed IBCTP Faculty and Affiliations
Stephen Barnes, Ph.D. Pharmacology and Toxicology
Wayne Brouillette, Ph.D., Chemistry
Robert M. Conry, M.D., Medicine
Robert B. Diasio, M.D., Pharmacology and Toxicology
Charles N. Falany, Ph.D., Pharmacology and Toxicology
Clinton J. Grubbs, Ph.D., Nutrition Sciences
Robert W. Hardy, Ph.D., Pathology
Sham S. Kakar, Ph.D., Physiology
Francis G. Kern, Ph.D., Pathology
Jeffrey Kudlow, Ph.D., Medicine
Coral A. Lamartiniere, Ph.D. Pharmacology and Toxicology
Donald Muccio, Ph.D., Chemistry
Deodutta Roy, Ph.D., Environmental Health Science
Michael Ruppert, M.D., Medicine
Theresa V. Strong, M.D., Medicine
University of Alabama at Birmingham Interdisciplinary Breast Cancer Training Program Seminars

September 12, 2000
Stephen Safe, Ph.D.
Department of Veterinary Physiology & Pharmacology
Texas A & M University
"A New Mechanism for Estrogen Regulation of Genes in Breast Cancer Cells"

December 5, 2000
Michael N. Gould, Ph.D.
University of Wisconsin-Madison
McArdle Laboratory for Cancer Research
"Genetic Identification of Mammary Cancer Susceptibility Modifier Genes: Implications for Risk Assessment and Cancer Prevention"

December 12, 2000
Daniel Medina, Ph.D.
Dept of Molecular and Cellular Biology
Baylor College of Medicine
"Modeling Breast Cancer in Genetically Engineered Mice"

January 9, 2001
Curtis Klaassen, Ph.D.
Department of Pharmacology & Toxicology
University of Kansas Medical Center
"Regulation of Transporters"

February 13, 2001
Ron Orlando, Ph.D.
Department of Biochemistry and Molecular Biology, University of Georgia
"Studying Protein-Carbohydrate Interactions and Protein Glycosylation (at a Proteome Level) with Mass Spectrometry"

April 24, 2001
Nancy Weigel, Ph.D.
Associate Professor, Dept of Cell Biology
Baylor College of Medicine
"Regulation of Nuclear Receptor Function through Cross-talk with Cell Signaling Pathways"
**Year 2000**

