Functional Genomics

Genomic sciences has two components. Functional genomics, the generation of large bodies of data relating to organism function, encompasses gene discovery, gene expression, protein and nucleic acid structure and function, and gene and gene product interactions, and genomic approaches to breeding and comparative studies relevant to ecology and evolutionary biology. Bioinformatics is the analysis of these vast and complex data sets including methods to analyze extremely large sets of genomic information such as DNA sequences and expression from DNA microarrays. Students register in either of these two fields but also receive a solid grounding in the other through core courses common to both programs. Unique and exceptional resources include the Bioinformatics Research Center and the Genome Research Laboratory.

Admission Requirements

Students should have an undergraduate major in the biological or physical sciences, mathematics, statistics or computer science and have completed calculus and other comparable courses. In addition to the other application requirements, a student should submit a statement of interests and career goals.

Master’s Degree Requirements

Students take a 15-credit core curriculum of courses common to both programs followed by courses specific to the degree and discipline. The Master’s of Bioinformatics requires a minimum of 33 credit hours. The Master’s of Functional Genomics requires a minimum of 30 credit hours, and the Master’s of Science in Functional Genomics requires a minimum of 36 credit hours.

Doctoral Degree Requirements

The Ph.D. program requires a total of 72 credits, and all students participate in a journal club, monthly seminar series and research ethics training. A co-mentoring system exists between bioinformatics and functional genomics through which each student has advisors from both disciplines. Throughout the program they will have the opportunity to gain practical experience in the Genome Research Laboratory, Bioinformatics Research Center and DNA Sequencing Facility.

Student Financial Support

A significant number of fellowships are available through the genomics program, and students may also be supported by research grant funds awarded to genomics faculty members.

Degrees

- Functional Genomics (MR) (http://catalog.ncsu.edu/graduate/interdisciplinary/functional-genomics/functional-genomics-mr/)
- Functional Genomics (MS) (http://catalog.ncsu.edu/graduate/interdisciplinary/functional-genomics/functional-genomics-ms/)
- Functional Genomics (PhD) (http://catalog.ncsu.edu/graduate/interdisciplinary/functional-genomics/functional-genomics-phd/)
- Functional Genomics (Minor) (http://catalog.ncsu.edu/graduate/interdisciplinary/functional-genomics/functional-genomics-minor/)

Faculty

Full Professors

Kenneth B. Adler
Jose Miguel Alonso
Prema Arasu
Christopher M. Ashwell
David M. Bird
Russell J. Borski
Rebecca S. Boston
Matthew Breen
Edward Bealmear Breitschwerdt
Dennis T. Brown
James W. Brown
Ignazio Carbone
Margaret E. Daub
Gregg A. Dean
Ralph A. Dean
Ralph E. Dewey
Charlotte E. Farin
Robert Graham Franks
Frederick J. Fuller
John E. Gadsby
Troy Ghashghaei
John R. Godwin
Major M. Goodman
Amy Michele Grunden
Linda Kay Hanley-Bowdoin
Jason M. Haugh
James B. Holland
Jonathan M. Horowitz
Sophia Kathariou
Robert M. Kelly
Matthew D. Koci
Bailian Li
Jonathan S. Lindsey
Hsiao-Ching Liu
Steven Lommel
James W. Mahaffey
Earl S. Maxwell
Steven Edward McKeand
Melissa Schuster Merrill
Eric S. Miller
Paul Edward Mozdziak
David C. Muddiman
Jack Odle
Charles H. Opperman
James N. Petite
Robert M. Petters
Jorge A. Piedrahita
Brian J. Reich
Jean B. Ristaino
Maria C. Sagui
Heike Inge Ada Sederoff
Barbara Sherry
Robert Charles Smart
William F. Thompson
Ross W. Whetten
Brian M. Wiegmann
Qiuyun Xiang
Deyu Xie
Jeffrey A. Yoder

Michael L. Sikes

Assistant Professors
Caitlin S. Heil
Ruben Rellan Alvarez
Benjamin John Callahan
Ilenys Muniz Perez Diaz
Manuel Kleiner
Kurt Marsden
Santosh Kumar Mishra
David Alan Rasmussen
Christina Zakas

Practice/Research/Teaching Professors
Patricia A Estes

Emeritus Faculty
Henry Van Amerson
William Reid Atchley
James W. Brown
Vincent L. C. Chiang
Steven D. Clouse
Stephanie E. Curtis
Barry Goldfarb
Cynthia L. Hemenway
Todd Robert Klaenhammer
David H. Ley
James W. Moyer
Paul E. Orndorff
Ron Ross Sederoff
Wayne Tompkins
Paul L Wollenzien

Associate Professors
Nicolas E. Buchler
Michael B. Goshe
Steffen Heber
David S. Lalush
Flora Meilleur
Jonathan W. Olson
Lina Quesada
Marcelo Rodriguez-Puebla

Adjunct Faculty
Robert R. Anholt
Trudy F. MacKay