RELATIONAL SELF-OWNERSHIP: WHAT WE OWE EACH OTHER WHEN GENES ARE SHARED

Shelly Simana*

Self-ownership—the idea that individuals own their bodies and what comes from them—has profoundly shaped moral and legal understandings of personal rights. Often framed in absolute terms, self-ownership is assumed to confer exclusive control. However, bodies and the resources they generate connect individuals to others in ways that create claims, dependencies, and responsibilities that cannot be captured by an atomistic view of self-ownership. This Article addresses this shortcoming by introducing the concept of "relational self-ownership," which posits obligations to others—both moral and legal.

The Article uses the sphere of genetics to showcase the importance of this novel conceptualization of self-ownership. With rapid technological advancement in genetics, a pressing question emerges: should genetic material and information be treated as exclusively owned, or does the shared nature of these resources impose legal obligations that curtail individual control in favor of family members and the broader community? Influenced by the prevailing, atomistic view of self-ownership, genetic material and information are increasingly treated as strictly private property. However, applying the lens of relational self-ownership, this Article introduces the concept of "genetic reciprocity" and identifies moral and legal obligations to contribute genetic material and information toward the development of a universal genomic biobank and database, as well as the duty to disclose genetic risks to close genetic relatives.

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The implications of relational self-ownership extend far beyond genetics. They inform debates on vaccination policies and pandemic response, reproductive technologies, and organ donation. Across these areas, the assumption of absolute self-ownership often conflicts with the interests and well-being of others, requiring a more nuanced reconciliation of personal rights with familial and societal responsibilities. By rethinking self-ownership in an era of genetic and technological innovation, this Article advances a necessary reassessment of what we own—and what we owe.

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INTRODUCTION

At the heart of Western philosophy, particularly in libertarian and liberal traditions, lies the concept of self-ownership.[1] This concept posits that an individual has dominion over their body.[2] The individual has the right to control their own body

1. This Article is premised on the idea that libertarianism and liberalism both embrace the concept of self-ownership, though libertarianism tends to articulate it more explicitly, whereas liberalism often does so implicitly. Regardless of the terminology each tradition favors, both ultimately concern the individual's authority to control their own body.

2. ATTRACTA INGRAM, A POLITICAL THEORY OF RIGHTS 25 (1994); Meredith M. Render, *The Law of the Body*, 62 EMORY L.J. 549, 590–93 (2013); MUIREANN QUIGLEY, SELF-OWNERSHIP, PROPERTY RIGHTS, AND THE HUMAN BODY: A LEGAL AND PHILOSOPHICAL ANALYSIS 194–96 (2018).

without external interference, and this control receives paramount consideration.[3] However, this conventional view of self-ownership merits reconsideration, particularly in light of rapid advancements in science and technology. These advancements offer significant potential for societal progress, rendering this individual-centric view increasingly outdated. Consequently, it is imperative to reexamine the dynamics between individual self-governance and collective obligations—including those toward family—and shift to a more relational perspective of self-ownership, a perspective I term "relational self-ownership."

Relational self-ownership is relevant in various contexts where personal decisions and actions concerning one's own body intersect with wider societal and familial obligations. For example, consider the practice of organ donation. While individuals may have ownership over their own bodies, the decision to donate an organ can affect not only the individual but also the recipients and their families, raising the question of how self-ownership relates to the collective good. Similarly, when individuals make decisions about reproductive rights, such as the use of assisted reproductive technologies, their choices affect not only their personal lives but also their immediate family, whose genetic and relational interests are directly implicated. These decisions further shape society's legal and ethical frameworks around family and parenthood. In the same vein, self-ownership becomes complicated in the context of public health, where individuals' rights to refuse vaccinations or public health interventions—such as quarantine measures—have consequences for the wider community. These examples show that the actions of individuals often have broader societal and familial consequences, leading us to reconsider how we define self-ownership in a context where individual actions are interconnected with the well-being of others.

The relational perspective of self-ownership becomes particularly critical in the realm of genome governance. The concept of self-ownership takes on a new dimension when considering the interconnected and shared nature of human genetic material and information. In this Article, *genetic material* refers specifically to DNA samples, excluding reproductive material such as sperm or eggs, while *genetic information* denotes the sequence of base pairs within that DNA.[4] These shared

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3. Eric Mack, *Self-Ownership, Marxism, and Egalitarianism: Part I: Challenges to Historical Entitlement*, 1 POL. PHIL. & ECON. 75, 75–76 (2002); Ian Carter, *Self-Ownership and the Importance of the Human Body*, SOC. PHIL. & POL'Y, Winter 2019, at 94, 97–101.

4. I intentionally treat genetic material and genetic information as a single, inseparable unit throughout the analysis. While I recognize that there are circumstances where one may be relevant without the other, the line between them has become increasingly blurred due to advancements in technology. For instance, a DNA sample might be collected for a forensic investigation, where the physical material itself is preserved as evidence. However, the utility of the sample lies in the information it provides—such as identifying a suspect or exonerating someone wrongly accused. Similarly, genetic information, such as a specific mutation linked to a hereditary condition, can be relevant without access to the physical DNA sample if the information is stored in a database. Despite these distinctions, it is often impractical to separate genetic material from genetic information. Whenever an individual provides a DNA sample, they are providing access to their genetic information, as modern technologies allow for the rapid and efficient analysis of genetic sequences. These advancements have made it possible to extract detailed information from even the smallest amount of genetic material, effectively merging the two concepts in practice. As a result, this

resources blur the lines between the self and the collective,[5] raising important questions about how societies should approach the ethical and legal challenges they pose.[6] It is critical that we, as a society, ask whether individuals should be able to claim exclusive ownership of genetic material and information, considering that both are not only inherently tied to familial lineage, but are also shared across generations.[7] After all, these resources are not solely products of an individual's choices or actions; they represent a blend of ancestral inputs.[8]

This Article explores the intersection between self-ownership and genetic material and information, positioning itself in opposition to the growing body of literature that advocates for treating genetic material and information as *private* property.[9] Such literature, rooted in libertarianism and liberalism—two dominant ideologies in Western philosophy—overlooks the relational nature of genetic

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Article adopts a unified approach, treating genetic material and genetic information as fundamentally intertwined resources.

5. It should be clarified that the origin of genetic material and information should not bear impact on a person's legitimate interest over them. Therefore, an individual has a legitimate interest over their genetic material and information, regardless of whether the material has been discarded. It is common for individuals to leave traces of DNA in various places, and it is unreasonable to expect them to clean every surface with which they come into contact. This perspective differs from the current genome governance, which often negates the notion that individuals retain any legitimate interest over their genetic material and information once the material has been removed from their body. *See infra* note 108 and accompanying text.

6. *See generally* Shelly Simana, *Genetic Property Governance*, 25 YALE J.L. & TECH. 144 (2023) (proposing that genetic material and information should be treated as a shared enterprise balancing personal, family, and collective claims rather than strict exclusive ownership); Bartha M. Knoppers & Yann Joly, *Our Social Genome?*, 25 TRENDS BIOTECHNOL. 284 (2007) (arguing that genomic data has a public–common dimension and that conceptualizing it purely as a private good overemphasizes individual rights); Michelle J. Bayefsky, *The Human Genome as Public: Justifications and Implications*, 31 BIOETHICS 209 (2017) (contending that the genome should also be understood as a common resource with implications for population-level policy and ethics).

7. *See generally* Pilar N. Ossorio, *The Human Genome as Common Heritage: Common Sense or Legal Nonsense?*, 35 J.L. MED. & ETHICS 425 (2007) (analyzing how property- and duty-based common heritage models apply to the human genome and its dual individual–collective nature); Matthieu Queloz, *The Double Nature of DNA: Reevaluating the Common Heritage Idea*, 24 J. POL. PHIL. 47 (2016) (arguing that DNA embodies both individual and collective dimensions, and proposing a reinterpretation of the common heritage concept to account for this dual character).

8. Yaniv Heled, Liza Vertinsky & Ana Santos Rutschman, *A Theory of Genetic Dimensions in the Law*, 99 IND. L.J. 1341, 1353–62 (2024).

9. It is important to note that I recognize the distinction between self-ownership and property rights. This distinction underscores that being part of the "self" does not automatically grant one property rights over it, and vice versa. However, in this Article, I advocate for the perspective that genetic material and information constitute integral aspects of the self and that individuals should also have property rights over these resources. Yet individuals are not the sole stakeholders with property rights over genetic material and information, and there is a need to find a balance among the varying rights. This Article seeks to explore and propose social and legal norms that could form the basis of a commons governance model for genetic material and information.

material and information.[10] This analysis sets the stage for introducing the concept of "genetic reciprocity." This concept is the Article's core argument, offering a new understanding of self-ownership in the context of genome governance.

By framing human relationships as inherently interconnected, genetic reciprocity redefines self-ownership to include shared responsibilities and argues that an individual's values and commitments are shaped by their relationships with and mutual dependencies on others.[11] Central to the concept of genetic reciprocity is the idea that respecting others' interests and preferences does not necessarily mean that one will inevitably suffer harm; instead, by valuing and considering the interests and preferences of others, a person not only contributes to a more inclusive and understanding environment but also enriches their own experiences. By centering relationships rather than treating them as secondary, genetic reciprocity shifts self-ownership from an isolated right to a concept grounded in both familial and collective responsibility.[12]

Building on this reconceptualization, genetic reciprocity demands a fundamental departure from the traditional, individualistic view of genetic material and information. Instead of treating these resources as exclusively owned by individuals, genetic reciprocity emphasizes shared responsibility. In practice, this means recognizing affirmative duties—*nonvoluntary* obligations that require individuals to contribute and share genetic material and information when doing so could yield substantial familial and collective benefits.[13]

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10. For a detailed discussion on the treatment of genetic material and information as private property, see discussion *infra* Section I.B.

11. *See generally* RELATIONAL AUTONOMY: FEMINIST PERSPECTIVES ON AUTONOMY, AGENCY, AND THE SOCIAL SELF (Catriona Mackenzie & Natalie Stoljar eds., 2000) (providing detailed characterizations of relational models of autonomy); JENNIFER NEDELSKY, LAW'S RELATIONS: A RELATIONAL THEORY OF SELF, AUTONOMY, AND LAW (2012) (centering the relational dimension of the human experience in discussions about the concepts and institutions that organize human society); RACHEL HALIBURTON, AUTONOMY AND THE SITUATED SELF: A CHALLENGE TO BIOETHICS (2013) (proposing that bioethics make use of resources provided by contemporary version of virtue ethics that employs a conception of autonomy that is relational and sees the self as situated within a rich moral universe); THADDEUS METZ, A RELATIONAL MORAL THEORY: AFRICAN ETHICS IN AND BEYOND THE CONTINENT (2022) (developing a normative theory of morality rooted in sub-Saharan African conceptions of communal relationship).

12. *See* discussion *infra* Part III.

13. The Supreme Court of California's landmark decision in *Moore v. Regents of the University of California* exemplifies the legal complexities involved when it comes to genetic material and information. 793 P.2d 479 (Cal. 1990). The Court ruled that individuals do not retain property rights over their cells once they are removed from their bodies, emphasizing the potential benefits of medical research and innovation. *Id.* at 127, 144–46, 164. This Article, however, argues from a different premise, proposing that individuals should maintain property rights over their genetic material and information. It contends that it is possible to advance scientific research and societal health while respecting these rights, challenging the frameworks that currently lack mechanisms for promoting ethical behaviors in the governance of genetic material and information.

To underscore this point, genetic reciprocity asserts that both *moral* and *legal* obligations are essential to fostering shared responsibility.[14] Moral obligations, grounded in voluntary action, emphasize the ethical significance of shared genetic material and information, yet they often fall short of ensuring meaningful participation.[15] Legal obligations, by contrast, establish a necessary framework for enforcing both familial and collective responsibilities, ensuring broader societal benefits.[16] While this Article advocates for the establishment of legal obligations, it acknowledges the practical challenges of implementation, recognizing that, for now, these obligations may function more as aspirational principles than immediately enforceable mandates.

Current regulatory mechanisms in the United States, such as the Revised Federal Policy for the Protection of Human Subjects (commonly known as the "Common Rule")[17] and the Health Insurance Portability and Accountability Act ("HIPAA")[18] can be read as implying a degree of legal obligation.[19] The Common Rule, for instance, permits the use of "broad consent" for secondary applications of genetic material and information, and even allows certain secondary research to

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14. The moral and legal obligations proposed in this Article could potentially be extended to other nongenetic resources, such as biological materials and medical information more broadly. However, this Article intentionally focuses on genetic material and information because they possess specific characteristics that require careful consideration. As I explain in Part II, these features distinguish genetic material and information and make them particularly important for the ethical and legal framework discussed in this Article. In an era dominated by big data, the obligation to share personal information—particularly genetic information—must be considered considering their immense value. The value of genetic information, which is still relatively scarce, justifies a broader societal obligation to share it. This duty is not limitless, but it is substantial, given the far-reaching benefits of such information in advancing collective well-being.

15. MATTHEW H. KRAMER, CAMBRIDGE ELEMENTS IN PHILOSOPHY OF LAW LEGAL RIGHTS AND MORAL RIGHTS 35–36 (George Pavlakos et al. eds. 2025).

16. Legal institutions transform moral expectations into legal obligations through governed action, thus reshaping communal norms and duties. Consider, for example, organ donation laws, which create enforceable legal frameworks governing anatomical gifts. These laws simplify consent, establish default rules, and impose penalties for fraud—together providing legally supported mechanisms that increase organ availability and promote public health.

17. 82 Fed. Reg. 7259, 7273 (Jan. 19, 2017) (codified at 45 C.F.R. pt. 46(A)).

18. Pub. L. No. 104-191, 110 Stat. 1936 (1996) (codified as amended in scattered sections of 18 U.S.C., 26 U.S.C., 29 U.S.C., and 42 U.S.C).

