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Maintaining Incentives for Bioprospecting: The Occasional Need for a Right to Lie

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MAINTAINING INCENTIVES FOR BIOPROSPECTING: THE OCCASIONAL NEED FOR A RIGHT TO LIE

By Robert Heidt[†]

ABSTRACT

Building on a model by Anthony Kronman, the author argues that biotechnological researchers searching for valuable cells should occasionally be allowed to deceive research subjects whose cells prove valuable. The wish to preserve proper incentives for these searches justifies this exception to the law's usual abhorrence of deception. The subject's ability to "hold up" the researcher once the subject learns of his cells' value combined with the law's likely refusal to force an unwilling subject to continue his cooperation with the researcher poses risks for biotechnologists that other producers of information do not face and that the right to deceive helps to alleviate. The author explains the variables that limit the proposed right to deceive, examines arguments against the proposed rule, and describes the current law.

Bioprospecting, the search for valuable cells, also presents three related issues on which the author comments. One issue is whether the subject's assignment of all his rights in his cell samples to the researcher should be enforced *ex post* when the cells prove valuable. A second issue is whether, in the absence of a clear assignment of rights to the cell samples, the subject or patient should possess a claim against the researcher to a share of revenues derived from those cell samples. A third issue is whether a patient whose samples are used for research or commercial purposes without his express consent should possess some dignitary claim against the researcher regardless of whether the samples have proven valuable. On each issue, the author supports an approach that favors the biotechnological researcher.

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I. INTRODUCTION

Consider this story:

A biotechnology¹ company (researcher) searches for individuals with rare cells that will assist it² in developing valuable drugs. The search is risky and costly for the researcher. It must collect (typically through drawing a sample of blood) and examine the cells of a great number of research subjects before discovering cells of value. In addition, the researcher must train its employees where to search, send them to remote areas to collect samples, compensate the subjects, and test the samples.

Before collecting a subject's cells, the researcher routinely informs the subject of the risks of the collection procedure and obtains the subject's consent to use the cells for research and commercial purposes.³ Although the subject's motivation is

1. Biotechnology refers to any technique to modify the products of living organisms. Examples include hybridoma and recombinant DNA technology. Hybridoma technology entails the fusion of two types of cells, an antibody-producing B lymphocyte and a certain tumor cell line (*i.e.*, a myeloma). See U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, NEW DEVELOPMENTS IN BIOTECHNOLOGY: OWNERSHIP OF HUMAN TISSUES AND CELLS - SPECIAL REPORT, OTA-BA-337, 31-58 (1987) [hereinafter OTA REPORT]. The resulting immortal hybrid cells, called hybridomas, secrete large amounts of monoclonal antibodies and lymphokines. Because of their exquisite specificity and reduced toxicity, these molecules may help in the treatment of a spectrum of diseases. Recombinant DNA technology (also known as genetic engineering) entails the insertion of genes into microorganisms (typically bacteria) that will express a desired protein which can then be purified. *Id.*

2. Throughout this article, in order to clarify the party being discussed, the researcher is referred to by the impersonal pronoun and the subject by the personal pronoun.

3. For the sake of brevity, the subject's "consent" refers both to the subject's consent that his samples be used for the research and commercial purposes of the researcher, and to the subject's assignment of all his interests in the cell lines and end products developed from his samples to the researcher.

With research governed by the guidelines of the Protection of Human Subjects issued by the Department of Health and Human Services, subjects may not be able to waive their interests in their cells because of the existing ban on the use of exculpatory language in consent agreements. See 45 C.F.R. § 46.116 (1998). Because the purpose of

largely altruistic, and the arrangement largely donative, the researcher compensates the subject modestly. For example, the researcher pays the subject's expenses of allowing the collection or performs medical tests of therapeutic value.

After much searching, the researcher finds valuable cells in a subject from an Indian tribe who lives in a remote corner of Alaska.⁴ The cell line developed from these cells helps the researcher develop a drug that assists in the treatment of one type of cancer.⁵ The value of this successful search to society should be apparent—the few cells needed for the research are infinitely more valuable in the researcher's hands than in the subject's.⁶ The discovery of the cells' value effectively increases the world's wealth.

If the researcher successfully maintains an immortal cell line, it would not need any further contact with the subject. It would proceed apace with its use of the cell line without identifying or involving the subject in any way. In particular, it would refrain from alerting the subject that his cells are valuable. Barring accident, the subject would never learn that his cells proved valuable.

that ban was to preserve a subject's right to sue should he be injured during the research, this impairment of the subject's ability to aid research by clarifying the researcher's rights seems unfortunate. See *Hearings: The Use of Human Biological Materials in the Development of Biomedical Products* 233 (October 29, 1985) (statement of Dr. Charles R. McCarthy, Director, Office for Protection From Research Risks, National Institute of Health).

4. Individuals with valuable cells are found disproportionately among members of isolated groups. See OTA REPORT, *supra* note 1, at 54-56. Examples of such groups include the Guyami tribe of northwest Panama (cells useful in retarding the progress of AIDS), the Hukahai tribe in Papua New Guinea (cells useful in combating leukemia) and a remote community in the Sudan (cells useful in avoiding heart disease). See Philip L. Bereano, *Patent Pending: The Race to Own DNA—Guaymi Tribe Was Surprised to Discover They Were Invented*, THE SEATTLE TIMES, Aug. 27, 1995, at B5; *Patent Blather: Biotechnology*, THE ECONOMIST, Nov. 25, 1995, at 87; Linda Marsa, *Whose Ideas Are They Anyway: Intellectual Property in the Information Age*, OMNI, Dec. 22, 1995, at 36.

5. Examples of successful end products of biotechnology include: EPO, which prevents anemia during kidney dialysis; Neupogen, which decreases the risk of infection during chemotherapy; and Acromegaly, which aids growth. See generally Sandra Cuttler, *The Food & Drug Administration Regulation of Genetically Engineered Human Drugs*, 1 J. PHARMACY & L. 191 (1992).

6. "[B]iological materials involved [in commercial biotechnology] are almost always replenishable and often constitute waste materials, at least from the point of view of the donor." Arthur L. Caplan, *Blood, Sweat, Tears and Profits: The Ethics of the Sale and Use of Patient Derived Materials in Biomedicine*, 33 CLINICAL RESEARCH 448, 450 (1985).

Unfortunately for the researcher, it is not able to maintain the cell line it has created, and therefore it needs to return to the subject for a further collection.⁷ However, when requested to participate on the same terms as before, the subject immediately asks whether the researcher has any reason to believe that his cells are valuable.

How should the law allow the returning researcher to respond? Must it tell the subject the truth—that his cells are valuable? Should the researcher be allowed to lie—by saying there is no more reason to believe the subject's cells are valuable than there was at the time of the first collection?

This article argues for the researcher's right to lie in this situation. Of the reasons supporting the right to lie, the most powerful stem from the subject's ability to hold up the researcher once he suspects his cells are valuable and from the resulting destruction of the researcher's incentive to search.

Not surprisingly, the law, both common and statutory, virtually never tolerates lying. To induce another to promise or to perform based on a deliberate lie about a material matter is to commit fraud.⁸ Agreements based on fraud are void,⁹ and the fraud may trigger liability in tort,¹⁰ as well as in contract.¹¹ Considerations from moral to economic call for this hostility to lying, a hostility that appears in many contexts and powers an elaborate variety of legal rules.¹² Without challenging any of these rules,

7. The probability of maintaining a cell line from a given sample is low. Even with strict adherence to nutrient and temperature requirements, established cell lines can not always be maintained. Contamination and damage during storage is the most common culprit. Interview with Dr. Derrick Stempel of Massachusetts General Hospital (Oct. 3, 1996).

One simplifying assumption throughout this article is that the researcher, perhaps because of its failure to maintain the cell line, is unable to obtain any patent.

8. See *Ahern v. Scholz*, 85 F.3d 774, 792-94 (1st Cir. 1996); see also *Haberman v. Greenspan*, 368 N.Y.S.2d 717, 720 (1975); RESTATEMENT (SECOND) OF CONTRACTS § 162 (1979).

9. See *Procter & Gamble Co. v. Bankers Trust Company*, 925 F. Supp. 1270, 1289 (D. Ohio 1996).

10. See RESTATEMENT (SECOND) OF TORTS § 525 (1974); see also WILLIAM PROSSER, *LAW OF TORTS* §§ 105-06 (6th ed. 1994).

11. See *supra* note 8.

12. See, e.g., *Shannon v. Russell*, 203 B.R. 303, 311-12 (Bankr. S.D. Cal 1996) (re-iterating the doctrines of fraud and misrepresentation in a non-dischargeability action); *Kahn v. Flood*, 550 F.2d 784 (2d Cir. 1977) (perjury invalidates evidence obtained with a search warrant); IND. CODE § 6-3-11 (1997) (criminal liability for submitting false state-

and without suggesting that the researcher should refrain from seeking alternative arrangements that would avoid the need to lie, this article contends that in carefully limited situations, of which the returning researcher's is one, the law's usual hostility toward lying is inefficient and misplaced.

II. THE HOLD-UP PROBLEMS

The subject's direct question about whether the researcher has reason to believe his cells are valuable puts the researcher in a dilemma that impacts the biotechnology industry and all future beneficiaries of this research.¹³ If the law requires an answer that leads the subject to suspect the truth, the subject, however altruistic, will be tempted to act against the researcher's interests. Conceivably, the subject could arrange to have himself tested,¹⁴ and having learned the value of his cells, could approach rival biotechnology companies, satisfy them as to the value of his cells, and allow collection of his cells only by the highest bidder. In effect, the subject can hold up the researcher by demanding, "Pay me the full value of my cells or I won't allow you another collection." In this scenario, the subject pockets all rents from the scarcity of his cells, the highest bidding researcher earns the normal competitive profit on the development of the

ments on tax returns); NEW YORK PENAL LAW § 210.00 (McKinney 1997) (felony to commit perjury during testimony before a court).

One reason fraud is undesirable is because it increases the amount of misinformation in the market and therefore reduces the market's ability to allocate resources efficiently. See Michael R. Darby & Edi Karni, *Free Competition and the Optimal Amount of Fraud*, 16 J.L. & ECON. 67 (1973).

13. I do not claim that the dilemma faced by the returning researcher in the story presented rises to the level of a pressing social problem. The stylized story primarily provides a convenient context for applying economic principles. Nevertheless, the Office of Technology has found that uncertainty about how courts will resolve various claims by subjects against researchers who have profited from the subject's cells presents the single greatest obstacle to continuing developments in biotechnology. See OTA REPORT, *supra* note 1, at 58. Moreover, previous discussion of the subject's claims has largely ignored the need to preserve the researcher's incentive to search. See, e.g., Roy Hardiman, Comment, *Toward the Right of Commerciality: Recognizing Property Rights in the Commercial Value of Human Tissue*, 34 UCLA L. REV. 207 (1986); Richard Delgado & Helen Leskovic, *Informed Consent in Human Experimentation: Bridging the Gap Between Ethical Thought and Current Practice*, 34 UCLA L. REV. 67 (1986).

14. This discussion assumes the suspicious subject can find some way to assess the value of his samples while still retaining his control over the use of the samples for research and commercial purposes. For this assumption to be true, some laboratory, testing service, or research institution must be able to assess the cells' value in return for compensation and must also be willing to refrain from using the cells itself.

end products, and the researcher that discovered the valuable cells is cut out completely. Its risky and costly search goes wholly unrewarded.¹⁵

The subject's suspicion of his cells' value allows a second holdup as well. Even after the subject provides the returning researcher with a further collection (indeed even when no further collection is necessary), the suspicious source can demand, "Pay me or I will alert your rivals to the value of my cells and deal with them."¹⁶

The possibility of these holdups presents added risks to a researcher contemplating whether to undertake a search. By undermining the incentive to search, the subject's suspicion drives a wedge between the private and social costs of searching.¹⁷ The amount of private investment in searching diverges more widely from its social product. At considerable loss to society, the amount of searching falls below the optimum.

The hold-up problem can be stated in various ways. One can state the issue as whether to recognize in the researcher a property right in the information it has discovered, namely, that valuable cells exist in this individual. So viewed, the holdup presents the information externality problem that is part of the standard argument for both patents and property rights.¹⁸

15. The subject's hold-up problem would not destroy the incentive to search if that search gave the researcher a decisive head start in developing and marketing the end products over the rival companies with which the knowledgeable subject might eventually decide to deal. Just as the need for patent protection is most acute when research is difficult but imitation easy, the need for the right to lie is most acute when the search for valuable cells is difficult but the development of the end products from those cells relatively easy.

16. The subject's threat must be taken seriously even when the researcher has a patent on the cell line derived from the subject's cells. This is because of the severe practical problems of enforcing the patent once an infringer has obtained access to the cell line. See Alan J. Lemin, *Patenting Microorganisms: Threats to Openness*, in *OWNING SCIENTIFIC AND TECHNICAL INFORMATION 196* (Vivian Weil & John Snapper eds., 1989).

17. Of course, society would not want the researcher to search when the expected costs of searching (primarily the costs to the researcher and to the subjects) exceed the expected social value of the search—the latter being the social value of a successful search discounted by the chance the search will not succeed. But as long as the costs of searching are internalized on the searcher, society can rely on the searcher's self-interest to assure that searches which are not cost-justified are not undertaken. The need for the searcher to compensate the subject for his voluntary participation, or to induce that voluntary participation some other way, internalizes the subject's costs of allowing the search unto the searcher. In short, the danger here is not too many searches but too few.

18. Like patents the proposed right to lie subjects the key information, here that this subject's cells are valuable, to the researcher's exclusive control. Assuming the demand curve for the information is negatively sloped, exclusive control imposes some allocative or dead weight loss. Here, for instance, the information once discovered would be most

Alternatively, one can say the hold-up problem arises because the information produced by the researcher—that these valuable cells exist in this individual—is not self-appropriating. Just as a firm that has prepared a competitive bid can lose the value of its preparatory effort if the bid is communicated to a rival who bids one dollar less, the researcher can lose the value of its search once the subject suspects the truth.

One can also state the problem by characterizing the subject whose suspicions are aroused as a free rider on the search efforts of the researcher. The subject's participation in the search was compensated adequately, in the subject's own eyes, by the nominal compensation he received. In contrast, the researcher relies for its compensation on the return from finding valuable cells. By asking his question, the subject can, in effect, exploit the law's condemnation of lying to appropriate that return for himself.¹⁹ Asking, in combination with the law's condemnation of lying, becomes the mechanism for this appropriation. Yet asking, although potentially ruinous to the researcher,²⁰ is virtually cost-free to the subject. While the windfall to the subject is not a concern, the harm to society from the suppression of the researcher's search is.

efficiently used if it was distributed to all biotechnology companies, the marginal benefits of distribution clearly exceeding the marginal costs. The dead weight loss primarily consists of the foregone gain from more widespread use of this information. See Frank Easterbrook, *Insider Trading, Secret Agents, Evidentiary Privilege and the Production of Information*, 1981 SUP. CT. REV. 309, 313. The case for patents and property rights hinges on the assumption that the gains to society from improved incentives exceed this short-term allocative loss which all quasi-rents create. But see Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265, 275-80 (1977) (calling for patent protection whenever the information sought is valuable and costly to acquire). Here the social gain from more widespread use of the information seems modest in part because the searching researcher's exclusive possession of the information gives it a powerful incentive to exploit that information vigorously by developing and marketing the end product itself or by transferring the information to some company who can.

19. The National Organ Transfer Act [hereinafter NOTA], 42 U.S.C. § 274(e) (1988), and its state complements, which condemn the sale of body parts, might seem to condemn the subject who attempted the holdup as well. But even if the transaction for the right to collect cells was deemed a sale of the subject's cells, NOTA would not apply. The Act expressly exempts the sale of replenishable tissues such as blood or sperm. In addition, NOTA may only forbid sales for transplantation, rather than research, purposes.

