CITIZENSHIP
Strength
• team player

Area to develop
• Informal service

Goals (including relationship to university and department goals) and plan. To assist individuals in their quest for perfection and eternal life, there are committee and community assignments I can fulfill by proactively looking for opportunities to integrate with and reach out to others, and by fulfilling assignments, including committee assignments. In particular, attending university and departmental functions will help to establish a sense of community and will support those, especially students, who speak or participate in these events. I will primarily accomplish these goals by putting the events on my calendar, and by making attending the events a priority.
• Students need to be supported in attending university devotions. Attend 75% of university devotions with students in my lab
• The department needs me to serve on at least 2 committees per year. Fill all committee assignments, including putting deadlines on my calendar and making it a priority.
  o Current progress:
    ▪ Service on College Mentoring Environment Grant Review committee
    ▪ Service on the Placement, Recruiting, Internship, and Mentoring (PRIME) committee
• Attend all departmental potlucks, events, and celebrations
• Attend 75% of college and department seminars
  o Current progress: Invited 1 speaker for our department seminar series
• Attend 25% of Masters and 50% of PhD candidate defenses in the department

Resources needed
• 10% time

TEACHING
Strengths
• Undergraduate mentoring
• “spoon-feeding” teaching approaches
• student-centric teaching

Interest
• Open-source educational resources

Area to develop
• Active learning techniques

Goals (including relationship to university and department goals) and plan. To assist individuals in their quest for perfection and eternal life, I can teach with and by the spirit in the classroom, with the goal of enlarging students’ intellect and strengthening students spiritually. In my view, all secular instruction has merit because it teaches students a language that will allow them to touch others in their field in a way individuals outside of their fields cannot. I believe this is one way “…every man shall hear the fullness of the gospel in his own tongue, and in his own
language, through those who are ordained unto this power, by the administration of the Comforter.” (D&C 90:11) I will overtly incorporate relevant gospel teachings into lectures whenever possible, and keep all “…subject matter perfumed lightly with the spirit of the gospel” (President Spencer W. Kimball). To facilitate superior learning and retention, I will incorporate active learning into classroom activities.

- The university needs gospel truths infused into classes, or “we will not be that different from other good universities to which an institute of religion is attached” (President Kevin J. Worthen, 2014 BYU Annual Conference: Overtly incorporate relevant gospel teachings and perfume subject matter with the spirit of the gospel
  - Begin each class period with prayer
  - Begin class instruction by inviting the spirit to assist me and the students as we learn together
  - Ask students to incorporate gospel teachings into classroom presentations
  - Incorporate directly-relevant gospel teachings or subjects into lectures
  - Challenge students to read The Book of Mormon every day during the semester.
- The department / major needs me to carry at least 8 credits per year. I will teach 2 x 3 cr. sections of PWS168: Personal Genomics and 1 x 2 cr. section of PWS469: Metagenomics per year.
  - Current progress:
    - Taught 52 students in PWS188. Instructor rating was: (not yet available)
    - Taught 4 and 9 students in PWS494R. Instructor rating was: (not yet available)
    - Submitted course materials for two new classes: Personal Genomics and Metagenomics. Both courses were approved
- Develop course materials for and incorporate active learning approaches into both of my new classes, Personal Genomics and Metagenomics
  - Develop 10 Personal Genomics and 12 Metagenomics homework assignments
    - Current progress: I have developed 3 homework assignments (1 week in)
  - Develop powerpoints for 26 lectures for Personal Genomics Summer 2015 (2 / week), including 5 integrated active learning questions per lecture
    - Current progress: need 2 lectures by Friday, May 1, 2015
  - Develop powerpoints for 12 lectures for Metagenomics in Fall 2015, including 4 integrated active learning questions per lecture (for smaller advanced course, anticipate lectures will be more interactive generally; less structure needed for active learning)
    - After developing active learning questions for 4 lectures, solicit feedback from Jamie Jensen, Biology, on my active learning questions. Incorporate her feedback in revising those questions and developing new questions.
- Improve in my teaching each year, and update course materials each semester to incorporate the 2 most common student comments
  - Use the faculty center SCOT program to solicit 1 change to be made to every course I teach, mid-semester, every semester. I will not do this in PWS188, which is primarily guest lecturers.
  - Review course materials within 2 weeks of concluding each semester and update all assignments to clarify or correct weaknesses / misunderstandings / vagueness from the previous semester
    - Current progress: need to review materials by Friday, May 1, 2015
o Review student evaluations within 2 weeks of posting. Identify the 2 most common criticisms of the class and develop, with my FDS mentor, a plan to resolve both issues.

