The PhD Program in Biomedical Informatics at the University of Cincinnati (UC) leverages partnerships between three leading institutions: Cincinnati Children’s Hospital Medical Center, the UC College of Medicine, and the UC College of Engineering and Applied Sciences. Students have an exciting opportunity to engage in cutting-edge research while being embedded in one of the premier healthcare centers in the nation.

**ABOUT THE PROGRAM**
- Trains students in theory and applications of informatics and biomedical data science.
- Topics range from the study of molecules to individuals and to populations.
- Embeds students in an exciting environment where basic and applied scientific principles are used within a team science framework.
- Students and faculty work to respond to data-driven challenges of biomedical research and healthcare.

**WHO SHOULD APPLY**
- Strong quantitative and/or computational background.
- Enthusiasm to make significant novel contributions to the field of biomedical informatics.

**ADMISSION REQUIREMENTS**
- Official college transcript(s)
- GPA minimum 3.5 or equivalent
- Official GRE score
- International students: TOEFL test score (minimum 100) or IELTS (minimum 7)
- Statement of purpose
- Three letters of recommendation

**CURRICULUM**
- Spans a number of domains, including clinical informatics, bioinformatics, genomics, systems biology, biostatistics, big data and healthcare analytics.
- Reflects the interdisciplinary nature of data-driven biomedical sciences.
- Core course requirements are minimal, so students can choose electives and start their research career as early as possible.

**FOUR-YEAR PROGRAM (eight semesters)**
- Year 1 – coursework, lab/clinical information systems rotations
- Year 2 – coursework, qualifying exam & dissertation proposal
- Years 3 & 4 – research, clinical informatics practicum & dissertation

**CORE COURSES** *(3 credit hours each, unless noted)*
- Introduction to Medical Informatics
- Database Management
- Introduction to Bioinformatics
- Data Science for Biomedical Research
- Decision & Cost-Effectiveness Analysis
- Biomedical Informatics Practicum
- Ethics in Research *(1 credit hour)*
- Dissertation Research

**GENERAL MEDICAL SCIENCE** *(3 credit hours each – choose 2 courses)*
- Molecular & Cellular Biology
- Introduction to Functional Genomics
- Introduction to Epidemiology
- Principles of Clinical Trials

**TECHNICAL ELECTIVES** *(3 credit hours each – choose 4 courses)*
- Artificial Intelligence I
- Digital Image Processing
- Intelligent Data Analysis
- Advanced Algorithms
- User Interface
- Pattern Recognition
- Data Warehousing and Mining
- Biostatistics in Research
- Advanced Statistical Methods in Biomedical Research
- Introduction to Biostatistics
- Applied Bayesian Analysis
- Advanced Health Care Data Analytics, Business Intelligence & Reporting
- Community-Based Participatory Research
- Quality Improvement & Patient Safety
- Healthcare Operations Management
- Quantitative & Qualitative Data Collection Methods for Health Services Research
- Analysis of Internet Health Data

**TO APPLY**
Apply through the UC admission system at apply.uc.edu/OnlineApply. Applications accepted August 1 through February 15.
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BIOMEDICAL INFORMATICS

RESEARCH AREAS

• Computational genomics & molecular medicine
• Integrative -omics, single-cell analysis & gene regulatory circuits
• Molecular modeling & structural bioinformatics
• Medical imaging informatics
• Natural language processing of clinical information
• Computational infrastructure for federated research applications
• Data mining for large-scale genomic & clinical studies
• Data analysis for patient safety, quality improvement & clinical effectiveness research
• Clinical decision support & expert systems
• Integrative approaches for precision medicine
• Advanced technology for improving patient care

DEPARTMENT DATA

Faculty: 12
Joint Appointment Faculty: 12
FY15 Total Budget: $18.1 million
FY15 Peer Reviewed Publications: 60
LEADERSHIP
Peter S. White, PhD  Division Director, Department Chair
Jarek Meller, PhD  Graduate Program Director
Pamela Atkinson  Graduate Program Coordinator

FACULTY
Bruce J. Aronow, PhD  Professor
John J. Hutton, MD  Professor Emeritus
Anil Goud Jegga, DVM, MRes  Associate Professor
Michal Kouril, PhD  Assistant Professor
Long (Jason) Lu, PhD  Associate Professor
Jun Ma, PhD  Professor
Keith Marsolo, PhD  Associate Professor
John P. Pestian, PhD, MBA  Professor
Nathan Salomonis, PhD  Assistant Professor
S. Andrew Spooner, MD, MS, FAAP  Professor & Chief Medical Information Officer
Michael Wagner, PhD  Associate Professor
Peter S. White, PhD  Professor

JOINT APPOINTMENT FACULTY
Judith W. Dexheimer, PhD  Assistant Professor  Emergency Medicine
Eric Hall, PhD  Assistant Professor  Neonatology & Pulmonary Biology
Brett Harnett, MS  Assistant Professor  UC Center for Health Informatics
Kenneth M. Kaufman, PhD  Professor  Center for Autoimmune Genomics & Etiology
Eric S. Kirkendall, MD, MBI, FAAP  Assistant Professor  Hospital Medicine
Kakajian Komurov, PhD  Assistant Professor  Experimental Hematology & Cancer Biology
Mario Medvedovic, PhD  Professor  UC Environmental Health
Jarek Meller, PhD  Associate Professor  UC Environmental Health
Alexey Porollo, PhD  Assistant Professor  Center for Autoimmune Genomics & Etiology
Alexander Towbin, MD  Associate Professor  Radiology & Medical Imaging
Matthew Weirauch, PhD  Assistant Professor  Center for Autoimmune Genomics & Etiology
Yan Xu, PhD  Professor  Neonatology & Pulmonary Biology
BIOMEDICAL INFORMATICS

Doctor of Philosophy

For more information, visit cincinnatichildrens.org/BMIgrad or contact us at bmi-education@cchmc.org or 513.636.6250