# FORM G BOARD OF REGENTS, STATE OF IOWA PROPOSAL FOR PROGRAM/DEPARTMENT NAME CHANGE

### 1. Provide a brief description of the department/program.

Genetics (<a href="http://www.genetics.iastate.edu">http://www.genetics.iastate.edu</a>), an interdepartmental graduate program, oversees the Genetics graduate major and is made up of 90 faculty members, most of whom are actively involved in genetics and/or genomics research, and 90 students pursuing graduate training (Ph.D. and M.S.) in Genetics. Faculty members are housed in 14 different departments and 4 different colleges on campus. Genetics trains students in a broad curriculum. Students select courses from 4 core areas: Transmission Genetics: Molecular Genetics: Genomics, Bioinformatics and Statistical Genetics; and Evolution, Population and Quantitative Genetics. Students receive training in bioethics, scientific ethics, are introduced to genetics faculty research on campus, and participate in a yearly workshop that introduces them to speakers on a specific genetics topic both through the speaker's publications as well as discussions with the speaker in small groups. Students present posters and their research at national and international symposia. The Genetics graduate program has awarded around 200 degrees since its formation in 1992. Our alumni are working in industry and academia; this site provides an overview of our program outcomes: http://www.genetics.iastate.edu/outcomes.html. The two largest employers of our graduate students, Monsanto and Pioneer DuPont, are doing genomics on a large scale. Out of 175 graduated students, Monsanto and Pioneer are employing (in 2013) a total of 22 of our graduates.

2. Describe reasons (justification) for the proposed name change. Include information about the value of the name change to the department, program, the discipline, college, and/or the university.

### The intent of this change is to:

- 1. Change the name of our program and our major from Genetics to Genetics and Genomics.
- 2. Better reflect our current curriculum and current and future research of theGenetics faculty, which includes genomics.
- Update our program and major to best compete for applicants in this rapidly changing field.
- 4. More accurately describe the degree that we want to provide our graduates so that they can compete in the field of genetics and genomics in the future.

### A. Background and history showing inclusion of Genetics Faculty members in discussion and approval processes.

This change has been discussed over the past six years in Genetics, and has reached the point where we believe it is important to update our name. A list of events is shown below, followed by a detailed description of the process we have taken.

- 2006- Initial discussions on name change at open faculty meeting
- 2007- Added information on Genomics research of Genetics faculty
- 2009- Genetics faculty voted to add Genomics/Bioinformatics/Statistical Genomics requirement to curriculum
- 2012- Genetics faculty voted to start process on name change
- 2012- Open faculty meeting to discuss process for name change
- 2012- Writing committee formed to prepare document
- 2013- Drafting of document completed
- 2013- Genetics faculty vote on this document

In December 2006, theGenetics faculty held a meeting where the following points were discussed regarding whether we should add Genomics to our name. There was agreement that this would better encompass the research performed within Genetics and that in fact genomics research was a major strength of Genetics faculty members. There was anecdotal evidence that current and prospective students responded positively to Genomics; that this has added value for recruiting and the ISU degree itself. On the other hand, we would need to formalize the teaching of genomics in our Core curriculum, as well as document the genomics research being done in Genetics faculty laboratories. It was decided to advertise the genomics research being done by the faculty members, and this website went live in Spring 2007. As of Spring 2013, 38 faculty are listed as doing genomics research; please see <a href="http://www.genetics.iastate.edu/genomics.html">http://www.genetics.iastate.edu/genomics.html</a>.

The consensus at the end of the 2006 meeting was favorable to move toward sucha name change, with additional discussion. No formal vote was taken.

In Fall of 2009, a faculty meeting was called to discuss changes to the curriculum,

to add to our required core course curriculum a course in Genomics, Bioinformatics or Statistical Genetics. A vote was taken in October of 2009 and this change was approved; the new curriculum went into effect in Summer 2010.