o Request that my FDS mentor, Josh Udall, attend 2 lectures per course in my second and third years. Request that other PWS (Craig Coleman, Jeff Maughan, Mike Stevens) and non-PWS (Biology: Byron Adams, Jamie Jensen; MMBio: Joel Griffitts) faculty attend one lecture per year during my second and third years and provide: 1) a written analysis of teaching which will be included in my CFS-packet; 2) one recommendation for improvement in the future. Adapt course materials in response to the feedback.

• Undergraduate mentoring
  o Help students to learn the scientific process through benchwork experience
    ▪ Current progress: I mentored a total 12 students for in benchwork or computing research.
  o Help take at least 1 undergraduate to a national meeting each year, beginning in year 2; 50% of all ‘serious’ students present at a local or regional meeting each year;
    ▪ Current progress: 1 student presented at the Fulton Undergraduate Research Conference as part of the Gerontology Program-funded work we are doing
  o Every ‘serious’ undergraduate submits an ORCA proposal each fall
    ▪ Current progress: 4 students submitted ORCA proposals in Fall 2014; 3 proposals were funded
  o At least 1 student submits a cancer research proposal each year
  o Each time a major research milestone is accomplished (i.e. a figure), the responsible student(s) will create a ‘mini-manuscript’ detailing the methods, results, and interpretations for that figure, along with a brief introduction and discussion.

Benefits:

▪ 1) maintain institutional memory: data are fully analyzed and archived by the person who collected the data, near the time when the data are collected;
▪ 2) context: the student puts the research in a larger context early on; helps to direct the follow-up experiments
▪ 3) manuscript preparation: helps students write as they go; in theory (but not in practice) the paragraphs from multiple mini-manuscripts are pasted together
  ▪ Current progress: 3 mini manuscripts have been prepared

Resources needed
• 45% time
• SCOT consultants
• Life Sciences IT laptop lab support (use of computers and installation of software)

SCHOLARSHIP

Strength
• Writing manuscripts

Skills, competencies, and interests
• Animal and microbial genetics
• Bioinformatics

Area to develop
• Grant writing

**Goals (including relationship to university and department goals) and plan.** My scholarship will assist individuals in their quest for perfection and eternal life in at least 2 ways: 1) Contributing to the establishment of new basic and applied scientific principles, which will expand the world’s understanding (Section 121:18 Whatever principle of intelligence we attain unto in this life, it will rise with us in the resurrection) and improve the human condition (in my work, development microbial-based therapies to ameliorate genetic and/or infectious disease; this isn’t just pie-in-the-sky; e.g. we’ve submitted a grant to understand how probiotics can relieve genetic learning deficiencies and are starting patent process); 2) Preparing students to participate in for future employment or graduate studies in the most competitive positions in their fields. (as described in teaching, students in these fields learn a “language” of expertise and experience that will allow them to touch others in their field in a way individuals outside of their fields cannot; also allows them to provide temporally for their families). Participation in research is now an absolute requirement (increasingly with accompanying publications, either submitted or in preparation) for undergraduates to obtain the best employment or educational positions, so my program of scholarship is key for them to obtain competitive positions. Pushing the boundaries of my field using data collected, analyzed, and disseminated by undergraduates is the foundational principle of my scholarship program. Developing as a scholar will allow me to do the same.

