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Ethical Concerns in Genomics

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BL / BIO 4411 – Genes, Genomes, and Genomics

Course Project – Ethical Concerns in Genomics

As the field of genomics and the application of biotechnology greatly expands, society finds itself on the precipice of a brave new world in which not only scientists but also policymakers will be responsible for deciding the limits of what is ethical. Students in BIO/BL 4411: Genes, Genomes, and Genomics are asked to not only learn the scientific underpinnings of genomics, but also to interact with the material in the broader context of how it can be applied to our understanding of inheritance of traits, personalized medicine, genetically modified organisms, and many other facets. Integral to these concepts is also the ethical considerations.

Upon reading the following quote from the textbook, “Human Heredity: Principles and Issues.” by Michael R. Cummings, think about a pressing ethical issue that you think would be important to address.

***What Choices Do We Make in the Era of Genomics and Biotechnology?*¹**

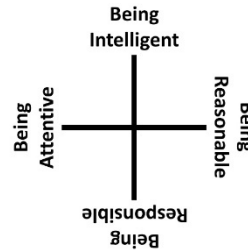
“In the span of about 40 years, we have learned how to predict the sex of unborn children, diagnose many genetic disorders prenatally, and manufacture human gene products to treat genetic diseases. We are now at a transition point where we are not only learning more about human genetics, but we are starting to apply genetic knowledge in ways that were unforeseen just a few years ago. These applications are colliding with social standards, public policy, and laws, forcing us to rethink what is acceptable and unacceptable in our personal and public lives.

Should we buy and eat food that comes from genetically modified plants and animals? Is milk from cloned cows safe to drink? Should we test ourselves or our children for genetic diseases even if no treatment is available? Is medicine produced from genetically modified animals safe? Should we vaccinate our children with edible vaccines produced from genetically altered plants? We are faced with an increasing number of seemingly bewildering choices. Sorting through the rhetoric and hype to find the facts that allow us to make intelligent and informed choices is a problem in modern life. Beyond these immediate personal choices is the fact that the development of biotechnology is raising new ethical questions that we must face and answer in the near future.

We can make informed personal decisions and formulate relevant laws and public policy only if we have a working knowledge of the principles of genetics as they apply to humans and understand how genetics is used in biotechnology. As a student of human genetics, you have elected to become involved in the search for answers to these important questions.”