19. The dramatic expansion of the Combined DNA Index System database ("CODIS") through immigration-related DNA collection also suggests an implicit legal obligation—imposed disproportionately on noncitizens—to contribute genetic material and information for the presumed public good. Since 2020, following a Department of Justice rule change under the Trump administration, the Department of Homeland Security ("DHS") has been required to collect DNA from all individuals it detains, regardless of the length or nature of detention. This policy shift has resulted in DHS contributing more profiles to CODIS annually than all other law enforcement agencies combined. *See* DNA-Sample Collection from Immigration Detainees, 85 Fed. Reg. 13483, 13484–86 (Mar. 9, 2020) (codified at 28 C.F.R. § 28.12); *Frequently Asked Questions on CODIS and NDIS*, FBI, https://www.fbi.gov/services/laboratory/biometric-analysis/codis/codis-and-ndis-fact-sheet [https://perma.cc/92NF-VBV9] (last visited Sep. 15, 2025).

proceed without explicit consent if specific criteria are met.[20] Similarly, regulations issued by the United States Department of Health and Human Services under HIPAA, particularly the Standards for the Privacy of Individually Identifiable Health Information (the "Privacy Rule"),[21] authorize covered entities to use or disclose identifiable health information (including genetic information) without an individual's explicit authorization for specific purposes, such as public health activities, law enforcement investigations, and research.[22] Furthermore, the protection offered by the Privacy Rule extends only for 50 years after an individual's death, after which their identifiable health information is no longer safeguarded.[23] This limitation may imply that, after a certain period, individuals may have a responsibility to make use of such valuable information. Finally, both the Common Rule and the Privacy Rule apply only to identifiable genetic material and information, allowing less restricted use of genetic material and information that are deidentified.[24] This suggests an implicit legal obligation to treat genetic material and information as resources for broader societal benefit once they are anonymized, indicating that the regulatory framework is encouraging a shift in how these resources are handled, used, and accessed, without necessarily requiring explicit consent.

However, the existing mechanisms fall short of establishing *explicit* legal obligations, as they do not impose clear statutory mandates or direct legal requirements. Moreover, they do not adequately strike a balance between protecting individual interests and considering the potential familial and social benefits (such as enabling relatives to access shared genetic information for medical decision-making; helping donor-conceived individuals learn about their genetic origins; or advancing public health research, addressing population-specific genetic risks, and informing equitable health policies). This imbalance is reflected in current legal and regulatory frameworks that often default to rigid privacy protections, even when those protections undermine other legitimate interests. For example, the protection of health information for 50 years posthumously may not be justified,[25] particularly when weighed against the evolving societal need for access to such information, and excluding deidentified genetic material and information completely ignores the interests of individuals.[26] Finally, the existing mechanisms fail to address a critical gap: the need for individuals to fully understand the implications of sharing their genetic material and information. Without transparency and public trust, even nominal legal obligations risk undermining meaningful engagement and participation. Genetic reciprocity seeks to address these shortcomings by establishing clearer legal obligations, balancing individual and

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20. 45 C.F.R. §§ 46.104(d)(4), 46.116(d) (2025).

21. Pub. L. No. 104-191, 110 Stat. 1936 (1996) (codified at 45 C.F.R. pts. 160(A), 164(E)).

22. 45 C.F.R § 164.512 (2025). For additional relevant provisions, see 45 C.F.R. §§ 164.506(c)(1)–(2), 164.522 (2025), and 78 Fed. Reg. 5566, 5668 (Jan. 25, 2013).

23. 45 C.F.R. § 160.103 (2025).

24. *Id.* §§ 46.102(e), 160.103.

25. *Id.* § 160.103.

26. *Id.* §§ 46.102(e), 160.103.

societal interests, and promoting transparency to foster informed decision-making and public trust.

Mandating the sharing of genetic material and information through legal obligations is likely to face considerable opposition. People may view the concept, particularly the idea to establish a universal genomic biobank and database for research and law enforcement purposes that I propose in Part IV,[27] as a severe invasion of privacy. Concerns about misuse, including identity theft, governmental overreach,[28] and discrimination, are central to their apprehensions. These fears are not unfounded; they are shaped by a historical record that includes egregious abuses of trust and autonomy.[29] One prominent example is the unauthorized use of Henrietta Lacks's cells, which were taken without her knowledge during cancer treatment and used extensively in biomedical research for decades without consent or acknowledgment.[30] Another is the case of the Havasupai Tribe, whose members

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27. The main distinction between *genetics* and *genomics* lies in their respective areas of focus and scope. Genetic research focuses on *individual genes* and their effects on specific traits or diseases, exploring how these genes are inherited and expressed. In contrast, genomic research focuses on the *entire genome* and looks at the interaction of genes. *Genetics vs. Genomics Fact Sheet*, NAT'L HUM. GENOME RSCH. INST. (Sep. 7, 2018), https://www.genome.gov/about-genomics/fact-sheets/Genetics-vs-Genomics [https://perma.cc/BUW8-9722].

28. Foucault's concepts of biopower and biopolitics help illuminate these concerns. Biopower refers to the ways in which modern states exert control over bodies and populations through the management of life itself—often under the guise of health, security, or efficiency. Genetic information, as a form of biological data, becomes a critical site for this control. Biopolitics, in turn, captures how such governance can sort, classify, and regulate individuals based on biological traits, often reinforcing existing social hierarchies and enabling new forms of surveillance and exclusion. *See* 1 MICHEL FOUCAULT, THE HISTORY OF SEXUALITY 133, 139–41 (Robert Hurley trans., Pantheon Books 1978) (1976).

29. The history of genetic material and information is marked by repeated episodes of misuse, particularly by scientists and state institutions. From the unauthorized collection and exploitation of genetic samples from Indigenous and minority communities—often without informed consent or benefit-sharing—to the use of genetic information in ethically fraught research, science has too often treated DNA as a resource to be extracted rather than as a deeply personal element of identity. In more recent years, law enforcement agencies have raised additional concerns by accessing consumer genetic databases—sometimes without adequate oversight or consent—to identify criminal suspects or their relatives, raising troubling questions about genetic surveillance and familial privacy. *See* Shelly Simana, *Gene Stewards: Rethinking Genome Governance*, 14 U.C. IRVINE L. REV. 1105, 1118–29 (2024); Natalie Ram, *America's Hidden National DNA Database*, 100 TEX. L. REV. 1253, 1300–02 (2022) [hereinafter Ram, *America's Hidden National DNA Database*]; Natalie Ram, *Genetic Privacy After* Carpenter, 105 VA. L. REV. 1357, 1359–67 (2019); Jessica L. Roberts, *Progressive Genetic Ownership*, 93 NOTRE DAME L. REV. 1105, 1135–38 (2018); HARRIET A. WASHINGTON, MEDICAL APARTHEID: THE DARK HISTORY OF MEDICAL EXPERIMENTATION ON BLACK AMERICANS FROM COLONIAL TIMES TO THE PRESENT 299–325 (2006). I am concerned about these kinds of uses, which illustrate the risks of treating genetic material and information instrumentally. Nonetheless, I believe such risks might be mitigated—though not eliminated.

30. Henrietta Lacks was a Black woman who received cancer treatment at Johns Hopkins Hospital in 1951. *See* REBECCA SKLOOT, THE IMMORTAL LIFE OF HENRIETTA LACKS 17–28 (2010). During her treatment, doctors collected samples of her tumor without her

provided genetic samples to researchers at Arizona State University for a study on diabetes—a condition of particular concern within the community.[31] Unbeknownst to the Tribe, the samples were later used for unrelated research on topics such as schizophrenia, inbreeding, and human migration, none of which had been disclosed or approved.[32] The case of John Moore, whose spleen cells were taken without his knowledge during medical treatment and later used to develop a commercially valuable cell line, further illustrates how individuals' genetic materials have been used without meaningful consent or transparency.[33] All these cases underscore how genetic material and information have been extracted and repurposed without consent, transparency, or accountability, often from marginalized individuals and communities. They reveal how systemic inequalities have shaped whose bodies are used, whose permission is bypassed, and who benefits from the resulting knowledge or profits—fueling widespread mistrust and raising serious ethical and legal concerns.

Given the personal nature of genetic material and information, these fears are understandable. People are often highly protective of their intimate and personal information, and the thought of mandatory sharing of genetic material and information can be unsettling. However, these concerns, while valid, can be addressed through careful design and implementation of the obligation to share genetic material and information, which I discuss in Part IV. For instance, we can develop safeguards to limit the potential for privacy invasion and protect individuals' genetic material and information from misuse, such as stringent security measures, anonymization techniques,[34] and strict legal frameworks. Transparent oversight mechanisms could also ensure accountability and build public trust.

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knowledge or consent. *See id.* Her cells—now known as HeLa cells—became the first immortal human cell line and have been used in countless scientific breakthroughs, from developing the polio vaccine to cancer research. *See id.* Yet for decades, neither Henrietta nor her family were informed, let alone compensated or consulted, highlighting the deep ethical failures that have shaped public mistrust in genetic science. *See id.*

31. Robyn L. Sterling, *Genetic Research Among the Havasupai: A Cautionary Tale*, 13 AMA J. ETHICS 113, 115 (2011).

32. *Id.*; *see also* Katherine Drabiak-Syed, *Lessons from* Havasupai Tribe v. Arizona State University Board of Regents*: Recognizing Group, Cultural, and Dignitary Harms as Legitimate Risks Warranting Integration into Research Practice*, 6 J. HEALTH & BIOMED. L. 175, 175 (2010) (arguing that genomic research can inflict collective and dignitary harms on groups, underscoring the need to integrate these risks into research governance).

33. *See* Moore v. Regents of Univ. of Cal., 793 P.2d 479, 480–83 (Cal. 1990).

34. It is true that current research demonstrates the difficulty of fully anonymizing genetic material and information; even after deidentification, it is often possible to reidentify individuals using publicly available data and familial matching techniques. This reality underscores the inherently identifiable nature of genetic material and information. Nonetheless, I remain hopeful that future technological advances will improve anonymization methods and that, when combined with robust regulatory safeguards, the risk of reidentification can be significantly mitigated. On the challenges of effectively deidentifying genetic material and information, see Zhiyu Wan et al., *Sociotechnical Safeguards for Genomic Data Privacy*, 23 NAT. REVS. GENET. 429, 429–34 (2022); Nora von Thenen, Erman Ayday & A. Ercument Cicek, *Re-Identification of Individuals in Genomic Data-Sharing Beacons via Allele Inference*, 35 BIOINFORMATICS 365, 370–71 (2019); Mahsa Shabani & Luca Marelli, *Re-Identifiability of Genomic Data and the GDPR: Assessing the Re-*

Even with such safeguards in place, it is important to recognize that our traditional views on privacy may need to evolve in light of the increasingly interconnected and data-driven world in which we live. The boundaries between what is considered public and private are becoming more porous, particularly when it comes to personal data—and genetic information is no exception. Millions of individuals now voluntarily share their genetic material and information with commercial genetic testing companies (such as 23andMe and AncestryDNA), often in exchange for health risk assessments, ancestry reports, or participation in research studies.[35] Others contribute their genetic information to academic or biomedical research institutions, sometimes through biobanks or public health initiatives.[36] These practices are often undertaken with enthusiasm and a sense of personal or societal benefit, even though the long-term implications and potential uses of the data—such as access by law enforcement or pharmaceutical companies—are not always fully understood or carefully considered.[37]

This widespread and often willing participation reflects a subtle but significant shift in the cultural understanding of genetic privacy. It suggests that many people may no longer view genetic material and information as resources that must be absolutely private, but rather as resources that—under the right conditions—can be shared for collective benefit. Importantly, this does not mean that privacy should be discarded or neglected. On the contrary, it underscores the need for robust governance frameworks that enable data sharing in ways that are transparent, equitable, and respectful of individual autonomy. Still, the popularity of voluntary sharing practices may point to a deeper transformation in societal expectations—one in which the collective benefits of genetic reciprocity, including advances in medical research, precision public health, and responsible law enforcement use, are increasingly weighed alongside individual rights. This evolving landscape invites a reassessment of privacy norms, recognizing that strict

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Identifiability of Genomic Data in Light of the EU General Data Protection Regulation, 20 EMBO REPS., May 24 2019, at 4, https://pmc.ncbi.nlm.nih.gov/articles/PMC6549023/ [https://perma.cc/QW4N-DBXE].

35. Diana Kwon, *What Went Wrong at 23andMe? Why the Genetic-Data Giant Risks Collapse*, 638 NATURE 14, 14 (2025), https://www.nature.com/articles/d41586-025-00118-y [https://perma.cc/9PSZ-YW5C].

36. *See* Helen Swede, Carol L. Stone & Alyssa R. Norwood, *National Population-Based Biobanks for Genetic Research*, 9 GENET. MED. 141, 146–47 (2007); Aisling M. McMahon & Opeyemi I. Kolawole, *Biobank Donation in Search of Public Benefits and the Potential Impact of Intellectual Property Rights over Access to Health-Technologies Developed: A Focus on the Bioethical Implications*, 32 MED. L. REV. 205, 205–09 (2024); Gloria Lyu, Matthew Spero & Connor Henderson, *Navigating Genetic Data Privacy and Law Enforcement Access*, REGUL. REV. (Oct. 5, 2024), https://www.theregreview.org/2024/10/05/navigating-genetic-data-privacy-and-law-enforcement-access/ [https://perma.cc/V9LM-MWKB].

37. Alaina Demopoulos, '*There are No Serious Safeguards': Can 23andMe be Trusted with Our DNA?*, THE GUARDIAN (Feb. 17, 2024, at 12:00 ET), https://www.theguardian.com/technology/2024/feb/17/23andme-dna-data-security-finance [https://perma.cc/8BAS-MTSS]; Jamie Ducharme, *A Major Drug Company Now Has Access to 23andMe's Genetic Data. Should You Be Concerned?*, TIME (July 26, 2018, at 15:47 ET), https://time.com/5349896/23andme-glaxo-smith-kline [https://perma.cc/K3JS-TZVJ].

individual control is not the only model for managing genetic material and information in a cooperative and solidaristic society.

Ultimately, the concept of genetic reciprocity reflects a broader principle already implicitly acknowledged in other areas of law and policy: that certain resources and responsibilities are inherently shared. Vaccination mandates, for instance, establish that individual participation is essential to achieving herd immunity, thereby protecting vulnerable populations and preventing the spread of infectious diseases.[38] Similarly, regulations to ensure clean air acknowledge that environmental quality is a shared resource requiring collective action, as no single individual or entity can safeguard it alone.[39] These examples demonstrate that, in contexts where individual actions have profound implications for the greater good, society is justified in imposing legal obligations to ensure collective benefits. Genetic material and information share these characteristics.