20. If the appropriation fails because the researcher denies reason to believe the cells valuable, the subject by asking will at least set up the researcher for a later suit should the cells prove valuable. Given that asking is costless to the subject, that should be reason enough to ask.

However stated, the problem is familiar. Kronman's famous article pointed out that the law could incent²¹ the production of socially valuable information by allowing the producer of the information to trade on it without disclosing it to the other trading parties.²² When producing socially valuable information is costly, society's wish to incent its production may trump society's usual wish to avoid mistakes by the contracting parties. The wish to avoid mistakes calls for compelling disclosure from the party who can avoid the mistake most cheaply. Invariably, the cheaper mistake-avoider is the party—here the researcher—which already possesses information about which it knows the other party is mistaken—here the true value of the subject's cells—and which can avoid the other party's mistake merely by disclosure. Tolerating nondisclosure by the cheaper mistake-avoider thus becomes the law's mechanism for establishing its property right in the information it produced.

The wish to incent the production of information explains those relatively rare occasions where contracts are enforced despite one party's deliberate failure to disclose material information about which it knows the other party is mistaken. Kronman's prime example was *Laidlaw v. Organ*.²³ There a buyer learned that the British blockade of New Orleans would soon be lifted, and thus that the price of tobacco would soon rise. Using this knowledge, the buyer bought tobacco at the relatively cheap price prevailing before this news became widespread.²⁴ When the seller refused to deliver at that low price, the buyer sued and prevailed.²⁵ A still more familiar example where courts do not require disclosure is suggested

21. The verb, "to incent," while not formally established grammar, enjoys an increasingly accepted status in various industries. The author uses it here because he feels that it most accurately captures the concept he intends to convey. *Eds.*

22. See Anthony T. Kronman, *Mistake, Disclosure and the Law of Contracts*, 7 J. LEGAL STUD. 1 (1978); see also Victor Brudney, *Insiders, Outsiders and Informational Advantages under the Federal Securities Laws*, 93 HARV. L. REV. 322, 339-43, 371-76 (1979).

23. 15 U.S. (2 Wheat.) 178 (1817).

24. *Id.* at 186.

25. *Id.* Kronman was offering an explanation for why courts did not require disclosure in some mistake cases. See Kronman, *supra* note 22. However the modern trend is to require disclosure in all such cases. See RESTATEMENT (SECOND) OF CONTRACTS § 153 (1979).

Kronman's model better explains the rationale courts should be using when they refuse to require disclosure than the rationale courts actually use in such cases. Other models, such as the contractarian model suggested by Professor Scheppele, better explain the rationales courts actually use. See KIM L. SCHEPPELE, *LEGAL SECRETS* 124 (1988).

by *Leitch Gold Mines, Ltd. v. Texas Gulf Sulfur*.²⁶ There a company searching for underground deposits of oil (oilman) discovers oil under the field of a farmer with whom it has never dealt. Naturally, the oilman seeks to buy the right to extract the oil without the farmer suspecting the value of those rights. By consensus, at least among legal scholars,²⁷ the oilman need not disclose to the farmer the information it has discovered. That is, the law will enforce the contract by which the uninformed farmer transfers the rights to extract to the oilman. Upon discovering his mistake, the farmer might attempt to void the contract on the ground that the oilman did not disclose material information of which it knew the farmer was ignorant, but his attempt will fail.²⁸ Nor will the law void the contract on the ground that the undisclosed information made the value of the right to extract far greater than the value suggested by the contract price.²⁹ Here again, allowing nondisclosure incents the search efforts of the oilman by recognizing its property right in the key information its search uncovered, namely, that oil lay under the farmer's field. Of course, our researcher resembles the oilman and our subject resembles the farmer. But while this example may provide a powerful precedent for allowing non-disclosure, no one suggests the law would allow the oilman to lie.³⁰

Or rather almost no one. Saul Levmore, while conceding that courts have not yet tolerated lying, points out that the right not to disclose will lose its value without an accompanying right to lie.³¹ Mere non-disclosure protects the incentive to search only until the other party learns to ask the key question. In the oilman/farmer case, the key question from the farmer is whether the oilman has any reason to believe oil lies under his field; in our case, the key question from the subject is whether the researcher has any reason to believe the subject's cells are valuable. In the face of the key question, the nondisclosure option becomes useless. At that point, any answer that seems to equivocate or evade—including, in particular, an an-

26. 1 O.R. 469, 492-93 (1969); see also *Holly Hill Lumber Co. v. McCoy*, 23 S.E.2d 372 (S.C. 1942); *Simpson Timber Company v. Palmberg Construction Co.*, 377 F.2d 380 (9th Cir. 1967).

27. See, e.g., CHARLES FRIED, *CONTRACT AS PROMISE* 82-84 (1981).

28. See *Laidlaw*, 15 U.S. (2 Wheat.) at 178; see also *In re Verifone Securities Litigation*, 784 F. Supp. 1471 (N.D. Cal. 1992).

29. See *Files v. Brown*, 124 F. 133 (8th Cir. 1903).

30. In *Laidlaw*, Chief Justice Marshall emphasized in dictum that while nondisclosure was permitted, more active measures to mislead, such as a lie, would not be. *Laidlaw*, 15 U.S. at 195. Mere silence in the face of the ignorant party's question may even have been fraudulent.

31. See Saul Levmore, *Securities and Secrets: Insider Trading and the Law of Contracts*, 68 VA. L. REV. 117, 139-41 (1982).

swer from the oilman/researcher that the law does not require it to answer—risks signaling the truth.³² And as we have seen, signaling the truth destroys the incentive to search.

To be sure, an outright, immediate lie may likewise fail to protect the incentive to search should the suspicions of the farmer/subject be otherwise aroused. The farmer may suspect the truth just from the oilman's offer to buy the mineral rights; the subject may suspect the truth just from the researcher's return. Any behavior from the oilman/researcher which the farmer/subject interprets as unexpectedly generous may signal the truth. In Dashiell Hammet's *Maltese Falcon*, Kasper Gutman, the fat man, nullifies his discovery of the falcon by negotiating too softly for its purchase. His uncharacteristically generous offer signals the antique seller, General Kemidov, that his apparently undistinguished black statuette of a falcon possesses greater value than he thinks, prompting him to reexamine it, discover its value, and replace it with a statuette truly undistinguished. The fact that the oilman/researcher lacks any guaranteed method of avoiding the holdup only underscores the importance of allowing them some latitude to minimize the hold-up problem provided their methods stop short of the coercive or invasive.³³

The researcher's lie is best characterized as a low-cost self-help method by which the researcher can internalize the benefits from its search. When a search yields new information, the searcher's ability to

32. Granted, a refusal to answer may not arouse the subject's suspicions as much if the researcher has clearly warned the subject from the start that it will never provide feedback about the value of a subject's cells. See *infra* notes 57-58 and accompanying text.

33. Courts have been willing to stretch the law to avoid severe hold-up problems in other contexts. See generally RICHARD A. EPSTEIN, *SIMPLE RULES IN A COMPLEX WORLD* 122 (1995) (denying injunction to resident whose property is polluted by manufacturer).

The power of eminent domain illustrates that the wish to avoid hold-up problems sometimes justifies coercion. Indeed some may feel allowing the researcher to use coercion to obtain a further collection no more odious than allowing it to lie. But while both coercion and lying trigger moral objections, lying seems a less serious offense. The lie still preserves the subject's control over whether he will allow a further collection in return for the nominal compensation offered. The lie merely removes the possibility of significant financial gain as a factor in the subject's decision.

In this context giving the researcher the right to force the subject to provide a further collection (*i.e.*, a private right of eminent domain) will not avoid hold-up problems as successfully a right to lie. For if the exercise of the right to eminent domain alerts the subject to the value of his cells, he will be able to hold up the researcher for payment in return for promising to refrain from providing collections to the researcher's rivals. See *infra* notes 57-58 and accompanying text.

keep the information secret often functions in this manner.³⁴ Helping an actor use self-help methods like secrecy frequently internalizes benefits better (at lower social cost) than granting the actor more formal legal protection, such as a patent, property, or contract right to the information in question.³⁵ The social cost of granting more formal rights, especially the cost of establishing, identifying, enforcing, and transferring the rights can easily exceed the negative aspects of legal rules that help an actor keep his information secret.

A straightforward comparison suggests itself. Rules that help an actor keep his information secret should be preferred to more formal legal protection that equally incents the actor's efforts when the negative aspects of the former are less than the cost of the latter. Because there is rarely a need to choose between the former and the latter, the comparison in no way calls for restricting formal legal protection. It does suggest, however, that the value of legal rules designed to assist self-help efforts—here maintaining the secrecy of the information discovered—deserves more appreciation.

Often self-help measures designed to internalize the benefits of an actor's efforts elicit judicial hostility until their function is understood. Antitrust law, for example, advanced enormously when economists described how practices thought to be exclusionary, such as tying and exclusive dealing arrangements, were better conceived as self-help measures to keep free riders from appropriating benefits generated by a firm's efforts.³⁶ Other self-help methods that incent socially valuable creative efforts remain condemned by judicial opinions that fail to appreciate the method's tendency to economize on the costs of more formal legal protection.³⁷

34. The costs of creating and administering property or contract rights in information often need to be incurred only because the information whose production society wishes to incent could not be kept secret in fact. One who develops a trade secret, say, has no need for any legal protection if he can actually keep what he has developed a secret. The law of trade secrets comes into play only when actual secrecy can no longer be maintained. Thus, laws that help an actor keep his information secret in the first place may economize on the costs of laws that are needed only after secrecy is lost. Here, keeping the subject free from any suspicion that his cells have proven valuable avoids all the costs of granting property rights or contractual rights in the key information.

35. Formal property rights in information can be granted through tort doctrines such as unfair competition as well as through trade secret and copyright law.

36. See, e.g., RICHARD POSNER, *ANTITRUST LAW: AN ECONOMIC PERSPECTIVE* (1976).

37. See, e.g., *Fashion Originators Guild of America v. Federal Trade Commission*, 312 U.S. 457 (1941) (self-help effort to avoid style piracy condemned as violation of the Sherman Act). In contrast, the courts of England are more inclined to view these self-help efforts favorably. See Robert Heidt, *Populist & Economic v. Feudal: Approaches*

Granted, in other contexts the cost of keeping new information secret in order to preserve the incentive to search can itself be high. For example, when the information concerns industrial or scientific know-how and when the many employees needed to exploit that know-how must learn the key information as a byproduct of the production process, the security measures needed to keep the information from rivals can entail considerable costs. In these instances, more formal legal protection may economize on the costs of these security measures. But when the information consists of the identity of the subject whose cells helped establish a useful cell line, the costs of maintaining secrecy are modest. Employees working with the cell line have little or no reason to learn the subject's identity. The know-how acquired about what the cells can do is easily shared without the need to identify the subject. Even the employees involved in testing the cells and discovering their value need not know enough about the subject to be able to identify him.³⁸

Given these features of the industry, this article suggests that helping the researcher keep the information secret may incent its search more effectively and cheaply than would more formal legal protection. Part IV builds on this suggestion by showing that one type of more formal legal protection—judicial recognition of the researcher's contract rights—proves inferior to judicial tolerance of the researcher's lie. But first, the article addresses the claim that the researcher can easily finesse the hold-up problems, thus rendering the researcher's lie unnecessary and, for that reason, unjustifiable.

III. INTRACTABILITY OF THE HOLD-UP PROBLEMS

One might think the researcher's ability to evade or refuse to answer the subject's question will avoid the hold-up problems. But a subject sufficiently interested in his ticket in the biotechnological lottery may not be so easily put off. To appreciate the intractability of the hold-up problems, imagine the possible discussion between the researcher's chief executive officer (CEO) and the employee responsible for collecting the cells (Collector) after they have learned that the subject's cells are valuable but that a further collection is needed:

CEO: You know we need to go back to Subject.

Collector: That's what I heard.

to *Industry Self-Regulation in the United States and England*, 34 MCGILL L.J. 39, 50 (1989).

38. See OTA REPORT, *supra* note 1, at 52.

CEO: What was he like? Was he altruistic about participating?

Collector: Very much so. Like most in the tribe, he was glad for the chance to help medical research.

CEO: So you don't see any problems in getting him to participate again?

Collector: Oh, I didn't say that. Subject definitely had his eye out for his main chance. He had heard about the *Moore* case somewhere.³⁹ He knew that very occasionally a person's cells or genes have rare properties that can help in making drugs that are worth millions. He asked if we had any reason to suspect his cells might be especially valuable. Of course, I told him all that we knew then, namely, the chance that his cells were valuable was close to zero. But I barely overcame his skepticism that time. So we can count on him asking the big question again.

CEO: Will he make anything of our coming back to him?

Collector: Sure he will. He's a savvy guy. Our coming back will set off every alarm bell. And I don't think he'll participate until he satisfied his chances are no better than they were before. We'll be lucky to satisfy him with a flat out denial that we have any more reason than before to think his cells are valuable. Though my guess is a flat out lie would suffice.

CEO: There must be a better way than lying. How about ignoring his question and offering him some extra payment?

Collector: If he suspects he's carrying a treasure trove in his veins, a modest extra payment won't persuade him. Once his suspicions are aroused, he'll put us off and think about how to proceed. You can be sure of that. And it won't take him long to

39. *Moore v. Regents of the University of California*, 793 P.2d 479 (Cal. 1990), *cert. denied*, 499 U.S. 936 (1991). This famous case was brought by a cancer patient against his doctor and his doctor's associates and employer. *See id.* at 480. In his treatment of the plaintiff over a course of years, the defendant doctor never alerted the plaintiff to the doctor's research interest in the plaintiff's tissues nor did he obtain the plaintiff's consent to any research or commercial use of those tissues. *See id.* at 481. The plaintiff was allowed to believe the tissues were taken solely for therapeutic purposes whereas in fact some tissues were taken solely for research purposes. *See id.* In a dramatic and widely publicized opinion the California Court of Appeals found that the defendant's research constituted the tort of conversion, entitling plaintiff to a share of the revenues from the end products of that research. *See Moore v. Board of Regents of University of California*, 249 Cal. Rptr. 494, 504 (Cal. Ct. App. 1988), *rev'd*, 793 P.2d 479 (Cal. 1990), *cert. denied*, 499 U.S. 936 (1991). In reversing, the California Supreme Court denied plaintiff's claim for a share of the revenues from the end products. *See Moore*, 793 P.2d at 479. But the court held that the doctor, as part of his obligation under the informed consent doctrine, needed to disclose his research interest in any treatment he was recommending. *Id.* at 484-85.

realize he should arrange to have himself tested and to deal with our rivals.

CEO: Why don't we tell him we're only coming back because we mishandled the first collection? That's literally true. After all, it's only our "mishandling" of the cell line that is taking us back to him for another collection.

Collector: He'll still suspect our coming back to him means we've found something special about his cells. And so before allowing the collection, he'll ask whether we have reason to think his cells are valuable. We need to be able to reply to that direct question in a way that persuades him to allow the collection without arousing his suspicions.

CEO: Let's use some new hire to approach him then. Someone who when asked the key question can honestly say "Sorry, I don't know anything about whether your cells have commercial value."

Collector: It's a thought. But my guess is that the moment he knows the request comes from us, he'll insist on talking to someone familiar with our testing of his first collection. He'll probably call you or me and put the question to us. And if we delay talking to him, he'll just get more suspicious and wait us out.

