

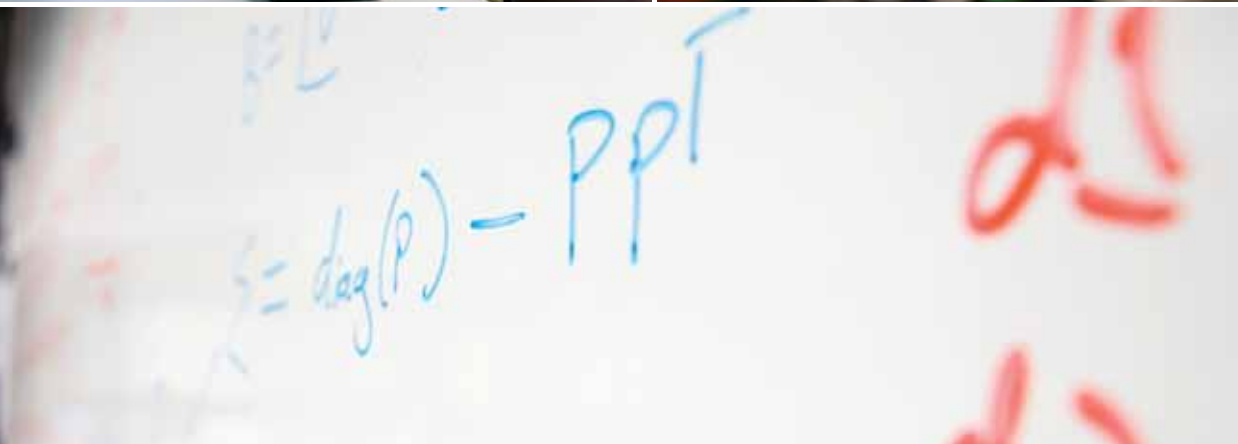
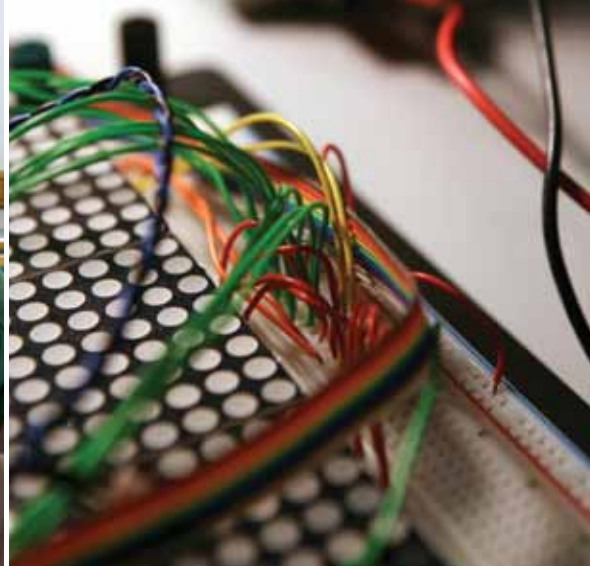


Graduate program in
BIOINFORMATICS



MARQUETTE
UNIVERSITY

Be The Difference.



Why a master of science in Bioinformatics at Marquette?

Pulling from the disciplinary strengths of Marquette and the Medical College of Wisconsin, this joint degree program gives you a tailored curriculum that combines biology and genetics with the practice and theory of computer science. You'll gain the skills necessary to understand, manage and analyze large amounts of biological data obtained from research and clinical settings and effectively communicate informatic solutions to biological problems.

ABOUT MARQUETTE

Our programs. Marquette offers 50 doctoral and master's degree and more than 30 graduate certificate programs, and a School of Dentistry and Law School. And we have a variety of specializations to help you tailor the curriculum to your needs — an opportunity not offered by all universities.

Our students. We enroll approximately 3,700 graduate and professional students from diverse cultural and educational backgrounds and 68 countries all over the world.

Our faculty. Marquette's almost 700 full-time faculty represent renowned scholars and industry experts. As a student, you'll also benefit from established collaborations within the local business and nonprofit communities, as well as other nationally renowned institutions within the region, including the Clinical and Translational Science Institute, Medical College of Wisconsin, Milwaukee School of Engineering, University of Wisconsin system, and others.