As inherently interconnected resources, they hold transformative potential for society. Contributing genetic material and information to biobanks or databases enables breakthroughs in medical research, the development of treatments for hereditary diseases, and public health initiatives aimed at preventing illness on a population level.[40] Beyond health, these contributions also bolster law enforcement efforts, such as solving crimes and identifying missing persons through genetic genealogy.[41] In this way, genetic material and information exemplify the idea that individual contributions, while seemingly personal, are integral to achieving collective outcomes that benefit all of society.[42]

What makes genetic reciprocity particularly compelling is the relatively low cost of individual participation. Unlike forms of societal contribution that may require significant time, effort, or sacrifice, providing genetic material and information is typically simple, quick, and noninvasive—for example, a DNA sample can often be collected through a brief, painless cheek swab or saliva sample.[43] The act of sharing genetic information, especially when anonymized and

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38. *See* Steven S. Cheng & Bianca A. Lepe, *The Path to Herd Immunity: Is Mandatory Vaccination the Answer?*, 2 MIT SCI. POL'Y REV. 82, 83 (2021).

39. *See* Anthony Moffa, *Constitutional Authority, Common Resources, and the Climate*, 2022 UTAH L. REV. 169, 198.

40. Hyeji Lee et al., *Lessons from National Biobank Projects Utilizing Whole-Genome Sequencing for Population-Scale Genomics*, 23 GENOMICS & INFORM., no. 1, 2025, at 9–11, https://genomicsinform.biomedcentral.com/articles/10.1186/s44342-025-00040-9 [https://perma.cc/CW2E-QZPR]; Elisabet Rodriguez Llorian et al., *A Rapid Review on the Value of Biobanks Containing Genetic Information*, 26 VALUE HEALTH 1286, 1291 (2023).

41. James W. Hazel & Christopher Slobogin, *"A World of Difference?" Law Enforcement, Genetic Data, and the Fourth Amendment*, 70 DUKE L.J. 705, 708–09 (2021).

42. While in this Article I defend the existence of a general legal duty to contribute genetic material and information, I recognize that the specific contexts in which such a duty may arise—public health, biomedical research, forensic investigations, and others—differ significantly in purpose, risk profile, and potential for misuse. Each domain may require its own tailored safeguards to ensure transparency, prevent abuse, and uphold individual rights. Nonetheless, the core claim advanced in this Article is that a broad legal duty exists across these domains, even if its implementation must be sensitive to contextual variations.

43. Dominique Quinque et al., *Evaluation of Saliva as a Source of Human DNA for Population and Association Studies*, 353 ANAL. BIOCHEM. 272, 272–73 (2006).

securely stored, imposes minimal ongoing demands on individuals. Furthermore, modern technology has streamlined the process of collecting and analyzing genetic material, making participation efficient and accessible.[44] When balanced against the immense societal benefits, the low burden on individuals underscores the fairness and practicality of such obligations. The costs are not only low in terms of effort but also in terms of privacy risks when appropriate safeguards are in place. Measures such as robust anonymization, strict data security, and transparent governance frameworks can mitigate concerns about misuse while ensuring that contributors' material and information are used responsibly.

This Article is constructed as follows. Part I discusses the connection between the concept of self-ownership and two central philosophical traditions, the libertarian and liberal ideologies. These ideologies differ from the theory developed in this Article by overlooking the relational dimensions of both the self and property rights. They prioritize individual rights without sufficiently addressing the impact of our actions on others or the duty of individuals to contribute positively to the welfare of others. This Part then examines self-ownership in the context of genetic material and information, spotlighting current practices and the increasing support for granting individuals exclusive ownership rights over these resources.

In Part II, this Article critiques the individual-centered approach in governing genetic material and information and emphasizes the need for a relational perspective that recognizes the interconnected nature of these resources. This Part argues that peoples' identities and decisions are shaped by their relationships with others and are deeply influenced by their social networks. The shared nature of genetic material and information links individuals not only to their immediate family, but also to wider "genetic networks," thereby uncovering shared genetic conditions.

Part III introduces the concept of genetic reciprocity. This concept moves beyond the individualistic focus of libertarian and liberal ideologies, proposing a redefinition of self-ownership that incorporates broader ethical principles and societal values in the governance of genetic material and information. It calls for the establishment of mandatory moral and legal obligations on individuals to benefit and support others with whom they share genetic similarities—effectively encompassing all people belonging to the human gene pool—and in particular a duty to share genetic material and information. While genetic reciprocity respects and protects an individual's property interests over their genetic material and information, it also emphasizes the need to weigh these interests against collective implications. This Part posits that, in certain scenarios, obligations toward other stakeholders outweigh individual interests.

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44. Roderick A. Yao et al., *Quality of Whole Genome Sequencing from Blood Versus Saliva Derived DNA in Cardiac Patients*, 13 BMC MED. GENOMICS, no. 11, 2020, at 1–2, https://bmcmedgenomics.biomedcentral.com/articles/10.1186/s12920-020-0664-7 [https://perma.cc/B56P-V53V]; Srinithi Purushothaman et al., *Evaluation of DNA Extraction Kits for Long-Read Shotgun Metagenomics Using Oxford Nanopore Sequencing for Rapid Taxonomic and Antimicrobial Resistance Detection*, 14 SCI. REPS., Nov. 27, 2024, at 10, https://www.nature.com/articles/s41598-024-80660-3 [https://perma.cc/VU4H-V9BL].

Part IV advances past purely theoretical discourse. It is centered on the tangible impacts of genetic reciprocity, illustrating the effects that social and legal changes can have on genome governance. Up to this point, there has been a lack of substantial efforts to establish a framework that encourages virtuous behavior when it comes to genetic material and information. Consequently, this Part suggests a legal requirement for the sharing of genetic material and information, aiming to create a comprehensive genomic biobank and database. It acknowledges, however, that such a legal requirement might not be feasible in the short term, primarily due to the need for major changes in societal norms and behaviors. As an alternative, it recommends employing incentives to encourage individuals to contribute their genetic material and information and suggests the implementation of opt-out mechanisms. Additionally, this Part advocates for a legal duty to disclose genetic conditions to close genetic relatives.

I. SELF-OWNERSHIP: PHILOSOPHICAL FOUNDATIONS AND IMPACT ON GENETIC RIGHTS

This Part first discusses the importance of self-ownership in libertarian and liberal ideologies. Both ideologies view self-ownership as a fundamental right intrinsic to each individual.[45] This discussion then shifts focus to the application of self-ownership in the context of genome governance. It draws attention to practices and perspectives that frequently overlook collective implications. Key among these practices is the stringent confidentiality maintained by healthcare providers concerning genetic information, the widespread and unregulated use of direct-to-consumer genetic testing by individuals that overlooks broader concerns, the emphasis on explicit consent for the use of genetic material and information, and the governance of these resources through the prism of private property rights.

A. The Concept of Self-Ownership Within Libertarian and Liberal Philosophies

The concept of self-ownership—asserting that each person belongs to themselves and, thus, is not obligated to provide service or goods to others[46]—finds its origins in Enlightenment philosophical thought.[47] Thinkers like John Locke proposed that people own themselves and, by extension, their labor and its products.[48] Later on, this notion became a foundational element in the formation of

45. Richard J. Arneson, *Lockean Self-Ownership: Towards a Demolition*, 39 POL. STUD. 36, 36–37 (1991); Joke I. de Witte & Henk Ten Have, *Ownership of Genetic Material and Information*, 45 SOC. SCI. & MED. 51, 52–55 (1997).

46. G.A. COHEN, SELF-OWNERSHIP, FREEDOM, AND EQUALITY 12 (2009).

47. Dan Moller, *Redistribution and Self-Ownership*, SOC. PHIL. & POL'Y, Winter 2019, at 196, 210.

48. COHEN, *supra* note 46, at 175–78. Locke's contribution to the discourse on self-ownership is anchored in his statement that "every man has a property in his own person; this nobody has any right to but himself." JOHN LOCKE, TWO TREATISES OF GOVERNMENT 134 (Thomas I. Cook ed., Hafner Publ'g Co. 1947) (1690). Locke's assertion is a departure from the feudal and hierarchical systems of his time, in which the divine right of kings and the subjugation of serfs were prevalent. For Locke, ownership and property were fundamentally linked to an individual's existence. Accordingly, self-ownership, when viewed through a Lockean lens, is an inherent, natural right that is central to human existence that provides every person with sovereignty over their own body and life. Having ownership over one's

libertarianism,[49] highlighting the significance—if not necessity—of personal freedom, private property, and minimal government intervention.[50] In a similar vein, liberalism has also strongly advocated for self-ownership, viewing it as essential to human dignity and autonomy.[51]

Libertarianism encompasses a wide spectrum of perspectives, ranging from right-leaning economic views that emphasize maximum market freedom and minimal state intervention to left-leaning views that prioritize equality concerns.[52] Regardless of their place on the spectrum, both right and left libertarians agree on the concept of self-ownership as a fundamental moral principle essential for protecting individual interests.[53] They diverge significantly, however, in their views on the ownership of external resources.[54] Given the ambiguity surrounding whether genetic material and information separated from the body qualify as "external

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body creates a zone of freedom for each individual that ensures their right to be free from external interference. It should be noted, though, that Locke's concept of self-ownership is rooted in the belief that humans belong to God. Therefore, if someone were to inflict harm on another person's life, health, freedom, or property, it would be an affront to God's enjoyment and a breach of the laws of nature. *See* JEREMY WALDRON, GOD, LOCKE, AND EQUALITY: CHRISTIAN FOUNDATIONS IN LOCKE'S POLITICAL THOUGHT 162–64 (2010); Niklas Angebauer, *Property and Capital in the Person: Lockean and Neoliberal Self-Ownership*, 27 CONSTELLATIONS 50, 51–54 (2020).

49. The work of Robert Nozick has established the foundations of libertarianism by emphasizing the importance of self-ownership and the inviolability of private property. Nozick emphasized that people have "property in themselves and their labor." ROBERT NOZICK, ANARCHY, STATE, AND UTOPIA 171 (1974). At the forefront of Nozick's philosophy is the idea that individuals have absolute rights over themselves, which includes their bodies, their talents, and the fruits of their labor. Nozick advocated for minimal state intervention and believed that any resource distribution that impinged on self-ownership is unjust, which underlined his strong emphasis on individual rights and advocacy for a state that primarily protects fundamental rights. The state's role in taxation was one of his major targets, as he equated the collection of taxes with the confiscation of labor or property. For Nozick, just distribution arises from voluntary trades, and forced taxation by the government is unjust unless it is crucial for maintaining institutions that ensure and protect the freedom of exchange. *See id.* at 26–33, 48–51; COHEN, *supra* note 46, at 19–37; WILL KYMLICKA, CONTEMPORARY POLITICAL PHILOSOPHY: AN INTRODUCTION 103–27 (2d ed. 2002).

50. COHEN, *supra* note 46, at 67–72; *see also Introduction: Respecting and Caring* to THE ROUTLEDGE HANDBOOK OF LIBERTARIANISM xvi, xvi–xx (Jason Brennan, Bas van der Vossen & David Schmidtz eds., 2018) (emphasizing respect for individual liberty, consent, and spontaneous order, and situating libertarian thought within classical liberalism and both deontological and consequentialist traditions).

51. Jason Brennan & Bas van der Vossen, *The Myths of the Self-Ownership Thesis*, *in* THE ROUTLEDGE HANDBOOK OF LIBERTARIANISM, *supra* note 50, at 199, 200–10; Robert S. Taylor, *Self-Ownership and the Limits of Libertarianism*, 31 SOC. THEORY & PRAC. 465, 475 (2005); Brian McElwee, *The Appeal of Self-Ownership*, 36 SOC. THEORY & PRAC. 213, 213 (2010).

52. Joseph Mazor & Peter Vallentyne, *Libertarianism, Left and Right*, *in* THE OXFORD HANDBOOK OF DISTRIBUTIVE JUSTICE 129, 140–41, 145–46 (Serena Olsaretti ed., 2018).

53. QUIGLEY, *supra* note 2, at 198.

54. Mazor & Vallentyne, *supra* note 52, at 135.

resources," I turn in the following paragraph to briefly explore the relationship between self-ownership and ownership over external resources.

According to right-libertarians, individuals, as self-owners, have the legitimate right to own everything else in the world.[55] They believe that individuals can rightfully acquire unowned external resources based not only on the principles of initial acquisition or labor mixing but also on the concept of self-ownership.[56] Additionally, right-libertarians oppose resource redistribution—such as taxation, even for the benefit of third parties[57]—and believe instead that a just distribution of resources should result from just initial acquisition and subsequent voluntary transfers.[58] In this view, self-ownership serves as the foundation for private property.

Left-libertarians, while still acknowledging each individual's self-ownership, hold various perspectives that suggest that external resources are initially owned in a more egalitarian manner.[59] Advocates of this theory align with the libertarian perspective regarding a robust right to self-ownership, arguing in favor of the view that individuals are entitled to the unique value of their talents.[60] Simultaneously, they argue that no one should have an excessive portion of the world's external resources.[61] This perspective incorporates John Locke's principle that one should only acquire as many resources as would leave everyone else with an equitable share, a principle expressed as "enough, and as good."[62]

Similar to libertarianism, liberalism also centers on the principle that each person possesses the inherent right to dictate the course and use of their lives and bodies according to their own values.[63] This entitlement holds immense significance and encompasses a comprehensive range of privileges and control powers.[64]

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55. *See* NOZICK, *supra* note 49, at 224–27.

56. *See* COHEN, *supra* note 46, at 67–79; KYMLICKA, *supra* note 49, at 111–21.

57. KYMLICKA, *supra* note 49, at 111–16.

58. *Id.*

59. Peter Vallentyne, Hillel Steiner & Michael Otsuka, *Why Left-Libertarianism Is Not Incoherent, Indeterminate, or Irrelevant: A Reply to Fried*, 33 PHIL. & PUB. AFFS. 201, 201 (2005); *see generally* HILLEL STEINER, AN ESSAY ON RIGHTS (1994) (developing a libertarian theory of justice grounded in universal self-ownership and equal claims to natural resources); PHILIPPE VAN PARIJS, REAL FREEDOM FOR ALL: WHAT (IF ANYTHING) CAN JUSTIFY CAPITALISM? (1995) (arguing that real freedom requires combining self-ownership with egalitarian resource entitlements, notably through a universal basic income); MICHAEL OTSUKA, LIBERTARIANISM WITHOUT INEQUALITY (2003) (reconstructing Locke's theory to defend a left-libertarian position that merges self-ownership with an egalitarian principle of resource distribution).