The university, the department, and I need me to obtain funding to support my research. I will submit three major grants my first year; at least 1 NSF and 1 NIH grant each year thereafter until awarded; also submit 1 MEG and, where relevant, 1 other internal grant each year (e.g. gerontology)

- **Current progress:** Submitted 1 NSF pre-proposal (denied), 2 collaborative NIH R01 proposals (one as PI, one as co-PI), a gerontology proposal, a College of Life Sciences Startup Funds proposal, and a Mentoring Environment Grant. I also submitted a collaborative USDA proposal that will bring in $0 research (but will contribute to manuscripts).

• Increase the quality of my work through collaboration

  - Collaborate with (publish a manuscript with) at least one lab in each of PWS GB (Udall,Coleman), PWS E Sci (Geary, Aanderud), PWS WW (McMillan, Larson, Robinson), Biology (Koide, Johnson), and MMBio (Bridgewater, Griffitts, Evans) over my first five years

  - **Current progress:**

    - Udall: maintaining fruit fly stocks for BioNano analysis
    - Coleman: providing Illumina lane space to obtain pine SSRs
    - Geary/Aanderud: funding obtained to study the impact of fumigation on microbial community composition in potato fields (collaborative USDA grant awarded $0 to Chaston)
    - Aanderud: discussing microbial community genomic / metagenomic metaanalyses
    - McMillan/Larson: seeking funding to correlate deer microbiome composition with health indices
    - Robinson: preparing sequencing run to correlate Alpaca microbiome composition with Alpaca nutrition
    - Koide: impact of diet on mouse microbiome; preparing sequence run to measure microbial composition of mice on distinct diets
    - Johnson: calculate fitness impacts of individual microbes on *Drosophila*
- Bridgewater: impact of microbiome on learning; preparing a collaborative R01 proposal
- Evans: *Drosophila* microbiome surveys from archived samples

- **Disseminate findings**
  - 2 publications per year, each year; At least 1 publication with an undergraduate as a lead author, per year (see mentoring goals above)
  - **Current progress:**
    - Lindy Koyle (lead), Madline Veloz, and Alec Judd are preparing a methods paper on axenic culture of fruit flies.
    - Alec Judd has concluded experiments for the first half of a research manuscript

**Resources needed**

- 45% time
- Startup funds
- External funds. At a minimum I aim to secure $500,000 in direct costs (1 R15, 1 NSF award), and ideally $1,250,000 (1 R01) before 6th-year continuing faculty status review.

**Themes and topics:** My research program focuses on the genetic basis for animal-microbe interactions: we identify bacterial genes that influence animal traits, behaviors, and physiology, and to a lesser extent, work with animal genes that influence which microbes occupy host niches. We are currently focused on the influence of microbes on animal nutrition, learning, and lifespan. We use the model organism *Drosophila melanogaster* to do this work because: 1) it is the model organism for understanding key principles of nutrition, learning, and lifespan; 2) it is technically amenable to empirical interrogation in ways that mammalian model organisms and humans are not; 3) experiments are economical.

**Methods & Applications:** we perform wet-lab experiments that measure differences in fruit fly traits when flies are raised with different combinations of microbes, and then use bioinformatics approaches to predict which bacterial (or host) genes are responsible for the observed effects. We confirm these predictions by mutant analysis. We also develop the bioinformatics approaches into freely-available software packages.
SCHOLARSHIP PROJECT

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Methods & Applications: we perform wet-lab experiments that measure differences in fruit fly traits when flies are raised with different combinations of microbes, and then use bioinformatics approaches to predict which bacterial (or host) genes are responsible for the observed effects. We confirm these predictions by mutant analysis. We also develop the bioinformatics approaches into freely-available software packages.

Goals
• Submit 3 manuscripts: the remaining paper from my postdoctoral work (target Proceedings of the National Academies of the Sciences) the remaining paper from my graduate work (target Journal of Bacteriology), and a techniques manuscript currently fully drafted by an undergraduate in my lab, Lindy Koyle (target Journal of Visualized Experiments).
• Submit 1 R01 proposal (June 2015) and 2 NSF pre-proposals (Jan 2016). My preproposal for a full NSF proposal in August 2015 was not invited.
• Develop mutagenesis techniques for Acetobacter species isolated from fruit flies by mentoring Makay Chapman, a new Masters student to join my group.