Our research. Graduate students can participate in important research alongside our renowned faculty members — making you a contributing member of our research team, not just a face in the crowd like at some other universities. Marquette's overall research award volume in fiscal year 2010 reached a record high, with faculty receiving more than \$28 million. Federal award dollars increased by 81 percent, and the average award size rose by 45 percent.

Our commitment. Class sizes are small and are usually taught by regular faculty members who are conducting cutting edge research. Your teaching will be informed by current research, and you will often have the opportunity to participate in research.

Our network. As a graduate of Marquette, you'll become part of our alumni family of 110,000 around the world — creating a professional network that spans from right next door to across the globe.

Our values-based education. As a Jesuit institution of higher education, Marquette continues a centuries-old tradition of academic excellence, development of the whole person and research that addresses societal needs.

Be well-rounded. You'll be prepared for a multidisciplinary career in biomedical sciences, including work at universities and in the biotech and pharmaceutical industries.

Be engaged. You'll have access to laboratory, computer and clinical facilities at both partner institutions, where you'll work alongside faculty members doing cutting-edge research.

Be needed. You'll be one of the first and finest graduates positioned to be a leader in the rapidly growing field of genomics and informatics.

Be noticed. Our small class sizes — seminars average about 10 to 12 students — mean individualized faculty interaction and peer collaboration in the spirit of *cura personalis*, or care for the whole person. Our faculty members are personally vested in your educational experience.

Be supported. We offer generous benefits to qualified students every year in the form of research assistantships or teaching assistantships with tuition credits, a competitive stipend and health care benefits.

YOUR JOURNEY

According to the Bureau of Labor and Statistics' 2010–11 *Occupational Handbook*, the demand for software engineers, database designers and computer analysts is expected to grow the fastest and the profession will add more jobs than any other from 2008–18. The handbook says employers prefer people with graduate degrees for the technically complex jobs. With a Marquette graduate degree in bioinformatics, you'll be prepared to take advantage of these opportunities.

Master of science in bioinformatics

Applicants (2010): 22

Admitted (2010): 8

Course work:

Thesis option

- Students must complete 24 credit hours (eight classes), including 18 credit hours (six classes) in graduate-level courses (6000 level or above) and six credit hours of thesis work.

Non-thesis option

- Students must complete 36 credit hours (12 classes), including at least 24 credit hours (eight classes) in graduate-level courses (6000 level and above).

All students are required to complete:

- three credit hours in bioinformatics and three credit hours in Software Development
- three credit hours (one class) from a list of computer science courses at the 6000 level.
- three credit hours (one class) from a list of biological sciences courses at the 6000 level.
- three additional credit hours (one class) from a list of either biological or computer science courses at the 6000 level.
- a three-credit-hour bioinformatics research practicum.

All students are strongly encouraged to attend one semester of bioinformatics seminars (two credit hours).

A typical full-time student can complete the program in 16 months.



Get involved. Marquette's faculty members are part of the Wisconsin Center of Excellence in Genomics Science team, which is working on identifying regulatory mechanisms that turn genes on and off and determine how they may be altered by critical biological processes, diseases or environmental factors. They're developing novel technologies to identify the proteins that bind to particular DNA regions. Find out more about this cutting-edge research at wisconsincegs.org.

“

I chose the bioinformatics program because it is the next logical step in my career as a lab technician and because of the increased need for bioinformaticians in the field. The program at Marquette offers the flexibility I need to maintain my full-time work status while pursuing a master's degree.”

Wendy Demos
Master's student



Scheduling:

- Many classes are held in the evenings or on weekends to meet the needs of part-time students who work full time.

Comprehensive exam and thesis requirements:

- Thesis option students
 - Students must pass an oral comprehensive exam concentrated on their thesis topic.
 - Students must complete a six-credit-hour master's thesis.

For more program details, including requirements and course descriptions, see the *Graduate Bulletin* at marquette.edu/grad.