CEO: So if our approaching him arouses his suspicions, how about hiring an independent lab to approach him? They can ask him if he'll allow them to draw some of his blood to be used in medical research. That's certainly true, medical research is what we're about. They could even say the researchers who hired them got his name from a list of people previously willing to give blood samples to help research. That's also true.

Then when he asks the key question, the collector can honestly say he doesn't know what the research entails and certainly doesn't know anything about whether Subject's cells are commercially valuable. Sure, Subject will still be suspicious. But look at the hassle facing him if he tries to follow up his suspicion: he'd need to ask this uninformed collector what company wants the samples, and, of course, that collector can honestly say he doesn't know. He'd then need to contact the collector's employer. But the collector's employer could delay him and, if necessary, eventually say he isn't at liberty to disclose who hired him. Or if he called us to ask if we're behind this latest request, we could delay him or transfer his call to someone working here who knows nothing.

Given his wish to help, and anticipating the hassle he'd face in following up his suspicion, don't you think he'd let us take another sample?

Collector: He could, but I doubt it. He was insistent on getting an answer to his key question the first time. I don't think he would have gone ahead had I said what you want your independent collector to say, namely that he can't answer his question. And no matter how unrelated to our first collection we make your independent's request appear, Subject is sure to wonder why he's being approached again. My guess is he'll insist that this collector put him in touch with someone who knows what was learned about his earlier collection. And he won't go ahead until someone answers his question.

And there's another downside to any plan aimed at evading his key question—the evasions might leave him so suspicious that he won't then believe an outright lie. Right now, my instincts tell me that he would believe a lie. But with any evasions, however well-handled, he's less likely to do so.

CEO: So that's what you suggest—lying right from the start?

Collector: Any other suggestions?

CEO: How about telling him everything? And then offer him a share of our eventual revenues?

Collector: Why should he agree to that? I said he likes to help medical research. I didn't say he was selfless. The moment he knows the truth he has no more reason to deal with us than with any of our rivals. He need only alert our rivals to the value of his cells and wait for everyone in the industry to bid for permission to collect his cells. And the permission will predictably go to the highest bidder, not to the company that sampled his cells and discovered their value originally.

CEO: That scenario leaves us with nothing, absolutely nothing, for our *successful* search. Our rivals will keep bidding until the winning bid allows a competitive return only on the development of the cell line. None of our expense to discover the cell line will ever be recovered. Unless we can lie, Subject can pick our pocket just by asking his question.

Avoiding the hold-up problem is not the only reason for allowing the returning researcher to lie. If such researchers are unable to lie, some may opt to obtain samples from the subject through methods that are even more unseemly and that deny the subject any choice about whether to participate. They may, for instance, surreptitiously seek out samples of the sub-

ject's hair, nails, or expelled bodily fluids.⁴⁰ The grave robberies of 19th century England illustrate the methods to which committed researchers have resorted when unfavorable laws impede their work.⁴¹

By keeping the identity of the source of the cell lines the researcher has developed secret, the right to lie will also help the researcher enforce any patents on those cell lines that are eventually obtained. For an aspiring infringer could not then obtain the patented cell line from the subject. Preventing aspiring infringers from gaining access to a cell line becomes especially important because of the lack of any effective remedy against infringement once the infringer obtains access. A.J. Lemin has explained that once an infringer splices the useful DNA from a prior inventor's cell line into the infringer's genomic construction and finds that the new cells produce large quantities of valuable proteins, enforcement of the patent on the first inventor's cell line becomes problematic:

These proteins would probably have no direct structural relationship to the pirated DNA. The fact that they were obtained through an infringement of the first inventor's patent would be ascertained only through a complete sequencing of the DNA in the second inventor's newly engineered organism. Since this organism would not be available to the general public, there would be no immediately way of discovering the infringement. Consequently there is no practical way to protect the inventor of the original cell line from accidental or otherwise covert infringement of his patent rights.⁴²

This is another example of how toleration for self-help measures advances the goals of more formal legal protection.

IV. THE ABSENCE OF CONTRACTUAL SOLUTIONS

One might think the researcher's dilemma in obtaining a further collection could be solved by careful drafting of the original agreement between the researcher and the subject.⁴³ The agreement could provide that

40. See generally Valerio Barrad, *Genetic Information and Property Theory*, 87 N.W.U. L. REV. 1037, 1083 (1993).

41. See JACQUES BARZUN, BURKE & HARE: THE RESURRECTION MEN (1974).

42. Alan J. Lemin, *Patenting Microorganisms: Threats to Openness*, in OWNING SCIENTIFIC AND TECHNICAL INFORMATION 196 (Vivian Weil & John Snapper eds., 1989).

43. Perhaps the surest way for the researcher to avoid the holdup would be to collect enough cells during the initial collection so that extra cells could be stored against the possibility that the cell line could not be maintained. The researcher could then recreate the cell line from the stored supply if necessary, and the subject need never be contacted.

the subject agrees to allow not just the initial collection but a number of further collections as well.⁴⁴ With the subject locked in by such a provision, the returning researcher could compel the subject to allow further collections even after the subject knows the value of his cells. Its ability to obtain further cells assured, the researcher could then answer the subject's key question with the happy truth.⁴⁵ And if the knowledgeable subject resists the request for a further collection, the researcher could enlist the court's help to enforce the contract provision.

But this approach is likely to fail. No modern court is likely to require an individual to allow another private party to collect bodily fluids from him against his present will no matter how clearly the individual agreed to allow precisely that. One reason is that the policies informing the common law rule against compelling specific performance of personal service contracts would apply.⁴⁶ Enforcing a decree that compels the subject to submit further collections by the researcher would require the cooperation of the subject. And the court would need to be prepared to invoke the severe sanctions available for contempt.⁴⁷

The researcher's inability to enforce such a provision suggests why the case for allowing lying in this context is stronger than in the oilman/farmer case. There, the oilman can avoid the hold-up problem by purchasing the right to search and extract at an early stage before it knows of the presence of the oil. At that point, of course, it has no need to lie. And the law's

Although certain types of cells are more fragile than others, most samples can be frozen and stored. And the survival rate when they are thawed, and recovery attempted, can approach 95%. See OTA REPORT, *supra* note 1, at 53.

44. Of course, a researcher who insists that its subjects promise to allow not just the immediate collection but future ones as well will predictably persuade fewer subjects to participate.

45. Telling the subject the truth will still enable the subject to exercise the second holdup, namely, "Pay me or I'll tell your rivals what you've learned and allow collections by them." Even if the original agreement contained an enforceable provision barring the subject from allowing collections by others, the subject's threat to allow such collections *sub rosa* would certainly be credible. Whether explicit or implicit, those threats create a risk for the researcher that it can never eliminate entirely once the subject knows the truth. The wish to avoid this second holdup gives the researcher ample reason to lie despite its contractual protection. For further discussion on the danger presented by the second holdup, see *infra* text accompanying notes 50-52.

46. See E. ALLEN FARNSWORTH, CONTRACTS § 12.7, at 836 (2d. ed. 1990).

47. Even if courts do everything within their power to force the subject to allow a further collection, a practical researcher must consider the possibility of the knowledgeable subject flouting the courts' orders by fleeing to another jurisdiction or going into hiding. The knowledgeable subject may hope the researcher stands to gain enough from his cells that it will quickly offer financial payment rather than endure delays or risks or incur enforcement costs.

willingness to enforce the agreement reached then makes all the difference. Once the oilman discovers oil, the court will enforce its right to extract the oil despite the objections of the farmer.⁴⁸ Indeed those searching for oil sometimes operate in this fashion, buying the right to search and extract at an early stage before they obtain positive information about the chance of finding oil which, if known, would significantly increase the price for those rights.⁴⁹ Technological restraints, in particular their inability to search under land without entering the land, may explain this practice of acquiring mineral rights early. But the oilman's ability to enforce an early agreement against a farmer who later learns information increasing the value of the right to extract may contribute to this practice as well.

Even if a court was willing to force the subject to allow a further collection, the knowledgeable subject retains the power to exercise the second holdup, "Pay me or I'll alert your rivals to my cells' value and deal with them."⁵⁰ Because competition from those rivals on the cell line or the end products would reduce the researcher's gain, the subject knows the researcher will be willing to pay to avoid that competition. Accordingly, the astute researcher would also include a provision in the original agreement whereby the subject agreed not to deal with the researcher's rivals.

In one sense this second holdup presents a greater threat to bio-prospecting than does the first. For the knowledgeable subject's ability to reduce the researcher's gain from its search by allowing collections by the researcher's rivals exists *even when no second collection is needed*. The ability to exercise the second holdup exists from the moment any subject learns the value of his cells. From that moment, the researcher can do little to prevent the subject and its rivals from dealing with each other in a manner that reduces the value of its discovery. Thus, the second holdup threatens a researcher even when it has maintained an immortal cell line and needs no further cooperation from the subject. The naive may think that such a researcher possessing both the cell line and a contract provision entitling it to the fruits of the cell line needs no further legal assistance and can justly be compelled to inform its subject of the happy news if only to

48. See *Leitch Gold Mines, Ltd. v. Texas Gulf Sulfur*, 1 O.R. 469 (1969).

49. See J.P. ALLENBRIGHT, *THE TEN DOLLAR WILDCAT* 20-24 (1979).

50. The assumption here is that once the knowledgeable subject allows collection by the researcher's rivals and tells those rivals what he knows about the value and characteristics of his cells, the rivals will not face significantly greater costs in exploiting the cells than would the original researcher. Without this assumption, the original researcher may not be hurt by the subject dealing with its rivals. If—to take the extreme case—all rents arise not from the cells' unique characteristics but from the researcher's unique knowledge about how to exploit the cells, giving the cells to rivals would not enable them to compete.

let the subject enjoy the satisfaction of knowing he provided valuable cells. But the knowledgeable subject need never content himself with so little. By exercising this second holdup, he can seriously threaten the researcher's gain. The wish to avoid the second holdup argues powerfully for never requiring a researcher to notify a subject that his cells have value.

To be sure, the subject's gain from this second holdup should fall short of the maximum rents from his cells as long as the original researcher, pursuant to the court's intervention or otherwise, can also obtain possession of the subject's cells. This is because the amount the researcher needs to offer the subject for his promise not to deal with its rivals should be limited to the maximum amount a rival will offer the subject in return for dealing with it. That amount is sure to fall short of the maximum rents from the cells given that the original researcher also possesses the cells and can also develop and market the end products. The most a rival would offer would be the expected duopoly gain, and a rival will only offer that amount if it can somehow be satisfied that the subject will never deal with additional rivals in the future.⁵¹

This contract provision barring the subject from allowing collections by the researcher's rivals will remain important to the researcher even if courts refuse to enforce the provision that would allow the researcher to take further samples from the subject. If the knowledgeable subject is barred from dealing with the researcher's rivals, the returning researcher should more easily and cheaply persuade the subject to allow it a second collection. The knowledgeable subject can still hold up the researcher for much more payment in return for allowing the second collection than the ignorant subject would receive. But the amount of the holdup should be less than if the knowledgeable subject was free to deal with the researcher's rivals. The problem now resembles that of bilateral monopoly for neither party has a good alternative to dealing with the other.⁵² The knowledgeable subject, not being able to turn to the researcher's rivals (at least not lawfully), can only refuse all further collections. And the subject will not find that alternative desirable. After all, allowing the collection

51. See JACK HIRSHLEIFER, *PRICE THEORY AND APPLICATION* 296 (3d ed. 1984).

52. A bilateral monopoly is an example of strategic behavior, the particular focus of game theory. See ERIK RASMUSEN, *GAMES AND INFORMATION: AN INTRODUCTION TO GAME THEORY* (1989). Bilateral monopolies also present the danger that the resource in question—here the cells—will not be transferred to the higher valued use because the parties in attempting to establish their reputation for hard bargaining will never reach agreement. The social loss when, for this reason, no researcher uses the subject's cells is acute.

costs the subject virtually nothing, merely a harmless, simple, and momentary drawing of blood. The offer the subject receives from the researcher will easily exceed those trivial costs. Likewise, the researcher lacks any good alternative to dealing with the subject, not being able to exploit its successful search without further cells.

One might think that the ideal situation for the knowledgeable subject would arise when courts refuse to enforce both the contract provision requiring the subject to allow further collections and the provision barring the subject from allowing collections by others. In fact, however, the subject would prefer the situation where the second provision ("I agree not to deal with rivals") was enforceable but the researcher neglected to include it in the consent agreement. Only that situation will yield the subject the maximum rents from his cells. The reason is that when the second provision is unenforceable, the amount bid by the rival companies will disappoint the subject because the bidders will fear that the subject will allow collections by others later despite his promise to the contrary and despite whatever consideration is paid for that promise. That is, the failure to enforce the second provision prevents the subject from giving a binding promise to allow collection only by the winning bidder. In contrast, with the second provision legally enforceable (putting aside the practical problems of enforcement), the amount bid for the right to collect the subject's cells should increase to the maximum rent. Because this ideal situation for the subject only arises when the researcher foolishly fails to include the second provision in the agreement, the situation is irrelevant to a consideration of whether the astute researcher can structure some contract solution to the hold-up problem. For that reason, it merits no further discussion.

In review, there are a multitude of possible outcomes facing the astute researcher. If the returning researcher must inform the subject of the value of his cells, the researcher can only avoid a holdup if courts enforce contract provisions that (1) assure the researcher future access to the subject's cells on the original terms, and (2) bar the subject from allowing collections by others. If either provision is unenforceable, some hold-up problem exists. If the second provision is enforceable but the first is not, the knowledgeable subject can demand payment in return for allowing the researcher the further collections it is seeking.⁵³ If the first provision is en-

53. A feature of the science involved here may aid our researcher. For when helpful cells are found in one individual, they are also typically found in at least some of the individual's relatives. This plurality of sources could undermine the ability of any one of them to exercise a holdup. The researcher's stumbling block now becomes the possibility of collusion among knowledgeable sources. For once one source learns of the value of

forceable but the second is not, the subject can demand payment in return for not allowing further collections by others. If neither provision is enforceable, the subject can demand payment in return for either or both desired behaviors, but cannot expect his unenforceable promise to refrain from allowing collections by others to yield much extra payment.

Given that courts are virtually certain to refuse enforcement of the first provision, the importance of enforcing the second provision becomes clear. The bilateral monopoly created when the second provision is enforced should provide the researcher at least some gain from, and therefore some incentive for, its search. In contrast, refusing to enforce the second provision as well as the first leaves the researcher nothing for its search.

However essential for preserving the incentive to search the second provision may be, modern courts are again likely to refuse enforcement.⁵⁴ The modern judicial hostility toward any agreements that smack of servitude or of restrictions on a person's freedom to deal with others comes into play.⁵⁵ Moreover, the researcher would be asking the court to issue an injunction. And courts traditionally refuse that equitable remedy when the consideration given the promisor, here the subject, has been nominal.⁵⁶

Even if this second provision was legally enforceable, the ease with which blood can be secretly drawn and the source of a cell line hidden bar effective enforcement. Once the subject knows the value of his cells, he

his cells, his interest lies in contacting his relatives and warning them against allowing any collections. If the relatives all heed this advice and collude with each other, the researcher's dilemma remains as before. Its negotiations with the sources should proceed just as they would if there was a single source.

54. For example, no court will enjoin a subject from allowing collections by medical personnel if therapeutic reasons call for those collections. Nor will a court compel the subject to obtain a contractual promise from those medical personnel not to use the collections for research or commercial purposes. Barring the subject from allowing collections by others, including other researchers, would change prevailing practices and annoy the many subjects who want to work with others. Such a ban, of course, would be unnecessary if the key information is kept secret.

