

Phil 255: The Human Genome Project
Science, Philosophy, Policy

Instructor Information

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Hours: Afternoons from 1 to 2 pm

(best to check my schedule with Kirsten at pacinst@pacificu.edu)

Consultants:

Dr. Lisa Sardinia, Associate Professor of Biology - x2729,
sardinil@pacificu.edu (Dr. Sardinia will help us with the science
component of this course.)

Dr. Elizabeth Arch, Associate Professor of Education - x2994,
archec@pacificu.edu (Dr. Arch will help us with translating learning into
teaching in middle school and high school contexts)

Chris Lane, Assistant Professor of Computer Science - x2275,
lanec@pacificu.edu (Chris is our IT specialist and webmaster for our
online course)

Kirsten Carpentier - x2296, pacinst@pacificu.edu

Schedule

TTh 8 – 9:15

Location

Marsh 106

Texts

- Holland, Lebacqz, Zoloth (eds.) Human Embryonic Stem Cell Debate: Science, Ethics and Public Policy
- Fukuyama, Francis, Our Posthuman Future: Consequences of the Biotechnology Revolution
- Selected short readings relevant to discussion

Course Description

Theoretical

It is difficult to pick up a newspaper without seeing a genetics-related story. These stories are sometimes on the science page, sometimes on the religion page and sometimes on the front page. Currently, there are genetic tests for over 1000 genetic diseases and disorders. The list grows daily. Newborn screenings,

mandatory in most states, test for up to 40 disorders. In 1993 human embryos were cloned using a process called blastomere separation. In 1996, Ian Wilmut used somatic cell nuclear transfer cloning to reproduce a sheep without benefit of sperm. In January of 2001 the Oregon Primate Center announced the birth of ANDi, the first transgenic primate. Combined with IVF technologies developed in



the 70's, genetic science is changing the way we think about human reproduction. It is not hyperbole to assert that we are in the midst of a revolution (scientific, medical, & cultural) because of genetic science and technology. Many people do not yet understand the depth and breadth of this revolution. The media play largely on our fears of genetic technology in films like Blade Runner, Boys from Brazil, Jurassic Park, The Island; even children's films like Lilo & Stitch. In the background, of course, is Mary Shelley's Frankenstein, the classic image of Man's destruction through his own careless tinkering with the creative forces of nature. Perhaps

curiosity killed the cat. Curiosity and hubris will kill us, is the not so subtle message.

This course will look back on the history leading up to the Human Genome Project (HGP) and examine the science, philosophy and policy (SPP) it has spawned. Some questions raised by genetic science are actually very old questions, questions that pre-date the concept of a "gene." Other questions are very new, so new that our syllabus is likely to change because of them. We will be doing some actual science. We will do this because the other sorts of questions, the philosophical and policy questions, tend to become distorted if based on a misunderstanding of the actual science. We will be doing some philosophy. Philosophy is largely concerned with conceptual clarity. Scientific terms, moral terms, and metafactual terms need to be isolated and analyzed. We must look closely at the language used to express scientific hypotheses in genetics.

We must also look closely at the language in which moral and spiritual implications are drawn from these hypotheses. For example, the NIH has a website (there is a link in our online course) with the title: "From Blueprint to You." Now... "blueprint" is an interesting image. A blueprint is often used to build a building. For every mark on the blueprint there is a corresponding expression in the actual building. But here the blueprint image is used to refer to "you." Is the implication that for every mark (genetic marker) there is a corresponding expression (phenotype) in the thing we call "you?" You are not a building. The intangible dimension of being a person seems to be subsumed



in the image. This is part of what we might call the “genetic myth.” By “myth” here I do not mean fiction, or anything of that sort. I mean that there is a mythology, a cultural appropriation of the science, which goes beyond the science and touches on the human imagination, playing on its hopes, fears, and self-understanding. This course will explore genetic mythology as well as genetic science.

Practical

There is “practicum” portion to this course. In fact it is worth 30% of your grade. Each of you will be part of a group which will develop an SPP lesson for kids in middle school (7&8), or high school. These lessons will be used in actual classrooms in Washington County to assess their effectiveness. This practicum is an important part of this course for two reasons. First, speaking as a pedagogue, the best way to learn something is to teach it...