Strategies
• Read 1 paper or spend 15 minutes reading abstracts each day (5 papers/week)
• Write for at least 15 minutes every day (target is 2 hours / day). Begin writing grants 3 months before due date.
• Complete grants 2 weeks before submission deadline
• Send grants and manuscripts to colleagues for review prior to submission
• Outline with Makay the key experiments needed to develop genetics in Acetobacter, together with a colleague at SUNY-Oswego.

Evaluate:
• Are the writing goals accomplished? If not, need to make 30 minutes / day minimum writing and /or begin writing grants sooner than 3 months.
• Revise grants based on feedback from panel reviewers (NIH). I cannot evaluate in February, but in May 2016 I will be able to evaluate if my NSF preproposals have improved scores over my first submission (Jan 2015).
• Are genetic techniques working in Acetobacter? If not, obtain closely related (i.e. Gluconacetobacter) isolates that have been successfully mutagenized, and seek to replicate protocols.
• Are the writing goals accomplished? If not, need to make 30 minutes / day minimum writing and /or begin writing grants sooner than 3 months.
CITIZENSHIP PROJECT

The problem: In my first year at BYU I have done a good job of getting to know personally many colleagues in the Department of Plant & Wildlife Sciences, and some colleagues in the College of Life Sciences. Unfortunately, through these interactions I have rarely gained more than a cursory knowledge of the main research areas in my colleagues’ labs.

The solution: For my citizenship project I would like to design a seminar series that includes the work in labs across the College of Life Sciences, to foster collaboration and cross-department interactions. Since undergraduate mentoring is a key interest for me personally, and since there is no formal seminar series for undergraduate presentations, I plan to design a seminar where undergraduate students from across the College of Life Sciences present their work. This will provide a venue for faculty and students across the college to get to know the work of their colleagues and for undergraduates to gain valuable experience presenting their research to a friendly audience.

Key steps:
1. Solicit abstracts to select for presentations. To select students to present, I will solicit abstract submissions from undergraduate students by two methods: 1) directly e-mailing students in the college; 2) directly contacting faculty to work with their students to submit abstracts. I do not anticipate this will add to the workload of other faculty as I hope to draw on students who are planning to present at regional and national meetings in the future, and to provide them an opportunity to present their work to a friendly audience first, and receive feedback to improve their presentation at the meeting. I will select abstracts based on three criteria: 1) quality of the research; 2) quality of the writing; 3) diversity of presentations. Since multiple students will present in each seminar time slot, the last point means that I will try to select students from different departments to present on the same day (see point #2).

2. Hold a twice-monthly seminar. I plan to hold a seminar on Thursdays at 4pm, twice monthly (1st and 3rd Thursdays) for academic year 2015-2016; but this may change depending on when other department seminars, etc, are scheduled; TBD when the fall seminar calendar is released. Each time slot will accommodate 3 undergraduate researchers, each presenting a 12-minute presentation with 3 minutes for questions. This is a standard presentation time slot that undergraduates might be asked to present at in a national or regional meeting, and so will help to prepare them for those meetings. I will strive to select students from different departments – or at least from different research labs – to provide breadth to the seminar, foster interdepartmental interactions, and to increase attendance (at least 3 research labs will be the audience).

3. Provide feedback forms to students. I will provide forms for attendees to comment anonymously on each undergraduate speaker by providing feedback in 4 areas: 1) What was the general topic / problem addressed? ; 2) What were strengths of the presentation? 3) How could the presentation be improved; 4) Additional comments. I will receive these forms and

4. Solicit feedback at the end of the series (e.g. to continue). At the end of the series I will contact all presenters and their faculty advisors to determine if there is interest in renewing the series in subsequent years (i.e. did students receive awards at their meetings; was it perceived to be useful). If at least 50% of participants considered it useful, I will continue it in subsequent years. I will plan to follow the same format, but adjust according to feedback received as necessary (e.g. increasing the length of the talks, decreasing number of speakers per time slot, etc).
5. TEACHING PROJECT


I have been working with Dr Michael Johnson to develop this course, and that work will continue this summer. I will teach the course, which is new to the University and was recently approved to fulfill general education requirements, in Fall 2015.