60. *See* Mazor & Vallentyne, *supra* note 52, at 130–35.

61. Barbara H. Fried, *Left-Libertarianism: A Review Essay*, 32 PHIL. & PUB. AFFS. 66, 67–68 (2004).

62. KYMLICKA, *supra* note 49, at 113.

63. Unlike libertarianism, the concept of self-ownership in the liberal tradition is more narrowly defined, focusing on a person's sovereignty over their own being, body, and life, rather than using it primarily as a basis for acquiring external resources. *See* JOHN STUART MILL, ON LIBERTY 8–17, 45–57 (Gildan Media, LLC 2020) (1859).

64. *See* John Christman, *Relational Autonomy, Liberal Individualism, and the Social Constitution of Selves*, 117 PHIL. STUD. 143, 143–44 (2004).

For example, liberal scholars propose that interpersonal interactions require clear boundaries regarding what belongs to each individual. These boundaries, ranging from control over one's thoughts and body to the possession of property, function as legal safeguards, demanding respect and preventing unwarranted intrusions.[65] The foundational legal literature on boundaries in property centers on this idea. For example, in his influential 1964 article *The New Property*, Charles A. Reich posited that property establishes a protective perimeter around each individual's actions, preserving their independence and dignity by creating areas where the owner's rights prevail over the majority.[66] Margaret Jane Radin's 1982 article *Property and Personhood* carried that position further by arguing that, for adequate self-development and personhood, a person must have exclusive control over certain resources.[67] The removal of property that holds deep personal significance and value to an individual can lead to a corresponding diminution in their sense of self.[68] The positions of both Reich and Radin highlight the critical role of property in shaping personhood, where specific types of property can blur the lines between the individual and the external world and between internal and external experiences.

The appeal of the self-ownership concept for liberals is notably linked to its impact on bodily autonomy. This principle asserts that possessing control over one's body naturally entails the right to avoid enforced intrusions, such as acts of violence or abuse.[69] This type of control is especially relevant for women, who are often confronted with threats like sexual violence and domestic abuse, and also holds significance for individuals belonging to socially disadvantaged groups. The essence of bodily autonomy is the inherent right to protect oneself from physical violations.

Despite the differences between libertarianism and liberalism,[70] both ideologies overlook the inherent relational aspects of people's motivations and the social nature of human existence.[71] Both libertarianism and liberalism consider

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65. Ngaire Naffine, *The Legal Structure of Self-Ownership: Or the Self-Possessed Man and the Woman Possessed*, 25 J.L. & SOC'Y 193, 197–200, 205 (1998).

66. Charles A. Reich, *The New Property*, 73 YALE L.J. 733, 771 (1964).

67. Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957, 957 (1982).

68. *Id.* at 1002–06.

69. Ann E. Cudd, *Feminism and Libertarian Self-Ownership*, *in* THE ROUTLEDGE HANDBOOK OF LIBERTARIANISM, *supra* note 50, at 135 [hereinafter Cudd, *Feminism and Libertarian Self-Ownership*].

70. For example, libertarian and liberal ideologies diverge in their views on the role of the state. Libertarians emphasize minimal state intervention, whereas liberals accept a more active role for the state in promoting fairness and equality. It should be highlighted that "new liberalism," with its emphasis on social justice theories, recognizes the interconnected nature of human life. It calls for equality and prioritizes aiding those who are most disadvantaged in society. Nonetheless, it firmly upholds civil and personal *liberties*. Therefore, its pursuit of equality serves to ensure that every individual in society has the opportunity to enjoy their freedoms. *See* Shane D. Courtland, Gerald Gaus & David Schmidtz, *Liberalism*, STAN. ENCYC. PHIL. (Feb. 22, 2022), https://plato.stanford.edu/archives/spr2022/entries/liberalism/ [https://perma.cc/5ZQB-K6E4].

71. *See* Christman, *supra* note 64, at 144–46.

people's bodies and selves to be inviolable.[72] This is why, for instance, these ideologies generally do not endorse the concept of imposing an obligation on individuals to act as Good Samaritans, nor do they typically support the removal of organs from a deceased person's body without their prior consent.[73]

Moreover, both ideologies rest on a shared conception of the person as an individual defined by independence, rationality, and self-interest.[74] This vision requires that a person be a clear-sighted, autonomous decision-maker who is fully aware of their own motives.[75] Specifically, it underscores the belief in the individual's inherent capacity to understand and direct their own life choices without external influence.[76]

Overall, self-ownership in both libertarian and liberal ideologies requires that each of us has complete control over our own body and mind, with the understanding that this control takes precedence over competing claims.[77] Self-ownership encompasses various rights, such as the rights to use, manage, or profit from one's abilities, and the ability to transfer or assert these rights.[78] Essentially, this concept is closely linked to an individual's rights to autonomy and self-determination, as well as the power to prevent involuntary actions imposed upon by others.

In the framework of this discussion, it is essential to acknowledge the growing recognition and importance of the concept of self-ownership across different domains, which has manifested itself in two significant ways. First, in our daily lives, there is a notable shift toward valuing individual rights and personal liberty, stemming from the growing acknowledgment of one's inherent ownership of oneself.[79] Additionally, this shift is mirrored in the increasing importance, across multiple domains, that has been placed on obtaining consent.[80] The act of seeking an individual's consent serves as a tangible expression of respect for their ownership over their body and possessions.[81]

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72. *See* CÉCILE FABRE, WHOSE BODY IS IT ANYWAY? JUSTICE AND THE INTEGRITY OF THE PERSON 2–3 (2006).

73. *Id.*

74. Françoise Baylis, Nuala P. Kenny & Susan Sherwin, *A Relational Account of Public Health Ethics*, 1 PUB. HEALTH ETHICS 196, 200–01 (2008).

75. *Id.*

76. *Id.*

77. John Thrasher, *Self-Ownership as Personal Sovereignty*, SOC. PHIL. & POL'Y, Winter 2020, at 116, 116.

78. *See* NOZICK, *supra* note 49, at 171.

79. Aileen Editha, *My Body Is Mine . . . Until I Die: The Relationship Between Self-Ownership and England's Opt-Out System for Deceased Adult Organ Donations*, 40 MED. & L. 337, 338–39 (2021).

80. RUTH R. FADEN & TOM L. BEAUCHAMP IN COLLABORATION WITH NANCY M. P. KING, A HISTORY AND THEORY OF INFORMED CONSENT 7 (1986).

81. David Archard, *Informed Consent: Autonomy and Self-Ownership*, 25 J. APPLIED PHIL. 19, 27–31 (2008).

B. Self-Ownership in the Genetic Landscape

The concept of self-ownership, as interpreted by libertarian and liberal ideologies, is integral in many health contexts and applies to genetic material and information as well. It represents the assertion that people have ownership over these resources, much like their ownership of their own bodies.[82] This concept manifests in numerous practices that emphasize an individual's right to make their own choices regarding genetic material and information and grant them significant—and sometimes even absolute—control over these resources.

For instance, there is no obligation for medical professionals or individuals to disclose important genetic information to family members.[83] Medical professionals are bound to protect the patient's genetic information and disclose it to third parties only with the patient's consent.[84] To illustrate, in *Pate v. Threlkel*, which is one of the first cases addressing this issue, the Florida Supreme Court determined that a physician's duty to warn about a genetically transferable condition is met by warning the patient directly.[85] While the physician's duty is limited to informing the patient, this does not impose a duty on the patient to subsequently warn family members.[86] Moreover, direct-to-consumer genetic testing services empower individuals to choose to undertake genetic testing without the need to consider its wider effects.[87] People have the liberty to use genetic testing services,

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82. QUIGLEY, *supra* note 2, at 233–34.

83. Anne-Marie Laberge & Wylie Burke, *Duty to Warn At-Risk Family Members of Genetic Disease*, 11 AMA J. ETHICS 656, 657 (2009); Amicia Phillips et al., *Disclosure of Genetic Information to Family Members: A Systematic Review of Normative Documents*, 23 GENET. MED. 2038, 2041–44 (2021).

84. It should be noted that while HIPAA does not mandate the disclosure of genetic risk to relatives, it permits certain forms of provider-mediated genetic risk notification, such as directly contacting relatives with the patient's consent. While this is legally permissible, there are still challenges regarding patient privacy, the effectiveness of these notifications, and the ethical implications of direct contact, especially when patients may not want their relatives contacted. In essence, while healthcare providers are allowed to share genetic risk information under certain conditions, the approach must be balanced with respect for patient privacy and the effectiveness of communication methods. *See* Nora B. Henrikson et al., *What Guidance Does HIPAA Offer to Providers Considering Familial Risk Notification and Cascade Genetic Testing?*, 7 J.L. & BIOSCI. 1, 7–10 (2020), https://doi.org/10.1093/jlb/lsaa071 [https://perma.cc/8GDT-GM8P].

85. 661 So. 2d 278, 282 (Fla. 1995). In this case, the Court dealt with the following question: "[d]oes a physician owe a duty of care to the children of a patient to warn the patient of the genetically transferable nature of the condition for which the physician is treating the patient?" *Id.* The Court determined that there is a duty of care owed to the children, the obligation to provide a warning rests with informing the *patient*, not the children directly. *Id.*

86. *Id.*

87. *Compare* Michele Loi, *Direct to Consumer Genetic Testing and the Libertarian Right to Test*, 42 J. MED. ETHICS 574, 574–77 (2016) (arguing that individuals possess a right, grounded in libertarian principles of self-ownership and bodily autonomy, to access genetic testing without state interference, and that concerns about harm are insufficient to override this right), *with* Wendy Elizabeth Bonython & Bruce Baer Arnold, *Response: Direct to Consumer Genetic Testing and the Libertarian Right to Test*, 44 J. MED. ETHICS 787, 788 (2018) (contending that Loi's account overlooks the collective and regulatory

based on their own judgment, free from external (family or societal) pressures. Furthermore, there are currently no mechanisms in place to encourage and incentivize participation in research studies related to genetic material and information, like the NIH's "All of Us Research Program,"[88] despite the fact that such studies aim to collect data from individuals to expedite research with the potential to enhance health outcomes.[89]

The above practices are closely linked to a growing movement that advocates for stronger protections of genetic material and information, recognizing that they are highly personal.[90] This movement is characterized by the adoption of what I term the "consent perspective." Under this perspective, the use of genetic material and information is contingent on explicit consent from the individual, and people are not obligated to provide it to others unless they have given clear consent.[91] Furthermore, this perspective is poised to question more indirect influences, such as behavioral nudges—subtle design features that influence choices by altering how options are presented—unless they culminate in informed and voluntary consent.[92]

The consent perspective extends beyond the requirement for informed and explicit authorization. It also supports three developments—academic, regulatory, and judicial, all of which I have criticized in other works—for advancing the notion that genetic material and information should receive the same level of protection as *private* property.[93] The concept of self-ownership is key here as it provides the justification for recognizing property rights over genetic material and information,

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dimensions of genetic testing, including risks of misuse, privacy harms, and implications for third parties, which can justify regulatory limits even within a liberal framework).

88. For more information on the All of Us Research Program, see *All of Us Research Program Overview*, NIH, https://allofus.nih.gov/article/program-overview [https://perma.cc/H6US-KHQB] (last visited Sep. 28, 2025). This program is a national initiative designed to gather data from over one million people across the United States.

89. *See* Cathie Sudlow et al., *UK Biobank: An Open Access Resource for Identifying the Causes of a Wide Range of Complex Diseases of Middle and Old Age*, 12 PLOS MED., Mar. 31, 2015, at 1, https://doi.org/10.1371/journal.pmed.1001779 [https://perma.cc/TRN7-55DH]; Emil Uffelmann et al., *Genome-Wide Association Studies*, 1 NATURE REVS. METHODS PRIMERS, no. 1, 2021, at 1, https://www.nature.com/articles/s43586-021-00056-9 [https://perma.cc/73MN-FXZ4]; Ozvan Bocher, Cristen J. Willer & Eleftheria Zeggini, *Unravelling the Genetic Architecture of Human Complex Traits Through Whole Genome Sequencing*, 14 NATURE COMMC'NS, June 14, 2023, at 1, https://doi.org/10.1038/s41467-023-39259-x [https://perma.cc/7KYC-EKQL].

90. Simana, *supra* note 6, at 149–51, 160–68.

91. Alan Wertheimer, *(Why) Should We Require Consent to Participation in Research?*, 1 J.L. & BIOSCI. 137, 140–41 (2014).

92. On nudges, see generally RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS (2008) (advocating behavioral "nudges" that shape choices, a practice consent-based perspectives may resist absent informed agreement).

93. *See* Simana, *supra* note 6, at 149–51, 160–68; *see also* Anya E. R. Prince, *Comprehensive Protection of Genetic Information: One Size Privacy or Property Models May Not Fit All*, 79 BROOK. L. REV. 175, 188 (2013) (analyzing the limits of applying traditional privacy and property frameworks to genetic information and cautioning against simplistic legal models that fail to capture its unique characteristics).

ensuring significant control for individuals over them.[94] At this point, it is important to reiterate a point I have made before: I recognize that "self-ownership" and "property" are distinct concepts.[95] Being part of the self does not automatically grant a person property rights over it, and possessing property rights over something does not imply that the "thing" in question is an integral part of the self. To put it differently, "whereas ownership represents the functional relationship between a person and a thing, property law represents a particular structure of rights and duties that protects the ownership relationship in a particular way."[96]

The first development is academic. A growing number of scholars have turned to property law to justify its application in the context of genetic material and information (whether or not these resources have been separated from the body).[97] Some scholars advocate for property rights as a way to protect against their potential misuse, arguing that this allows individuals to gain legal authority over them.[98] This authority shields individuals from unwarranted uses of their genetic material and information, thereby ensuring autonomy in decisions related to them. Other scholars support assigning property rights to genetic material and information as a means to signify that they are inherently tied to an individual's identity.[99] According to this perspective, no other entity possesses a stronger or more legitimate claim to one's genetic material and information than the individual to whom they pertain. This argument draws parallels with the rights individuals have over their own image or likeness,[100] suggesting that a right exists for individuals also to control their genetic material and information.