55. See CAL. BUS. & PROF. CODE § 16600 (West 1995) (contracts restricting an employee from engaging in a lawful profession, trade, or business are to that extent void); RESTATEMENT (SECOND) OF CONTRACTS § 186 (1979); E. ALLAN FARNSWORTH, CONTRACTS § 5.3, at 16-17 (3d ed. 1992). Commentators have pointed out some of the legitimate purposes which restrictive covenants serve but which courts have overlooked. See Edmund W. Kitch, *The Law & Economics of Rights in Valuable Information*, 9 J. LEGAL STUD. 683 (1980) (employment restraints, although generally unenforceable, assist companies in financing the training of employees and in enforcing trade secret laws); Paul H. Rubin & Peter Shedd, *Human Capital and Covenants Not to Compete*, 10 J. LEGAL STUD. 93 (1981) (occupational and geographic restrictions on the seller of a business, although often unenforceable, encourage the development of good will).

56. See E. ALLAN FARNSWORTH, CONTRACTS § 12.7, at 836, 869 (2d ed. 1990).

has little reason, apart from his previous promise, to confine his collections to the researcher who discovered his cells' value. The subject may feel driven, perhaps desperately, to find some way to capture for himself more of the value of his cells. Allowing others to collect costs him little. The chance his breach would be detected is remote. His likely penalty should his breach be detected cannot amount to much compared to his likely gain. A contract provision barring a subject from dealing with rival researchers will inhibit only the unusually law-abiding. Even the unusually law-abiding may be able to allow collections by others while maintaining a colorable claim of having acted lawfully by leaving the reach of U.S. law and allowing collection elsewhere.

If the law is not able effectively to police the subject from allowing collections by the researcher's rivals, some may think the law can effectively police the rival researchers from secretly collecting or using the subject's cells. The rival researchers, perhaps, offer deeper pockets and less mobility than the subject and thus provide a more feasible legal target. A lawsuit against them, grounded on their interference with the agreement between the researcher and the subject, may be worth maintaining. But these biotechnology companies need not be the ones who actually collect the subject's cells. Other companies, some of them operating entirely outside the reach of U.S. law, can collect the cells and sell them to the rival researchers without identifying the subject. The subject will face an ongoing temptation to deal with these companies.

One can imagine other attempts to solve the hold up problems contractually. The original contract could provide for revenue sharing between the researcher and the subject should the subject's cells prove valuable. In return, the subject would allow the researcher to collect samples now, and if necessary, in the future, and would also promise not to allow collections by others. More than the provisions discussed previously, those provisions so combined would probably be legally enforceable. But the practical enforcement problems discussed above remain. Having made this deal with the searcher, the knowledgeable subject will be tempted to augment his gain by allowing collections by others, if not within the reach of U.S. law, then outside of it.⁵⁷ The subject's mobility and ability to hide his breach separates him from the farmer who knows that his breach will

57. No doubt the revenue sharing agreement could be structured to link the subject's future gains to the researcher's. But while a carefully structured agreement might reduce the subject's temptation to deal with rivals, some temptation will remain as long as the subject can keep his dealings with rivals secret. This research will now suffer from the incentives for inefficient behavior created by divided ownership. See RICHARD POSNER, *ECONOMIC ANALYSIS OF LAW* 82-83 (5th ed. 1995).

be detected, and an injunction against him issued, should he allow extraction of the oil on his farm by a rival of the oilman who discovered the oil.⁵⁸

No contractual solution to the hold-up problems serves the researcher as well as keeping the subject unaware of the value of his cells. From the moment this subject suspects the truth, the researcher loses control of the cell line and its development. The knowledgeable subject becomes a loose cannon whose behavior endangers the researcher's future return. Whatever promises the subject gave at the time of the original collection, the knowledgeable subject can find some way, legally or illegally, within reach of this country's laws or elsewhere, to appropriate much of the gain from the researcher's search. The self-help method of keeping the subject in the dark protects the researcher's incentive to search better than would more formal legal protection—here, the protection afforded by contract law.

The most helpful contract solution would aim not at controlling the suspicious subject but at keeping the subject from ever becoming suspicious. One provision in the consent agreement that recommends itself would state clearly that the researcher will never inform the subject of the value of his cells. Beyond that, the researcher may want to clarify that it will never inform the subject of the specific goals or methods of its research. This advance warning may eliminate a later need for the returning researcher to lie. In response to the subject's direct question, the returning researcher could refer to this policy and decline further comment. While this response may lead some subjects to refuse the requested further collections, fewer subjects should suspect the truth and thus more should participate as they did before than without this advance warning. Many subjects may accept that the researcher, in refusing to answer their question, is merely obeying a general policy rather than hiding its knowledge that their cells are valuable.

58. Revenue sharing also makes more sense in the oilman/farmer context because the farmer who sells his mineral rights while retaining his fields will learn eventually that his fields contain oil, whereas the subject is much less likely ever to learn of the value of his cells. The farmer's knowledge of the oil's presence may put him in position even at that point in time to harm the oilman's operations through, for example, noncooperation or sabotage. Thus the oilman may feel compelled to obtain the farmer's continuing cooperation, a goal achieved by the revenue sharing agreement. In other words the oilman may need to resort to revenue sharing because it is not able to adopt, as a practical matter, the self-help remedy available to the researcher, namely, keeping the subject permanently in the dark.

V. LIMITING THE PROPOSED RIGHT TO LIE

The preceding discussion suggests the right to lie could be limited to situations where the hold-up problems may destroy all incentive to search and where the searcher's inability to overcome those problems through evasions or contractual commitments is manifest. Other variables limit this proposed right to lie further. First, the right to lie, like Kronman's right to nondisclosure,⁵⁹ is only worthwhile when the search it incents is likely to be socially valuable. And the usual proxy for a socially valuable search is that the new information produced is itself likely to be socially valuable. On this ground, Kronman distinguished new information about market conditions (which the discovering party need not disclose) from information about typographical errors in the other party's offer (which the discovering party must disclose).⁶⁰ The considerable social value of the researcher's search, acknowledged by the United States Supreme Court in its decision allowing cell lines to be patented, thus distinguishes it from searches for less valuable information.⁶¹ A right to lie designed to incent the researcher's search need not call for a general right to lie.

Indeed, the development of methods to use an individual's cells in the production of valuable drugs provides a vivid example of a technological change that by enhancing the social value of certain activities calls for legal changes designed to better incent those activities.⁶² The development of the telegraph and of wireless communication played a similar role in *International News Service v. Associated Press*.⁶³ There, the Associated Press (AP) successfully attacked its rival's practice of reporting the foreign news AP had gathered. The development of the telegraph and wireless in effect increased the value of gathering foreign news because that news need only be minutes rather than weeks old.⁶⁴ Thus, the loss to society from the law's failure to incent the gathering of foreign news increased. And as that social loss increased, the case for incensing those news gathering efforts (in that case, by enjoining a rival from reporting

59. See Kronman, *supra* note 22, at 6.

60. See *id.* at 23.

61. See *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (the mere fact that subject matter is "living" does not render it unpatentable).

62. Harold Demsetz has offered the classic explanation of how technological changes that increase the value of certain resources call for legal changes designed to better incent the development of those resources. One such legal change is the recognition of new property rights. See Harold Demsetz, *Toward a Theory of Property Rights*, AEA PAPERS AND PROCEEDINGS (May 1967).

63. 248 U.S. 215 (1918).

64. See *id.* at 237.

news gathered by AP) strengthened. The externalization of benefits from the AP's efforts and the resulting poor incentive structure for those efforts that was tolerable when the gathering of such news added little to society's wealth became intolerable when, as a result of the wireless, those news gathering efforts added more value. Just so, the law's failure to incent the researcher's search efforts becomes less tolerable as those efforts, thanks to the developments of modern biotechnology, aid society more.

Requiring that the search incented be costly to the searcher confines the right to lie even more. Scholars have emphasized the relation between the actor's cost of undertaking an activity and the need for the law to internalize to the actor the benefits of his activity.⁶⁵ For example, giving the actor a property right in the fruits of the activity—one method of internalizing benefits—becomes more appropriate as the actor's cost of undertaking the activity increases. At bottom the point is a simple one. The more costly the desired activity, the less likely the actor will undertake it in the absence of some assurance that he will reap its benefits. Conversely, the less costly the desired activity, the more likely the actor will undertake it for an independent reason despite the risk that he will not reap its benefits. Thus in *International News* where the Supreme Court granted AP a quasi-property right in the news it gathered, the Court identified as a key factor in AP's favor the huge cost it incurred in creating the AP network.⁶⁶ Without legal intervention to enable AP to appropriate the benefits of its efforts, society could not expect future APs to incur such costs, and society would suffer from a suboptimal amount of news gathering. Kronman likewise limited the right to nondisclosure to situations where the search being incented was costly.⁶⁷ Only those who had incurred substantial costs in ferreting out new information were free to trade upon it without disclosure. One who obtained the information casually could not. To take Kronman's example, an eavesdropper overhearing new information of which it has reason to believe the other party is unaware must disclose the information to the other party.⁶⁸

Unlike the social value of the search, which will be high for virtually all searches, not all researchers will face high costs in finding an individ-

65. See Armen Alchian & Harold Demsetz, *Some Economics of Property Rights*, 30 IL POLITICO 816 (1965); Armen Alchian & Harold Demsetz, *Production, Information Cost, and Economic Organization*, 62 AM. ECON. REV. 777 (1972); Douglass C. North, *The Rise and Fall of the Manorial System: A Theoretical Model*, 30 J. ECON. HIST. 777 (1971).

66. See *International News*, 248 U.S. at 222.

67. See Kronman, *supra* note 22, at 11.

68. See *id.* at 13.

ual with valuable cells. For example, a researcher who is paid by an individual to determine the value of that individual's cells might discover valuable cells at no risk or net expense to itself.⁶⁹ Here the risk of the search failing falls not on the researcher but on the subject. And the compensation from the subject adequately incented the researcher's efforts. In this case, there is absolutely no reason to excuse the researcher from honestly reporting the test results to the subject, as the parties agreed. Enforcing such an agreement benefits this research by encouraging individuals who have reason for believing their cells are likely to be valuable to test themselves. Reporting to the individual that his cells are valuable may trigger a holdup but not a hold-up problem. The subject's gain properly incents the subject's search. Not having incurred the costs and risks of searching, the researcher cannot avail itself of legal rules designed to encourage it to undertake those costs and risks. In general, a subject who takes the risks and incurs the costs of self-testing is entitled to whatever compensation, whether in the form of a share of eventual revenues or otherwise, he can induce the researcher to promise.

One can imagine cases short of this extreme example in which the researcher's search costs are so low that the wish to incent the researcher's search will no longer justify a right to lie. A patient may suffer from an abnormal growth of tissues whose cells are disproportionately likely, by several orders of magnitude, to prove valuable. The patient's cells may become available to the researcher through no effort of its own, and the value of the cells may be readily apparent on examination. If in such a case the researcher returns to the subject for a further collection, having found useful cells but having failed to maintain an immortal cell line, and if the subject confronts it with the key question, society's wish to incent searches would not support allowing the researchers to lie. In Kronman's words the researcher, like the eavesdropper, acquired the key information casually, or at least relatively casually compared to a researcher who undertook an expensive and risky search for those with useful cells.⁷⁰

69. Another example of a low cost searcher would be one who learns the key information—the value of this subject's cells—by eavesdropping or by industrial espionage.

70. See Kronman, *supra* note 22, at 14. To be sure, just as the eavesdropper at least incurs the cost of eavesdropping, the lucky researcher has incurred the cost of ascertaining the cells' value. And compelling truthfulness will prevent the eavesdropper and researcher respectively from recouping those costs, thus creating a disincentive for them to incur those costs in the first place. This is a greater concern with the researcher than with the eavesdropper just because ascertaining the value of cells plainly carries greater social value than eavesdropping.

However, the cost of differentiating case by case between the low-cost and high-cost searcher in order to reserve the right to lie to the latter may not be worth the benefit. Such a differentiation imposes significant line drawing and measurement difficulties. A cruder rule that treats as high-cost searchers all searchers who at their own expense and risk examine cells not previously known to be valuable recommends itself when the administrative costs of a more differentiated rule are considered.⁷¹ In effect, such searchers serve as proxy for high-cost searchers.

The previous example of the individual who takes the initiative and incurs the cost and risk of testing himself suggests another limit to the right to lie—the liar must be generally more able to discover the key information than the victim of the lie. For if the cheaper way to identify those with valuable cells is for individuals to search out the value of their cells themselves than for researchers to search for promising subjects, the appropriate legal approach ought to shift fundamentally. In that case, the cheaper way for society to acquire the key information would be to incent individuals either to arrange to search themselves or to gather information about whether self-searching would be cost-justified.

There is no need to consider what legal rules would best further that goal, however, because certain features of this industry suggest that the researcher can generally search at lower cost than can the subject. As a by-product of its research efforts, the researcher acquires some expertise about the family background and profile of traits that might suggest where

The facts of *Moore v. Regents of the University of California*, 793 P.2d 479, 480-83 (Cal. 1990), *cert. denied*, 499 U.S. 936 (1991) suggest the problem. There, a cancer patient, Moore, presented a melon-sized diseased spleen which his doctor, the primary defendant, surgically removed and from which the doctor maintained a cell line of considerable value. The issue discussed here did not arise because the doctor had not obtained Moore's consent to the use of his tissues for research and commercial purposes at the time the tissues were taken. But if Moore had consented, the doctor/researcher had thereafter returned to Moore for further tissues, and Moore had asked the key question, should the doctor have been allowed to lie about the value of Moore's cells? The fact that the doctor came into possession of the cells almost costlessly, indeed almost fortuitously, suggests not. On the other hand, the fact that the doctor had undertaken significant efforts to ascertain the value of the cells, the benefits of which Moore could appropriate if he knew the full truth, suggests the lie should be allowed.

The more precise question then is not whether the researcher's *search* was costly but whether the researcher has undertaken *any* costly and socially valuable efforts the benefits of which the subject will be able to appropriate, and the incentive for which will be destroyed, if the subject is told the truth.

71. See Isaac Ehrlich & Richard A. Posner, *An Economic Analysis of Legal Rule-making*, 3 J. LEGAL STUD. 257 (1974) (case by case assessments often less efficient than reliance on blanket rule based on cruder indicia which serve as proxies).

to search. Moreover, in this fast developing field the researcher can more easily keep up to date on new developments that aid searching. Insofar as effective searching calls for testing many individuals, the researcher is better positioned to do that than the subject who can probably test only his family and himself. To be sure, the subject will learn about his family background and traits more cheaply than the researcher. But the subject likely faces prohibitive costs in learning whether his background and traits render him a sufficiently promising subject to justify the cost of self-searching.

The fact that subjects, for whatever reasons, are not likely to search out the value of their cells themselves further heightens the importance of maintaining proper incentives for searching by researchers. As in the oilman/farmer example, the case for allowing the oilman to suppress his knowledge of the oil would lose much of its force if the farmer, left to his own devices, was likely to drill for minerals himself. For the net social loss from failing to encourage the oilman's exploration would then diminish. Thus, the right to lie may be further limited to situations where the liars are more likely to undertake a search for the key information than are the victims of the lie.

Granted, this research would advance faster (though perhaps at disturbingly high costs) if individuals took the initiative to "search themselves" at their own expense. Accordingly, the approach recommended here calls for rewarding those individuals. Still, given the individual's likely inability to assess whether self-searching is worthwhile, and thus his likely failure to self-search, the law can best incent worthwhile searches by incenting the researchers.