In April 2012, a faculty meeting took up this subject again, and discussed pros and cons. By this time, there were several courses that contained small or large proportions of genomics material (see next section), and it was clear that many faculty members are doing research that they identify as genomics-related. Several faculty members indicated they felt it useful for recruitment that we add Genomics to the name of the program. There was additional email-based discussion in May and June 2012, discussing not only the pros and cons of sucha change but making suggestions as to names. A ballot to establish whether the Genetics faculty wanted to move forward with a name change to include Genomics went out June 21. This passed (91% positive amongst those voting), and a vote was also taken on alternate names for the program. The results were as follows:

- Interdepartmental Genetics and Genomics	8
- Genetics and Genomics Graduate program	17
- Graduate program in Genetics and Genomics	4
-Any of the above	5

A faculty meeting was held on September 5, 2012 to discuss details on how to implement this decision. A name change writing committee was appointed by the Genetics Chair on September 19, and included the following members:

- Christopher Tuggle, Genetics Chair and committee chair
- Jack Girton- Transmission Genetics curriculum and Faculty senate expertise
- Diane Bassham- Curriculum Committee liaison
- Bing Yang- Molecular Genetics Core course instruction
- Jeff Essner- Supervisory Committee representative and future Chair

During Spring 2013, this committee created this document and provided to the Genetics faculty members for comment on April 23, 2013. The Genetics faculty members discussed this at an open faculty meeting on May 3, 2013 and voted to approve the proposal following that discussion by email on May 6, 2013.

#### B. Justification for this name change.

1. Documentation that our Geneticscurriculum and faculty research programsinclude genomics.

#### a. Curriculum.

A survey of faculty to identify courses taught with genomics contentwas send out October 3, 2012, and responses were received from F. Janzen, D. Dobbs, H. Chou, J. Wendell, Y. Yin, and C.K. Tuggle.

Results: Courses with genomics content:

- a. GDCB 511 (Molecular Genetics)\*
- b. ANS 556 (Current Topics in Genome Analysis)\*\*
- c. EEOB 562 (Evolutionary Genetics)\*\*\*
- d. BCB 544 (Introduction to Bioinformatics)\*\*
- e. EEOB 566 (Molecular Evolution)\*\*\*
- \* Required Core course

- \*\* Course listed as one of several alternates to fulfill core requirement group III in Genomics, Bioinformatics and Statistical Genetics
- \*\*\* Course listed as one of several alternates to fulfill core requirement group IV in Evolution, Population and Quantitative Genetics b. Faculty genomics research.

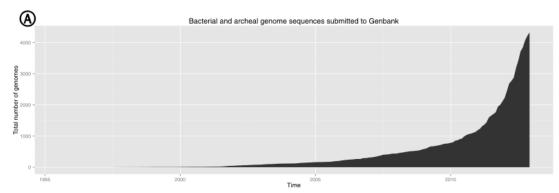
The web page that lists faculty performing genomics research has been live since 2007 and is at: <a href="http://www.genetics.iastate.edu/genomics.html">http://www.genetics.iastate.edu/genomics.html</a>. Currently we have 38 faculty listed in various areas of genomics; this is 42% of all current Genetics faculty members.

2. Description of the state of genetics and genomics and the degree that we want to provide our graduates so that they can compete in the field of genetics and genomics in the future.

The current request for a name change is in recognition of changes/advances in the state of the discipline of genetics. The study of inheritance began more than 10,000 years ago with the recognition by the first farmers that "like begets like", and that selective breeding generates improved strains of plants and animals. This remains the foundation of modern agriculture. The success of selective breeding lead to a desire to understand how inheritance worked, and this has been a central area of study in the biological sciences ever since. This discipline has often undergone major changes in response to new technologies and new discoveries. The modern science of genetics began with the discovery by Gregor Mendel that there were discrete units of inheritance (genes). The past 100 years has seen a tremendous number of studies dedicated to the study of the structure, function, and mutation/evolution of genes.

Studies of many traits of great importance to agriculture revealed that such traits are controlled by large numbers of interacting genetic factors, indicating that many important processes are influenced by the composition of the entire genome, including non-gene elements. Analyzing such traits remained technically difficult until the advent of powerful technologies for DNA sequencing. These technologies have lead to an explosion in the number of studies determining the genomic DNA sequences of many different species, from bacteria (Figure A) to higher eukaryotes, including most major species of economic value. This rapid expansion of the information about genomic DNA sequences has been accompanied by an expansion of the statistical tools needed to analyze large data sets of genomic information. The ability to determine and analyze genome sequences has lead to an important change in the nature of questions that are being asked and answered about the structure, function, and mutation / evolution of whole genomes, or complex combinations of genetic elements. Such studies quickly were labeled "genomics" to reflect their focus.