YOUR FACULTY MENTORS



From Marquette:

Dr. Jeanne Hossenlopp, professor, vice provost for research and dean of the Graduate School

Laser studies of chemical reaction dynamics

Dr. Gary Krenz, professor and chair of the Department of Mathematics, Statistics and Computer Science

Stomathematical modelling, pulmonary hemodynamics, microangiographic measurements, vascular biology and endothelial cell/drug interaction

Dr. Daniel Rowe, associate professor and co-director of the bioinformatics program

fMRI activation, MR image reconstruction, MR image processing and Bayesian statistics

From the Medical College of Wisconsin:

Dr. Andrew S. Greene, professor and director of the Biotechnology and Bioengineering Center

Cardiovascular physiology, computational biology and bioinformatics, molecular and cellular physiology

Dr. Ravi Misra, professor and dean of the Graduate School of Biomedical Sciences

Molecular and genetic mechanisms involved in cardiac function and heart formation

Dr. Simon Twigger, assistant professor and co-director of the bioinformatics program

Bioinformatics, model organism databases, data mining

For more information about the program's faculty members and their research, visit marquette.edu/bioinformatics/faculty.

“

Marquette's bioinformatics program gave me biology and genetics knowledge to complement my computer science expertise. This is valuable for my work translating clinical research into clinical practice at GE Healthcare.”

Scott Bolte, Grad '08
Clinical genomics leader
GE Healthcare
Milwaukee



FACULTY RESEARCH

Students and faculty associated with the master of science in bioinformatics participate in several research projects as part of their thesis work or research practica. The areas of research opportunities include:

Model organism database

Dr. Simon Twigger

Biomedical text mining

Drs. Michael Johnson, Richard Povinelli and Craig Struble

Genetics and SNP analysis

Drs. Soumitra Ghosh, Aoy Mitchell and Struble

Microarray data analysis

Drs. Stephen Merrill and Struble

Virtual screening for drug design

Drs. Daniel Sem and Struble

For more information about the program's faculty members and their research, visit marquette.edu/bioinformatics/faculty.

YOUR RESOURCES

As a graduate student in bioinformatics, you'll have access to:

- all available student services at Marquette and the Medical College of Wisconsin.
- an academic adviser assigned to you based on your interests with whom you will work throughout your program.
- a faculty mentor for your practicum who will be assigned to you by the end of your first year.
- several local and national research projects and groups, including:
 - the Biotechnology and Bioengineering Center at MCW (bbc.mcw.edu).
 - the Bistro Lab at Marquette (marquette.edu/bistrolab).
 - the Chemical Proteomics Facility at Marquette (marquette.edu/cpfm).
 - the Max McGee National Research Center for Juvenile Diabetes. (mcw.edu/MaxMcGeeResearchCenter.htm).
 - the Rat Genome Database (rgd.mcw.edu).



Our graduate programs also provide excellent resources beyond the classrooms. Thanks to our location in downtown Milwaukee and community-connected faculty, you'll enjoy an urban setting with access to a vibrant arts scene, professional sports, restaurants and nightlife.

Marquette University

- Access to networking, career counseling, and job searching counselors and seminars through our free [Career Services Center](#)
- More than 20 [academic centers and institutes](#) that foster research in end-of-life care, ethics, neuroscience, rehabilitation engineering, transnational justice, water quality, sports law and others
- Access to more than 1.7 million volumes of books and bound journals, 22,000 journals and other serials in digital format, laptops for checkout, and extensive special collections ([Raynor Memorial Libraries](#) are open evenings and weekends)
- Access to a secure high-speed wireless network (54Mbps) for laptops and other devices
- Remote computer access to campus-only resources through our VPN
- [Student Health Service](#), [Counseling Center](#) and Campus Ministry
- [Sports recreation and fitness facilities](#)
- [Big East Conference sports](#), including men's basketball, which has 27 NCAA appearances, 14 Sweet Sixteen appearances, three Final Four appearances and one NCAA championship (1977) and plays in front of 18,000 fans at the Bradley Center

Milwaukee

- The Milwaukee metropolitan area has approximately 1.7 million people, ranking among the top cities in the United States by population
- Home to nine fortune 500 company headquarters, including Harley-Davidson, Johnson Controls, Northwestern Mutual and Rockwell Automation
- Milwaukee offers many art and cultural opportunities, including a [repertory theatre](#), a [symphony orchestra](#), two opera companies, a [ballet company](#), diverse art galleries, a [public museum](#), the [Milwaukee County Zoo](#) and the [Milwaukee Art Museum](#)
- Professional sports include baseball ([Brewers](#)), basketball ([Bucks](#)), hockey ([Admirals](#)), soccer ([Wave](#)) and skating exhibitions at the [Pettit National Ice Center](#) (an Olympic training facility)
- Known as the city of festivals, Milwaukee has abundant celebrations throughout the year honoring the city's diverse heritage, including [Summerfest](#) — the world's largest outdoor music festival
- More than 10 miles of lakefront, 1,500 restaurants and 15,000 acres of parks

YOUR INVESTMENT

Furthering your education is an investment you can count on. Financial aid — in several forms — can help meet the costs of your graduate education at Marquette.