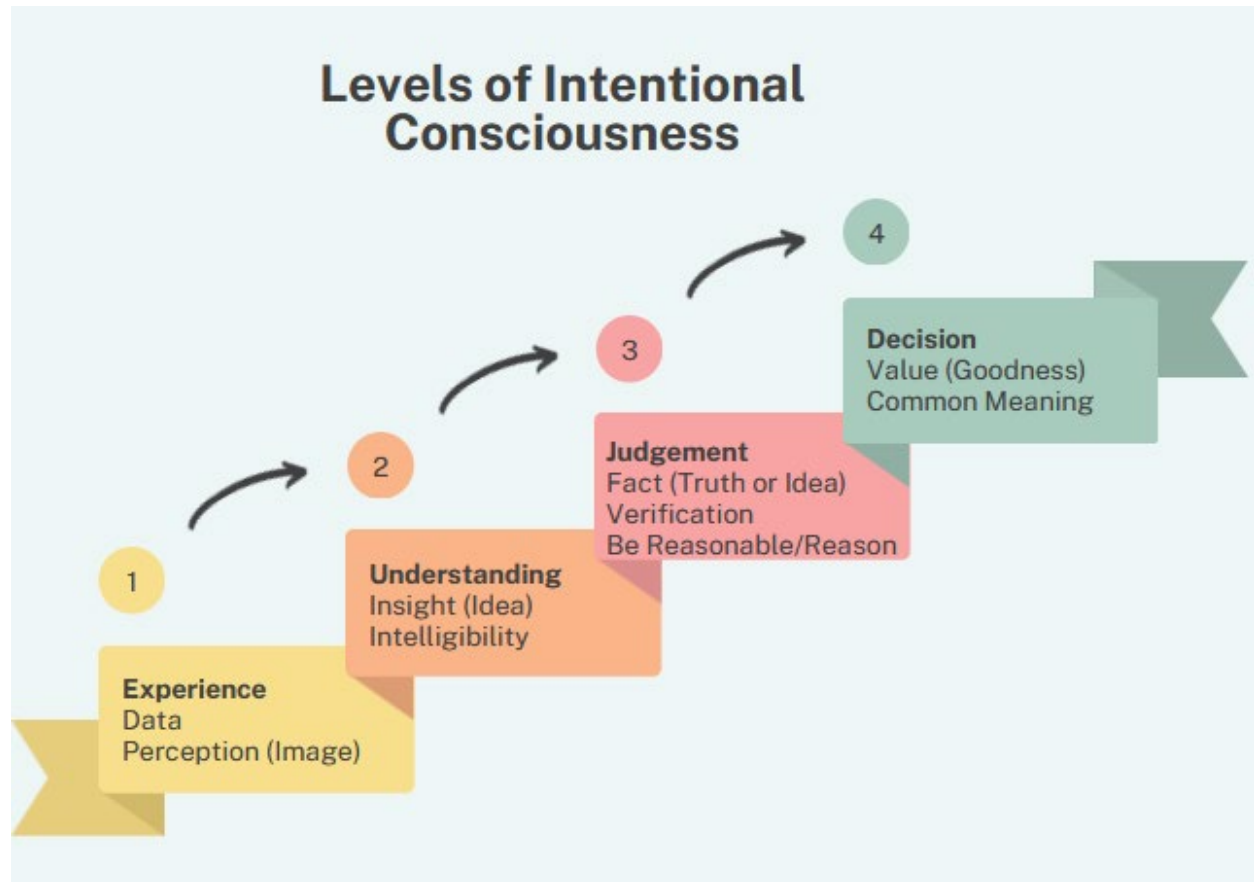
As a scholar at a Catholic, Marianist University, the ethical issue that is of interest to you will be investigated through the lens of Catholic Intellectual Tradition (CIT) as influenced by Benard Lonergan. Lonergan recognized that there are many different types of knowledge to include (but not limited to): common sense, interpersonal relations, scholarship, self-knowledge, philosophy, etc. Through exploring Lonergan’s framework of intentional consciousness, the topic will be explored through the four transcendental imperatives:

- Being Attentive; *in Experience*
- Being Intelligent; *in Understanding*
- Being Reasonable; *in Judgement*
- Being Responsible; *in Deciding*



Throughout this semester long project, you will be utilizing Lonergan’s “generalized empirical method,” (GEM). Please reference the recorded lecture for more information about the GEM and this project. For more information about GEM and Lonergan, please visit the following sites:

- <https://iep.utm.edu/lonergan/>
- <https://equivalentexchange.blog/2015/12/09/the-four-transcendental-imperatives-of-bernard-lonergan/>



GEM Level	Assignment	Components	Audience	Due Date
Experience	Research Project Proposal	<ul style="list-style-type: none"> • What is the topic you would like to explore? • What biases/beliefs are you bringing into the project on this topic? • What is the relevant evidence? (Cursory/initial literature review) 	Your Professor	September 9
Understanding	Explanation of Topic to Peers – Discussion Board	<ul style="list-style-type: none"> • Create an easily interpretable summary of the two (or more) points of view you are exploring in your ethical concern topic. (See handout for more information). • Provide peers with a summary paragraph of the points outlined. • Please provide citations. 	Your Professor and Peers	September 16
Judgement	Meaningful Dialogue on Topic Discussion Board	<ul style="list-style-type: none"> • Students are asked to pick two topics that are of interest and provide their insight on the topic. • This level of judgement should take the insights provided and create judgements on facts and values. (See handout) 	Your Professor and Peers	September 30
Decision	Final Research Project	<ul style="list-style-type: none"> • 1st Draft <ul style="list-style-type: none"> ○ Peer Review two drafts • Final Draft • Final Publication on the StMU Research Scholars Site 	Your Professor, Peers, and the General Public	September 30 October 14 October 21 **

*Please see corresponding assignment handout for Understanding and Judgement.