The right to lie may be further limited to situations where the lie is unlikely to effect an allocative loss. The right to lie, like Kronman's right to not disclose, suffers from the disadvantage of causing mistakes. Here the subject in reliance on the lie allows a further collection that he might not have allowed had he known the truth. Mistakes by contracting parties harm society by frustrating the tendency of contracts to move resources into the hands of those who value them most highly. Mistaken investors, for example, may misjudge consumer demand and launch ventures that waste society's resources. A buyer of a house who is unaware of the presence of termites may fail to take remedial action until the cost of dealing with the termites is much greater. Absent the mistake, the waste could have been avoided. Various commentators distinguish between mistakes causing these productive or allocative losses and mistakes that merely re-

distribute wealth between the contracting parties.⁷² In their view, the law should aggressively strive to penalize allocative mistakes but should be willing to tolerate redistributive mistakes when doing so incents the production of socially valuable information. Thus, the knowledgeable party should be required to disclose material information to the mistaken party when necessary to avoid allocative losses but need not disclose merely to avoid redistributive losses. Applied here, the issue becomes whether the subject would have allowed someone to collect his cells and use them in biotechnology had the subject known of their value. Can we predict with confidence that the cells would have been put to biotechnological purposes rather than remain in the subject or be used for some other purpose? If so, the researcher's lie does not effect any allocative loss, and the case for tolerating the lie is strengthened.

The previous willingness of the subject to allow a collection in return for nominal compensation supports this prediction.⁷³ The subject's willingness to allow the second collection in return for the same modest compensation conclusively establishes that, when all subjective valuations are counted, his is not the higher valued use of those cells.⁷⁴ If the trivial costs to him of allowing the collection are swamped by the modest benefits actually offered (mainly the satisfaction of helping medical research), those costs would be swamped, *a fortiori*, by the substantial benefits that would be offered if he had the knowledge to hold out. Once the cells are known to be valuable in research, they will ultimately be used in research rather than remain in the subject, with or without the lie. The lie merely removes information about the value of the cells from the second consent agreement. It thus allows the subject to grant or withhold consent to the second collection based largely on his subjective feelings about contributing to research which might lead to commercial gain for the researcher. Prohibiting the lie, and thereby allowing the holdup, only

72. See, e.g., Janet K. Smith & Richard L. Smith, *Contract Law, Mutual Mistake, and Incentive to Produce and Disclose Information*, 19 J. LEGAL STUD. 467, 470 (1990); ROBERT COOTER & TOM ULEN, *LAW AND ECONOMICS* (2d ed. 1997).

73. Barring the remote chance that the subject has undergone a conversion since the original collection, the subject is not someone who for religious or other personal reasons strongly opposes the drawing of his blood or any participation in research. Were that the case, the subject would feel his cells were more highly valued in a use other than research. Of course a subject recently converted to an anti-research view remains free to refuse a second collection.

74. In other words, the agreement to allow the second collection creates significant gains from trade, despite the subject's ignorance of the value of his cells. The researcher's lie only affects the terms of that agreement, not the ultimate use of the cells.

redistributes wealth between the subject and the researcher, at the cost of destroying the latter's incentive to search.⁷⁵

One could limit the right to lie further by confining it to situations where that rule is unlikely to lead victims of the lie to duplicate the liar's previous search. Adoption of this proposed right to lie will admittedly reduce the subject's trust in the returning researcher. Because the subject knows that the law allows the researcher to lie, the subject becomes more inclined to self-search. Any rule short of one requiring full disclosure by all parties suffers from the disadvantage of eliciting "defensive" searches by less informed parties to discover information they fear the other parties already know but are not disclosing.⁷⁶ Insofar as the nondisclosing parties have already searched out the information, these "defensive" searches duplicate the earlier searches. The greater the resulting social waste, the stronger the case for requiring full disclosure.⁷⁷ How can one estimate this waste in each specific context? One indicia is clear: if for any reason the less informed party will not undertake a search despite his fear of being mistaken, no waste will occur. In our context, the question becomes whether a subject who knows the law allows the researcher to lie will undertake the costs of self-searching when he sees the researcher return and hears the researcher deny any knowledge of positive information. What will most research subjects in this position decide? Perhaps one can only guess. However, the tiny percent of people whose cells are actually valuable suggests that the chance of that being the case, even when the researcher has returned to that subject, remains remote.⁷⁸ Thus, the expected costs of self-searching probably still exceed the expected benefits. For this reason, a right to lie should trigger only a modest amount of duplicate searching.

75. The allocative effect of a lie will rarely be so insignificant. False information about the value of securities, for example, moves the price away from the accurate price and thereby inflicts a deleterious allocative effect.

76. See Erik Rasmussen & Ian Ayres, *Mutual Mistake*, 22 J. LEGAL STUD. 309 (1993); Levmore, *supra* note 31, at 137-38.

77. At least until the research subjects learn that the law allows the researcher to lie, the researcher's false assurance that it has no reason to think the subject's cells are valuable should deter the subject from searching himself. And to the extent self-searching is wasteful, this effect strengthens the case for allowing the lie. Nevertheless, allowing lying should eventually inspire more self-searching, not less. Once the subject knows he can not rely on the researcher for an honest answer to his question, self-searching becomes his only way to obtain a reliable answer.

78. See Thomas P. Dillon, Note, *Source Compensation for Tissues and Cells Used in Biomedical Research: Why a Source Shouldn't Share in the Profits*, 64 NOTRE DAME L. REV. 628, 631 (1989).

More obvious limits to the right to lie narrow the proposed rule further. Plainly, the researcher could not justify lying about the value of the subject's cells to the tax authorities. Nor could it lie when doing so would increase the amount of misinformation in the marketplace, and therefore reduce the efficiency of the market as a mechanism for allocating resources. For instance, the researcher could not escape its obligations to be truthful which the securities laws impose.

Added together, all the limits suggested here confine the proposed right to lie so narrowly that it might seem to apply to the returning researcher's situation alone. While the right's scope may not be quite so narrow, these limits should allay any concern that embracing the right would compromise the law's condemnation of lying to a significant extent.

VI. ARGUMENTS AGAINST THE PROPOSED RIGHT TO LIE

The proposed right to lie will discourage from participating in this research those potential research subjects who, for whatever reason, wish to learn the value of their cells. Granted, the proposed right leaves these potential subjects free to search themselves at their own expense. But given the cost of that option, the right should effect a net reduction in the number of subjects willing to allow some collection of their cells for biotechnological purposes. Fortunately for this research, however, the low cost to the subject of participating and the substantial number of people willing to participate simply for the satisfaction of advancing medical research should assure an ample supply of subjects and should keep this objection from becoming significant.

Judicial embrace of the right to lie presents a greater concern than the possible disaffection of those interested in their cells' value. The wider audience that currently supports research financially and through other volunteer efforts may start to view researchers, and the research enterprise, in a less generous light. A legal rule chosen in part to encourage this research could easily backfire if it compromises the image of research among this wider audience.

The chance that judicial embrace of the right to lie would sour this wider audience on supporting research is a matter of public perception that cannot be assessed here. One can speculate that the example of the returning researcher lying would hurt the industry more than the courts' tolerance of that lie. Many people must know by now that some biotechnology researchers become wealthy by finding unusual cells and discovering their value. And many people no doubt suspect that certain researchers are driven by that prospect. But that does not mean the public expects the

lie defended here. The only deceit during research many probably expect is that which is required to achieve the immediate research goal. For example, a single blind research project may require misleading subjects who are given a placebo. To be sure, the deceit defended here resembles that deceit in that both advance research. But the public is likely to view the deceit defended here with a more jaundiced eye. The public is more likely to attribute the returning researcher's lie not to its wish to assure itself some gains from its search, thereby maintaining incentives for that search, but rather to its greedy wish to keep all the gains from the subject's cells to itself.

Lying to the subject may seem especially offensive when compared with the subject's own generous and altruistic behavior. The researcher repays the subject for his willingness to volunteer by lying to him in a way that deprives him of his ticket in the biotechnological lottery.⁷⁹ Moreover the researcher, instead of justifying the trust implicitly placed in him by the research subject, seems to be preying on that trust. If the researcher has lied to the subject about the value of his cells, and then brazenly and successfully justified that lie in court, the public may wonder what other matters the researchers may be lying about.

The proposed rule presents other problems than the public relations risk to the industry. The adage "one lie leads to another" suggests one jurisprudential problem: by tolerating the collector's verbal lie, the court would seem to tolerate supplemental lies by other employees of the researcher in more formal settings. Suppose the suspicious subject asks the returning researcher to put in writing its denial of any further reason for believing the subject's cells valuable? A law that tolerates the researcher's verbal denial would seem implicitly to tolerate a written one. Then suppose the subject insists on separate written denials from the researcher's employees who have personally tested his cells? Again, tolerating the company denial presumably requires tolerating individual denials. Yet we can see that the quantum of lying may proliferate quickly. Suppose further that the subject insists the denials be notarized or submitted in a formal affidavit or sworn to under oath? Can the researcher who wishes to comply, and thus allay the subject's suspicions, lie in these more formal settings with equal impunity? Criminal law provides a useful limit here, for courts could recognize an exception to the right to lie when the lie is uttered in a setting where lying is a crime. After all, the wish to pre-

79. See, e.g., Aaron D. Twerski & Neil B. Cohen, *The Myth of Justiciable Causation*, 1988 ILL. L. REV. 600, 620 (reviewing the public's tendency to overrate small chances of large payoffs).

serve the integrity of the law's fact-finding processes warrants condemning lies uttered in the course of formal legal proceedings regardless of the lies' social value otherwise. Thus, lying under oath about a material matter triggers criminal sanctions, without regard to the subject of, or the justifications for, the lie.⁸⁰ Moreover, there is nothing remarkable or anomalous about treating lies differently depending on the legal formality of the setting in which they are uttered. Applying this limit, researchers who lie in a setting where the lie is criminal would subject themselves to the usual criminal sanctions.⁸¹ Incenting socially valuable searches is not the law's only mission.

Perhaps the most obvious objection to the right to lie is that it opposes, indeed it seems to be proposed in defiance of, the Kantian principle that one must never treat another person merely as a means to some other end.⁸² The researcher who responds to the subject's question with a lie in order to secure the second collection provides a quintessential example of using another merely as a means. Further, the lie denies the subject the choice of whether to donate his valuable cells to research or to attempt to secure for himself at least some of their value. A Kantian might claim that proper respect for the subject as a rational, autonomous, and moral being requires affording him that choice. To deny him that choice by means of the lie is to deny his essential personhood.

The researcher can hardly deny that it is treating the subject as a means, but it can reply that in research on human subjects, subjects are inevitably means to the research goals. That subjects are means is an inherent aspect of the research enterprise. The question for a Kantian, the researcher could argue, is not so much the morality or effect of the deception, but rather how much the subject needs to know to be in position to

80. The federal statute imposing criminal penalties for perjury requires that the lie be uttered in the course of a formal proceeding. See 18 U.S.C.A. § 1621 (West Supp. 1996). Its purpose is to keep the process of justice free from the contamination of false testimony. See generally *United States v. Manfredonia*, 414 F.2d 760 (S.D.N.Y. 1969).

81. Except when the lie of the researcher's employee is uttered in such a formal setting that it constitutes a crime, the proposed right to lie would preclude criminal liability as well as civil. The reasons for guarding the researcher and its employees from civil liability argue as forcefully against criminal liability.

When the lie of the researcher's employee constitutes a crime, the offense lies in polluting society's fact-finding processes. As perjury by a defendant during a civil proceeding does not necessarily call for upholding the civil plaintiff's action, the lie of the researcher's employee, when criminal, need not automatically trigger civil liability to the subject.

82. See IMMANUEL KANT, *GROUNDWORK OF THE METAPHYSICS OF MORALS* 96 (1964).

consent meaningfully to the second collection. Here the subject knows a great deal at the time he gives consent. He knows the researcher with whom he dealt before is asking for a further collection for biotechnological research with possible commercial applications. In addition, the subject knows the time, place, risks, methods used, and terms of the proposed collection. Given what the subject knows, the researcher can argue, the subject is able to make a choice that ratifies his personhood. Thus, Kantian principles are not necessarily offended if he is not told more. It would not be practical, after all, to insist that the subject's choice is only meaningful when the subject knows everything the researcher knows. No one can seriously advance such a stern disclosure requirement.

Arguably, misinformation about harms, risks, and costs to the subject offend Kantian principles more than misinformation about additional benefits. As long as the known benefits suffice to induce the subject's consent, information about additional benefits should be viewed as surplusage. Failure to disclose those benefits or misinformation about them need not nullify consent freely given in the hope of lesser benefits.

The amount the subject knows at the time he consents to the further collection combined with the fact that he retains the option to refuse consent distinguish the lie from more offensive ways of obtaining samples. The lie accords the subject's autonomy greater respect and influence than if the researcher seized the samples surreptitiously or coercively.

Another moral objection to the proposed right to lie is that it countenances bad faith behavior. Such a characterization of the researcher's lie seems especially appropriate given the need for trust in the subject/researcher relationship. But the researcher may reply by calling for a fresh evaluation of the morality of the subject's question and of how that question colors its response. Here, conventional norms fall short, for they dismiss too readily the negative effects of the subject's question. It is common to say, for instance, that "there is no harm in asking," at least when the party being asked is a business with much greater ability to unearth the information sought. But here, asking is anything but harmless. While the subject may ask out of innocent curiosity, his question amounts to an attempted appropriation of the researcher's search. In this respect, asking becomes socially destructive for the same reason as attempted theft. Asking threatens the researcher for other reasons as well. When the researcher honestly answers the question "no" but later discovers the cells' value, then the researcher in a later suit by the subject may be unable to show that it was ignorant of the cells' value at the time it answered the question. Asking thus enables the subject to set up the researcher for a later suit whether he answers honestly or not. Once these effects of the

question are appreciated, the claim that the researcher's lie amounted to bad faith appears in a fresh light. Whether an actor has behaved in good faith or bad cannot be assessed in a vacuum.

Plainly, the Kantian and other moral objections to the proposed rule cannot be answered entirely. But the returning researcher's situation illustrates that the application of existing norms to new technology may yield anomalous effects. While those who violate the law gain a competitive advantage over the law-abiding in many other contexts as well, a law against lying here will give legal violators a particularly significant advantage over the law-abiding. When confronted with the subject's question, the former, appreciating how inappropriate that question is, and how dangerous to its interests an affirmative answer would be, will opt to lie despite the law. And if sued, the researcher will dispute or deny the lie. Rather than experience remorse, such a researcher will rightly disdain the shortsighted law that would insist on an honest answer to a question so inappropriate. In contrast the law-abiding researcher who complies with the law and answers truthfully will suffer for its compliance. And the lesson it will learn, the message that the law will send most clearly, will be that searching is futile where an uncritically conventional law fails to protect the incentive to search.

VII. THE CURRENT LAW

The reverence afforded the common law as the accumulated wisdom from case by case adjudication over time naturally inspires a wish to reconcile one's proposals with that law. But although no court has dealt definitively with the returning researcher who lies, there is little reason to believe that courts will guard the researcher against liability by adopting the right to lie. The subject able to prove that the returning researcher has lied can advance various claims under a number of common law categories.⁸³ While an exhaustive review of the possible claims triggered by the researcher's lie is beyond the scope of this article, a sampling of claims will illustrate the gap between the proposed rule and the current law.