**Breast Cancer Causation and Regulation**

**TOX 750**

**Mondays and Wednesday, 3-5 pm in Volker Hall 108D**

*Course Director: Coral A. Lamartiniere*

*Volker Hall 124; 4-7139; Coral.Lamartiniere@ccc.uab.edu*

*Administrative Coordinator: Elizabeth Wilson*

*Volker Hall 101C; 4-4579; Elizabeth.Wilson@ccc.uab.edu*

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Instructor (Department)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon Sept 11</td>
<td>Overview of the Breast Cancer Problem</td>
<td>John Waterbor (Epi)</td>
</tr>
<tr>
<td>Wed Sept 13</td>
<td>Genetics and Breast Cancer</td>
<td>Rodney Go (Epi)</td>
</tr>
<tr>
<td>Mon Sept 18</td>
<td>Estrogens and Breast Cancer</td>
<td>Deodutta Roy (Env Hlt Sci)</td>
</tr>
<tr>
<td>Wed Sept 20</td>
<td>Nutrition and Breast Cancer</td>
<td>Gary Johanning (Nutrition Sci)</td>
</tr>
<tr>
<td>Mon Sept 25</td>
<td>Environmental Epidemiology</td>
<td>Mary Hovinga (Epi)</td>
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<tr>
<td>Wed Sept 27</td>
<td>Environmental Carcinogenesis</td>
<td>Coral Lamartiniere (Pharm/Tox)</td>
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<tr>
<td>Mon Oct  2</td>
<td>Exam</td>
<td></td>
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<tr>
<td>Wed Oct  4</td>
<td>Animal Models in Breast Cancer</td>
<td>Clinton Grubbs (Chemoprevention)</td>
</tr>
<tr>
<td>Mon Oct  9</td>
<td>Mathematical Modeling of Cancer Prognosis</td>
<td>Seng-Jaw Soong (Biostatistics)</td>
</tr>
<tr>
<td>Wed Oct 11</td>
<td>Oncogenes and Suppressor Genes</td>
<td>Mike Ruppert (Medicine)</td>
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<tr>
<td>Mon Oct 16</td>
<td>Steroid Hormone Action in the Breast</td>
<td>Stephen Barnes (Pharm/Tox)</td>
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<tr>
<td>Mon Oct 23</td>
<td>Exam</td>
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<tr>
<td>Wed Oct 25</td>
<td>Primary Prevention</td>
<td>Mona Fouad (Preventive Medicine)</td>
</tr>
<tr>
<td>Mon Oct 30</td>
<td>Screening for Breast Cancer</td>
<td>Eva Rubin (Radiology)</td>
</tr>
<tr>
<td>Wed Nov  1</td>
<td>Cancer Pharmacology</td>
<td>Robert Diasio (Pharm/Tox)</td>
</tr>
<tr>
<td>Mon Nov  6</td>
<td>Pathology of Breast Cancer</td>
<td>Andra Frost (Pathology)</td>
</tr>
<tr>
<td>Wed Nov  8</td>
<td>Gene Therapy</td>
<td>Theresa Strong(Gene Therapy)</td>
</tr>
<tr>
<td>Mon Nov 13</td>
<td>Targeted Immunotherapy</td>
<td>Denise Shaw (Medicine)</td>
</tr>
<tr>
<td>Mon Nov 20</td>
<td>Exam</td>
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</tr>
</tbody>
</table>
# Fall 2001

**Breast Cancer Causation and Regulation**  
**TOX 750**

**Mondays and Wednesdays, 3-5 pm in Volker Hall 108D**

Course Director: Coral A. Lamartiniere  
Volker Hall 124; 4-7139; Coral.Lamartiniere@ccc.uab.edu

Administrative Coordinator: Elizabeth Wilson Volker Hall 101C; 4-4579; Elizabeth.Wilson@ccc.uab.edu

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<th>Date</th>
<th>Topic</th>
<th>Instructor (Department)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wed Sept 5</td>
<td>Overview of the Breast Cancer Problem</td>
<td>John Waterbor (Epi)</td>
</tr>
<tr>
<td>Mon Sept 10</td>
<td>Estrogens and Breast Cancer</td>
<td>Deodutta Roy (Env Hlt Sci)</td>
</tr>
<tr>
<td>Wed Sept 12</td>
<td>Primary Prevention</td>
<td>Mona Fouad (Preventive Medicine)</td>
</tr>
<tr>
<td>Mon Sept 17*</td>
<td>Breast Cancer Politics and Policy</td>
<td>Janet Bronstein (Health Care Policy)</td>
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<tr>
<td>Wed Sept 19</td>
<td>Environmental Carcinogenesis</td>
<td>Coral Lamartiniere (Pharm/Tox)</td>
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<td>Mon Sept 24</td>
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<td>Wed Sept 26</td>
<td>Animal Models in Breast Cancer</td>
<td>Clinton Grubbs (Chemoprevention)</td>
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<tr>
<td>Mon Oct 1</td>
<td>Drug design and synthesis</td>
<td>Donald Muccio (Chemistry)</td>
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<tr>
<td>Wed Oct 3</td>
<td>Oncogenes and Suppressor Genes</td>
<td>Mike Ruppert (Medicine)</td>
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<td>Mon Oct 8</td>
<td>Mathematical Modeling of Cancer</td>
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<td>Steroid Hormone Action in the Breast</td>
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<td>Wed Oct 17</td>
<td>Antiestrogens in Breast Cancer</td>
<td>Francis Kern (SRI and Pathology)</td>
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<td>Mon Oct 22</td>
<td>Cancer Pharmacology</td>
<td>Robert Diasio (Pharm/Tox)</td>
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<td>Pathology of Breast Cancer</td>
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