

## An Initiative for The Future

The Graduate School of Vanderbilt University and the Department of Biomedical Informatics continue a tradition of academic distinction by offering a new graduate degree program leading to the M.S. and Ph.D. degrees in Biomedical Informatics commencing in the Fall of 2001. The interdisciplinary curriculum emphasizes the integration of health information and decision-support systems with bioinformatics for molecular medicine, and the informatics of evidence-based health care.

The mission of the program is to prepare the future leaders in the field of Biomedical Informatics.

### Faculty

An undoubted strength of the Vanderbilt program is the nationally and internationally prominent faculty experienced in research, education, and administration and engaged in a wide variety of ongoing, leading-edge projects.

- **Randolph A. Miller, M.D.**, Professor and Chair of the Department of Biomedical Informatics, and Professor of Medicine. President-elect of the American College of Medical Informatics, (Past) President of the American Medical Informatics Association. *Medical Decision-Support Systems, Clinical Terminology Systems, Ethical and Legal Implications of Clinical Information Systems, Clinician Order Entry and Workflow Integration.*
- **William W. Stead, M.D.**, Professor of Medicine and Biomedical Informatics, Director of the Informatics Center, and Associate Vice Chancellor for Health Affairs. (most recent) President of the American



College of Medical Informatics, Elected to the Institute of Medicine. *Electronic Medical Records, Information Technology Architecture.*

- **Judy Ozbolt, Ph.D., R.N.**, Independence Foundation Professor of Nursing and Professor of Biomedical Informatics. Founding Member, Board of Directors and (Past) secretary of the American Medical Informatics Association. *Nursing vocabularies, Clinical Information Systems, Education and Training in Nursing Informatics.*
- **Nancy M. Lorenzi, M.L.S., Ph.D.**, Professor of Biomedical Informatics and Assistant Vice Chancellor for Health Affairs at Vanderbilt. (Past) President of the Medical Library Association. Vice-President of the International Medical Informatics Association. *Change Management related to Information Technology (with a focus on the health care industry).*
- **Dario Giuse, Dr. Ing.**, Associate Professor of Biomedical Informatics, and Computer Science. *Electronic Medical Records, Medical Knowledge Acquisition.*



- **Edward K. Shultz, M.D., M.S.**, Associate Professor of Biomedical Informatics. *Enterprise-wide Informatics Architecture, Mathematical Modeling, Clinical Systems Interfaces, Innovative approaches to Medical Education, Telemedicine.*
- **Nunzia B. Giuse, M.D., M.L.S.**, Associate Professor of Biomedical Informatics, and Director of the Annette and Irwin Eskind Biomedical Library at Vanderbilt University Medical Center. *Medical Knowledge Acquisition, Medical Library Science and Professional Education.*
- **Steven Brown, M.D., M.S.**, Assistant Professor of Biomedical Informatics and Chief Information Officer at the Nashville VAMC. *Medical Nomenclature, Electronic Patient Records.*
- **Anderson Spickard, III, M.D., M.S.** Assistant Professor of Medicine and Biomedical Informatics. Director of the Medical Student Clerkship Program for the School of Medicine. Director of Programs for Technological Innovations in Medical Education and Chair of the Vanderbilt Task Force on Informatics in Support of Education. *Medical Education with special focus on the Design and Application of Innovative Informatics Approaches to Medical Education.*
- **Constantin Aliferis, M.D., Ph.D.**, Assistant Professor of Biomedical Informatics. Director of the Degree Program in Biomedical Informatics. *Evidence-Based Medicine Informatics, Medical Artificial Intelligence, Machine Learning, Bioinformatics.*
- **Mary E. Edgerton, M.D., Ph.D.**, Assistant Professor of Pathology and Biomedical Informatics. Director of

Bioinformatics Core, Vanderbilt Ingram Cancer Center. *Analysis of Genetic Expression Data for Diagnosis and Prognosis.*

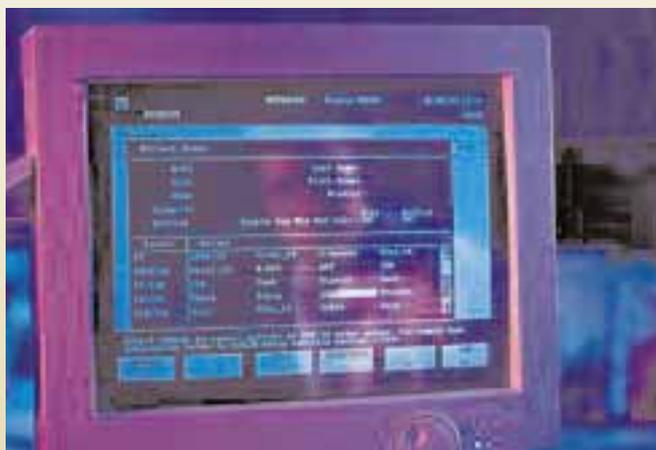
- **Dominik Aronsky, M.D., Ph.D.**, Assistant Professor of Biomedical Informatics. Director of Academic Programs for Fellowships, Infrastructure, and Interdisciplinary Training. *Decision Support Systems for Real Time Clinical Applications. Applied Machine Learning. Evaluation of Medical Informatics Systems.*
- **Fern FitzHenry, Ph.D., R.N.**, Instructor in the Department of Biomedical Informatics. *Impact of Biomedical Informatics on Payment Systems, Health Risk Assessment, Patient Registries.*

In addition to the DBMI-based core faculty, the program has 13 more core faculty from various departments within the university, with expertise in bioinformatics, computer science, biochemistry, pharmacogenomics, pharmacology, molecular physiology, biophysics, human genetics, and biostatistics.