COURSE DEVELOPMENT PROJECT PROPOSAL

I request $300 to provide supplies for students to extract bacterial DNA from their own fecal matter. The focus of the entire course is on personal genomic information, and students are encouraged to submit a saliva sample to the company ‘23andme’, who will extract students’ DNA and provide genomic information for a fee of ~ $80. This service provides a great service for the students – far more than we could provide for equivalent cost (logistics, software, technical processing, etc) – but it means that the sample processing is a black box for the students. At a reasonable cost we can take students through the process of sequencing bacterial DNA from their own feces to 1) model the steps taken to sequence their own DNA, 2) provide instruction about the key importance of gut microbes in human health and disease. This is a major area of interest in the field of personal genomics and medicine, and 2 weeks of the course are devoted to studying gut microbes. Using techniques that are standard in my research lab (and a small number of supplies provided by my research funds), we plan to extract DNA by a very inexpensive (and somewhat unreliable) method, prepare the DNA to be sequenced, and submit it for sequencing. I would use the $300, if awarded, to purchase materials to extract DNA by the standard methods (more reliable but also 20 times more expensive; ~$5 / sample). My research funds will absorb the minimal cost for sequencing by combining with other samples in my lab’s ongoing research; but we cannot subsidize the expensive extraction methods.

The additional funds will provide hands-on, useful experience to the students to help them understand how samples are prepared for sequencing, to provide a high quality DNA extraction that is more likely to yield sequencing results, and to tell the students something about the microbes that are unique to their gastrointestinal tracts.

COURSE SYLLABUS ON SUBSEQUENT PAGES
PWS 168, Personal genomics - me and my genes
MWF; 11:00-11:50 am, 231 MARB

Instructor:
John M. Chaston
5132 LSB, john_chaston@byu.edu
Office hours: 2-3 pm MWF or by appointment; you may also submit questions by e-mail and in Learning Suite discussion boards

TA:

Course Prerequisites: None

Course purpose: Students will interpret commercial genotyping data to determine ancestry of genetic signatures and genetic predisposition to disease.

Course Objectives:
The goal of this course is to help you understand and appreciate how genes and genomes affect the diversity of human characteristics, and by extension, the diversity of characteristics in all living organisms. We will focus on: how genetic variation relates to human health, disease, and ancestry; how tools to sequence and document human genetic content are used and sequence data interpreted; how to intelligently evaluate inevitable developments in personalized genomic healthcare and medicine; how to use personal genetic information in genealogy and family history work. As part of this course you will have the opportunity to obtain, interpret, and analyze portions of your own, personal, genome sequence (or use a sample genome sequence provided to you), understand how your genome sequence contributes to your unique traits, and use this data in family history work. We will also discuss how genomic technologies can provide insight into gospel-related topics, including Lamanite ancestry and man’s creation. Understanding these tools and principles will prepare you to make educated, ethical decisions about personalized genomic medicine and ancestry throughout your life.

Learning Outcomes:
1) Demonstrate foundational knowledge of genetics, and understanding of emerging concepts of personal genomics in medicine, health, and family history. (KNOWLEDGE)
2) Communicate effectively with your classmates through oral, visual, and digital media as you present a topic on ‘personal genomics’ in the news as part of a group. (COMMUNICATION, COLLABORATION, and LIFELONG LEARNING)
3) Evaluate global and local ethical issues in personal genomics, and how these issues impact individuals, families, and society (PERSPECTIVE, LIFELONG LEARNING)
4) Understand relationships between personal genomics concepts and teachings of the restored gospel, including discussions on evolution, Lamanite ancestry, and use of genomic data in family history (FAITH AND SPIRITUALITY, LIFELONG LEARNING)
5) Apply sound thinking to use personal genomics information in real-life situations (SOUND THINKING AND PROBLEM SOLVING, LIFELONG LEARNING).