### Rapid Expansion of genomics data:



A genome sequence is extremely valuable for many areas of study, and the integration of genomics and genetic data has provided an unprecedented view of the landscape and molecular components of complex genomes that are of practical importance for understanding important aspects of many species (crops, livestock, as well as human). Iowa State University has a long history of leadership in the study of complex traits in crop and livestock species, and in the statistical techniques for analysis of large sets of genetic/genomic data. Current Genetics faculty members are taking advantage of new genomic tools and approaches now available. Many of our graduates are taking positions where they need to be not only cognizant of but experienced in using genomic approaches and analyzing data sets that span genomes. Our programs need to recognize this growing area of expertise.

In addition to generating rapid progress in understanding existing complex systems in genetics and in answering existing questions in the study of populations, the tools of genomics are creating entirely new fields of enquiry, including network and systems biology that seek to predict the behavior of sets of genes/proteins. Combining genomic information with statistical/probabilistic modeling of biological systems is providing answers to important real-world problems. Funding agencies have taken notice of this shift, and more funding opportunities are opening for teams of researchers that utilize interdisciplinary approaches to attack large, practical issues. Many genomics-based proposals submitted by Genetics faculty have been successful in this realm, and Genetics faculty see the need to train students in these new areas through integration with fundamental training in Genetics.

3. Documentation that we need to update our programname to best compete for applicants in this rapidly changing field.

We estimate that 35% of the Genetics domestic applicant pool in 2013 indicates an interest in pursuing a genomics project during their graduate studies or already has research experience in genomics. We believe this applicant pool will likely increase in the future and that changing the Genetics program and major name to Genetics and Genomics will allow us to better compete for students interested in genomics research.

The Genetics program has existing and outstanding strengths in genomics research and coursework. As outlined above, many of our faculty members have research programs that are intensely focused on genomics. Changing our name would allow us highlight these strengths during student recruitment. Further, several departments that currently contribute to the Genetics program are considering new faculty hires in the areas of genomics research, and we expect these new hires to join our program and want to hire graduate students entering our program. Thus we expect to need to increase the recruitment of students interested in genomics. In order to compete strongly for such students, we also plan to update our recruitment materials and strategies to reflect our strength in genomics.

The name change is the first step toward this goal.

### C. Documentation we sought input from appropriate stakeholders.

There is no academic unit at Iowa State University that currently uses Genomics

in its name. We have surveyed current Genetics interdepartmental graduate students and ask for comment on changing our name. The respondents (about 30% of our students responded) voted overwhelming in favor (74% positive) of adding Genomics to the name of the Program and Major; this is significant as it is our understanding that the degree they would be awarded would thus be changed to reflect the name we adopt; the current favored name is Genetics and Genomics, thus graduate degrees would indicate the MS or PhD would be in Genetics and Genomics.

### 1. If this is a department name change, describe how the proposed name is consistent with the mission of the college.

While this is a request to change the name of an Interdepartmental Program, we believe this proposed name change will further demonstrate that the graduate training provided and research conducted by our faculty is consistent to the mission of the four Colleges with faculty members in Genetics. These are the College of Liberal Arts and Sciences, the College of Agriculture and Life Sciences, the College of Human Sciences, and the College of Veterinary Medicine. The relevant portion of all four College's mission is to educate biologists in current scientific knowledge and to train them to do research to gain new knowledge of value to the society. Addition of Genomics to the name of the program is in complete alignment with these missions.

### 3. Will the proposed name change be consistent with other institutions? Identify other institutions that have the same or similar name to the proposed name.

There are many Departments and interdepartmental programs in the US that have Genetics, Genomics or both in their title. A search of Peterson's Guide using "Genetics" or "Genomics" as search terms for both MS and PhD degrees lists 240 of these; while a search for genomics only found 43. We list below several such programs that include both terms.