The second development is regulatory. Legislative initiatives across various states have sought to establish property rights for genetic material and

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94. QUIGLEY, *supra* note 2, at 233–36.

95. *Id.*

96. JESSE WALL, BEING AND OWNING: THE BODY, BODILY MATERIAL, AND THE LAW 24 (2015).

97. *See, e.g.*, Catherine M. Valerio Barrad, Comment, *Genetic Information and Property Theory*, 87 NW. U. L. REV. 1037, 1048 (1993); Radhika Rao, *Genes and Spleens: Property, Contract, or Privacy Rights in the Human Body?*, 35 J.L. MED. & ETHICS 371, 371 (2007); Natalie Ram, *Assigning Rights and Protecting Interests: Constructing Ethical and Efficient Legal Rights in Human Tissue Research*, 23 HARV. J.L. & TECH. 119, 119–24 (2009); Roberts, *supra* note 29, at 1105.

98. *See, e.g.*, QUIGLEY, *supra* note 2; Valerio Barrad, *supra* note 97, at 1084–86; Jeffery Lawrence Weeden, *Genetic Liberty, Genetic Property: Protecting Genetic Information*, 4 AVE MARIA L. REV. 611, 612 (2006); Robin Feldman, *Whose Body Is It Anyway? Human Cells and the Strange Effects of Property and Intellectual Property Law*, 63 STAN. L. REV. 1377, 1385 (2011).

99. *See, e.g.*, Leigh M. Harlan, Note, *When Privacy Fails: Invoking a Property Paradigm to Mandate the Destruction of DNA Samples*, 54 DUKE L.J. 179, 182–83 (2004); Tufik Y. Shayeb, *You Are What You Own: Reopening the Discussion on Universally Recognizing a Property Right in Genetic Information and Material*, 38 WHITTIER L. REV. 181, 183–88 (2017); Yaniv Heled & Liza Vertinsky, *Genetic Paparazzi: Beyond Genetic Privacy*, 82 OHIO ST. L.J. 409, 448–49 (2021); Steven A. Fisher, Comment, *Protecting Genetic Identity with the Right of Publicity: Applying California's Common Law Right of Publicity to Direct-to-Consumer Genetic Testing*, 70 AM. U. L. REV. 1217, 1255 (2021).

100. Heled & Vertinsky, *supra* note 99, at 436–40.

information.[101] Alaska, Florida, Colorado, Georgia, Louisiana, and Texas have all determined that genetic material and/or information are the sole property of the individual from whom they originate.[102] For instance, Alaska and Texas explicitly recognize DNA samples and the derived analyses as the person's "exclusive property."[103] Bills echoing these sentiments have been tabled across multiple states, emphasizing the private-property nature of genetic material and information.[104]

In other states, legislation has been enacted that provides individuals with a substantial degree of control over their genetic material and information, although these specific laws do not formally recognize genetic material and information as the individual's personal property.[105] Instead, these laws give individuals certain rights that significantly impact how their genetic material and information can be used. These rights include, but are not limited to, the right to be notified about the specific uses of genetic information derived from them, the right to access and review this information, and the right to formally request the destruction or deletion of both their genetic material and any associated data.[106] Other states have gone a step further, requiring explicit consent for *any* disclosure or use of an individual's genetic material and information by any third party, thereby creating rights that are enforceable against all other entities.[107]

Finally, the third development is judicial. Some courts have upheld the treatment of genetic information as private property.[108] Contrary to the approach of

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101. Leslie E. Wolf et al., *The Web of Legal Protections for Participants in Genomic Research*, 29 HEALTH MATRIX, no. 1, 2019, at 74–75, https://pmc.ncbi.nlm.nih.gov/articles/PMC6779301/pdf/nihms-1050896.pdf [https://perma.cc/2U9V-6A3J]; Anya E. R. Prince, *The Genetic Information Privacy Act: Drawbacks and Limitations*, 330 JAMA 2049, 2049 (2023).

102. ALASKA STAT. § 18.13.010(a)(2) (2025); FLA. STAT. ANN. § 760.40(2) (West 2025); COLO. REV. STAT § 10-3-1104.7(1)(a) (2025); GA. CODE ANN. § 33-54-1 (2025); LA. STAT. ANN. § 22:1023(E) (2025); TEX. BUS. & COM. CODE ANN. § 503A.00 (West 2025). Alaska and Texas are unique in considering both genetic material and information as private property, whereas other states only regard genetic information as such. It remains unclear whether Alaska's and Texas's definitions extend to *discarded* genetic material.

103. ALASKA STAT. § 18.13.010(a)(2) (2025); TEX. BUS. & COM. CODE ANN. § 503A.003 (West 2025).

104. *See* Simana, *supra* note 6, at 161–62.

105. Wolf et al., *supra* note 101, at 69–74. It should be noted that there has been a growing effort among states to implement legislation regulating the activities of direct-to-consumer genetic testing companies. These laws mandate the acquisition of consent from individuals before their genetic information can be collected, used, or disclosed. *E.g.*, CAL. CIV. CODE § 56.181 (West 2023); MD. CODE ANN., COM. LAW § 14-4404 (West 2024); UTAH CODE ANN. § 13-60-104 (West 2024); ARIZ. REV. STAT. ANN. § 44-8002 (2024); TENN. CODE ANN. §§ 47-18-4901–06 (West 2024).

106. Wolf et al., *supra* note 101, at 69–74.

107. *Id.* at 27–29, 40–42, 44–46.

108. *See* Simana, *supra* note 6, at 162–65, 167. However, it should be emphasized that current interpretations of the Fourth Amendment do *not* recognize genetic material and information as private property. The courts have not extended Fourth Amendment protections to what is considered "abandoned" property, including DNA. The prevailing view is that individuals do not have a reasonable expectation of privacy for objects they discard. *Id.* at 205, n.308.

scholars and legislatures, courts seem to place significant importance on the origin of genetic material.[109] They have shown a reluctance to consider discarded genetic material as private property, although this does not extend to the information contained within it.[110]

For instance, in the 2017 case of *Peerenboom v. Perlmutter*, which was brought before a Florida trial court, two businessmen, Harold Peerenboom and Isaac Perlmutter, found themselves in a conflict related to tennis court access.[111] This escalated when Peerenboom received anonymous, slanderous letters, leading him to suspect Isaac and Laura Perlmutter were the culprits.[112] To link the Perlmutters to these letters, Peerenboom brought a separate legal claim against them to secretly obtain their DNA.[113] Peerenboom accomplished this by providing them with specially treated documents and collecting water bottles they used, then comparing their DNA with that found on the anonymous letters.[114] The Perlmutters, in turn, sued Peerenboom, accusing him of illegally stealing their genetic information, using claims of conversion and civil theft.[115] They argued that their genetic information was their personal property and Peerenboom's actions infringed upon their rights to property and privacy.[116] In its ruling, the court sided with the Perlmutters, asserting that they had a property interest in their own genetic information, a stance supported by Florida's statute, which explicitly designates genetic information as personal property.[117] This decision effectively upheld their procedural right to bring a claim under the law, affirming the notion that genetic information is not only a matter of privacy but also a recognized property right.[118]

Also in 2017, the federal trial court in Alaska heard the case of *Cole v. Gene by Gene*, in which Michael Cole sued Gene by Gene, a DNA testing company, after discovering that his personal and DNA test details were released online without his consent.[119] Cole argued this was a breach of his privacy and violated Alaska's

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109. *See, e.g.*, Peerenboom v. Perlmutter, No. 2013-CA-015257, 2017 WL 11839690, at *13 (Fla. Cir. Ct. Jan. 23, 2017).

110. *Id.* at *5 n.7.

111. Fed. Ins. Co. v. Perlmutter, 376 So. 3d 24, 28 (Fla. Dist. Ct. App. 2023). As of the time of writing, the legal battle between the Perlmutters and Peerenboom continues to unfold. In December 2023, the District Court of Appeal of Florida held that the record evidence was insufficient to permit claims for punitive damages. In its decision, the court did not delve into the broader issue of whether individuals have a property right over their genetic information. *Id.*

112. *Peerenboom*, 2017 WL 11839690, at *1.

113. *Id.*

114. *Id.* at *2.

115. *Id.* at *4–7.

116. *Id.* at *4, *7.

117. *Id.* at *5, *7.

118. *See id.*

119. Cole v. Gene by Gene, Ltd., No. 1:14-cv-00004-SLG, 2017 WL 2838256, at *2 (D. Alaska June 30, 2017). At the time of writing, it appears that the case is still navigating through the court system.

Genetic Privacy Act, which requires explicit consent for such disclosures.[120] Gene by Gene denied any wrongdoing and claimed that Cole had agreed to certain data disclosures by participating in the company's project groups.[121] They emphasized that the information published was limited to nonsensitive DNA and that Cole had not removed his information from their website after discovering the disclosure.[122] The court sided with Cole, acknowledging that Alaska's Genetic Privacy Act grants individuals property rights over their genetic information.[123] The court found that unauthorized disclosure of genetic information constitutes a substantial harm.[124]

To conclude, the concept of self-ownership has been instrumental in shaping our understanding of the self, particularly in health-related fields. When applied to genetic material and information, this concept advocates for extensive individual control and decision-making over these resources. Moving forward, there is a clear need to critically reevaluate self-ownership in the context of genome governance. However, while recognizing and protecting individual interests over genetic material and information is undoubtedly important, this recognition must be juxtaposed against the potential consequences for other stakeholders. This complex interplay lays the groundwork for the subsequent Parts of this Article, which delve deeper into alternative models and perspectives, moving beyond the traditional lens of self-ownership.

II. GENETIC INTERCONNECTEDNESS

This Part addresses a particular limitation of the individual-centric perspective on self-ownership, which I outlined in the previous Part. Specifically, it argues that this perspective falls short in the context of genome governance due to the interconnected nature of genetic material and information. It highlights the externalities affecting those who have a close genetic connection with the individual—like close relatives—as well as the broader population, given that all people share genetic similarities as members of the gene pool.

By "externalities," I mean benefits to others resulting from the activity of another.[125] For instance, genetic material and information have a crucial role in addressing global health issues, enriching our knowledge of human evolution, and promoting stronger unity among different populations. Consequently, a broader acknowledgment and appreciation of our genetic interconnectedness is needed,

120. Class Action Complaint & Demand for Jury Trial at 2, Cole v. Gene by Gene, Ltd., No. 1:14-cv-00004-SLG, 2017 WL 2838256 (D. Alaska June 30, 2017) (on file with the author).

121. Defendant's Motion to Dismiss Pursuant to Rule 12(B)(1) & 12(H)(3) at 4, Cole v. Gene by Gene, Ltd., No. 1:14-cv-00004-SLG, 2017 WL 2838256 (D. Alaska June 30, 2017) (on file with the author).

122. *Id.*

123. *Cole*, 2017 WL 2838256, at *3–5.

124. *Id.* at *4.

125. N. GREGORY MANKIW, PRINCIPLES OF ECONOMICS vii–viii (9th ed. 2021); *Externality*, *The A to Z of Economics*, ECONOMIST, https://www.economist.com/economics-a-to-z#E [https://perma.cc/W8KV-QDEV] (last visited Sep. 29, 2025).

which should be reflected in policies designed to capture the positive externalities associated with these resources.[126]

Overall, this Part provides the foundation for a relational approach to self-ownership, which will be further elaborated upon in Parts III and IV. This approach is based on the belief that our identities and lives are fundamentally linked to our relationships with others. It highlights the crucial role of connections in forming our sense of self and calls for a more inclusive approach to decision-making.[127] In the context of genetic material and information, a relational approach urges a wider evaluation of the repercussions of their use. It advocates for considerations that extend beyond the individual, encompassing the impact on the broader genetic networks they are part of. Specifically, it supports the establishment of an obligation to share genetic material and information.

The term "relational" emphasizes the significance of interconnections in human existence.[128] It posits that people are interdependent; their very essence is shaped and nurtured within complex interactions.[129] This term asserts that both personal connections and broader societal dynamics contribute to the formation of each person.[130] These multifaceted and intersecting relationships assist in comprehending one's own identity and role in society and open avenues for personal and collective transformation.[131]

Historically, ethical and legal frameworks have prioritized self-ownership and individual autonomy, especially in matters concerning personal health and bodily decisions.[132] These frameworks have perceived individuals as autonomous entities, with the right to make independent choices about their health and bodies.[133] However, this view overlooks the fundamentally social nature of human beings. People are not isolated entities; rather, they are deeply embedded within historical, social, cultural, and political environments.[134] Personal development and identity formation occur through interactions and engagements with others, not in isolation.

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126. Genetic material and information do not stand alone in this context. There are several other domains where policies are crafted to capture positive externalities, including those related to taxation, energy, and health.

127. NEDELSKY, *supra* note 11, at 19–38; Jennifer J. Llewellyn & Jocelyn Downie, *Introduction* to BEING RELATIONAL: REFLECTIONS ON RELATIONAL THEORY AND HEALTH LAW 1, 4–8 (Jocelyn Downie & Jennifer J. Llewellyn eds., 2012).

128. Llewellyn & Downie, *supra* note 127.

129. Françoise Baylis, *The Self in Situ: A Relational Account of Personal Identity*, *in* BEING RELATIONAL: REFLECTIONS ON RELATIONAL THEORY AND HEALTH LAW 109, 109 (Jocelyn Downie & Jennifer J. Llewellyn eds., 2012).

130. *Id.*

131. Susan Sherwin & Katie Stockdale, *Whither Bioethics Now? The Promise of Relational Theory*, 10 INT'L J. FEM. APPROACHES TO BIOETH. 7, 9 (2017).

132. *See* Archard, *supra* note 81, at 32; HEATHER WIDDOWS, THE CONNECTED SELF: THE ETHICS AND GOVERNANCE OF THE GENETIC INDIVIDUAL 15–29 (Margaret Brazier et al. eds., 2013); Bruce Jennings, *Reconceptualizing Autonomy: A Relational Turn in Bioethics*, HASTINGS CTR. REP., May-June 2016, at 11, 11–13; Seema Mohapatra & Lindsay F. Wiley, *Introduction* to FEMINIST JUDGMENTS: HEALTH LAW REWRITTEN 1, 6–7 (Seema Mohapatra & Lindsay F. Wiley eds., 2022).