Texts:
1. With genetic testing, I gave my parents the gift of divorce. Vox. Tuesday, September 9, 2014
Software:
Geneious (http://www.geneious.com/)

Other materials:
As part of this class you will have the option to have portions of your genome sequenced using the 23andme.com service (they don’t actually sequence your genome but use a method called high-density genotyping – you’ll learn what that means later!). It takes 6-8 weeks from when you send in your DNA to receive data back, so it is essential that you submit a saliva sample within the first week of the class if you want to use your genome for the class homework assignments (see below). If you do not submit your sample within the first week of class you may not have sequence information back by the middle of the semester when we begin homework assignments. If you choose not to purchase the genome-sequencing service you will be provided with a mock sample to analyze. Your grade will not be affected by your decision.

Evaluation and grading
Your grade will be determined by classroom participation (in part through online and in-class quizzes), 1 class presentation, and 9 DNA analysis assignments, and 3 exams:

<table>
<thead>
<tr>
<th>Participation</th>
<th>190 points (20%)</th>
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</thead>
<tbody>
<tr>
<td>Mid-term exams (2)</td>
<td>175 points each (17.5%)</td>
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<tr>
<td>Class presentation and summary (1)</td>
<td>25 points (2.5%)</td>
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<tr>
<td>Homework assignments (9)</td>
<td>25 points each (22.5%)</td>
</tr>
<tr>
<td>Final exam</td>
<td>175 points (17.5%)</td>
</tr>
<tr>
<td>Course Evaluation</td>
<td>10 points (1%)</td>
</tr>
<tr>
<td>Total</td>
<td>1000 points</td>
</tr>
</tbody>
</table>

- Late assignments will be penalized 10% per day.
- The class will not be graded on a curve, so you will not competing with any other students for a grade.
- Your final grade will be calculated as a percentage of the total 1000 points

<table>
<thead>
<tr>
<th>Cutoff</th>
<th>Grade</th>
<th>Cutoff</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93%</td>
<td>A</td>
<td>73%</td>
<td>C</td>
</tr>
<tr>
<td>90%</td>
<td>A-</td>
<td>70%</td>
<td>C-</td>
</tr>
<tr>
<td>87%</td>
<td>B+</td>
<td>67%</td>
<td>D+</td>
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<tr>
<td>83%</td>
<td>B</td>
<td>63%</td>
<td>D</td>
</tr>
<tr>
<td>80%</td>
<td>B-</td>
<td>60%</td>
<td>D-</td>
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<tr>
<td>77%</td>
<td>C+</td>
<td>&lt;59.5%</td>
<td>E</td>
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</tbody>
</table>

Participation
Participation will be measured through at least one assignment per class period, including but not limited to brief pre-class Learning Suite quizzes, brief in-class quizzes, signing an attendance role, or verbal in-class participation. In general your honest and full effort to complete the assignment will result in full- or nearly-full credit. For example, pre-class quizzes may be infinitely retaken, and in-class quizzes will be used to assess classroom-wide understanding. Each assignment throughout the semester will be given equal percentage-wise weight across the 190 participation points available. Late credit will not be awarded for participation.

Presentations and summary
Each of you will be assigned to find a popular news article within the last 3 years that discusses an issue in personal genomics, and to present the highlights of the article to the class (10 minutes). You
will be assigned to work in groups. In your presentation you should identify: the primary question or topic being addressed; technologies used to obtain genetic information; technical constraints to further progress; ethical considerations; scientific accuracy of terms and content. In addition, you should provide a 1 page, 1” margin, single-spaced, 11-point Arial font summary of the same questions. Articles should be approved by e-mail or in person with me at least 2 weeks before your assigned presentation.

**Homework assignments**
You will complete 9 homework assignments, each begun during a class period listed on the syllabus. You will receive a handout with instructions to perform various analyses using your genome sequence, and to answer questions based on the analysis. Some of the homework assignments will require the use of the Geneious program, which you will be provided access to. Homework assignments can be done alone or as a group, and groups may vary from homework assignment to homework assignment. Groups may contain no more than 4 students.