The subject could claim the researcher is liable in tort for intentional infliction of emotional distress. The subject would need to show that the returning researcher acted in reckless disregard of the emotional distress the subject might suffer from the lie, that the lie foreseeable caused the subject emotional distress, and that the researcher's behavior in lying con-

83. The issue here—whether the researcher's lie is actionable—must be distinguished from the issue of whether the researcher's use of the subject's or patient's cells without their consent is actionable. For discussion of the latter issue, see *infra* part VIII B.

stituted outrageous conduct.⁸⁴ To keep this claim from a jury (the first two elements being unproblematic), the researcher would need to satisfy the court that sensible jurors could not deem its behavior "outrageous."⁸⁵ But the law's usual abhorrence of lying coupled with the subject's trust in and vulnerability to the researcher probably doom the researcher's claim. And characterizing the researcher's lie as outrageous conduct may expose the researcher to punitive as well as compensatory damages.⁸⁶ The danger of this liability brings into relief the importance of courts appreciating the reasons for tolerating the lie. By establishing the lie's social utility, those reasons might persuade a court to rule as a matter of law that the lie was not outrageous, despite its similarity to other deceitful behaviors deemed outrageous. Previous decisions defining outrageous behavior indicate that socially useful activities—from discharging for just cause an aged worker to outbidding at an auction one who is sentimentally attached to item for sale—escape that characterization regardless of the actor's intent or the emotional distress that predictably results.⁸⁷

The subject can attack the researcher's behavior under other tort categories as well. The subject could claim the researcher's lie nullified the subject's consent to the second collection, thereby rendering that collection procedure a battery.⁸⁸ This tort action would not require any reliance on the informed consent doctrine.⁸⁹ The action relies only on the long-

84. See RESTATEMENT (SECOND) OF TORTS § 46 (1974).

85. "Outrageous" conduct has been defined as "conduct exceeding all bounds usually tolerated in a decent society of a nature which is especially calculated to cause ... mental distress of a very serious kind." WILLIAM PROSSER & W. PAGE KEETON, TORTS § 12, at 60-64 (5th ed. 1984).

86. See *Kelco Disposal v. Browning-Ferris Industries*, 845 F.2d 404 (2d Cir. 1988).

87. See *Thompson v. Williamson Co.*, 965 F. Supp. 1026 (M.D. Tenn. 1997) (ruling father can't recover for intentional infliction of emotional distress (IIED) where deputy sheriff shot and fatally wounded mentally disturbed son holding machetes); *Coleman v. Special School Dist. No. 1*, 959 F. Supp. 1112 (D. Minn. 1997) (school district's firing of principal and dissemination of written statements regarding prior, concealed felony convictions not grounds for IIED); *Kraslavsky v. Upper Deck Co.*, 65 Cal. Rptr. 2d 297 (Cal. Ct. App. 1997) (no grounds for IIED where employee terminated after refusing to take drug test, even when no individualized suspicion); *Gosvener v. Coastal Corp.*, 59 Cal. Rptr. 2d 339 (Cal. Ct. App. 1996) (no grounds for IIED where supervisor who held safety sensitive position at a dangerous chemical refinery in a residential neighborhood was terminated for being an alcoholic).

88. See, e.g., *Mink v. University of Chicago*, 460 F. Supp. 713 (N.D. Ill. 1978).

89. The tort of battery requires only that the defendant acts with intent to cause a harmful or offensive contact, or apprehension thereof, and that such a contact results. See RESTATEMENT (SECOND) OF TORTS § 13 (1974); see also WILLIAM PROSSER & W. PAGE KEETON, TORTS § 9, at 39-42 (5th ed. 1984); see also Richard Epstein, *Intentional Harms*, 4 J. LEGAL STUD. 391, 421 (1975).

standing principle that fraud vitiates express consent, here the express consent of the subject to the second collection.

More ambitiously the subject could seek to extend the informed consent doctrine so as to give subjects who allow collections in reliance on lies (or at least lies unrelated to the research goals) a cause of action in tort.⁹⁰ Thus far, the doctrine only benefits patients, not research subjects. Informed consent only requires that patients be informed of risks of the proposed treatment and of alternatives to that treatment, not of potential financial benefits.⁹¹ In most states, a violation of the doctrine only gives rise to an action in negligence for injuries from the treatment. Thus, extending the doctrine to behavior like the researcher's, which poses no hidden risk of bodily harm, would stretch the doctrine beyond its personal injury focus.

Perhaps the subject's most obvious and irrefutable claim against the lying researcher—one sounding in tort and contract—would be fraud.⁹² Given the researcher's intent to mislead, its awareness that its answer is false, and the likelihood that its false answer contributed to the subject's decision to allow the second collection, the researcher would seem reduced to arguing that the lie did not concern a material matter. The heart of the offer put before the subject, the researcher could argue, was whether the subject was willing to further the researcher's research and commercial purposes by allowing this second collection in return for the nominal compensation. The fact that the subject was highly likely to further those purposes, it could be asserted that the matter lied about was not material to this willingness. Unfortunately for the researcher, the significant chance the subject would have refused to allow the collection on the same terms had the researcher told him the truth establishes the matter's materiality in the eyes of most courts.⁹³ Once the fraud is established, the subject's remedy might even include an injunction against future production of products derived from the fraudulently acquired cells.⁹⁴

90. See, e.g., Linda Daniels, *Commericalization of Human Tissues: Has Biotechnology Created the Need for an Expanded Scope of Informed Consent*, 27 CAL. W. RES. L. REV. 209 (1990).

91. See, e.g., *Canterbury v. Spence*, 464 F.2d 772 (D.C. Cir. 1972).

92. See RESTATEMENT (SECOND) OF CONTRACTS § 159 (1979); RESTATEMENT (SECOND) OF TORTS § 46 (1974).

93. See W. Page Keeton, *Fraud, Concealment and Nondisclosure*, 15 TEX. L. REV. 1, 25-26, 31-40 (1936).

94. See *Papazian v. American Steel & Wire Co.*, 115 F. Supp. 111, 116 (N.D. Ohio 1957).

One could also attack the lie on the ground that it violates the fiduciary duty which researchers ought to owe to their subjects. The classic fiduciary relationship can be viewed as an implied understanding to share certain risks with the beneficiary who is, in effect, purchasing the fiduciary's information and using the fiduciary as an agent.⁹⁵ While such an implied understanding may exist between the researcher and subject as to the risks (physical and emotional) which the subject might face in participating in the research, no such implied understanding would seem to exist as to the financial benefits that might arise from the research.

In support of a fiduciary duty to respond to the subject honestly, the subject might cite the duties Congress imposed on researchers toward subjects when it passed the National Research Act of 1974.⁹⁶ That Act required the Office for Protection from Research Risks of the Department of Health and Human Services (then the Department of Health, Education and Welfare) (DHSS) to publish regulations for the protection of research subjects.⁹⁷ It also created the National Commission for the Protection of Human Subjects⁹⁸ and directed it to hold public hearings every four years and issues findings which, unless rejected by DHSS, were incorporated into new regulations.⁹⁹ The regulations primarily protect human subjects by requiring the creation of Institutional Review Boards (IRBs) which must review and approve each research project prior to its being funded by DHSS. In turn, the IRBs focus heavily on satisfying themselves that the researcher has obtained the subject's informed consent. The spirit of those regulations—if not the letter—call for the fullest and most updated disclosure of material matters to researcher subjects.¹⁰⁰ The regulations' oppo-

95. See RESTATEMENT (SECOND) OF AGENCY § 13 cmt. 9 (1958); RESTATEMENT (SECOND) OF TRUSTS § 2 cmt. 3 (1958); RESTATEMENT (SECOND) OF TORTS § 874 (1974); see also DEBORAH A. DEMOTT, FIDUCIARY OBLIGATION, AGENCY, AND PARTNERSHIP 4 (1st ed. 1991).

96. See National Research Service Award Act of 1974, Pub. L. No. 93-348, 88 Stat. 342 (1974).

97. *Id.* at 352-53.

98. *Id.* at 348.

99. *Id.* at 349.

100. Both the Food and Drug Administration and the Department of Health and Human Services have issued regulations that, where applicable, require researchers to disclose certain information to research subjects. 21 C.F.R. § 50 (1989); 45 C.F.R. § 46 (1998). If those regulations would condemn a researcher's failure to disclose that the subject's cells have been found valuable, they would seem to condemn, *a fortiori*, a deliberate lie about the cells' value.

The regulations focus entirely on assuring that the subject is alerted to risks, including risks of psychological distress, social stigmatization or financial indebtedness. Not surprisingly, a number of provisions suggest that a researcher need not disclose that a

sition to mere non-disclosure by the researcher suggests an abhorrence of any lying, at least any lying not necessary to the research goals.

However, the congressionally imposed obligations on researchers focused on reducing risks, whether physical or emotional, to the subject. Congress stopped short of imposing an obligation on researchers to further the financial well-being of subjects. Likewise the California Supreme Court in *Moore*, while recognizing that a doctor has a fiduciary duty to his patient to inform him when samples are taken solely for research purposes, based that duty on concern for the patient's physical well-being and refused to hold that a doctor has an obligation to concern himself with the patient's financial well-being.¹⁰¹ Whatever the duties arising from the doctor/patient relationship, no court has yet recognized a fiduciary relationship between a researcher and its subjects.

The subject could attempt to nullify the second agreement under contract principles as well. The Uniform Commercial Code's emphasis on the fundamental importance of good faith supports a sweeping condemnation

subject's cells have proven valuable. Reflecting the focus on alerting subjects to possible embarrassment, 46 C.F.R. § 101(b)(4) exempts from any obligations "[r]esearch involving the ... study of ... pathological specimens or diagnostic specimens ... if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects." *Id.* Reflecting the focus on alerting subjects to possible physical injury, 46 C.F.R. § 116 (1998) further allows an Institutional Review Board to waive the usual requirement of informed consent when the research involves no more than minimal risks to the subject. Moreover, in 1981, the Department clarified that this waiver may be obtained through an expedited procedure when the research involves the mere collection of blood samples.

On the other hand, some language in the regulations could be interpreted to require researchers who discover that a subject's cells are valuable to alert the subject to their discovery. 46 C.F.R. § 116(b)(5) requires disclosure when "significant new findings [are] developed during the course of the research which may relate to the subject's willingness to continue participation." Similarly, 46 C.F.R. § 116(a)(3) requires that subjects be informed of likely benefits from the research.

These guidelines apply to studies funded by any of the seventeen federal agencies, experiments to prove the efficacy of medicines or medical devices, and research by academics regardless of the source of funds. In addition, California, New York, and Virginia have legislated consent requirement for research not governed by the federal guidelines. None of these statutes expressly require that subjects be notified when their cells are found to be valuable. See CAL. HEALTH & SAFETY CODE §§ 24170-24179.5 (West 1986); N.Y. PUB. HEALTH LAW §§ 2440-2446 (McKinney Supp. 1986); VA. CODE ANN. § 37.1 (1979).

101. See *Moore v. Regents of the University of California*, 793 P.2d 479, 482 (Cal. 1990), cert. denied, 499 U.S. 936 (1991); see also Anne T. Corrigan, Note, *A Paper Tiger: Lawsuits against Doctors for Non-Disclosure of Economic Interests in Patients' Cells, Tissues and Organs*, 42 CASE W. RES. L. REV. 565, 583 (1992).

of lies.¹⁰² The subject could also invoke the law of unilateral mistake, despite that law's apparent willingness to forgive non-disclosure in the *Laidlaw* and *Texas Gulf Sulphur* line of cases.¹⁰³ Not only do cases like *Laidlaw* stop short of tolerating lying, they probably fail to state the prevailing legal rule even for their own contexts. Despite those cases, the mistaken party—here the subject—can generally void an agreement under the Restatement when the knowledgeable party has reason to know of the other's mistake or has caused it.¹⁰⁴

That the subject may advance a number of highly promising claims against the researcher does not mean the fate of the proposed right to lie is sealed. The context, like the technology, is fresh. Courts have yet to confront even remotely similar facts. The *Laidlaw* and *Texas Gulf Sulphur* line of cases offer some support for a right to not disclose material information about which one knows the other party to be ignorant as long as that information is the fruit of one's deliberate search. From that right to not disclose, the proposed right to lie is a short step. The need to protect search incentives that supports the former right argues for the latter as well. Indeed, once the other party learns to ask the searching party what it has discovered, the right to not disclose becomes meaningless unless accompanied by the right to lie. However more outlandish the right to lie may seem compared to the right to not disclose, the two rights imply each other.

VIII. RELATED ISSUES

A. Nullifying the Consent Agreement on Behalf of the Subject when the Cells Prove Valuable.

Some may think the most interesting issue bioprospecting presents is whether the original agreement giving the researcher the right to any revenues derived from the subject's cells should be upheld when attacked ex post by a subject who somehow learns that his cells have proven valuable. The specter of the researcher profiting from the subject's cells while the

102. U.C.C. § 1-203 (1995); see also CHARLES FRIED, CONTRACT AS PROMISE (1981) (emphasizing the importance of good faith). The Greeks saw good faith as a universal social force that governed their social interrelationships. See FRITZ PRINGSHEIM, THE GREEK LAW OF SALES 87 (1950). Canon law posited good faith in a universal moral norm rather than a social norm. See Powel, *Good Faith in Contracts*, 9 CURRENT LEGAL PROBLEMS 21-22 (1956).

103. *Laidlaw v. Organ*, 15 U.S. 27 (2 Wheat) 178 (1810); *Leitch Gold Mines, Ltd. v. Texas Gulf Sulfur*, 1 O.R. 469 (1969).

104. See *supra* note 25 and accompanying text.

subject does not may rankle some. They may feel intuitively that the subject should share in any revenues the researcher obtains. And by nullifying the provision in the agreement whereby the subject assigned the researcher the right to use the cells for commercial purposes, the court can use its equitable powers to effect that result.

There seems no reason, however, why the researcher and subject, *ex ante*, should not be free to enter into binding arrangements that they consider desirable. Nor is there any reason the usual assumption that participants in agreements can protect their own interests should not control here as elsewhere.

The most publicized proponent of nullifying the agreement on behalf of the subject is Thomas Murray.¹⁰⁵ Notwithstanding the warning given the subject before the collection that the samples might be used for commercial purposes, the subject's clear assignment of his rights to the researcher, and the nominal compensation, Murray insists that the original collection be viewed entirely as a gift.¹⁰⁶ Murray privileges gift-giving over agreed-upon exchange in that he invests gift-giving and the gift relationship with special and superior moral significance. According to Murray, it would pollute our moral relation to our bodies, even to our replenishable fluids and cells, and even after we have abandoned them, were others to make use of them save by our gift.¹⁰⁷ And to safeguard the purity of our moral relation to our bodies (themselves a gift), courts should nullify the terms of any agreement concerning bodily materials and enforce instead terms that comply with the norms of gift-giving. What are those norms that so trump the party's wishes? Murray suggests a few: grateful conduct, appropriate reciprocity, and grateful use.¹⁰⁸ Applied here, the grateful use norm maintains that no recipient should unduly prosper from the gift, and if profits do result, some must be dedicated to a public service goal and some must be shared with the subject.¹⁰⁹

In putting gift-giving on a more elevated moral plane than exchange and then insisting that certain transfers be only by gift, Murray echoes

105. See Thomas Murray, *Gifts of the Body and the Needs of Strangers*, 17 HASTINGS CENTER REPORT 30 (1987); Thomas Murray, *The Gift of Life Must Always Remain a Gift*, 7 DISCOVER, Mar. 1986, at 90; Thomas Murray, *On the Ethics of Commercializing the Human Body* (1986), (unpublished paper prepared for U.S. Congress Office of Technology Assessment) (on file with author); Thomas Murray, *Who Owns the Body? On the Ethics of Using Human Tissue for Commercial Purposes*, 8 IRB: A REV. OF HUM. SUBJECTS RES. 1 (1986).

