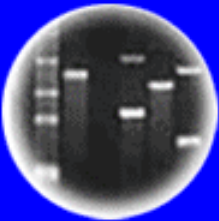


DNA
Genetic Code of Life



Entire Genetic Code
of a Bacteria



DNA Fingerprinting



Cloning: Ethical Issues
and Future Consequences



Plants of Tomorrow

**ETHICS
ELHIC?**

**ETHICS
ELHIC?**

HC70AL Spring 2011 Gene Discovery Laboratory

Ethics in Scientific Research

4/25/11



**HC70AL Gene Discovery Laboratory
Professor Bob Goldberg
Spring 2011
Science Ethics Cases**

Presenters & Discussion Leaders

**Krista - Cases 4.9 & 7.3
Pauline - Cases 2.8 & 4.7
Lauren - Case 3.5
Hanbee - Case 5.1
Mike - 11.6
Reece - Case 11.4**

4.9 Suzanne Booth is recruited as a postdoctoral fellow in a laboratory where research centers on the cell biology of a specific mammalian cell type. Suzanne's training has been in eukaryotic gene cloning and molecular genetics; no such technology is available in this laboratory. Suzanne completely trains a senior-level graduate student working in the group. Under Suzanne's supervision, the student proceeds to build a cDNA library and isolates by molecular cloning a gene for a membrane protein. Several months later, a manuscript describing this work is prepared for submission. The principal investigator of the laboratory, Professor Jack Taylor, and the student are listed as coauthors. Suzanne is listed in the "Acknowledgments" section of the paper. She is upset with this disposition and confronts Dr. Taylor. Dr. Taylor says that he has strict rules about authorship and that Suzanne's contribution was a technical one that does not merit authorship. Dr. Taylor quotes from several different standards-of-conduct documents indicating that authorship must be strictly based on intellectual and conceptual contributions to the work being prepared for publication. Technical assistance, no matter how complex or broad in scope, is not grounds for authorship. Does Suzanne have a case for authorship?

7.3 Dr. Stuart Sales, a neurologist, inherits a portfolio of stock shares rich in large pharmaceutical companies. As usual, he turns the management of these equities over to his stockbroker, John Taylor. John has been managing Dr. Sales's investments for 15 years and does so with little guidance from Dr. Sales. A couple of years later, one of the companies that he owns stock in, Major Pharmaceuticals, approaches Dr. Sales about enrolling subjects in a clinical trial. The drug under study shows great promise for helping his patients with multiple sclerosis. Dr. Sales eagerly agrees to enroll subjects, forgetting that he has a considerable number of shares of stock in this company. Months later, as he is looking over his portfolio, he notices that he owns 5,000 shares of Major Pharmaceuticals, which at current market value are worth over \$200,000. He considers the implications of taking part in a trial with a company in which he has a considerable financial interest and how it might look to the Food and Drug Administration. He also considers withdrawing from the study, but his patients seem to be doing very well on this new drug. Ultimately, he decides that no action is necessary. He believes he has done nothing wrong. After all, he did not purchase the stock himself. He comes to you for advice. What do you tell him?

2.8 A predoctoral student working in the laboratory of her mentor is gathering data for a federally funded project on which the mentor serves as principal investigator. The student is, of course, going to use the data for her dissertation work. The student and mentor have a terrible falling out. The student leaves the lab and finds a new advisor. The original advisor notices that data and materials related to the student's project are missing. The student readily admits to removing the tissue sections, gels, and computer disks but asserts that they are "hers"—the product of her sweat and blood. Do these data and resources rightfully belong to the student? What data ownership issues apply to this situation?

4.7 Dave Clubman completes his Ph.D. program and leaves the laboratory immediately to attend to personal matters. An important manuscript based upon his dissertation exists only in a preliminary draft. During the next year, Henry Franks, his former advisor, attempts to contact Dave to complete the manuscript. After some months, Dr. Franks edits the manuscript, prepares the figures, and sends the updated version to Dave. Dave acknowledges receipt of the manuscript but provides no comments and does not sign a memorandum acknowledging consent to submit the manuscript. During this period, some results similar to Dave's are published by another laboratory. Dr. Franks and a postdoctoral fellow extend the work and prepare a new manuscript with Dave as first author and the postdoctoral fellow as an additional coauthor. The manuscript is sent to Dave by certified mail, but he does not provide any comments or return a signed memorandum agreeing to submission for publication. A third party hears that Dave blames Dr. Franks for the delay and is trying to "give him a hard time." Dave was supported by federal funds, and his results were included in annual progress reports to the granting agency. Can Dr. Franks submit the manuscript and publish it if it is accepted by the journal? What should be the authorship of the paper? Should any comments be included in the "Acknowledgments" section?