Knowing is a three-fold composite of experiencing, understanding, and judging.

Knowledge is a three-fold composite of relevant data, intelligibility, and verified fact that is “isomorphic” with the structure of consciousness.

You are required to thoroughly research and write an Academic Explanatory article to be published on the StMU Research Scholars Page: <https://stmuscholars.org/>

- Students are to pick their own topics. Dr. Boies will make sure that there is minimal overlap between topics. Students who submit their topics first will be given priority over similar topics submitted later.
 - Students are encouraged to submit early to ensure that they can write on the topic that they are interested!
 - If you are having problems picking a topic, please set up an office hour appointment and I happy to speak with you!
- Minimum of 2000 words
- Citations: The Chicago style of formatting is preferred for the StMU Research Scholars Site. The following will also be accepted for this assignment: APA formatting or the numbered IEEE style
- A **minimum** of 7 scholarly sources (you can have more!!)
- Students are required to meet with the RSC (Rattler Success Center) tutors at least once and provide documentation that you did meet with a writing tutor.
- The essence of the Academic Explanatory article is its focus on a question or problem of scholarship, where other scholars would acknowledge that that question or problem is worthy of research energy. Students need to define their research by focusing on the contributions that other scholars have already invested in those questions or problems. Students need to master the arguments used by those scholars, analyze those scholars' use of evidence and argumentation, and then make up their own minds about the answer to their question or problem, which would become their thesis for their own answer to that question or problem of scholarship.
 - I encourage to students to make appointments with the research librarians! (Diane Duesterhoff and Anacely Murphy)
- Your goal is to then design an argument to explain the question or problem to your readers, enter into a conversation with those other scholars, and persuade your readers of your understanding of the case.
- **What you DO NOT want to do is simply give your uninformed opinion about something, like a reflection paper.**
- **As you are publishing this on the StMU Research Scholars site (a public site), you can place this publication on your resume/CV. This should be a project and product that you are proud of!**

Important Dates:

- September 9: Research Project Proposal Due
- September 30: Draft of research paper due
 - Students will be asked to peer-edit; due October 14
- October 21: Research paper due
- **October 29: Publication cut-off date for StMU Research Scholars Nomination**
- **November 13: Nominations for Awards Posted**
- **November 20 – 21: StMU Research Scholars Voting Days**
- **November 30: Award Ceremony (6:30 pm in UC-Room A)**
 - **Students are required to attend the award ceremony**

Miscellaneous:

Students are encouraged to discuss any questions, etc. about the project with Dr. Boies **throughout the semester** as they are working on paper. Questions submitted to Dr. Boies at the “last-minute” before a part of the project is due *are not guaranteed to be answered in-time for the student to make appropriate changes before the assignment is due.*

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Email: lboies@stmarytx.edu

Book Office Hour Appointments: www.calendly.com/lboies

Any problems with Canvas that cannot be resolved using the help menu should be reported to the Help Desk of Technology Services (email: helpdesk@stmarytx.edu; phone: 210-431-4357) so that these issues can be addressed and resolved. Unfortunately, I am not IT and cannot help you with these issues! If you email me, I will tell you the following:

“Please contact the help desk to address your issues.”

Unforeseen technology issues are a reason that students should not wait until the “last-minute” to submit their assignments. 😊

Good luck and have fun!

Citations:

1. Cummings, M. R. (2015). *Human heredity: Principles and issues*. Cengage Learning.