106. See Murray, *Gifts of the Body and the Needs of Strangers*, *supra* note 105, at 33.

107. See *id.* at 34.

108. See *id.* at 32-33.

109. See *id.* at 35.

earlier authors, most notably Richard Titmuss.¹¹⁰ These authors exalt primitive tribes who emphasized gift-giving as a method of establishing networks of reciprocity that bound the community together. They find support for the moral superiority of gift-giving over agreed-upon exchange in the fact that gifts were typically used to satisfy the recipients "needs" rather than his mere "desires." That is, gifts were more often given to avoid starvation than to avoid some lesser dissatisfaction.¹¹¹

Looking at the same anthropological phenomena through an economic lens, Richard Posner punctures this romantic illusion.¹¹² He explains that gift-giving provided insurance against major losses like starvation in a society where insurance markets were not sufficiently developed for insurance to be otherwise obtained.¹¹³ For example, giving to another whose fields were located elsewhere would create an obligation on the other's part to reciprocate in time of need and thus would diversify against the risk that one's own crops would fail.¹¹⁴ The well-known tendency for insurance to be sought only against major losses likewise explains the restriction of gift-giving to what Murray calls "needs."¹¹⁵ As insurance, gift-giving suffers in comparison to the market insurance available in more developed societies. The move away from gift-giving to the agreed-upon exchanges of more developed societies thus appears, at least on this front, as an advance. Murray's views, like those of Titmuss, represent the by-product of a romantic ideology rooted in antipathy toward the market economy and idealization of the primitive.¹¹⁶

B. Sharing Revenues in the Absence of an Agreement

When samples come from therapeutic efforts to treat patients rather than from research subjects participating in clearly designated research projects, the patients are not always alerted to the possibility that their

110. See RICHARD M. TITMUSS, *THE GIFT RELATIONSHIP* (1971); see also MARCEL MAUS, *THE GIFT* (1967); Lori B. Andrews, *My Body, My Property*, 16 HASTINGS CENTER REPORT 28 (1986).

111. See, e.g., TITMUSS, *supra* note 110, at 197.

112. See Richard A. Posner, *A Theory of Primitive Society, With Special Reference to Law*, 23 J.L. & ECON. 1, 32 (1980).

113. *Id.* at 33.

114. *Id.* at 34.

115. See, e.g., David Friedman, *What is Fair Compensation for Death or Injury?*, 2 INT'L REV. L. & ECON. 81 (1982) (the diminishing marginal utility of wealth, which lies behind the demand for insurance, is not brought into play by small losses).

116. See Scott Cook, *The Obsolete "Anti-market" Mentality: A Critique of the Substantive Approach to Economic Anthropology*, 68 AMER. ANTHROPOLOGY 323 (1966) (responding to Karl Polyanyi, *Our Obsolete Market Mentality*, 3 COMMONWEALTH 109-17 (1947)).

samples may be used for research or commercial purposes.¹¹⁷ And research subjects who know and consent to the use of their samples for research and commercial purposes may not always have assigned all rights to revenue derived from those samples to the researcher. These "non-consenting"¹¹⁸ parties (patients) figure significantly in one of biotechnology's most discussed issues: when the samples prove valuable, should the non-consenting patient be entitled to a share of the revenues?¹¹⁹ While we may prefer that doctors and researchers obtain consent, the better rule in the absence of any agreement assigning the revenues from commercial use to the patient or the researcher would give the patient no right to share in the revenues or to control the course of the research.¹²⁰

117. The assumption here is that the collector had a therapeutic purpose for recommending that the samples be collected, and that the patient consented to the collection for that purpose. The patient was not asked about, and was presumably unaware of, the subsequent research and commercial use of those samples.

The facts in *Moore* differed significantly. There, apparently, defendants collected some samples with no therapeutic purpose whatsoever. Although allowing those collections subjected the patient to some inconvenience, his physician, one of the defendants, led him to believe the collections were necessary for therapeutic purposes. *Moore v. Regents of the University of California*, 793 P.2d 479, 481 (1990), *cert. denied*, 499 U.S. 936 (1991).

118. The patient is "non-consenting," despite having consented to the collection for therapeutic purposes, only in the sense that he never consented to any research or commercial use of his samples and never assigned the right to revenues derived from the samples to the researcher. The subject is "non-consenting" because he never assigned the right to revenues derived from the samples to the researcher. The assumption here is that the patient and subject are silent on these matters. Of course, if the patient or subject expressly refuses consent, his wishes should be respected.

Because of the continuing ban on exculpatory provisions in any consent agreement governed by the Department of Health and Human Services guidelines, many research subjects will be non-consenting as the term is used here. See 45 C.F.R. § 46.116 (1998). Yet the purpose of the rule banning exculpatory provisions had nothing to do with the subject's commercial rights in the extractions. Its purpose was to preserve a subject's right to sue should he be injured during the course of the research. See *Hearings: The Use of Human Biological Materials in the Development of Biomedical Products* 233 (October 29, 1985) (statement of Dr. Charles R. McCarthy, Director, Office for Protection From Research Risks, National Institute of Health).

119. Of the many commentators discussing the patient's claim, most support the patient's right to share. See, e.g., Mary Taylor Danforth, *Cells, Sales and Royalties: The Patient's Right to a Portion of the Profits*, 6 YALE L. & POL'Y REV. 179 (1988); William Bowlier, Note, *Sperm, Spleens, and Other Valuables: The Need to Recognize Property Rights in Human Body Parts*, 23 HOFSTRA L. REV. 693 (1995); Laura M. Ivey, Comment, *Moore v. Regents of the University of California: Insufficient Protection of Patient Rights in the Biotechnological Market*, 25 GA. L. REV. 489 (1991).

120. Although *Moore* provides one precedent for denying the patient's claim to the revenues, there is no discrete statutory or common law that deals specifically with this

First, giving the patient a share will not encourage socially desirable behavior. It will not, for example, encourage the patient to act in a way that would increase the value of his cells. Giving people a right to the earnings from their native talent incents them to develop those talents. But there are no such developmental behaviors by which the patient can add value to his cells. The patient either possesses valuable cells or does not. His possession of such cells is a matter of his genetic endowment and not of any behavior the law can influence.

To be sure, with a default rule that recognized the patient's right to share, patients will feel more enthusiastic about allowing collections for therapeutic purposes. At least they will be much less likely to object should they learn their samples were subsequently used for research and commercial purposes. And if, as a result, more samples are available to researchers, that would be some reason for letting the patient's share. But the therapeutic reasons alone will persuade patients to allow the overwhelming majority of these collections, and there is no need to give the patients the extra incentive of a possible share in far-removed revenues.

Moving from the context of the patient to that of the research subject whose consent agreement was silent about the right to revenues, one could argue that a default rule recognizing the subject's right to share would give the subject greater incentive to participate in the research project. The resulting greater willingness of subjects to participate should lower search costs. But the savings should be modest if, as appears to be the case, many subjects are willing to allow collections without this incentive. Given the generous spirit of so many subjects, the extra incentive of a possible share seems unnecessary. It may look unkind to deny subjects a right to share in the revenues on the ground that most of them are generous and altruistic enough to participate in the research anyway. But this is just another application of the general principle that the law need not incent low cost activities that the actor is likely to undertake for independent reasons despite his inability to internalize the benefits.¹²¹

issue. Nor is it clear whether the issue should be treated as one of property, tort, contract, patent, or trade secret law. Certainly a patient seeking a share of the profits could advance his claim under a wide variety of legal theories.

121. One might think granting subjects a right to share would encourage persons not only to participate in the researcher's project, but also to self-search, in other words, to undertake the initiative and risks of testing themselves. If searching is better conducted by persons self-searching, this would provide a further reason for giving subjects a right to share. One must distinguish, however, between participating with the researcher's project and taking the initiative and bearing the risk of self-searching. Recognizing the right to share encourages the first but not the second. Instead, denying the right to share better encourages the second. Self-searching with a view toward allowing collection by

By awarding the subject a share of the revenues, the law should reduce the need interested subjects may feel to self-search.¹²² That effect would strengthen the case for sharing if self-searching was a wasteful and high-cost method of finding valuable cells and if many subjects, denied the right to share, would resort to it. While the first condition is met (the subject being a higher-cost searcher than the researcher),¹²³ denying the subject the right to share is unlikely to induce much self-searching, wasteful or otherwise, given the long odds against having valuable cells that face a subject who has no particular reason to believe his cells valuable. Thus, recognizing the subject's right to share realizes little savings on this score.

Compared to the meager social benefits of assigning the patient a share of revenues, the costs society would incur from this default rule are striking. Measuring the patient's share of the revenues would entail substantial costs.¹²⁴ A court would need to identify the contribution, if any, of the patient's cells to the end product. But many laboratory transformations over a long period of time separate the original extraction from the end product.¹²⁵ Research results are typically a series of several joint efforts with specimens provided by several individuals.¹²⁶ Moreover, the cells of some individuals may have contributed merely by educating the researcher about the kind of genetic material that might express the desired protein product. The cells of others might have helped merely by educating the researcher how to make hybridomas or monoclonal antibodies in the first place. That is, neither those cells nor the cell line derived from them constitute any physical part of the end product. How then can the contribution of those cells be measured? Even if the right to share was (rather arbitrar-

the highest bidding researcher then becomes the only way a person can realize for himself the value of his cells. In general, the more the law favors researchers over subjects, the more the law encourages persons to self-search and keep all researchers out of the search as much as possible.

We see the same principle at work in the oilman/farmer case where rules favoring oilmen drive the suspicious farmer to take the initiative and the risks of hiring a geologist to ascertain the value of his mineral rights. If such self-searching is socially desirable, that is an argument for the law favoring the oilman. If such self-searching is not socially desirable, say because it duplicates previous testing or is otherwise wasteful, that is an argument for the law favoring the farmer. Assuming that the costs of self-searching exceed the benefits, the case for a right to share is marginally strengthened by that rule's tendency to reduce self-searching.

122. *See id.*; *see also supra* notes 76-78 and accompanying text.

123. For discussion of why the researcher can search at lower cost than the subject, *see supra* notes 73-74 and accompanying text.

124. *See* OTA REPORT, *supra* note 1, at 54.

125. *See id.*

126. *See id.*

ily) limited to patients whose cells constitute some physical part of the end product, a number of patients could typically claim a right to share. Often there will be no way to assess the relative contribution of each patient's cells. As the Office of Technology Assessment found, "A determination of the contribution of any single individual to the marketable end product would be speculative."¹²⁷

One could reply that the measurement problems should diminish in the face of a clear rule recognizing the patient's right to share, because researchers would react to that rule by negotiating the patient's share at the time of the collection. But the negotiations thus induced, which will sometimes need to occur around the patient's hospital bed, impose costs of their own. Perhaps the greatest cost stems from the delay of research that may result if the two sides hold out for a greater share. But even when negotiations proceed smoothly, the negotiating costs may be substantial compared to their benefits in light of the many patients whose collections researchers may wish to examine and the tiny percent of these negotiated agreements that will ever be used. Indeed researchers can argue that the cost of the negotiations needed to allocate the right to revenue should be analogized to the cost of transferring property rights from a lower to a higher valuing user.¹²⁸ As the costs of transferring those rights increase, perhaps because of the number of agreements needed, the case for recognizing the lower valuing user's property right—and thus compelling the transfer in the first place—weakens. For these reasons and others discussed below,¹²⁹ it is surprisingly unclear whether society wants to require researchers to negotiate with patients for use of their cells. There is little

127. *Id.* at 41. The costs of identifying the patient's contribution resemble the prohibitive identification cost of patenting the ideas generated by basic research. With the passage of time it becomes increasingly difficult to identify the products in which the basic ideas are embodied. Here identifying the contribution of the patient's cells to various end products becomes increasingly difficult. See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 67 (4th ed. 1993).

128. The property rights issue arises, for example, when a landowner sues for trespass an airline that has flown at a high elevation over his property. One reason for ruling for the airline, and thus refusing to recognize the landowner's property right to the airspace above his land, is to avoid the cost of negotiating the many agreements that would be needed for the airline to obtain the consent of all landowners over whose land its route would pass. See Thomas W. Merrill, *Trespass, Nuisance and the Costs of Determining Property Rights*, 14 J. LEGAL STUD. 13 (1985).

129. See *infra* notes 143-152 and accompanying text.

point to embracing a pro-plaintiff rule in order to induce negotiations which cost more than the benefits they provide.¹³⁰

The record-keeping required to measure the patient's share also imposes costs. To keep a court from overestimating shares, researchers would need to keep track of patients, cell lines, the patients' contribution to each cell line, the role of each cell line in developing the end products, and the sales of the end products to which each cell line contributed. Studies involving the development of cell lines can take years to complete and commercial application even longer. The cost of keeping records of the origin of all the cell lines involved cannot be ignored. In light of the small percent of cell lines that ever yield revenues, these record-keeping costs may dwarf the revenues that researchers are eventually compelled to share.

No doubt the greatest cost of recognizing the patient's right to share comes from the possible effect of that rule on the behavior of researchers. Before the patient's claim to a share of revenues is clearly recognized or rejected, the usual costs of legal uncertainty burden the researcher. The researcher faces the specter of the law seizing a substantial share of its revenues and branding it as a converter or thief in the process. That specter also warns off any would-be purchaser of the cell line for the purchaser cannot be sure what rights, or what liability, it will be buying. The researcher's fear of these lawsuits may sour its enthusiasm and drive its energies and investments elsewhere. As Hamlet said of another fear, "enterprises of great pitch and movement, with this regard their currents turn awry, and lose the name of action."¹³¹

Eliminating the legal uncertainty by ruling in the patient's favor will of course further reduce the incentive for the researcher's endeavors. The chance of a loss of revenue should a patient discover that his cells have been used now becomes a certainty. Moreover, recognizing the patient's right to share in effect divides the ownership of the cell lines, thereby inflicting the usual costs of divided ownership.¹³²

Recognizing the patient's right to share the revenues implies some right in the patient to control the course of the research. Thus, the possible harm from the patient's right to control argues against the right to share. And the divergent interests between the patient and researcher render that

130. The Office of Technology Assessment found that "transaction costs are likely to dwarf the cost of payment to ... individuals [whose cells contribute to commercial gain.]" OTA REPORT, *supra* note 1, at 31.

131. WILLIAM SHAKESPEARE, HAMLET, act III, sc.1, lines 86-88.

132. For a summary of the inefficiencies of divided ownership, see RICHARD POSNER, ECONOMIC ANALYSIS OF LAW 120 (5th ed. 1995).

harm all too likely. For example, the patient's interest might oppose the widespread practice among researchers of exchanging newly acquired information and tissue samples freely.¹³³

Notwithstanding the utilitarian grounds for a default rule favoring the researcher, some will say the patient becomes entitled to a share of the revenues on grounds of fairness just because use was made of his cells. To let the researcher profit from those cells but not the patient seems unjust.¹³⁴ This claim will often lose some of its appeal when the use of the patient's cells is examined more closely. In genetic engineering, for example, the patient's cells may serve only to educate the researcher about what kind of genetic material will express the desired protein product.¹³⁵ Genetic engineering typically leads not only to the modification of cells but to the development of organisms that have never existed in nature separate from other organisms. In this sense those organisms are new. To be sure, the patient's cells have contributed to that organism. But the patient's contribution does not differ significantly from that of subjects whose cells led researchers to learn the methods of genetic engineering originally.

The contribution of the patient's cells to the end product nevertheless provides a more compelling equitable ground for granting the patient a share than does the patient's behavior. The relatively passive behavior of allowing the collection requires little effort and less preparation. In both respects, it contrasts sharply with the strenuous and elaborately grounded behavior of the researcher who must find the cells, identify their value and develop the end product. Why equity demands a windfall for the passive at the expense of the active is not self-evident. At bottom, the patient's equitable claim relies on the lottery mentality which champions claims based on a wild fortuity over claims based on value added through extensive preparation, careful planning, and painstaking effort. Fueled by a populist fervor, the lottery mentality favors claims of ordinary folk over claims of entrepreneurs or educated professionals regardless of the effect of recognizing those claims on society.