Tuition*

For full-time students:

Nine credit hours per semester at \$945 per credit = \$8,505 per semester

For part-time students:

Three to six credit hours per semester at \$945 per credit = \$2,835 to \$5,670 per semester

A minimum of 36 credit hours is required to complete the master's program non-thesis option.

A minimum of 24 credit hours and a six-credit-hour thesis is required to complete the master's program thesis option.

* Figures are based on average credit hours taken per semester and exclude service fees and/or continuous enrollment/continuation course fees. Per-credit cost valid until May 2012.

Merit-based aid

Teaching and research assistantships are available to candidates on a competitive basis and include a stipend, an 18-credit tuition scholarship and health care benefits.

Need-based aid

Enroll as a half- or full-time student in a degree program (at least four credit hours, usually two or more classes a semester), and you may be eligible for loans distributed through the [Office of Student Financial Aid](#). Most student loans have competitive interest rates and do not require repayment until after you have completed your course of study.

To apply, file the Free Application for Federal Student Aid each year between January 1 and mid-February. It's available from the [Office of Student Financial Aid](#) or at [fafsa.ed.gov](#). Once you have been admitted to your program and completed your financial aid paperwork, we will determine your eligibility and send you a notice explaining what financial aid you are eligible to receive from the university.

Additional resources

- Marquette offers a convenient payment plan that divides tuition costs into monthly installments. For more information, visit [marquette.edu/mucentral](#) or contact Marquette Central at (414) 288-4000.
- **Employment assistance** is available.
- Private lenders feature special educational loans.
- Your employer may offer a tuition-remission plan.
- Some private foundations offer financial aid for graduate study.
- Tax credits can be claimed for work-related educational expenses.

YOUR OPPORTUNITIES

Where could a graduate degree in bioinformatics at Marquette lead you? You'll find our recent graduates excelling in industry and research at:

- Brigham and Women's Hospital in Boston
- Cornell University in Ithaca, N.Y.
- GE Healthcare in Milwaukee
- Medical College of Ohio in Toledo
- Roche NimbleGen in Madison, Wis.
- UT Southwestern Medical Center in Dallas
- Virginia Bioinformatics Institute in Blacksburg

in a variety of positions, including as:

- clinical leaders
- computer programmers
- database specialists
- quality assurance engineers

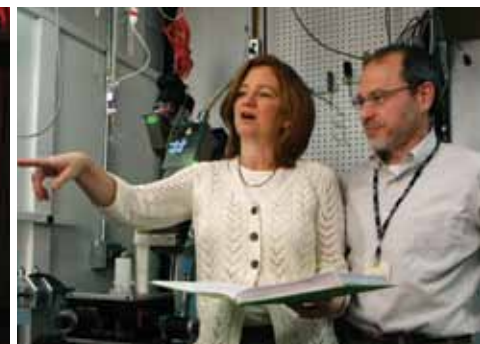
YOUR FIRST STEP

We invite you to apply.

Application requirement checklist:

- Online application at marquette.edu/grad/apply (must be submitted online before all other admission materials)
- Application fee
- Official transcripts from all current and previous colleges/universities except Marquette
- An essay outlining relevant work experience or education, career goals, possible areas of interest and reasons for seeking admission to the program
- Three letters of reference from professors or professionals familiar with your abilities, academic work and/or professional background
- (For international applicants) A TOEFL score or other acceptable proof of English proficiency
- (For international applicants) GRE scores strongly recommended
- If necessary, submit any additional hard-copy materials in one envelope to:

Marquette University Graduate School
P.O. Box 1881
Milwaukee, WI 53201-1881



We invite you to speak with a faculty member.

Dr. Daniel Rowe

Co-director of the bioinformatics program
P.O. Box 1881
Milwaukee, WI 53201-1881
Phone: (414) 288-5228
Fax: (414) 288-5472
E-mail: daniel.rowe@marquette.edu



MARQUETTE
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Be The Difference.

Marquette University Graduate School

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E-mail: mugs@marquette.edu

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marquette.edu/grad