Secondly, this course is partly the product of two grants received by the National Institutes of Health (NIH) and the Northwest Academic Computing Consortium (NWACC). They are particularly interested in genetics education (science, philosophy, policy), in the K-12 environment and in religious communities. In the K-12 environment we have the next generation growing up fast. Anything we can do to help integrate science learning with social learning is a good thing and in the case of genetics a very good thing.

In the case of religious communities there are special opportunities and challenges for the policy debates on genetics. It is important that people in communities of faith have accurate science as they ponder the implications of genetic technologies and it is important that we listen to groups which have traditionally had a heightened sense of the importance of preserving deontological over purely utilitarian categories in understanding the moral dimension of life. The NIH has provided the Pacific Institute with over a quarter of a million dollars to work with twenty denominations in the Portland Metro area over the next two years to do genetics education.

Some of our conversations will play the boundary between philosophy and theology. Why? Because we will be exploring questions about fundamental human self-understanding, human origins and human meaning. There will be no promotion or debunking of religions *per se*, but we will (we must...) talk about very basic human questions. “Is there an immutable human nature?” “Is everything about us determined by ‘genes and scenes,’ that is our genetic



inheritance combined with environmental forces?” “What is the meaning of human dignity?” “What role does human reproduction play in our self-understanding?” “How might genetic technologies change the way we think about ourselves?” “Is there a ‘post-human’ future?” “What does ‘post-human’ mean?” We will be using many of the materials developed for the communities of faith we serve in Portland. We’ll do this because a large majority of people do believe in some sort of God and an even greater majority believe in some sort of ‘spiritual reality’ which, obviously..., will play a part in the discussion of some of the more puzzling aspects of genetic technology.

Evaluation of Work

There are three types of work we’ll do that will be part of performance evaluation for this course

1. Genetic Science & History
2. Philosophy & Policy
3. Education Practicum

Genetic Science

I am not a molecular biologist. I have picked up quite a bit of genetic science along the way but I will be largely assisted in the genetic science curriculum by Dr. Lisa Sardinia. Prof. Sardinia and I have worked together on genetic education programming for four years. She will be a regular lecturer in this course. The



curriculum we have developed for this course is NOT a substitute for a regular class on genetic science, however it WILL provide you with a basic working knowledge of many concepts in genetics. You do NOT need a science background to do well in this part of the course. We have plenty of tools to help you learn the vocabulary, grasp the concepts and become skilled in how to use them. Lisa Sardinia and our Pacific Institute genetics intern

Shana McAlexander have produced a genetic science glossary which is part of our online course.

Philosophy & Policy

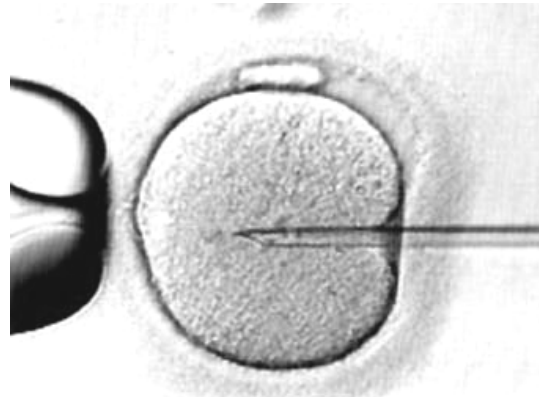
I am a philosopher active in regional policy-making so this dimension of the course is understandably the heart of what we are doing. I will talk about the history of genetic science and technology and then move on to moral reasoning skills and examination of the deeper philosophical/theological puzzles posed by genetic science. You do not need to have a background in philosophy to do well in this part of the course. Our goal will be insight rather than truth in the sense that an appreciation for complexity and depth is itself a worthy educational goal. We WILL attempt to build some consensus on controversial issues, but this will be largely to illustrate how arguments

breakdown and what is required to keep them going. For example, we may end up with a variety of opinions on the subject of human cloning for reproduction. But the learning will be in appreciating how and why disagreement arises in this discussion with the long-term hope that this understanding will make for better consensus building in the future.