133. See Alan J. Lemin, *supra* note 16, at 197.

134. See OTA REPORT, *supra* note 1, at 43-44. John Rawls is one philosopher who would oppose allowing the subject a share of the revenues. Rawls justifies rewarding the born lucky only when society has reason to expect that the reward will motivate the born lucky to significant added efforts that benefit the community as a whole. JOHN RAWLS, A THEORY OF JUSTICE, 102-104 (2d ed. 1971).

135. See OTA REPORT, *supra* note 1, at 43-44.

C. Whether Researchers Should be Required to Obtain a Patient's Consent to Research and Commercial Use

The default rule proposed in the preceding subsection, by denying the patient a right to share in the revenues, will certainly invite researchers to refrain from notifying patients that samples taken from them for therapeutic purposes will also be used for research and commercial purposes.¹³⁶ For the researcher's failure to notify will not give the patient a claim for any revenues directly or indirectly derived from the collections. Given that default rule, the question becomes whether the law should put any pressure whatsoever on researchers to alert patients to the possible research and commercial use. For example, the law could afford the non-consenting patient some claim against the researcher short of a claim for a share of the revenues, the hope being that the lesser claim will suffice to induce the researcher to obtain the patient's consent.¹³⁷

136. Again, the situation in *Moore* differs from that discussed here in several respects. In *Moore*, some collections were undertaken with no therapeutic purpose in mind at all, yet the patient was allowed to believe the collections were solely for therapeutic purposes. *Moore v. Regents of the University of California*, 793 P.2d 479, 492 (1990), *cert. denied*, 499 U.S. 936 (1991). *Moore* was treated purely as a research subject, yet he was led to believe he was purely a patient.

One rule *Moore* establishes is that when the doctor's only purpose of a collection is to aid research, the doctor should inform the patient of that fact. Federal regulations, where they govern, also support this rule for they require that consent to research use be obtained where samples are taken from patients *primarily* for research purposes. See 46 C.F.R. § 110(b) (1998). But this rule leaves open the issue here where researchers merely use material collected for therapeutic purposes.

Moore also clarifies the information a doctor must provide in order for a patient to give informed consent to the doctor's recommended treatment. Under *Moore*, doctors who have research interests in the treatment they recommend must alert the patient to those research interests, at least when those interests might have influenced their decision about what treatment to recommend. *Moore*, 793 P.2d at 479. The knowledge of the doctor's research interests bears on the patient's decision about whether to seek a further opinion regarding the recommended treatment and also on his decision about which doctor should administer the treatment. Without knowledge of the doctor's other interests, *Moore* holds, the patient's decision to consent to the doctor's recommended treatment cannot be an informed one. *Id.* at 508.

So understood, the ruling in *Moore* only affects those involved in the patient's treatment. The ruling puts no obligations on researchers or pathologists not involved in the treatment who merely gain access to the samples afterwards.

137. For instance, the researcher's negligent or deliberate failure to obtain the patient's consent might be held to afford the patient an action for the modest damages stemming from the indignity he suffers because his samples are used in ways he would not have approved. See, e.g., Alan Meisel, *A "Dignitary Tort" as a Bridge between the Idea of Informed Consent and the Law of Informed Consent*, 16 LAW MED. & HEALTH CARE 210, 211-14 (1988); Anne T. Corrigan, Note, *A Paper Tiger: Lawsuits Against*

At least two considerations call for requiring researchers and cooperating health care professionals to obtain the patient's consent to research and commercial use. First, some patients will object to research or commercial use of their samples on religious grounds or on other grounds of principle.¹³⁸ Their dignitary interest in avoiding offensive uses of their cells deserves respect. Like the property owner who puts a subjective value on his property that is much higher than the market value, that subjective valuation ought to be taken into account in deciding the optimal use of the samples. There is a welfare loss, after all, when samples are used for research even though their utility for that purpose is swamped by the disservice that use causes the patient. And the patient's subjective valuations will only come into account if the patient's consent must be obtained. Moreover, so few patients are likely to refuse consent that their refusals should not interfere significantly with the research.

Second, in the vast majority of cases the researcher should be able to obtain the patient's consent to research and commercial use easily, at least when the researcher asks early enough, namely, before the patient suspects his cells have a significant chance of being valuable. Another sentence in the notification given patients upon their arrival at the hospital or in the

Doctors for Non-Disclosure of Economic Interests in Patients' Cells, Tissues and Organs, 42 CASE W. RES. L. REV. 565 (1992). The court in *Moore* recognized a similar dignitary action against an uninformed patient's doctor. *Moore*, 793 P.2d at 508. To be sure, the doctor not only failed to inform his patient that his samples might be used for research and commercial purposes, he also misled his patient into believing that certain collections were for therapeutic purposes when in fact they were solely for research purposes. The court further limited the action by basing it on the fiduciary duty doctors owe to all their patients. *Id.* at 511. Thus researchers who have no contact with the patient would have no duty to warn of the possible research and commercial use.

Despite these distinctions, *Moore* gives some support to the notions that patients should be informed when research or commercial use of their samples is contemplated and that courts should recognize some action for the modest indignity when the samples of uninformed patients are so used.

138. A devout Catholic woman with ovarian cancer might object to the use of her removed ovary for the development of oral contraceptives. Similarly, an Orthodox Jew who believes that it is good to bury the parts of the body in the same area where the body itself will rest after death might not want her organs to be sent to a research facility. A person morally opposed to war might not want her cells to be used in experiments regarding the effects of chemical warfare, while an animal rights activist would object to the use of her tissue in the development of painful skin tests to be used on live animals.

Sharon N. Perley, Note, *From Control Over One's Body to Control Over One's Body Parts: Extending the Doctrine of Informed Consent*, 67 N.Y.U. L. REV. 335, 346 (1992).

consent form which the patient needs to sign for his treatment may be all that is needed.¹³⁹

Moreover, the court in *Moore* has already found illegitimate one reason for the reluctance of doctors to mention to patients the possibility of research and commercial use.¹⁴⁰ That reason is the doctor's wish to appear exclusively devoted to the patient's health rather than involved in some research use of the patient's samples. Doctors may fear that any hint of divided loyalty risks rupturing their relationship with the patient and thereby endangering the patient's therapy. Regardless of whether this fear is warranted, the court in *Moore* brushed this fear aside and held that the patient is entitled to be informed when his doctor has a research interest in his recommended therapy.¹⁴¹

Research hospitals that do not routinely alert patients to the possible research or commercial use of their extractions defend their practice on several grounds.¹⁴² They claim that mentioning the possibility of commercial use to the patient excites unwarranted curiosity and unreasonable hopes and invites further inquiries from the patient about the research.¹⁴³ The burden of supplying each patient with all the information he demands may become significant. Occasionally, a patient also may insist on controlling the course of any research that would use his samples.¹⁴⁴ In an effort to assure that their samples are examined for possible commercial value, some patients may falsify their medical history. Thus, mentioning this possibility adds an element of complexity in obtaining samples that may imperil the therapeutic goals that called for the collections originally.¹⁴⁵ How patients in fact react to mention of this subject, and whether mentioning it would impede therapy or research, is something the health care professionals and researchers are better positioned to assess than a

139. Research hospitals usually provide notice on admission and do not seek informed consent until treatment. See ROBERT LEVINE, *ETHICS AND REGULATION OF CLINICAL RESEARCH* 111-113 (1986).

140. See *Moore*, 793 P.2d at 485.

141. See *id.* at 511.

142. See Eleanor S. Glass, Note, *Restructuring Informed Consent: Legal Theory for the Doctor-Patient Relationship*, 79 YALE L.J. 1537 (1970); Henry K. Beecher, *Ethics and Clinical Research*, 274 NEW ENG. J. MED. 1354 (1966).

143. See *supra* note 100.

144. For the argument that patients should have the right to control the course of research by putting restrictions on the use of their samples, see Perley, *supra* note 138.

145. The possibility that therapeutic goals will suffer from informing patients about research use contradicts the holding of *Moore*, for the court there held that alerting patients to their doctor's research interests furthered therapeutic goals by giving the patient a sounder basis for picking a doctor, requesting a second opinion and allowing treatment. *Moore*, 793 P.2d at 496.

judge would ever be. They are better able, after all, to see the patient's reaction when the topic is broached and the patient's consent requested.

Moreover, a law requiring consent would need to indicate how much information researchers need to convey about the research use intended. Need they describe only the goals or the methods as well? How specifically must the goals and methods be described? Under the informed consent doctrine, the test of materiality governs which risks of treatment must be disclosed. And that test requires disclosure of risks to which a reasonable person would attach significance.¹⁴⁶ However, given the widely divergent views about research that patients possess, a researcher will be hard pressed to identify the information about its research that patients will find significant.

Once consent is required, it follows that patients can at least attempt to condition their consent on the researcher's promise to adhere to certain research goals and methods of which the patient approves. Respect for the patient's autonomy in this regard will present further issues. Will courts enforce, for example, a patient-imposed requirement that the patient's cells only be used in research designed to benefit certain races?

Because the patient is consenting to the collection on therapeutic grounds, the research use requires no added invasion of the patient's bodily integrity. Nor does the research use expose the patient to any additional risk of harm. The lack of additional risk argues against an extension of the informed consent doctrine because that doctrine is driven by the wish to assure patients the power to decide whether to incur the risks of doctor-recommended treatment. The patient's decision-making power in that regard would in no way be impaired by research use of his samples.

While research use is more common, the patient's samples will so rarely lead to a commercial use that requiring consent to this use from every patient seems unduly burdensome.¹⁴⁷ As the chance of using this consent becomes more remote, the cost of obtaining the consent, though

146. See *Canterbury v. Spence*, 464 F.2d 772, 786 (D.C. Cir. 1972).

147. The Department of Health administrators responsible for the federal regulations protecting human subjects cite the remote chance of commercial gain as the primary reason for not requiring researchers to alert subjects to the chance of such gain. See *Hearings: The Use of Human Biological Materials in the Development of Biomedical Products* 233, 263 (October 29, 1985) (statement of Dr. Charles R. McCarthy, Director, Office for Protection From Research Risks, National Institute of Health). Those regulations, in particular the ban on exculpatory provisions, may discourage researchers from mentioning that research or commercial use is possible. For those regulations do not allow patients to give up any rights they may have to the cell lines or end product derived from their samples. This effect of the regulations was surely unintended. See *supra* note 121.

small with each collection or patient, approach and eventually exceed the benefits. It would be foolish for the law to insist that researchers prepare for the possibility of samples having commercial value if the number of times that preparation will be put to use is trivial. When the chance of a contingency becomes sufficiently remote, the law should not insist that the parties provide for that contingency *ex ante*. Much of contract law, for example, aims to establish default rules for contingencies so remote that it is not sensible for the parties to provide for them. With such contingencies, it may not be wise for the law to require agreement.

Thus, courts should be surprisingly hesitant before insisting, through even the mildest remedy, that researchers alert patients from whom a collection is recommended on therapeutic grounds that some research or commercial use of the sample collected is also possible.¹⁴⁸ Arguably, the use of the samples should be classified with other research involving patients for which consent is not required, such as passive behavioral observations or the anonymous tabulation of routine data like body temperature, blood pressure, height, and weight.

IX. CONCLUSION

Previous commentators have discussed the respective claims of the subject and researcher by asking essentialist questions such as whether the subject's cells in essence constitute the subject's property.¹⁴⁹ Once the

148. For the current U.S. law on whether patients who have consented to samples on therapeutic grounds need to be informed of possible research and commercial use, and their consent for such use obtained, see Catherine A. Tellerico, Note, *From Control Over One's Body to Control Over One's Body Parts: Extending the Doctrine of Informed Consent*, 67 N.Y.U. L. REV. 335 (1992); Catherine A. Tellerico, *The Autonomy of the Human Body in the Age of Biotechnology*, 61 U. COLO. L. REV. 659, 673-74 (1990).

In Canada, cells from placentas are routinely used for commercial purposes without the patient's knowledge or consent. Cells collected during amniocenteses, circumcision and psychosurgery are routinely used for research without patient knowledge or consent. Bernard M. Dickens, *The Control of Living Body Materials*, 27 U. TORONTO L.J. 142, 155 (1977).

149. See generally RUSSELL SCOTT, *THE BODY AS PROPERTY* (1981); Richard Gold, *Owning Our Bodies: An Examination of Property Law and Biotechnology*, 32 SAN DIEGO L. REV. 1167 (1995); Lori B. Andrews, *My Body, My Property*, 16 HASTINGS CENTER REPORT 28 (1986); Paul Matthews, *Whose Body? People as Property*, 36 CURRENT LEGAL PROBLEMS 193 (1983); Bernard M. Dickens, *Living Tissue, Organ Donors, and Property Law: More on Moore*, 8 J. CONTEMP. HEALTH L. & POL'Y 73 (1992); Phillippe Ducor, *The Legal Status of Human Materials*, 44 DRAKE L. REV. 195 (1996); Michelle B. Bray, Note, *Personalizing Personalty: Toward a Property Right in Human Bodies*, 69 TEX. L. REV. 209 (1990); Daniel M. Wagner, Comment, *Property Rights in the Human Body: The Commercialization of Organ Transplantation and Biotechnology*,

essentialist questions are answered, analogies and metaphors to existing legal categories take over. Through such reasoning, the subject emerges with causes of action that vary from conversion¹⁵⁰ to assessment¹⁵¹ to confusion,¹⁵² to violations of his rights of commerciality,¹⁵³ privacy¹⁵⁴ or informed consent.¹⁵⁵ While the behavior of the returning researcher who lies has not yet been discussed, those who resolve legal issues by relating concepts and looking for the preexisting legal categories that bear the closest resemblance to the behavior in question will confidently condemn that behavior as fraud.

This article has argued that the sensible, socially apt, and efficient rules are to allow the returning researcher to lie, to enforce faithfully any agreements which assign rights to the researcher, and to resolve ambiguities in favor of the researcher. The contentions rest on an examination of the economics of developing these biologic resources. That focus rejects all essentialist claims.¹⁵⁶ That focus pays no heed to whether existing legal concepts like fraud can be expanded to apply to the researcher's behavior, nor to whether the rules that seem most sensible are required by the law of property or of informed consent. While the law elsewhere may be driven by policies that operate here as well, this focus discusses those policies directly and does not cast about for the legal metaphors that fit the context here with the least Procrustean stretching or collapsing. New technologies often challenge courts to alter the legal environment so the technology can better flourish. This technology will suffer needlessly if courts regulate it based on formal resemblances to issues of the past.

33 DUQ. L. REV. 931 (1995); see also Margaret Radin, *Property and Personhood*, 34 STAN. L. REV. 957 (1982) (Radin is perhaps the most well known proponent of the essentialist approach to concepts like property).

150. See Moore, 793 P.2d at 479.

151. See Allen B. Wagner, *The Legal Impact of Patient Materials Used for Product Development in the Biomedical Industry*, 33 CLINICAL RESEARCH 444, 445 (1985).

152. See Thomas Murray, *Gifts of the Body and the Needs of Strangers*, 17 HASTINGS CENTER REPORT 30 (1987).

153. See Roy Hardiman, *Toward the Right of Commerciality: Recognizing Property Rights in the Commercial Value of Human Tissue*, 34 UCLA L. REV. 67 (1986).

154. See Mary T. Danforth, *Cells, Sales, and Royalties: The Patient's Right to a Portion of the Profits*, 6 YALE L. & POL'Y REV. 179 (1988).

155. See Perley, *supra* note 138; Richard Delgado & Helen Leskovac, *Informed Consent in Human Experimentation: Bridging the Gap Between Ethical Thought and Current Practice*, 34 UCLA L. REV. 67 (1986).

156. In support of this focus, see RICHARD POSNER, *OVERCOMING LAW* 387-405 (1995).