The faculty's scientific achievements, awards, professional credentials, and prominence in published bodies of work are proof that Vanderbilt has the administrative support and financial backing to attract the brightest minds in the field. It is the Graduate Program's intention to attract similarly dedicated and outstanding students.

### Uniqueness of Studying Biomedical Informatics at Vanderbilt

Our state-of-the-art systems infrastructure includes a cutting-edge physician order entry system that allows automated decision support at the point of clinical decision making; a sophisticated medical record/clinical data repository system that allows optimization of care and facilitates clinical research; and an innovative care management/documentation system which electronically links clinical care pathways to the patient flowsheet thus leveraging patient care by grounding it to evidence-based medicine guidelines and policies. Our major strength is that we have functionally integrated this informatics infrastructure throughout the institution, and have aligned it with research, education, and clinical practice objectives.



The Vanderbilt program is uniquely positioned to simultaneously provide strong theoretical education and an advanced informatics environment, serving as a laboratory in which students can test scientific hypotheses and deploy new technologies.

### Career Objectives • Concentration Areas • Learning Activities

Past experience in our field suggests that graduates with degrees in biomedical informatics receive multiple job offers from academic, industrial, governmental, and healthcare organizations. Entrepreneurial opportunities abound as well as R&D, consulting, and managerial positions in the industry. To accommodate these varying career objectives the Graduate Biomedical Informatics curriculum offers six concentration areas for students to choose from:

- Clinical Information Systems
- Decision-Support Systems & Medical Decision Sciences
- Informatics of Evidence-Based-Practice
  - Informatics for Health Care Policy, Management, and Administration
  - Bioinformatics for Molecular Medicine
  - Clinical Bioinformatics



Students typically receive advanced education in:

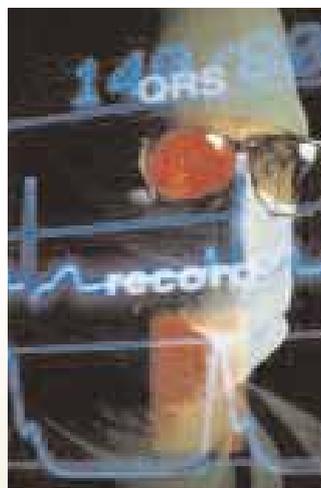
- Computer programming, design and analysis of algorithms, networks
- Biomedical science (biology, anatomy, physiology, diagnostics and therapeutics, bio-lab techniques)
- Research design, mathematical and applied statistics
- Integrative core courses: bioinformatics for molecular biology, foundations of medical artificial intelligence (machine learning and intelligent decision-support systems), biomedical



informatics for evidence-based practice, clinical information systems and databases, and health-care organization and management

Students are involved from very early on - and in a progressive manner - in one or more key research areas that include:

- Next-generation clinical information systems
- Intelligent decision support tools and decision models
- Systems and algorithms for optimal document retrieval and usage
- Systems and models for optimal information application and resource optimization at the basic research, clinical, and organizational domains
- The application of informatics for evidence-based medicine, organizational policies and issues.
- New algorithms and software for medical bioinformatics
- Systems and models linking molecular biology to applied disease diagnosis, prevention, and treatment



### Prerequisites and Support

We are looking for a limited number of exceptional candidates to pioneer the development of the Vanderbilt Biomedical Informatics M.S./PhD. Program.

We encourage applications from candidates with backgrounds in the Health Care Professions, Biomedical Sciences, and/or Computer Science-related disciplines





including the Mathematical and Engineering sciences. Applicants should possess strong technical skills (in computer programming, applied mathematics, or engineering), an understanding of the field, and a strong commitment to advancing health through rigorous scientific research. In addition, successful candidates will have excellent oral and written communication skills (including command of the English language for non-native speakers, standardized test scores

(GRE, TOEFL) as required by university rules, a strong record of past academic achievement in required fields, enthusiasm, and ability to work collaboratively as well as to undertake responsibilities assigned to them, good working habits, persistence, patience, and good time management skills. Prior research experience in the same or related fields, although not required, is an advantage.

We will provide successful applicants with the financial support necessary to excel in the field including tuition remission, medical benefits, a stipend, personal space, computer hardware and software, and travel funds.

### Culture = Values = Academic Life

The Biomedical Informatics Program at Vanderbilt University is located in a nationally and internationally renowned academic setting enjoying a climate of cross-departmental collaboration and development and a longstanding tradition of excellence. Vanderbilt scientists share an appreciation for fruitful collaboration, hard work, and intellectual honesty. Above all they are committed to contribute to society by providing optimal care to patients, educating the next generation of scientific and professional leaders, and pioneering scientific developments for the benefit of all. The campus is situated in the center of a dynamic urban environment. The abundant professional, cultural and recreational activities ensure that students grow collectively with the institution and the city.

## Contact Information

For more information about the Graduate Program in Biomedical Informatics at Vanderbilt University, visit the web page of the Department of Biomedical Informatics:

<http://www.mc.vanderbilt.edu/dbmi/>

For more information about Vanderbilt University visit:

<http://www.vanderbilt.edu/>

For inquiries about the Biomedical Informatics M.S./Ph.D. program please contact Constantin Aliferis, M.D., Ph.D. Program Director

[Constantin.Aliferis@mcmail.vanderbilt.edu](mailto:Constantin.Aliferis@mcmail.vanderbilt.edu)

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