Practicum

The practicum is one of the most exciting parts of this course for me. I believe, as do my colleagues in the College of Education, that there is nothing better than teaching a subject to learn about it. Why? Because when you teach you **MUST** know something about the concepts you are working rather than just having more or less accurate information. For example, my daughter has had some trouble with long division in the past. She had to give a presentation to the class on how long division works using a few examples. She had to write out what she was doing and why at every stage of the way. She's now one of the top math students in her class because she understands the concept of division and knows how the concepts are used in solving problems.

You will be a part of a group which will develop a self-contained lesson on some aspect of genetics. Each of the lessons will involve some science, some philosophy and some policy discussion. We have some great equipment and software to do some very interesting work. I'll show you a few examples of what you can do in class. The basic tool for use in the creation of your programs is PowerPoint. However, the PowerPoint we are using is a very souped up version with an add-in called *Articulate*, a program which allows you to add in voice narration and flash movies and then "publish" the whole program as a flash module which anyone can access and view on the web. It is a remarkable program which you will become familiar with this term. We also have a video camera with a professional light setup which you will use to shoot video of yourselves following a script or "storyboard" you will develop as part of the practicum. Each group will meet with me to talk about lesson content and the grade level you will pitch your lesson at.



Presence

I always include a "presence" evaluation in my courses. Presence means the degree to which you "show up" for the course. I do not mean simply attendance here. I mean show up in the sense of demonstrating engagement. This can be done in class, but is not necessarily limited to this. Not everyone likes the class environment as a way of engaging with the material. Use of the online course, email, and office visits all contribute to my belief that you are present and accounted for. A special note here

about early morning classes. For some, getting up twice a week for an 8am class will not be difficult. I'm usually up by 6 am, for example. For others, 8am is very early requiring some real effort to make the adjustment. For still others, 8am is not a possible time for doing anything. No "adjustments" will change that. (must be genetics....). Do a hard realistic assessment of yourself in this regard. I've had a few students in the past get into real trouble because they thought they could make the adjustment and then failed or nearly failed the course because they just could not drag themselves out of bed in time for class.

Evaluation Breakdown

- Genetic Science & History 30%
- Philosophy 30%
 - Moral Reasoning
 - Metaethics
 - Education Project 30%
- Presence 10%

Evaluation Methods & Processes

- Science
 - Two exams on genetic terminology, concepts & History
- Philosophy
 - Two exams on moral reasoning & metaethics
 - Accumulated journal assignments (online)
- Practicum
 - Assessment of your contribution (self & peer)
 - Assessment of the quality of the program itself (including feedback on its effectiveness with the students)
- No "Final Exam."

Website

Our online homeroom can be found at <http://faithforum.net>. It is housed on a server in the computer science department and is managed by Chris Lane, faculty in Computer Science. His contact information is listed above. If you have any difficulty with the site let Chris know, and cc me. We will be sharing this space with 150 participants in the NIH project and, in some cases, will share resources. To enroll yourself in the course go to the site and hit the create an account button. You will need an enrollment key, a word or phrase that will let the site know you are *bona fide*. The phrase you need is "James Watson." Once you are enrolled in the course, I'll know. You will be sent an email confirming your enrollment and asking that you fill out your



profile. Please do that. If you have photo of yourself (just your face is best), you can upload that as well. It is very easy to use. Your enrollment in the online course is mandatory. Some assignments will be exclusively web-based.

Final Words of Advice and Encouragement

Given the nature of the subject matter of this course I will be trying to create the atmosphere of a seminar rather than a classroom. That is, much of time we will move forward using the model of a guided conversation rather than that of the lecture. That being the case, the success or failure of our time together will rest on finding good habits of conversation. Some of us grew up in very talkative families. Others of us have grown up in very quiet families. We will look for courtesy and a sense of proportion in our discussions. I have posted a short document entitled, "How to Have a Great Conversation" online. We'll take some time to discuss this early in the term.

I have been looking forward to teaching this course on the SPP of genetics for three years. I hope you find the subject as fascinating and troubling as I do and end up with a special interest in public policy debates which, if not yet in our house, are on our doorstep.