133. Jennings, *supra* note 132, at 14.

134. NEDELSKY, *supra* note 11, at 39.

When facing crucial decisions, individuals often do not possess a predefined, rational set of values.[135] Instead, they navigate their way to decisions through discussions and interactions with others, which play a vital role in helping them understand their identity and beliefs.[136]

In the realm of health, this interconnectedness becomes even more evident as patients' health status is linked to their familial, social, and economic circumstances. This interdependence suggests that the traditional individualistic model of understanding people is limited and does not fully capture the complexity of their experiences and needs.[137]

Viewing genetic issues through an individualistic lens is also problematic, as it can provide neither an effective description of the nature of genetic material and information, nor guidance as to how these resources should be governed. Because genetic material and information are inherently shared, a single person's genetic makeup holds implications not just for themself, but also for their close relatives and the broader population.[138] The intertwined nature of these resources leads to a network of shared concerns and responsibilities that go beyond individual boundaries. The Sections below describe the main two externalities of genetic material and information.[139]

A. Genetic Externalities: Impact on Close Genetic Connections

Our genetic code is passed down through generations. Each person inherits half of their DNA from each genetic parent.[140] During conception, parents contribute their genetic material to the embryo, resulting in a distribution of their chromosomes, which together form the 46 chromosomes defining human DNA.[141] Due to this genetic interchange, people possess significant genetic similarities with those to whom they are closely genetically related.

For instance, siblings share half of their genetic makeup, while the shared DNA decreases to 25% with grandparents, aunts, and uncles, and further decreases with more distant relatives.[142] The Y chromosome, a critical determinant of male sex, is inherited from fathers to sons without alteration, maintaining a direct paternal

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135. Shelly Simana, *Malleable Morality: Re-Shaping Moral Judgments in Health Policymaking*, 51 J.L. MED. & ETHICS 344, 349 (2023).

136. *Id.*

137. Baylis, Kenny & Sherwin, *supra* note 74, at 201; Barbara Prainsack, *The "We" in the "Me": Solidarity and Health Care in the Era of Personalized Medicine*, 43 SCI. TECH. & HUM. VALUES 21, 32–33 (2018).

138. *See* Simana, *supra* note 6, at 177–80.

139. *See id.* at 177–82; Simana, *supra* note 29, at 1110–11.

140. ALAN MCHUGHEN, DNA DEMYSTIFIED: UNRAVELLING THE DOUBLE HELIX 201 (Sarah Humphreville ed., 2020).

141. *See Chromosomes Fact Sheet*, NAT'L HUM. GENOME RSCH. INST. (Aug. 15, 2020), https://www.genome.gov/about-genomics/fact-sheets/Chromosomes-Fact-Sheet [https://perma.cc/6DC2-7SXC].

142. *DNA Relatives: Detecting Relatives and Predicting Relationships*, 23ANDME, https://customercare.23andme.com/hc/en-us/articles/212170958-DNA-Relatives-Detecting-Relatives-and-Predicting-Relationships [https://perma.cc/L5TK-4WPX] (last visited Oct. 17, 2025).

lineage.[143] Additionally, mitochondrial DNA, located outside the cell nucleus, is passed down from mothers to their offspring.[144] Consequently, genetic markers, conveyed through the Y chromosome and mitochondrial DNA, can be used to trace familial connections.[145] The closer the genetic relationship, the more prominent these shared markers become,[146] transforming an individual's DNA into an inadvertent window revealing their family's genetic heritage.

To exemplify the externalities on those with close genetic relations, consider the story of Dr. Donald Cline as an illustration.[147] Cline was a fertility doctor in Indianapolis. He ran a clinic where he helped couples struggling with infertility.[148] However, unbeknownst to his patients, Cline was engaging in unethical practices. Instead of using the sperm from anonymous donors or the intended fathers, Cline used his own sperm to inseminate his patients without their knowledge.[149]

The journey to uncovering Cline's actions began when several individuals, born through fertility treatments from his clinic, started to explore their genetic backgrounds using commercial DNA testing services.[150] As these individuals submitted their DNA for analysis, they began to find an unusually large number of genetic matches indicating half-siblings.[151] This was unexpected and raised questions, as most were told that the sperm donors (not their mothers' fertility doctor) were anonymous and their donations would be limited, reducing the likelihood of a large number of half-siblings.[152] The discovery of multiple half-siblings led to online discussions and connections among the affected individuals.[153] As they shared their stories, a disturbing pattern emerged: all of them had been conceived at Cline's clinic during a specific time frame.[154]

In another story intertwined with tragedy and familial discovery, Kif Augustine-Adams's experience began when her daughter used a DNA testing service by AncestryDNA.[155] Unexpectedly, her daughter's results revealed an

143. Natalie Ram, *DNA by the Entirety*, 115 COLUM. L. REV. 873, 878 (2015).
144. *Id.*
145. *Id.*
146. Divyaratan Popli, Stéphane Peyrégne & Benjamin M. Peter, *KIN: A Method to Infer Relatedness from Low-Coverage Ancient DNA*, 24 GENOME BIOL., no. 1, 2023, at 10 (2023), https://genomebiology.biomedcentral.com/articles/10.1186/s13059-023-02847-7 [https://perma.cc/AE9F-E43S].
147. Sarah Zhang, *The Fertility Doctor's Secret*, ATLANTIC (Mar. 18, 2019, at 17:23 ET), https://www.theatlantic.com/magazine/archive/2019/04/fertility-doctor-donald-cline-secret-children/583249/?gift=QIPv5Wua1I8ceVkTqRGnQT_3dkJELAiEG12KWlZVaVI&utm_source=copy-link&utm_medium=social&utm_campaign=share [https://perma.cc/G8VA-YPC2].
148. *Id.*
149. *Id.*
150. *Id.*
151. *Id.*
152. *Id.*
153. *Id.*
154. *Id.*
155. Kif Augustine-Adams, *Generational Failures of Law and Ethics: Rape, Mormon Orthodoxy, and the Revelatory Power of Ancestry DNA*, *in* CONSUMER GENETIC

unfamiliar DNA match.[156] Curious, Kif reached out to this person and uncovered a startling truth: the individual was adopted at birth, and Kif's mother was named on the birth certificate.[157] This revelation led Kif to understand she had an unknown sister.[158] When Kif asked her mother, uncovering a painful past, the story took a somber turn. In 1959, Kif's mother had been a victim of rape and had kept the resulting pregnancy a secret, burdened by the stigma within her deeply orthodox Latter-Day Saints community.[159]

A third story involves Kathy Giusti, a cancer advocate and founder of the Multiple Myeloma Research Foundation.[160] Kathy faced a crucial decision when her identical twin sister, Karen Andrews, was diagnosed with breast cancer.[161] This prompted her to consider whole-genome or whole-exome sequencing for her family, aiming to better understand their cancer risk, especially for her children.[162]

The idea of genetic sequencing brought a range of reactions within her family. Kathy's mother, a melanoma patient herself, saw it as a chance to provide valuable assistance and agreed to participate.[163] On the other hand, her twin sister, Karen, was hesitant. The physical and emotional strain of cancer treatments, coupled with concerns about the implications for her children, made her cautious.[164] Kathy's husband viewed sequencing positively, considering his own family's medical history.[165] However, their daughter Nicole, at the young age of 21, felt overwhelmed by the prospect of learning such potentially life-altering information. Conversely, their son David was open to the idea, seeing it as an opportunity to gain empowering knowledge.[166]

The stories of Dr. Donald Cline, Kif Augustine-Adams, and Kathy Giusti highlight the profound impact of genetic material and information on relationships between individuals with close genetic ties.[167] These cases illustrate that our genetic

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TECHNOLOGIES: ETHICAL AND LEGAL CONSIDERATIONS 173, 173 (I. Glenn Cohen et al. eds., 2021). This story not only illustrates how genetic discoveries can affect close family members but also highlights the personal reasons individuals may choose to keep such information private, such as concerns about the emotional impact on family members or the wish to avoid disclosing painful personal histories.

156. *Id.* at 179.

157. *Id.* at 180.

158. *Id.*

159. *Id.* at 174.

160. Amy Dockser Marcus, *How One Family Faced Difficult Decisions About DNA Sequencing*, WALL ST. J. (Sep. 28, 2015), https://www.wsj.com/articles/how-one-family-faced-difficult-decisions-about-dna-sequencing-1443406974 [https://perma.cc/T3X2-XZJ6].

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.*

166. *Id.*

167. While these stories underscore the profound impact genetic material and information can have on family dynamics and relationships, it is important to recognize that this impact may vary across different situations. For instance, in cases involving a same-sex couple or a couple dealing with infertility who choose not to reveal or explore the genetic origins of their child (as gamete donation is necessary for these couples), the significance of

code is interlaced with threads inherited from our family tree. This complex mosaic of DNA influences not only our physical traits but also forges an unbreakable bond with our genetic roots. It reminds us that, while we are unique individuals, we are also essential parts of a larger, interwoven "genetic narrative" that extends beyond the constraints of time and space. This bond intimately connects us to both our forebears and future generations, embedding us deeply in the continuous story of our genetic family history.

B. Genetic Externalities: Impact on the Population

In a world that often emphasizes differences, stepping back to appreciate our commonalities offers a profound perspective. This realization becomes strikingly evident when we consider our shared genetic foundation. Remarkably, 99.9% of our DNA is identical across all humans, illustrating our deep-rooted shared ancestry.[168] This "human gene pool"—the collective genetic inheritance of humanity—is a treasure trove of information with far-reaching implications for society.[169]

The exploration of human genetics and genomics is a beacon of hope in medical science. As we decipher the complexities of genetic diversity, we unlock potential for advancements. The study of genetic material and information from diverse populations sheds light on disease mechanisms and prevalence; for example, initiatives like the Human Genome Project and the Impact of Genomic Variation on Function ("IGVF") Consortium have been instrumental in studying the human genome, offering insights into genetic diseases and paving the way for personalized medicine.[170] These collective efforts serve as a cornerstone for developing treatments that benefit society at large.[171]

Beyond medicine, genetic material and information play a role in connecting us to our roots. DNA testing offers a window into the past, linking diverse groups. This not only nurtures a sense of identity but also underscores the shared narrative of human history. Ancient DNA, extracted from long-extinct species and our earliest ancestors, offers a glimpse into the evolutionary journey of

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a genetic link in establishing family ties may be negligible or completely absent. This underscores the diverse ways genetic material and information can affect family structures, indicating a range of experiences rather than a single, uniform story.

168. MCHUGHEN, *supra* note 140, at 8; *see* HENRY T. GREELY, THE END OF SEX AND THE FUTURE OF HUMAN REPRODUCTION 10, 20–21 (2016).

169. "The gene pool is a joint possession of all members of society." Robert Wilson, *Environmental Regulation of the Human Gene Pool as a Genetic Commons*, 5 N.Y.U. ENV'T L.J. 833, 833 (1996) (quoting W. French Anderson, *Human Gene Therapy: Scientific and Ethical Considerations*, 10 J. MED. & PHIL. 275, 286 (1985)).

170. Fernando Carrasco-Ramiro, Ramón Peiró-Pastor & Begoña Aguado, *Human Genomics Projects and Precision Medicine*, 24 GENE THER. 551, 551 (2017); *The Human Genome Project*, NAT'L HUM. GENOME RSCH. INST. (Mar. 19, 2025), https://www.genome.gov/human-genome-project [https://perma.cc/5Q7N-ABZH]; *Impact of Genomic Variation on Function (IGVF) Consortium*, NAT'L HUM. GENOME RSCH. INST. (Mar. 24, 2025), https://www.genome.gov/Funded-Programs-Projects/Impact-of-Genomic-Variation-on-Function-Consortium [https://perma.cc/ZAP4-K45P].

171. Bayefsky, *supra* note 6, at 210.

life on Earth.[172] By analyzing DNA from fossils and archaeological remains, scientists have been able to reconstruct evolutionary trees, shedding light on how species have adapted, migrated, and interbred.[173] Ancient DNA also helps in identifying evolutionary adaptations to different environments and climates, providing insights into how humans have evolved to survive changing conditions.[174]

In the context of law enforcement, the shared nature of genetic material and information has revolutionized forensic science.[175] The use of DNA analysis has become a pivotal tool in solving crimes, identifying perpetrators with high precision, and exonerating the wrongfully accused.[176] Moreover, the establishment of DNA databases has facilitated the swift comparison and matching of genetic profiles from different cases, aiding in tracking serial offenders and linking crimes across jurisdictions.[177] In essence, the advancements in genetic technology serve as a powerful deterrent to criminal behavior by heightening the probability of uncovering and successfully prosecuting offenders.

To summarize, given the externalities of genetic material and information, a purely individualistic perspective that permits one person to make decisions regarding these resources without considering their impact on other stakeholders is becoming less sustainable. To address these challenges, Parts III and IV below propose a shift toward a relational theory of self-ownership in the context of genetic material and information.

Part III argues that the exploration of self-ownership requires an understanding of relational influences. This approach brings to light the importance of different dimensions in understanding what it means to respect self-ownership.

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172. Pontus Skoglund & Iain Mathieson, *Ancient Genomics of Modern Humans: The First Decade*, 19 ANN. REV. GENOMICS & HUM. GENET. 381, 382 (2018); Gaspard Kerner, Jeremy Choin & Lluis Quintana-Murci, Comment, *Ancient DNA as a Tool for Medical Research*, 29 NATURE MED. 1048, 1048 (2023).

173. *See* Kermer, Choin & Quintana-Murci, *supra* note 172.

174. Elizabeth A. Hadly et al., *Genetic Response to Climatic Change: Insights from Ancient DNA and Phylochronology*, 2 PLOS BIOL. 1600, 1600 (2004); Margaret B. Davis, Ruth G. Shaw & Julie R. Etterson, *Evolutionary Responses to Changing Climate*, 86 ECOLOGY 1704, 1713 (2005); Ludovic Orlando & Alan Cooper, *Using Ancient DNA to Understand Evolutionary and Ecological Processes*, 45 ANN. REV. ECO., EVOL. & SYST. 573, 589–90 (2014).

175. Natalie Ram, Erin E. Murphy & Sonia M. Suter, *Regulating Forensic Genetic Genealogy*, 373 SCIENCE 1444, 1444–46 (2021).

