

Bioinformatics

NC State offers two closely linked interdepartmental graduate programs in Genomic Sciences. All students pursuing degrees in either Bioinformatics and Functional Genomics will take a shared core set of courses that promote breadth of knowledge and encourage interdisciplinary collaboration.

Functional Genomics students focus on laboratory research requiring the collection and interpretation of massive data sets that enhance our knowledge of organismal biology, gene expression, protein and nucleic acid structure and function, and genetic and environmental interactions. Bioinformatics students develop skills to manage and analyze these large and complex "omics" data sets. These two groups of students will be prepared to work seamlessly as parts of teams addressing fundamentally important problems in areas including the biomedical sciences, plant and animal breeding, evolutionary biology, ecology, and toxicology.

Unique and exceptional resources include the Bioinformatics Research Center and the Genome Research Laboratory.

Master's Degree Requirements

Students take a 15-credit core curriculum shared by all students in the Bioinformatics and Functional Genomics degree programs, followed by additional bioinformatics and elective courses. The Master's of Bioinformatics requires a minimum of 33 credit hours. No thesis is required.

Doctoral Degree Requirements

Students take a 15-credit core curriculum shared by all students in the Bioinformatics and Functional Genomics degree programs, followed by additional bioinformatics and elective courses. The Ph.D. in Bioinformatics requires a total of 72 credits, and all students participate in a journal club, monthly seminar series and research ethics training. All PhD students assemble advisory committees including faculty from both Bioinformatics and Functional Genomics to promote effective interdisciplinary research and collaboration, and many students have co-advisors representing different fields.

Student Financial Support

Fellowships are available through the program, and students may also be supported by research and training grants awarded to our faculty members.

More Information

Bioinformatics Program Website (<https://brc.ncsu.edu/genomics/bioinformatics/>)

Admission Requirements

Students applying to either the Master's or PhD program in Bioinformatics are evaluated on their background in three key areas: mathematics and statistics; genetics and biological sciences; and computer science. Students should have completed at least two semesters of calculus, and additional courses in mathematics and statistics are preferred. Evidence of basic computer programming skills is required. A course in genetics is strongly encouraged. Previous research experience is a significant advantage.

Applicant Information

- **Delivery Method:** On-Campus
- **Entrance Exam:** None
- **Interview Required:** None

Application Deadlines

- **Fall:** January 15

Degrees

- Bioinformatics (MR) (<http://catalog.ncsu.edu/graduate/interdisciplinary/bioinformatics/bioinformatics-mr/>)
- Bioinformatics (PhD) (<http://catalog.ncsu.edu/graduate/interdisciplinary/bioinformatics/bioinformatics-phd/>)

Faculty

Full Professors

Jose Miguel Alonso

Christopher M. Ashwell

Russell J. Borski

Matthew Breen

Dennis T. Brown

Ignazio Carbone

Marie Davidian

Jon Doyle

Robert Graham Franks

Sujit K. Ghosh

Amy Michele Grunden

Jason M. Haugh

Cathrine Hoyo

Fikret Isik

Erich L. Kaltofen

Robert M. Kelly

Matthew D. Koci

Cristina Lanzas

Bailian Li

Hsiao-Ching Liu

Christian Maltecca

Earl S. Maxwell

Melissa Schuster Merrill

David C. Muddiman

Spencer V. Muse
Charles H. Opperman
James N. Petitte
Robert M. Petters
Jorge A. Piedrahita
Brian J. Reich
Maria C. Sagui
Seth M. Sullivan
Jung-Ying Tzeng
Mladen Alan Vouk
Ross W. Whetten
Fred Andrew Wright
Qiuyun Xiang
George C Yencho
Zhaobang Zeng
Daowen Zhang

Associate Professors

David Lawrence Aylor
Nicolas Buchler
Gavin Clay Conant
Michael B. Goshe
Steffen Heber
Slavko Komarnytsky
David S. Laloush
Terri A. Long
Arnab Maity
Flora Meilleur
Dahlia M. Nielsen
Jonathan W. Olson
Xinxia Peng
David Michael Reif
Michael L. Sikes
Charles Eugene Smith
Lori June Unruh Snyder

Yihui Zhou

Assistant Professors

Orlando Arguello-Miranda
Hamid Ashrafi
Christa Baker
Louis-Marie Bobay
Benjamin J. Callahan
Zixuan Cang
Abdulkerim Eroglu
Rafael Felipe Guerrero Farias
Denis Fourches
Joseph Lee Gage
Caitlin Heil
Amanda Marie Hulse
Jicai Jiang
Xingcheng Lin
Kurt Marsden
Marcelo Mollinari
David Rasmussen
Kasie Raymann
Christina Zakas

Emeritus Faculty

William Reid Atchley
David Bird
Wendy F. Boss
Rebecca S. Boston
James W. Brown
Vincent L. C. Chiang
Eugene Eisen
Todd Robert Klaenhammer
Jeffrey Thorne
Wayne Tompkins
Anastasios A. Tsiatis

Paul L. Wollenzien