

# Bioinformatics

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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.

## 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.

## 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.

## 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

David M. Bird

Donald L. Bitzer

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

Jacqueline M. Hughes-Oliver

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. Petite

Robert M. Petters

Jorge A. Piedrahita

Brian J. Reich

Maria C. Sagui

Barbara Sherry  
Seth M. Sullivant  
Jeffrey L. Thorne  
Jung-Ying Tzeng  
Mladen Alan Vouk  
Ross W. Whetten  
Fred Andrew Wright  
Qiuyun Xiang  
Zhaobang Zeng  
Daowen Zhang

Rafael Felipe Guerrero Farias  
Denis Fourches  
Joseph Lee Gage  
Caitlin Heil  
Amanda Marie Hulse  
Jicai Jiang  
Xingchen Lin  
Kurt Marsden  
David Rasmussen  
Christina Zakas

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## Associate Professors

David Lawrence Aylor  
Nicolas Buchler  
Gavin Clay Conant  
Michael B. Goshe  
Steffen Heber  
Slavko Komarnytsky  
David S. Lalush  
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

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## Practice/Research/Teaching Professors

Patricia A. Estes  
Jane L. Lubischer

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## Emeritus Faculty

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

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## Assistant Professors

Hamid Ashrafi  
Louis-Marie Bobay  
Benjamin J. Callahan