176. Gerald Laporte, *Wrongful Convictions and DNA Exonerations: Understanding the Role of Forensic Science*, NIJ J., Apr. 2018, at 2, https://nij.ojp.gov/topics/articles/wrongful-convictions-and-dna-exonerations-understanding-role-forensic-science#2-0 [https://perma.cc/8NKM-MNL9]; *DNA Exonerations in the United States (1989–2020)*, INNOCENCE PROJECT, https://innocenceproject.org/dna-exonerations-in-the-united-states [https://perma.cc/AH6T-JVD6] (last visited Sep. 27, 2025); Megan Sloan & Nichole Cebak, *Criminal Exonerations: Their Prevalence and Contributory Factors*, UNIV. OF NEV. LAS VEGAS, CRIME & JUST. POL'Y (Dec. 2024), https://www.unlv.edu/sites/default/files/media/document/2024-12/r7-Crime-Exonerations.pdf [https://perma.cc/4Y84-Q6JE].

177. Ray A. Wickenheiser, *Forensic Genealogy, Bioethics and the Golden State Killer Case*, 1 FORENSIC SCI. INT'L: SYNERGY 114, 115 (2019).

The choices one makes can either reinforce or undermine the capabilities of those around them. This interdependence highlights the complex nature of personal decisions within relationships and mutual influences.[178] A relational perspective on self-ownership in the genetic context recognizes that individuals are part of a network of relationships. Consequently, decisions regarding genetic material and information should be taken with an awareness of their broader impact, and policies need to account for the well-being and interests of the different stakeholders involved.

While Part III delves into the relational approach from a theoretical perspective, Part IV focuses on how this approach can be implemented practically. I propose a range of policies designed to capture the positive externalities of genetic material and information, underlining the duty individuals have to share these resources. Strategies include a legal requirement to share genetic material and information to build a comprehensive genomic biobank and database and a mandate to disclose genetic conditions to those with close genetic connections.

III. GENETIC RECIPROCITY

This Part lays the theoretical foundations of genetic reciprocity—a new concept that adopts a relational conception of persons.[179] Adopting a relational perspective of the self calls for a reimagining of different values, including self-ownership, in a relational context. Such a perspective requires a legal structure that mirrors and reinforces these interrelated values.[180] Some of the features of this legal structure, including a legal obligation of individuals to share their genetic material and information with other stakeholders, will be discussed in the subsequent Part IV.

Section III.A introduces the concept of genetic reciprocity, suggesting that individuals have a moral and legal obligation to share their genetic material and information since the knowledge generated from these resources can significantly benefit others with whom they share close genetic connections or genetic similarities (effectively, all humans). This shift toward an obligation to share represents a departure from the current governance of genetic material and information, which is more in line with the liberal and libertarian ideologies discussed in Part I of this Article.[181] As I previously argued, these ideologies emphasize the importance of

178. Alistair Wardrope, *Liberal Individualism, Relational Autonomy, and the Social Dimension of Respect*, INT'L J. FEM. APPROACHES TO BIOETH., Spring 2015, at 37, 38.

179. *See, e.g.*, NEDELSKY, *supra* note 11, at 8; Llewellyn & Downie, *supra* note 127; Susan Sherwin, *A Relational Approach to Autonomy in Health Care*, *in* THE POLITICS OF WOMEN'S HEALTH: EXPLORING AGENCY AND AUTONOMY 19, 34–35 (1998).

180. *See, e.g.*, NEDELSKY, *supra* note 11, at 8; JOSEPH WILLIAM SINGER, ENTITLEMENT: THE PARADOXES OF PROPERTY 95 (2000); GREGORY S. ALEXANDER, AN INTRODUCTION TO PROPERTY AND HUMAN FLOURISHING 39 (2018); HANOCH DAGAN, A LIBERAL THEORY OF PROPERTY 114 (2021); Salomé Viljoen, *A Relational Theory of Data Governance*, 131 YALE L.J. 573, 639 (2021); Cornelius Ewuoso et al., *Addressing Exploitation and Inequities in Open Science: A Relational Perspective*, 23 DEV. WORLD BIOETH. 331, 331 (2022).

181. *See* discussion *supra* Section I.A.

consent and voluntary action in matters related to one's body.[182] As such, they are incompatible with the proposed obligation to share genetic material and information.

Genetic reciprocity aligns more with communitarian values—those that emphasize mutual responsibility, social cohesion, and the idea that individuals are embedded within a broader community—aiming to cultivate a social and legal framework that prioritizes the significance of interpersonal connections and collective well-being.[183] However, valuing the fundamental role of relationships in human existence and advancing the welfare of others does not imply that collective interests should overshadow individual interests, as a stringent communitarian stance would suggest. Instead, it serves to highlight the idea that individual interests are rooted in and reliant on supportive relationships. Therefore, societies should consider how their norms and laws shape these relationships in a way that nurtures individual interests.

Sections III.B and III.C describe two philosophical theories from which genetic reciprocity draws its theoretical underpinnings: Ann Cudd's theory of the connected self-owner and Michael Sandel's justice theory.[184] These theories unveil a different interpretation of self-ownership that is grounded in ethical virtues and the pursuit of the common good. These theories provide the foundation for the concept of relational self-ownership that I advance in this Article.

A. Genetic Reciprocity and the Duty to Share Genetic Material and Information

Given that individuals are constantly shaped by their broader environments and interactions with others, it becomes necessary to rethink our current understanding of the concept of self-ownership. This concept should not be regarded as a fixed tenet; instead, it is shaped by different moral guidelines and societal values. In other words, while self-ownership serves as the fundamental basis for individual rights, it is not the ultimate limit; there are other considerations, such as positive externalities, that can override or adjust claims associated with self-ownership.

The concept of genetic reciprocity emerges from this standpoint because it recognizes the significance of individual rights while highlighting the responsibility to consider broader contexts of human existence. This concept requires that each person, when exercising their interest in self-ownership, constantly evaluates their actions to ensure they also respect the interests of others with whom they have a

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182. *See* discussion *supra* Section I.A.

183. *See generally* DANIEL A. BELL, COMMUNITARIANISM AND ITS CRITICS (1993) (analyzing communitarian critiques of liberalism, focusing on the role of community in shaping identity and moral commitments).

184. Ann E. Cudd, *Connected Self-Ownership and Our Obligations to Others*, SOC. PHIL. & POL'Y, Winter 2019, at 154, 154 [hereinafter Cudd, *Connected Self-Ownership*]; Cudd, *Feminism and Libertarian Self-Ownership*, *supra* note 69, at 129; MICHAEL J. SANDEL, LIBERALISM AND THE LIMITS OF JUSTICE (2d ed. 1998) [hereinafter SANDEL, LIBERALISM]; MICHAEL J. SANDEL, JUSTICE: WHAT'S THE RIGHT THING TO DO? (2009) [hereinafter SANDEL, JUSTICE]; MICHAEL J. SANDEL, DEMOCRACY'S DISCONTENT: A NEW EDITION FOR OUR PERILOUS TIMES (2022) [hereinafter SANDEL, DISCONTENT].

genetic relationship. It is possible that in certain situations, considerations that benefit other parties may take precedence over a person's interest in self-ownership.

This approach stands in opposition to the classic libertarian viewpoint that strictly prohibits infringing on an individual's right to self-ownership for the benefit of others.[185] It also diverges from the liberal viewpoint that might be willing to endorse limitations on self-ownership, but solely to promote a greater "system of liberty for all."[186] Put differently, although the liberal viewpoint might permit some restrictions on self-ownership to benefit others, it interprets these restrictions through the lens of individualism and independence—limits on self-ownership are acceptable only if they result in increased individuality and independence for all.

Genetic reciprocity endorses a limitation on self-ownership in scenarios where individual sacrifices that come at a comparatively lower cost result in substantial benefits for others with whom they share a genetic relationship. Specifically, it urges individuals to share their genetic material and information, thereby fueling scientific innovations, enhancing our comprehension of genetic disorders, and contributing to the provision of other public goods. This moral and legal duty underscores the importance of collective responsibility in influencing the future direction of science, technology, and medicine.[187]

Fundamentally, the duty to share genetic material and information falls within the realm of justice, and as I will argue in Part IV, it ought to be enforced by the law. A just society is one that needs to allow room for personal endeavors, yet it must not allocate so much space to these endeavors that it prevents other individuals from leading a flourishing life.[188] By withholding genetic material and information, individuals restrict the range of societal advantages across several important domains. The benefits of sharing genetic material and information span multiple areas, including but not limited to improvements in understanding and treating

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185. *See* discussion *supra* Section I.A.

186. JOHN RAWLS, A THEORY OF JUSTICE 220 (2d ed. 1999); *see generally* H.L.A. Hart, *Rawls on Liberty and Its Priority*, 40 U. CHI. L. REV. 534 (1973) (analyzing Rawls's principle of the priority of liberty, its interpretation, and the difficulties in applying it to conflicts between liberties and other values).

187. *See generally* I. Glenn Cohen, *Is There a Duty to Share Healthcare Data?*, *in* BIG DATA, HEALTH LAW, AND BIOETHICS 209 (I. Glenn Cohen et al. eds., 2018) (arguing that individuals have an obligation to share health data on the grounds that they lack property rights over such data and that sharing satisfies reciprocal duties). Contrary to Cohen, I argue that individuals hold property rights over their genetic material and information. Nonetheless, I resonate with Cohen's viewpoint that since individuals stand a fair chance of gaining from the use of these resources, they bear a responsibility to share them.

188. *See* FABRE, *supra* note 72, at 31. Fabre presents a stronger argument than the one I make in this Article. She contends that individuals possess rights to the resources essential for a basic level of well-being, which extends to the right to use others' bodies. As a result, there is an obligation for individuals to assist others by offering personal services, including body parts. The argument in this Article, while resonating with Fabre's perspective on body-part sharing, adopts a narrower scope, suggesting only the sharing of genetic material and information.

diseases, uncovering unknown family connections, and bolstering crime-solving capabilities.[189]

To clarify: it is important to protect individual interests regarding genetic material and information.[190] Society should be urged to think carefully before allowing departures from the protection of individual interests over their genetic material and information. At the same time, as society becomes more interconnected, there are moral and legal obligations on all individuals to contribute to the well-being of others, the development of social bonds, and other essential human capabilities.[191]

Genetic reciprocity places reciprocal obligations on individuals to collectively shoulder the responsibility of considering and caring for each other when it comes to the use of genetic material and information. It recognizes the interdependence of individuals, suggesting that true self-ownership involves considering the needs and interests of others, as well as pursuing virtues and the common good.

At its core, genetic reciprocity intertwines the expectation of personally benefiting from genetic material and information with the commitment to contributing to the welfare of those with whom one shares a genetic relationship. In other words, it substantially enhances the probability that each individual will have access to essential resources. While the likelihood of any single person requiring and obtaining such a benefit may not be particularly high, the cumulative impact of everyone's contributions functions as a type of insurance, guaranteeing the availability of resources to those in need when the time arises.[192]

Building on this, the implications of genetic reciprocity come to the forefront. The argument against withholding genetic material and information gains strength from the principle of reciprocity, which posits that the challenges preventing any person from achieving a fulfilling and flourishing life ought to be collectively borne by all.[193] Moreover, the principle of reciprocity suggests that people who share their genetic material and information may themselves be recipients of these benefits, providing further reasons to share genetic resources.[194]

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189. Marcus Smith & Seumus Miller, *A Principled Approach to Cross-Sector Genomic Data Access*, 35 BIOETHICS 779, 779–80 (2021); Mengge Wang et al., *Forensic Investigative Genetic Genealogy: Expanding Pedigree Tracing and Genetic Inquiry in the Genomic Era*, 52 J. GENET. & GENOMICS 460, 460–72 (2025); Sandra Soo-Jin Lee et al., *The Illusive Gold Standard in Genetic Ancestry Testing*, 325 SCIENCE 38, 38–39 (2009).

190. *See* Simana, *supra* note 6, at 203–05; Simana, *supra* note 29, at 1129–33.

191. MARTHA C. NUSSBAUM, CREATING CAPABILITIES: THE HUMAN DEVELOPMENT APPROACH 17–45 (2011).

192. Gil Siegal & Richard J. Bonnie, *Closing the Organ Gap: A Reciprocity-Based Social Contract Approach*, 34 J.L. MED. & ETHICS 415, 416 (2006).

193. *See* Alison McIntyre, *Guilty Bystanders? On the Legitimacy of Duty to Rescue Statutes*, 23 PHIL. & PUB. AFFS. 157, 159 (1994); Arthur Ripstein, *Three Duties to Rescue: Moral, Civil, and Criminal*, 19 LAW & PHIL. 751, 760–61 (2000).

194. Cohen, *supra* note 187, at 216; Ben Saunders, *Normative Consent and Opt-Out Organ Donation*, 36 J. MED. ETHICS 84, 86 (2010).

In the same way that individuals are morally and legally obligated to support public goods such as defense and clean air,[195] they are likewise obligated to share genetic material and information. By doing so, individuals contribute to a collective endeavor aimed at improving society overall. Every act of sharing becomes a significant step toward creating a more advanced society, in which the understanding of genetics and genomics is key to elevating the quality of life for everyone. In framing genome governance around the concept of genetic reciprocity, the act of sharing genetic material and information, though individual in nature, is significantly influenced by one's strong sense of community belonging.

The duty to share genetic material and information is conditional, subject to exceptions or mitigating factors. This duty can be likened to the obligation to perform an "easy rescue," implying that individuals are not expected to pay a very high cost for the benefit of others.[196] Thus, if sharing genetic material and information conflicts with deeply held religious beliefs regarding bodily integrity or poses an undue burden, the individual should not be compelled to share.[197]

Precisely determining the intensity of this duty is difficult, mainly because the occurrence of conflicts among duties is a natural component of our moral landscape. This reality does not weaken or cancel out the duty but rather emphasizes the complexity inherent in ethical decision-making. The duty to share genetic material and information establishes a baseline expectation that individuals are presumed to share their genetic material and information. If they decide against sharing, they must present a substantial reason for this choice.

