This interdisciplinary Cancer Biology Program is built on an innovative Ph.D. curriculum to train future scientific leaders in cancer biology.

**Unique Integrated Biomedical Research Curriculum** - An important goal of the program is to provide students with a strong background in basic biomedical research coupled with an understanding of clinical aspects of cancer including diagnostic, prognostic, and therapeutic intervention.

**PROGRAM OVERVIEW**

The Cancer Biology Ph.D. Program is a University-wide multidisciplinary training program that will involve faculty from multiple departments and multiple schools and colleges of the University of Miami. The objective of this program is to provide a unique training environment for highly qualified individuals that will prepare them for independent research and teaching careers.

The scientific focus is cancer research with an emphasis on the biology of cancer and the development of novel diagnostic and therapeutic approaches. The program emphasizes an approach which encompasses concepts and state-of-the-art techniques of molecular biology, biochemistry, genetics, genomics, proteomics, structural biology, cell biology, and biostatistics and will integrate students into the extensive and rapidly expanding translational research programs at the Sylvester Comprehensive Cancer Center and other basic science research programs around the University of Miami.

**CURRICULUM AT A GLANCE**

Each student will enroll in Core courses including Tumor Biology, Scientific Reasoning and Logic in Cancer Biology: Bench to Bedside, Approaches to understanding cancer, Colloquia in Translational Cancer Research, and student seminar. Students will also be able to enroll in electives in Cancer Epimyology, Cellular and Molecular Biology, Molecular and Cellular Immunology, Molecular and Cellular Pharmacology, and Microbiology and Immunology.

**ADMISSIONS PROCEDURES**

The Cancer Biology Ph.D. Program is designed for highly qualified and motivated students who desire a Ph.D. in the biological sciences with an emphasis in cancer research. Suitable applicants will be assessed on the basis of their academic record, recommendations from their mentors, and an in-person interview.

**CORE COURSE CURRICULUM:**

**Scientific Reasoning and Logic in Cancer Biology: Bench to Bedside**

One aspect of the Cancer Biology Ph.D. Program is to train students in the application of basic research to clinical problems i.e., translational research. The goal of this course is to expose students to the scientific reasoning and logic behind solving problems in translational cancer research.

**Colloquia in Translational Cancer Research**

As an in-depth introduction to the fields of clinical research, students will attend Colloquia at which faculty members present seminars on their current clinical research topics and methods of investigation.

**Approaches to Understanding Cancer**

This interactive lecture course will teach students specific methodologies used to solve problems in cancer research.

**PROGRAM GOALS:**

- To provide a multidisciplinary foundation in cancer biology that demonstrates the interrelationship of biological discovery and clinical application.
- To emphasize explicit training in scientific reasoning.
- To provide students with two-tier mentoring. The students will receive guidance from both a research mentor and a physician mentor; the research mentor is the dissertation advisor, while the physician mentor will provide the students with a clinical perspective in cancer biology.

**APPLY**

Application is now open for enrollment in Fall 2008. Please apply online at [www.biomed.miami.edu/cab](http://www.biomed.miami.edu/cab).
Biomedical Research Training
Cancer Biology Ph.D. Program

UM/Sylvester Faculty Research Interest

Michael Antoni, Ph.D.
Psycho-oncology, psycho-neuro-immunology

Glen Barber, Ph.D.
Viral oncology, viruses as therapeutic agents

Julio Barreto, M.D.
Bone marrow and stem cell transplantation, childhood brain and spinal tumors, pediatric sickle cell disease

Lisa L. Baumbach-Reardon, Ph.D.
Genetic basis and molecular pathophysiology of breast cancer

Larry Boise, Ph.D.
Cell death; multiple myeloma; proteasome inhibitor

Karoline Briegel, Ph.D.
Transcription; mammmary development and breast cancer; mouse models of mammogenesis and breast cancer

Kerry Burnstein, Ph.D.
Signaling mechanisms; prostate cancer cell cycle; steroid hormone responsiveness; vitamin D

Kermit Carraway, Ph.D.
Mammary epithelial; cancer cells, ligand, receptor tyrosine kinase ErbB2/HER2/Neu, glycoprotein complex, Mac4

