

RESEARCH ETHICS

Paying Patients for Their Tissue: The Legacy of Henrietta Lacks

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In *The Immortal Life of Henrietta Lacks*, Rebecca Skloot tells the moving story of the woman who was the source of the first immortal cell line (HeLa) (1). The cells were obtained at Johns Hopkins University in 1951 from biopsies performed during her treatment for cervical cancer. Her physicians did not seek her consent before using her tissue for research, nor did they receive any personal financial gain from the cell line.

The cell line did become extremely lucrative, however.

Although it is difficult to precisely quantify the total revenue generated from the HeLa line, it is not unreasonable to assume that the line has contributed to hundreds of millions of dollars in downstream revenue. Hundreds of patents contain the word “hela” in their claims, and genetically modified versions of the line currently sell for as much as \$10,000.

For many, it seems an injustice that the Lacks family never received any financial benefits from the HeLa line, especially given that they lived in poverty, unable to pay even for their own medical care. Christoph Lengauer, a cancer drug developer and former Hopkins faculty member, articulated this sense of inequity when he reportedly told Lacks’s daughter that he thought Hopkins had “screwed up” by not sharing some of the proceeds from the HeLa cell line with the Lacks family (1). Although this sentiment resonates with a sense of fairness for many people, it requires critical examination before becoming accepted as precedent regarding payments to patients.

We recently had an opportunity to consider issues surrounding sharing revenues with patients who provide tissue for research when a young man (we will call him DF) was treated at Dana-Farber Cancer Institute for a



rare metastatic malignancy. Shortly before he died, he was admitted to the hospital with increasing shortness of breath, requiring placement of a pleural drainage catheter. With his knowledge and permission, the physician-investigators obtained discarded fluid from the catheter to obtain and isolate tumor cells. The cells were processed into a cell line that holds promise for basic science research and the development of therapeutics. The line may result in a revenue stream for the medical center, as well as personal income for the physician-investigators.

After the patient died, the physician-investigators who cared for him were motivated to see that his family received some financial benefit from his contribution. They sought advice from the Research Ethics Consultation Service at the Harvard Clinical and Translational Science Center, on which we serve.

Property rights in human tissue

If patients own their tissues, even after removal from their bodies, then it follows that they have the right to demand payment when a profitable discovery derives from them. One of the earliest cases addressing this question was *Moore v. Regents of the University of California* (2). John Moore had his spleen removed as part of his treatment for hairy cell leukemia. Several years later, he initiated a lawsuit after learning that his physician at the University of California, Los Angeles, had developed a lucrative

The intuition that tissue donors are owed financial compensation is mistaken as a matter of policy and ethics.

cell line (MO) from this tissue; at the time Moore predicted a market value of around \$3 billion. In 1990, the California Supreme Court decided that Moore did not have a property interest in his removed cells, worrying that giving property rights to patients would “hinder research by restricting access to the necessary raw materials” and might “destroy the economic incentive to conduct important medical research.” Most other legal precedent supports the view that patients do not maintain a property interest

in discarded tissue (3).

Even if patients lack such property rights, there are many examples of individuals receiving financial compensation for donating tissue. A striking case was that of Ted Slavin, a man with hemophilia who developed extremely high antibody titers after contracting hepatitis B (4). When his physician informed him that his blood might be valuable to medical researchers, he was able to sell his serum for as much as \$10,000 per liter, providing himself with a source of income for the rest of his life.

Are the Moore or Slavin cases relevant to those of Lacks or DF? What are the salient features that determine whether patients should be paid for their tissue?

Investigators’ obligations to individuals from whom they seek tissue for research

There are three distinct obligations that an investigator who seeks access to tissue might have toward an individual whose tissues, upon removal from the body, might hold value for biomedical research (see the table). In addressing each of these obligations, it is necessary to distinguish between situations in which the tissue constitutes excess material that remains after an indicated clinical procedure and those in which obtaining the tissue imposes incremental inconvenience, burden, or risk.