**Exams**
Mid-term exams will be available in the testing center for 5 school days each. Final exams will be available in the testing center and scheduled by the university. They will have multiple choice, matching, and short answer questions.

**Final Grades**
Final grades will not be given over the telephone. Final grades will be available over the AIM systems shortly after they have been submitted.

**Course Evaluation**
Please fill out the course evaluation near the end of the semester. The evaluation is completely anonymous to me. After 5 students complete the evaluation, I will see a complete list of students who completed the evaluation (again, unlinked). You will receive full credit for the evaluation if it is completed.

**Honor Code**

Honor and integrity are among the most aspects of a person’s character. While few, if any, of you may be inclined to be dishonest, a reminder of what it means to be honest is important for everyone. All of us have agreed to abide by the BYU Honor Code, which includes maintaining academic integrity. In addition to the stated items in the BYU Honor Code, the items listed below must be followed for you to be fully honest in your work for this class:

1. Your examinations must represent your own work and not the work of another.

2. Do not discuss the content of exams with anyone (except your professor) until the exam has been handed back. You should not discuss the content of an exam with another individual until the exam has been handed back, even if both of you have already taken the exam.

3. Taking a graded exam that belongs to another student or attempting to find out another student’s grade are dishonest acts and are serious violations of the Honor Code.

Academic dishonesty is very rare at BYU. Most of us are deterred from it by conscience and respect for integrity. Unfortunately, a very small number of BYU students seem to value an undeserved grade above their personal integrity and the commitments they have made. Confirmed violations of any aspect of the Honor Code involving academic integrity will result in a failing grade for this course and will be reported in writing to the Honor Code Office. Cases of theft (such as taking another student’s
examination or entering a professor’s office without permission and taking materials) will be reported to University Police and may result in legal as well as academic penalties.

**Sexual Harassment Statement**

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity. Title IX covers faculty-student, student-faculty and student-to-student sexual harassment. BYU’s policy against sexual harassment extends not only to employees of the university but to students as well. If you encounter unlawful sexual harassment or gender-based discrimination, please talk to your professor; contact the Equal Employment office (422-5895); or contact the Honor Code Office at 422-2847.

**Students with Disabilities**

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability, which may impair your ability to complete this course successfully, please contact the Services for Students with Disabilities Office (422-2767). Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. Services are coordinated with the student and instructor by the SSD Office. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Equal Employment Office at 422-5895, D-282 ASB.
<table>
<thead>
<tr>
<th>Class date</th>
<th>Lecture topic</th>
<th>Assigned Reading</th>
<th>Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon, 8/31</td>
<td>Course intro: why care about your genome?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wed, 9/2</td>
<td>Central dogma-replication; DNA</td>
<td>12.3</td>
<td>Replication</td>
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<tr>
<td>Fri, 9/4 - Lab</td>
<td>23andme introduction</td>
<td>None (Dr. Joanna Mountain slides)</td>
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<tr>
<td>Wed, 9/9</td>
<td>Central dogma-transcription; RNA</td>
<td>13.1</td>
<td>Transcription</td>
</tr>
<tr>
<td>Fri, 9/11</td>
<td>Central dogma – translation; proteins</td>
<td>13.2</td>
<td>Translation</td>
</tr>
<tr>
<td>Mon, 9/14</td>
<td>Mutations and DNA repair</td>
<td>12.3 [subset] DNA repair; 16.1</td>
<td>Population evolution</td>
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<tr>
<td>Fri, 9/18 - Discussion</td>
<td>Book of Mormon and DNA studies</td>
<td>Book of Mormon and DNA studies</td>
<td>SS, IEi, LL</td>
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<tr>
<td>Mon, 9/2</td>
<td>Mendelian inheritance</td>
<td>14.3</td>
<td>Mendel’s experiments; 14.4</td>
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<td>Wed, 9/23</td>
<td>Non-mendelian inheritance</td>
<td>15</td>
<td>Variations on mendelian genetics</td>
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<tr>
<td>Fri, 9/25 - homework</td>
<td>Mendelian HW</td>
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<td>IEa, LL</td>
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Exam 1: Introduction to genetics