Ahmed Farooq, Ph.D.
Protein structure, function and mechanism of signal transduction

Eli Gilboa, Ph.D.
Tumor immunology and immunotherapy, dendritic cell biology and vaccines for cancer tx

Edward Harbaj, Ph.D.
Retrovirus; T Cell Leukemia (ATL); HTLV-I-associated myelopathy/tropical spastic paraparesis (HAM/TSP)

T.K. Harris, Ph.D.
NMR and kinetic studies of enzyme signaling mechanisms; tumor-suppressor gene

David Helfman, Ph.D.
Oncogenic ras, cytoskeleton, signal transduction, apoptosis

Jennifer Hu, Ph.D., MPH
Molecular epidemiology, DNA damage/repair, human cancer risk assessment and prevention

Roland Juretic, Ph.D.
Stem cells; pluripotent cells; stem cell transplantation; gene therapy; hematopoietic stem cells

Erik Kobetz, Ph.D.
Epidemiology and public health; breast and cervical cancer prevention

Leonidas Komisaris, M.D.
Growth regulation in the liver, mechanisms of cancer associated wasting

Ted Lampidi, Ph.D.
Chemotherapeutic agents; p-glycoprotein (P-gp); mediated multiple drug resistance (MDR); hypoxia; mitochondrial

Robert Levy, Ph.D.
T-Cells in bone marrow transplantation and cancer; Graft vs. Host Disease (GVHD) in models of allogeneic bone marrow transplantation (BMT)

Jie Li, M.D., Ph.D.
Angiogenesis, tumor biology, skin disease and cutaneous biology

Bhakrishna L. Lokeswar, Ph.D.
Prostate cancer, diagnostic markers, mechanism of growth

Vinata Lokeswar, Ph.D.
Diagnostic markers, mechanism of growth

Diana Loper, Ph.D.
Breast cancer; mammary tumors, tumor immunology, T Lymphocytes, natural killer cells, immunotherapy

Zidore Lossos, M.D.
Immunology, lymphoma, signal transduction

Thomas Malek, Ph.D.
Cytokine receptor regulation of T Lymphocyte development, activation, and memory; T regulatory cells in suppression of autoimmunity

Enrique A. Mesri, Ph.D.
Kaposi’s sarcoma, Angiogenesis, (KSHV/ HIV-8), vGPCR angiogenesis, tumorigenesis and VEGF

Carlos Moraes, Ph.D.
Human mitochondrial DNA (mtDNA)

Zafar Nawaz, Ph.D.
Mechanisms of steroid hormone receptor; estrogen receptor (ER) regulation in breast cancer and androgen receptor (AR) regulation in prostate cancer

Frank J. Penedo, Ph.D.
Psycho-oncology, HIV and psychoneuroimmunology; psychology of aging and immunosenescence in chronically ill older adults; stress, coping, and personality styles in chronic illness

Eckhard R. Pockett, M.D., Ph.D.
Immunotherapy for Non Small Cell Lung Cancer (NSCLC), T Cells, transgenic expression, heat shock proteins

Joseph Rosenblatt, M.D.
Hematologic malignancies, development of novel approaches to breast cancer and solid tumors, gene therapy and immuno therapy of cancer; human retroviruses, immune therapies for cancer and human gene therapy; Human T Cell Leukemia virus type I

Michael Schmae, Ph.D.
Marine animal models; cancer; molecular biology, virology

Sean Scully, M.D., Ph.D.
Ewing’s sarcoma; chondrosarcoma; TGF-beta1 and ECM signals; extracellular matrix, metastasis; signaling; cell signal transduction

Rakesh Singal, M.D.
Prostate cancer, epigenetics, transcriptional regulation, DNA methylation, chromatin structure, biomarkers

Joyce Slingerland, M.D., Ph.D., F.R.C.P.(C)
Breast cancer, molecular mechanisms, molecular genetics, epidemiology, cell cycle, and estrogen receptors

Keith Webster, Ph.D.
Therapeutic angiogenesis molecular mechanisms of hypoxia/ischemia-regulated gene expression; pathology of vascular disease; cell death

For More Information
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