Consent: Residual clinical tissues, such as those at issue in the case of DF, are obtained as a by-product of necessary care,

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INVESTIGATORS' OBLIGATIONS TO INDIVIDUALS FROM WHOM THEY PROSPECTIVELY SEEK TISSUE FOR RESEARCH

Investigators' obligations	Residual clinical tissues	Tissue collection requiring additional interventions
Consent to use tissue for research	+	+
Compensation for effort and burden of acquiring tissue	–	+
Rights to revenue streams derived from the tissue	–	–

involve no increased potential for harm or discomfort to the patient, and entail no extra effort or inconvenience beyond that inherent in the patient's medical treatment. Although consent is not always required for the use of residual clinical tissue (as with de-identified tissues obtained from pathology department archives), current U.S. regulatory standards require investigators to obtain the individual's consent whenever they prospectively intend to use residual clinical tissue for research. Of course, investigators must also obtain informed consent before undertaking additional procedures, beyond necessary clinical care, to procure tissues for research.

Compensation for effort and burden: By definition, the use of residual clinical tissue for biomedical research imposes no additional effort, burden, or risk on the patient. As a result, no compensation for such effort is owed. By contrast, when the procurement of the tissue imposes burdens over and above those required for indicated clinical care, it may be necessary to offer individuals, whether patients or healthy volunteers, compensation. Ample precedent exists for offering payment when individuals are asked to cooperate with physicians or investigators for the benefit of others. For example, in research contexts beyond that of tissue acquisition, subjects are commonly compensated for the time, effort, and cooperation that participation requires (5).

Similarly, payments are often made when renewable tissues are procured from volunteers, not for their medical benefit, but solely for the benefit of others. This is reflected in the markets that exist for blood and blood derivatives, oocytes, sperm, and breast milk. Although many individuals do not demand payment for these tissues (as reflected in the largely volunteer supply of banked blood), it is widely acknowledged that, as in the case of Ted Slavin, individuals may seek payment for these renewable tissues. In light of the *Moore* decision and other legal precedents holding that individuals do not retain property ownership over removed tissues, we suggest that a plausible rationale for justifying such payments is that they are made in exchange for the performance of a service,

rather than for the transfer of property.

Rights to revenue streams: Cases such as Lacks and DF pose the question of whether investigators and institutions owe individuals payment for the potential value of the tissue, and in particular whether contributors should have rights to a portion of any revenue stream that derives from their tissue. As discussed, neither legal norms nor contemporary practice treat tissues that have been separated from the body as the ongoing property of the individual such that it would generate a revenue stream. Nevertheless, beyond legal duties, do ethics require that individuals whose tissues ultimately provide revenue for institutions and investigators be offered a share of the proceeds?

Several considerations mitigate against the claim that patients such as Lacks or DF should be offered financial compensation for use of their residual clinical tissue. First, although it is true that the patients have contributed "raw materials" necessary for development of the cell line, it is the investigators, not the patients, whose intellectual contributions lead to the creation of value.

Second, paying such individuals raises questions of fairness. Investigators may preferentially reward patients and families with whom they have become emotionally bonded, but not those who were equally generous but with whom personal relationships were absent.

Third, the implications of reconceptualizing tissue acquisition as an economic exchange rather than as a gift relationship must be carefully considered. Payment might paradoxically have a negative effect on patients' willingness to give their tissues for research. Providing upfront payments to all patients who donate tissue—independent of and without prior knowledge regarding the actual financial value of their contributions—suggests that the payments themselves would likely be quite modest. The enormous number of tissue samples collected, as compared with the relatively small number that acquire significant value, suggests that the prior estimated value of any given tissue sample is low. Such small payments might not merely fail to incentivize patients, but might actually be scorned as an unfair or token reward. In addition,

there is a risk that invoking the extrinsic motivation of money would crowd out intrinsic motivations, such as the desire to contribute altruistically to improved knowledge and treatment (6, 7).

Finally, and perhaps most important, few individuals will contribute tissues that generate financial blockbusters. As a result, compensating such persons in effect rewards them for "winning the lottery," whereas the vast majority, despite their ex ante identical contributions, receive nothing. If financial rewards for the development of useful cell lines should be tied to material contributions rather than to luck, then compensating patients such as Lacks or DF, ostensibly in the service of justice, may lead to an outcome that is manifestly unjust.

Conclusion

Although Skloot's book is moving and compelling, we use caution in using the Lacks example as a model for thinking about compensating patients who provide tissue for research. Although one can point to the many injustices Lacks endured as a poor woman without access to needed medical care, the use of her residual clinical tissue, involving no additional risk or burden to her, does not demand any form of compensation. Furthermore, compensating such patients may have unintended consequences that could work to decrease the availability of tissue for research, and may paradoxically become a source of injustice. In the case of DF, we therefore advised the investigators not to offer his family any payments for use of the residual clinical tissue they obtained.

References and Notes

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