Mount Sinai School of Medicine: Department of Genetics and Genomics Case Western Reserve U.: Program in Human, Molecular, and Developmental Genetics and Genomics

Wake Forest U.: Molecular Genetics and Genomics Program
UC-Riverside: Graduate Program in Genetics, Genomics, and Bioinformatics
Boston U.: Program in Genetics and Genomics

- U. Chicago: Committee on Genetics, Genomics and Systems Biology
- U. Georgia: Institute of Plant Breeding, Genetics and Genomics
- U. Pennsylvania: <u>Graduate Group in Genomics and Computational Biology</u>
  Further, there is no Department or Academic program at the University of Iowa that uses "Genomics" in its name. Research service centers, such as those at ISU, use "genomics" in their name, and two research foci of faculty members within the Biomedical Engineering graduate program are listed as "Computational Genomics" and "Genomics, Bioinformatics, and Systems Biology".

4. Is the proposed name consistent with association/accreditation designations?

Not applicable; we are not aware of such designations in the Genetics field.

5. Describe program configuration changes that will result from the proposed name change, e.g., change in number of credit hours required, etc.

Because our program already includes both Genetics and Genomics components in our required as well as optional courses, we don't anticipate any additional requirements or changes in credit hours.

6. Describe how current students will be affected by the proposed department/program name change.

We have identified that the only effect on current students will be the change in the name of their degree from "Genetics" to "Genetics and Genomics". Furthermore, current students that entered under the previous major name would be able to choose which name would be used for their major and diploma.

7. What costs will be incurred by the proposed name change? Identify new resources that will be needed in connection with the proposed name change, e.g., facilities, faculty, funds, etc.

We have not identified any significant new costs that will be incurred by this change in name. All changes to website headings will take some time, but will be done at the same time as updates to the webpages by present personnel. Most correspondence is done via email; current letterhead/envelopes will be used until they are gone; updated mailing materials will be ordered at that time.

## IOWA STATE UNIVERSITY OF SCIENCE AND TECHNOLOGY

College of Agriculture and Life Sciences

Department of Animal Science 2255 Kildee Hall Ames, Iowa 50011-3150 515 294-4252 office 515 294-2401 FAX email: cktuggle@iastate.edu

2 October, 2013

Dear Graduate Curriculum and Catalog Committees;

The faculty members participating in the Genetics interdepartmental graduate program have voted to change the name of our major and the program. Pursuant to the Faculty handbook (Sections 2.8 and 10.8.1), I have sent the Form G to the Colleges involved (CLAS, CALS, CVM and CHS), and I attach their approvals. I forwarded in July the Form G to you for your consideration, and received your positive response with minor suggested revisions.

Pursuant to your comments provided to Genetics on September 19 by Judy Strand, we have revised Form G and renamed it as "FormG-NameChangeApplication-October2013.docx".

If you have any questions, please get in touch with me.

Thanks.

Christopher K. Tuggle

Chair, Genetics, Interdepartmental Graduate Program

Professor, Animal Science

Chimtophu K. Lugar

CC: Jeff Essner, Genetics, Interdepartmental Graduate Program Associate Chair Linda Wild, Genetics, Interdepartmental Graduate Program support staff

Attachments: FormG-NameChangeApplication-October2013.docx CollegeApprovals.pdf

### **Academic Program Approval Voting Record**

This document is to be appended as the last page of the proposal for any new or revised academic program to record the successive votes of approval as the proposal moves through its required review and approval steps. Consult Faculty Handbook Section 10.8 or the Faculty Senate Curriculum Committee website for information regarding Committee review and voting requirements for each action.