3.5 Robin Carvell has been a postdoctoral fellow in a large research group for 3 years. He has accepted a job at a university and is in the last month of his formal training. Dr. Eleanor Hunt, his mentor, requests to meet with him privately shortly before his departure. Dr. Hunt produces a typewritten document that summarizes Robin's contributions during his training. Moreover, the document lists biological materials that Robin will not be allowed to remove from the laboratory when he leaves. Finally, it spells out several areas not yet under investigation in Dr. Hunt's laboratory that Robin is forbidden to work on in his new position. There is a signature line at the end of the document for Robin to indicate his agreement with its language. Dr. Hunt asks Robin to take the document home, read it carefully, and return the signed copy to her in the morning. Robin leaves the office and is quite upset with this situation. He believes his mentor is acting selfishly and unethically. He comes to you seeking advice.

5.1 You have been appointed to your institution's IRB and are attending your second meeting as a voting member. One of your assignments is to serve as a secondary reviewer on a study involving mucosal cells of the large intestine. Clinical materials will be obtained from patients undergoing routine colonoscopy at the university's teaching hospital. You have found the experimental design to be well conceived and presented, and the informed consent is clear and appropriate. When the primary reviewer of this protocol presents it to the IRB panel, she expresses some concerns about the informed consent process. She conveys anecdotal information about the principal investigator and his colleagues based on her awareness of other clinical research they have done. She claims that the principal investigator has been inappropriately forceful in getting patients to sign informed consent forms and that this is well known among research circles at the institution. The primary reviewer agrees that the proposed research is meritorious and offers the following solution to her concerns about the informed consent issue. She makes a motion that the protocol be approved with the contingency that the investigator and patient be videotaped during the explanation of the informed consent document and any questions and answers that result. These videotapes are to be made available to IRB staff, who will monitor them for appropriateness. Her motion is quickly seconded by another member of the board. As secondary reviewer, you are quite surprised by these events. Discuss the ethical and legal implications of what the primary reviewer has proposed. Are the actions of the primary reviewer appropriate? Will you vote to support the motion? Why or why not?

11.6 Dr. Robert Baker is a physiologist studying ligand-gated ion channels in smooth muscle. Matt Pinfield, one of Dr. Baker's postdoctoral students, is finishing up his work in the lab. He has completed a series of experiments designed to investigate the modulation of ion channel function by angiotensin II. The results of the study are exciting and appear to shed new light on how angiotensin II affects ion channel function in vascular smooth muscle. The findings may eventually lead to treatments for hypertension and other cardiovascular diseases. Matt has submitted a manuscript describing the experiments to the prestigious journal *Molecular Physiology*, with himself as the first author and Dr. Baker as the second author. While the paper is under review, Dr. Baker receives a manuscript for ad hoc review that suggests a key finding of Matt's work is incorrect. Without specifically mentioning the manuscript he is reviewing, Dr. Baker questions Matt about his experiments. Matt insists that his results are correct. However, when Dr. Baker inspects the data books from the experiments, he finds the records incomplete and sloppy. Because of the incomplete nature of the records, he is unable to determine the cause for the discrepancy. Dr. Baker suggests that Matt perform some new experiments that would confirm his original findings, but Matt responds that he does not have time to do any more experiments since he has accepted a faculty position at another institution. Shortly after Matt leaves to begin his faculty position, he informs Dr. Baker that the paper has been accepted for publication. Dr. Baker insists that Matt withdraw the paper because he is unsure of the results, but Matt refuses. Thus, Dr. Baker insists that his name be removed from the author's byline and reference to his grant be removed from the acknowledgments. Matt agrees, and the paper is published with him as the sole author; Matt's postdoctoral fellowship grant from a philanthropic society is still mentioned in the acknowledgments. The relationship between Matt and Dr. Baker subsequently deteriorates. Meantime, Dr. Baker enlists his new postdoctoral student, Juanita Gomez, to repeat the relevant experiments, and her results clearly support that the findings in question are incorrect. Dr. Baker and Gomez prepare a manuscript reporting this and ultimately publish their results in *Molecular Physiology*. Comment on Dr. Baker's handling of this situation. What, if anything, would you have done differently. Does anything described in this scenario meet the definition of scientific misconduct? Explain.

11.4 You have submitted a manuscript to a peer-reviewed journal that contains primary nucleotide sequence data for a new gene and its upstream sequences. When you receive the paper back from the editor, it is accompanied by two favorable reviews written by expert ad hoc referees. One of the referees has some suggestions regarding the interpretation of your sequence data. Specifically, the reviewer attaches a new printout of your entire sequence data with some computer-generated structures. These represent predictions of folded mRNA derived from the transcription of your gene. The reviewer's interpretations have implications for translational genetic control of the gene. It is clear to you that the reviewer has made an electronic file of your sequence data and has subjected the data to his or her own analysis. Did the reviewer do anything wrong, in your view? Will you discuss this with the editor of the journal? If so, what inquiries, comments, or requests will you direct to the editor?

Cases Taken From:

Scientific Integrity

AN INTRODUCTORY TEXT WITH CASES

SECOND EDITION

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