<table>
<thead>
<tr>
<th>Section 2: Non-genetic and genetic effects on health</th>
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<tbody>
<tr>
<td>Mon, 9/28</td>
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<td>Wed, 9/30</td>
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<tr>
<td>Fri, 10/2</td>
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<td>Mon, 10/5</td>
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<td>Wed, 10/7</td>
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<tr>
<td>Fri, 10/9 - homework</td>
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<td>Mon, 10/12</td>
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<td>Fri, 10/16</td>
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<td>Mon, 10/19</td>
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<td>Wed, 10/21</td>
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<tr>
<td>Fri, 10/23 - homework</td>
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<td>Date</td>
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<td>Mon, 10/26</td>
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<td>Wed, 10/28</td>
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<td>Wed, 10/28</td>
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<td>Fri, 10/30</td>
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**Section 3: Personal genomics and ancestry in health and disease**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Mon, 11/2</td>
<td>Treating genetic diseases</td>
<td>Text: A vision for the future</td>
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<tr>
<td>Wed, 11/4</td>
<td>Pharmacogenomics and personalized drugs;</td>
<td>Text: The right drug at the right dose for the right person</td>
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<td>Appendix D: Rational drug development</td>
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<tr>
<td>Fri, 11/6</td>
<td>Disease (23andme)</td>
<td>Handout in class</td>
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<tr>
<td>Mon, 11/9</td>
<td>Genetic ancestry and race in medicine</td>
<td>Text: What’s race got to do with it?</td>
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<td>Wed, 11/11</td>
<td>Inferring genetic ancestry from DNA variation</td>
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<td>Tree-thinking challenge <a href="http://www.genome.gov/26525384">http://www.genome.gov/26525384</a> -</td>
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<td>Ancestry (23andme)</td>
<td>Handout in-class</td>
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<td>Mon, 11/16</td>
<td>Homework assignment catch-up</td>
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<td>Wed, 11/18</td>
<td>Ancestry (ancestry.com)</td>
<td>Handout in class</td>
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<td>Fri, 11/20</td>
<td>Evolution of primates</td>
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<tr>
<td>Mon, 11/23</td>
<td>Neandertal (23 and me)</td>
<td>Handout in class</td>
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<td>Tues, 11/24</td>
<td>Evolution and the origin of man (LDS documents)</td>
<td>Official LDS packet</td>
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<td>Mon, 11/30</td>
<td>Ethical, legal, and social implications of genetic testing:</td>
<td>Article: Prohibiting Genetic Discrimination</td>
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<td>Article: Civilian and Military Genetics:</td>
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<td>Nondiscrimination Policy in a Post-GINA World</td>
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<td>Article: Keeping Pace with the Times — The Genetic Information</td>
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<td>Nondiscrimination Act of 2008</td>
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<td>Wed, 12/2</td>
<td>'Designer babies', pre-implantation genetic testing, and newborn</td>
<td><a href="http://www.babysfirsttest.org/newborn-screening/genetics-family-history">http://www.babysfirsttest.org/newborn-screening/genetics-family-history</a></td>
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<tr>
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<td>genetic screening</td>
<td>'Designer Babies:' Patented Process Could Lead to Selection of Genes for Specific Traits</td>
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<td>Fri, 12/4</td>
<td>Carrier status (23andme)</td>
<td>Handout in class</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Activity</td>
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<tr>
<td>Mon, 12/7</td>
<td>Personal genomics in the news</td>
<td>In class presentations</td>
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<tr>
<td>Wed, 12/9</td>
<td>Personal genomics in the news</td>
<td>In class presentations</td>
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Abbreviations:
SS: spiritually strengthening [personal genomics in family history research, Lamanite ancestry, and human evolution]
IEi: intellectually enlarging (instruction) [basic understanding of genetic principles]
IEa: intellectually enlarging (analytical) [hypothesis testing]
Cb: character building [evolution through environmental change/stewardship; ELSI in personal genomics and medicine]
LL: lifelong learning [genomics in health; critically evaluate new findings]