Curricular Action: (check appropriate boxes below)						
1. □ New Program x Name Change □ Discontinuation □ Concurrent Degree for:						
2. □ Undergraduate Major x Graduate Major □ Undergraduate Minor □ Graduate Minor						
☐ Undergraduate Certificate ☐ Graduate Certificate ☐ Other:						
3. Name of Proposed Change:Genetics name change to Genetics and Genomics						
4. Name of Contact Person: <u>Chris Tuggle</u> e-mail address: <u>cktuggle@iastate.edu</u>						
5. Primary College: <u>Ag and Life Sciences</u> Secondary College: <u>Liberal Arts and Sciences</u>						
Veterinary Medicine Human Sciences						
6. Involved Department(s): Agronomy; Animal Science; Biochemistry, Biophysics and Molecular Biology; Biomedical Sciences; Ecology, Evolution, and Organismal Biology;						
Entomology; Food Science & Human Nutrition; Genetics, Development, and Cell Biology; Horticulture; Natural Resource Ecology and Management; Plant Pathology and Microbiology;						

Statistics; Veterinary Microbiology and Preventive Medicine; Veterinary Pathology

### Voting record for this curricular action:

	Votes			
Voting Body	For	Against	Abstain	Date of Vote
Dept. or Program Committee				
Genetics	51	0	1	3 May 2013
College Curriculum Committee				
CALS	12	0	1	11 Feb 2014
LAS	8	0	0	6 December 2013
CVM	Unanimous		2 December 2013	
CHS	Unanimous		7 November 2013	
College Approval Vote				
CALS Faculty	110	12	0	3 December 2013
LAS Representative Assembly	21	0	0	5 February 2014
CVM Caucus	82	0	5	24 February 2014
CHS Faculty	55	1	2	10 December 2013
Graduate Council	9	1	0	17 October 2013
Faculty Senate Curriculum Committee	6	0	0	6 March 2014
Faculty Senate Academic Affairs Council				
Faculty Senate				

To:

Tuggle, Chris K [AN S]

Subject:

RE: CVM: no objection to IG name change

From: <Nolan>, "Lisa K [V MED]" < <a href="mailto:lknolan@mail.iastate.edu">lknolan@mail.iastate.edu</a>>

Date: Tuesday, June 4, 2013 4:46 PM

To: chris Tuggle <cktuggle@mail.iastate.edu>

Cc: "Sebring, Lisa [V MED]" < <a href="mailto:lkseb@mail.iastate.edu">"Ikseb@mail.iastate.edu">"Ikseb@mail.iastate.edu">"Zhang, Qijing [V MPM]" < <a href="mailto:zhang123@mail.iastate.edu">zhang123@mail.iastate.edu</a>

Subject: CVM: no objection to IG name change

Good luck, Chris...

From: <Nolan>, "Lisa K [V MED]" <lknolan@mail.iastate.edu>

Date: Thursday, May 30, 2013 11:37 AM

To: chris Tuggle <<u>cktuggle@mail.iastate.edu</u>>, "White, Pamela J [HS AD]" <<u>pjwhite@mail.iastate.edu</u>>, "Wintersteen, Wendy [AEX S]" <<u>wwinters@mail.iastate.edu</u>>, "Schmittmann, Beate [LAS]" <<u>schmittb@mail.iastate.edu</u>>

Cc: "Sebring, Lisa [V MED]" < <a href="kseb@mail.iastate.edu">kseb@mail.iastate.edu</a>>, "Andreasen, Claire B [V MED]" < <a href="kseb@mail.iastate.edu">kseb@mail.iastate.edu</a>>), "Andreasen, Claire B [V MED]" < <a href="kseb@mail.iastate.edu">kseb@mail.iastate.edu</a>), "Andreasen, Claire

"Zhang, Qijing [V MPM]" <zhang123@mail.iastate.edu>

Subject: Re: request to change name of Interdepartmental Genetics

Chris,

We will check next week and let you know.

CIM

To:

Tuggle, Chris K [AN S]

Subject:

RE: request to change name of Interdepartmental Genetics

From: <White>, "Pamela J [HS AD]" <piywhite@mail.iastate.edu>

Date: Thursday, May 30, 2013 9:55 AM

To: chris Tuggle <cktuggle@mail.iastate.edu>, "Wintersteen, Wendy [AEX S]" <wwinters@mail.iastate.edu>, "Nolan, Lisa

K [V MED]" < <a href="mailto:lknolan@mail.iastate.edu"> k [V MED]" < a href="mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailto:lknolan@mailt

lindah@mail.iastate.edu>

Subject: RE: request to change name of Interdepartmental Genetics

Thank you for this information. I have checked within the college, and we do not have any concerns regarding this change.

Best wishes.

Pam

Pamela J. White

Dean, College of Human Sciences; University Professor of Food Science and Human Nutrition E262 Lagomarcino Hall, Ames, Iowa 50011; phone: 515-294-5380; fax: 515-294-7802

From: Tuggle, Chris K [AN S]

Sent: Wednesday, May 29, 2013 4:48 PM

To: Wintersteen, Wendy [AEX S]; White, Pamela J [HS AD]; Nolan, Lisa K [V MED]; Schmittmann, Beate [LAS]

Cc: Linda Wild; Jeffrey Essner

Subject: request to change name of Interdepartmental Genetics

Dear Deans of Interdepartmental Genetics Faculty;

The faculty members participating in Interdepartmental Genetics have voted to change the name of our major. Pursuant to the Faculty handbook (Sections 2.8 and 10.8.1), I am sending the Form G to you for your consideration.

If you have any questions, please get in touch with me.

Thanks,

Chris

\*

Christopher K. Tuggle

Professor, Molecular Genetics

Chair, Interdepartmental Genetics Program

Iowa State University

Department of Animal Science

2255 Kildee Hall

Ames, IA 50011

PHONE 515-294-4252

FAX 515-294-2401

email: cktuggle at iastate.edu replace at with @ symbol

1

HS

To:

Tuggle, Chris K [AN S]

Subject:

RE: request to change name of Interdepartmental Genetics

From: <Wintersteen>, "Wendy [AEX S]" <www.inters@mail.iastate.edu>

Date: Sunday, June 16, 2013 7:34 PM

To: chris Tuggle <cktuggle@mail.iastate.edu>, "White, Pamela J [HS AD]" <piywhite@mail.iastate.edu>, "Nolan, Lisa K [V

MED]" <lknolan@mail.iastate.edu>, "Schmittmann, Beate [LAS]" <schmittb@mail.iastate.edu>

Cc: Linda Wild <a href="mailto:linda">linda Wild <a href="mailto:linda">li

<colletti@mail.iastate.edu>

Subject: Re: request to change name of Interdepartmental Genetics

Chris,

CALS supports this name change.

Wendy

Wendy Wintersteen

Endowed Dean, College of Agriculture and Life Sciences

Director, Iowa Agriculture and Home Economics

**Experiment Station** 

138 Curtiss Hall

Ames, IA 50011

515-294-2518

wwinters@iastate.edu

CALS

From: <Tuggle>, "Chris K [AN S]" <cktuggle@mail.iastate.edu>

Date: Wednesday, May 29, 2013 4:47 PM

To: Wendy Wintersteen <wwinters@mail.iastate.edu>, Pam White <pjwhite@mail.iastate.edu>, Lisa Nolan

<<u>lknolan@mail.iastate.edu</u>>, Beate Schmittmann <<u>schmittb@mail.iastate.edu</u>>
Cc: Linda Wild <<u>lmwild@iastate.edu</u>>, Jeffrey Essner <<u>jessner@iastate.edu</u>>

Subject: request to change name of Interdepartmental Genetics

Dear Deans of Interdepartmental Genetics Faculty;

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If you have any questions, please get in touch with me.

To:

Tuggle, Chris K [AN S]

Subject:

RE: request to change name of Interdepartmental Genetics

From: <Slagell>, "Amy R [ENGL]" <a slagell@mail.iastate.edu>

Date: Friday, July 12, 2013 8:11 AM

To: chris Tuggle < cktuggle@mail.iastate.edu >

Subject: RE: request to change name of Interdepartmental Genetics

Dear Chris,

The College of Liberal Arts and Science is happy to support the decision of the Interdepartmental Genetics Faculty and formally endorse the proposed name change of the program from Interdepartmental Genetics to Genetics and Genomics Graduate Program. The name change is consistent with what is offered in the courses in the program, consistent with the field of study and will better represent this strong multi-disciplinary and interdepartmental program.

Best of luck moving forward with this change,

Amy Slagell

Amy R. Slagell Interim Associate Dean College of Liberal Arts and Sciences Iowa State University 202 Catt Hall (515) 294-3596

LAS