Embracing genetic reciprocity presents its own set of challenges, necessitating a change in societal behaviors. Essentially, genetic reciprocity requires coordination—it revolves around a collective objective that cannot be attained by any single individual acting alone, and it demands collaborative effort.[198] Realization of this objective requires widespread adherence to a new norm, driven

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195. Wertheimer, *supra* note 91, at 144–45. Wertheimer contends that since we are willing to compel individuals to support various public goods, it follows that we should also mandate their participation in research efforts that produce knowledge beneficial to everyone. *Id.*; *see also* G. Owen Schaefer, Ezekiel J. Emanuel & Alan Wertheimer, *The Obligation to Participate in Biomedical Research*, 302 JAMA 67, 68–70 (2009) (arguing that individuals have a moral duty to participate in biomedical research, grounded in principles of beneficence, reciprocity, and fairness, and challenging the traditional framing of research participation as purely voluntary).

196. Tina Rulli & Joseph Millum, *Rescuing the Duty to Rescue*, 42 J. MED. ETHICS 260, 260–61 (2016).

197. One could imagine an argument that individuals may owe a duty to contribute not only their genetic material but also broader phenotypic, medical, and behavioral data—such as health records, biometric data, or even social media activity—for the sake of the public good. But at this stage, such expansive contributions may be more than what is needed. Genetic material and associated information, when collected ethically and used responsibly, may already yield substantial public benefit. Expanding expectations to include more intimate or contextual data risks normalizing intrusive data practices without clear evidence that they are necessary to achieve shared goals.

198. Robert H. Sloan & Richard Warner, *Relational Privacy: Surveillance, Common Knowledge, and Coordination*, 11 U. ST. THOMAS J.L. & PUB. POL'Y 1, 11–13 (2017).

by the understanding that its success hinges on collective participation and will remain effective only as long as everyone else also complies.[199] Indeed, history has shown that societal norms can and do evolve, making this perspective a viable solution.[200] Once new norms are established and embraced, individuals tend to adapt and internalize these changes as part of their understanding and behavior.[201]

While the adoption of the concept of genetic reciprocity might seem daunting at first, it is within the realm of possibility. By setting new norms that emphasize mutual responsibility and interdependence, individuals can adjust their

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199. Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903, 945 (1996); *see also* Sergey Gavrilets & Peter J. Richerson, *Collective Action and the Evolution of Social Norm Internalization*, 114 PROC. NAT'L ACAD. SCI. 6068, 6068–72 (2017) (modeling how individuals internalize social norms to solve collective action problems and sustain cooperation over time).

200. Consider the example of littering. The United States has tackled the problem of littering through legislative actions and public awareness campaigns. Legislative efforts are grounded in laws and ordinances aimed at reducing litter through enforcement mechanisms such as fines, penalties, and sometimes mandatory community service. Public awareness campaigns have been pivotal in educating about the negative impacts of litter on the environment and public health. Campaigns like "Keep America Beautiful" have been at the forefront of these efforts. *See States with Littering Penalties*, NAT'L CONF. OF STATE LEGISLATURES (Mar. 21, 2022), https://www.ncsl.org/environment-and-natural-resources/states-with-littering-penalties [https://perma.cc/6PFX-AWHL]; KEEP AMERICA BEAUTIFUL, 2020 NATIONAL LITTER STUDY SUMMARY REPORT: MAY 2021, at 9 (2021), https://kab.org/wp-content/uploads/2021/05/Litter-Study-Summary-Report-May-2021_final_05172021.pdf [https://perma.cc/MRP2-9Q6Z]. Another example where norms have undergone significant transformation is the growing acceptance of vaccination. Vaccines, especially for children, have even become a requirement for attending schools or participating in social activities. As the effectiveness of vaccines in controlling and eradicating diseases becomes more apparent, public opinion has shifted. What was once considered a matter of personal choice is progressively being recognized as a shared duty toward public health. This change reflects a broader understanding of the collective benefits of vaccination. *See* Noel T. Brewer et al., *Increasing Vaccination: Putting Psychological Science into Action*, 18 PSYCH. SCI. PUB. INT. 149, 149–50 (2017); Cary Funk & Alec Tyson, *Intent to Get a COVID-19 Vaccine Rises to 60% as Confidence in Research and Development Process Increases*, PEW RSCH. CTR. (Dec. 3, 2020), https://www.pewresearch.org/science/2020/12/03/intent-to-get-a-covid-19-vaccine-rises-to-60-as-confidence-in-research-and-development-process-increases/ [https://perma.cc/X8C6-HBW4]; Ayman El-Mohandes et al., *COVID-19 Vaccine Acceptance Among Adults in Four Major US Metropolitan Areas and Nationwide*, 11 SCI. REPS. Nov. 4, 2021, at 1–2, https://doi.org/10.1038/s41598-021-00794-6 [https://perma.cc/J3GE-J847]; Sean D. McCabe et al., *Unraveling Attributes of COVID-19 Vaccine Acceptance and Uptake in the U.S.: A Large Nationwide Study*, 13 SCI. REPS. May 24, 2023, at 1–2 (2023), https://doi.org/10.1038/s41598-023-34340-3 [https://perma.cc/A8K8-7GE8]. It is important to highlight, however, that the rate of vaccination acceptance in the United States remains lower compared to other countries, and that there are groups that continue to resist vaccine mandates vehemently. *See, e.g.*, Julio S. Solís Arce et al., *COVID-19 Vaccine Acceptance and Hesitancy in Low- and Middle-Income Countries*, 27 NATURE MED. 1385, 1386–92 (2021), https://www.nature.com/articles/s41591-021-01454-y [https://perma.cc/9V7E-BA2Z].

201. *See* MOSHE HOFFMAN & EREZ YOELI, HIDDEN GAMES: THE SURPRISING POWER OF GAME THEORY TO EXPLAIN IRRATIONAL HUMAN BEHAVIOR 181–95 (2022).

behaviors and beliefs, aligning themselves with a more relational approach that values the well-being of others alongside personal interests.

This shift not only aligns with the evolving moral landscape but also paves the way for more responsible use of genetic material and information.[202] As we continue to grapple with the dilemmas posed by the use of genetic material and information, genetic reciprocity can serve as a guiding light, ensuring decisions are made with a profound understanding of their impact on both individuals and society at large.

In the Sections that follow, I elaborate on two theories that underpin the concept of genetic reciprocity: Ann Cudd's theory of the connected self-owner and Michael Sandel's theory of justice.

B. Ann Cudd's Theory: The Connected Self-Owner

Ann Cudd is an American philosopher who has been instrumental in the development of analytical feminism.[203] This field, a distinct subset of feminist philosophy, employs the techniques and principles of analytic philosophy to delve into and address a range of feminist issues and topics.[204]

Cudd has formulated the theory of the connected self-owner, offering an important framework for interpreting the concept of genetic reciprocity.[205] At its core, the theory of the connected self-owner challenges the traditional notion of individualism, advocating instead for a perspective that sees individuals as inherently connected to and shaped by their social environments.[206] It emphasizes that the self is not an isolated construct but is influenced by interpersonal relationships and societal structures. As Cudd herself beautifully articulates:

> Once we embrace the concept of the connected self-owner as the foundation for political theory, we have to rethink the rights and obligations that are said to follow from the premise that we own our selves. Our essential connections among selves means that *ownership has to be in some sense shared with other selves*, and the relations between us become morally significant and laden with obligation.[207]

The theory of the connected self-owner not only acknowledges our interconnectedness with others but also asserts that these connections are indispensable to the very existence of the self.[208] As Cudd explains, the human self

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202. *See* Simana, *supra* note 6, at 155; Simana, *supra* note 29, at 1140–43.

203. *See generally* Kristina Rolin, *Philosophy of Science: Analytic Feminist Approaches*, *in* THE OXFORD HANDBOOK OF FEMINIST PHILOSOPHY 226 (Kim Q. Hall & Ásta eds., 2021) (outlining analytic feminist approaches to philosophy of science and their integration of feminist values into epistemic practices).

204. On analytic philosophy, see STEPHEN P. SCHWARTZ, A BRIEF HISTORY OF ANALYTIC PHILOSOPHY: FROM RUSSELL TO RAWLS 1–6 (2012).

205. Cudd, *Connected Self-Ownership*, *supra* note 184, at 164–67; Cudd, *Feminism and Libertarian Self-Ownership*, *supra* note 69, at 129–35.

206. Cudd, *Connected Self-Ownership*, *supra* note 184, at 154–55.

207. *Id.* at 155 (emphasis added).

208. *Id.* at 163–67; Cudd, *Feminism and Libertarian Self-Ownership*, *supra* note 69, at 136.

is not a solitary entity but rather one that emerges and evolves within the context of relationships.[209] Our self-identity is intricately intertwined with our interactions with others. In essence, we come to define ourselves through our connections with and responses to others. In this worldview, relationships are not peripheral but instead have a constitutive role, reflecting the inherent social nature of human beings.

The theory acknowledges the vital role of relationships in shaping the self, but it does not suggest that the self is entirely defined by these relationships.[210] Instead, the theory aims to acknowledge the self's inherently interconnected nature while still valuing the individual and their capacity for agency.[211] For example, the theory imposes affirmative duties that interconnected selves must fulfill.[212] Doing nothing when faced with a situation like a drowning child not only damages trust in the community, but it also weakens the relational ties that contribute to individual identity.[213] However, such duties should be limited by the ability of the person to maintain some level of control over their own body and to flourish as autonomous individuals.[214] It is important to clarify that for Cudd, "[a]utonomy consists not in the ability to control one's destiny but in the *ability to be a full contributor to the normative framework within which one lives*."[215] She further explains that "there are threshold needs for a physically instantiated being to become a node among the connected selves of a community."[216] Consequently, practices that are oppressive as well as violent crimes are forbidden.[217]

Applying the theory of the connected self-owner in the genetic context envisions a world in which individuals are intricately woven into complex social networks. It advocates for a delicate balance between self-ownership and collective responsibilities. It places significant importance on reciprocal obligations, a topic I delve into more deeply in Part IV, highlighting the shared duty of caring for, nurturing, and supporting one another. In this interconnected framework, individuals generally maintain control over their personal boundaries. However, this authority is not without connections to other stakeholders. The individual, while preserving personal boundaries, is also constantly linked to their community, carrying an inherent responsibility for the welfare of society.[218]

This shift from isolation to interconnectedness promotes mutual interdependence, weaving a strong social fabric within communities. By emphasizing collective responsibility, genetic reciprocity—which embraces the theory of the connected self-owner—attempts to foster trust among individuals and underscore the shared responsibility for sustaining society as a whole. If widely

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209. Cudd, *Connected Self-Ownership*, *supra* note 184, at 164–67.

210. *Id.* at 167–72.

211. *Id.*

212. A shortcoming of the theory is that it fails to specify the types of affirmative duties that ought to be imposed on individuals.

213. Cudd, *Feminism and Libertarian Self-Ownership*, *supra* note 69, at 137.

214. Cudd, *Connected Self-Ownership*, *supra* note 184, at 166, 169.

215. *Id.* at 170 (emphasis added).

216. *Id.* at 165.

217. *Id.* at 169.

218. *Id.* at 167–72; Cudd, *Feminism and Libertarian Self-Ownership*, *supra* note 69, at 136–38.

embraced, genetic reciprocity would entail sacrificing the ostensible freedom of isolation. Yet in return, it would grant the capacity to rely on the assistance of others by nurturing a more expansive sense of responsibility and a shared commitment to preserving the community, which is essential for the existence of interconnected selves.

C. Michael Sandel's Justice Theory

Michael Sandel, an American political philosopher, offers another foundational pillar for genetic reciprocity through his theory of justice. Sandel's theory intricately brings together the concepts of citizenship and the common good. His perspective on justice extends beyond the traditional boundaries of individual freedom and equality, encompassing the cultivation of virtues, active deliberation on the common good, and the strengthening of community bonds.[219] According to Sandel, "[J]ustice has something to do with honoring, recognizing, promoting, and cultivating virtues and goods implicit in social practices."[220]

Sandel's theory emerges as a critique of the dominant (egalitarian) liberal and libertarian perspectives in political theory.[221] He argues that these perspectives, exemplified by thinkers like John Rawls and Robert Nozick, overly emphasize individual rights and the maximization of welfare, neglecting the moral and communal dimensions of human life.[222] Specifically, Sandel challenges the libertarian notion of self-ownership, which suggests a lack of societal obligations toward one another, as an oversimplification of human complexity and societal interplay. While Sandel does not entirely dismiss the concept of self-ownership, he argues that a theory of justice should not be based *solely* on individualistic principles like consent.[223] Therefore, for example, he contends that alongside voluntary obligations, which require consent, there are "obligations of solidarity," which do not require consent.[224]

Sandel posits that justice is not solely about the distribution of material goods or the protection of individual freedoms but also about how these goods and freedoms contribute to the common good.[225] Justice involves actively fostering commendable character traits and cultivating individuals into "good citizen[s]."[226] By implication, therefore, Sandel suggests that politics should not only ensure the

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219. *See generally* SANDEL, LIBERALISM, *supra* note 184 (critiquing liberal individualism and arguing that justice must be grounded in a shared moral framework and communal values); SANDEL, JUSTICE, *supra* note 184 (presenting justice as a practice of public reasoning about the common good, not merely the protection of individual rights); SANDEL, DISCONTENT, *supra* note 184 (warning against meritocratic hubris and calling for renewed civic solidarity and moral reflection on shared responsibilities).

220. Michael J. Sandel, *Justice: What's the Right Thing to Do?*, 91 B.U. L. REV. 1303, 1303 (2011).

221. SANDEL, JUSTICE, *supra* note 184, at 31–57, 140–66; SANDEL, LIBERALISM, *supra* note 184, at 15–24.

222. SANDEL, JUSTICE, *supra* note 184, at 212–15, 218–25; SANDEL, LIBERALISM, *supra* note 184, at 147–54.

223. SANDEL, JUSTICE, *supra* note 184, at 223–25.

224. *Id.*

225. SANDEL, DISCONTENT, *supra* note 184, at 250–83.

226. SANDEL, JUSTICE, *supra* note 184, at 260–69.

conditions for autonomous decision-making but also cultivate the social connections integral to an individual's sense of self.[227]

Sandel's focus on virtues is pivotal in understanding his conception of justice. He advocates for the cultivation of moral and civic virtues, such as solidarity, civic responsibility, and community engagement.[228] These virtues play a vital role in creating a sense of community and responsibility among citizens, which is essential for building a just society. Such a society not only upholds these civic virtues but also actively seeks ways to instill in its citizens a concern for the collective well-being.

According to Sandel, in societies where strong personal and community ties exist, the need for formal justice is often minimal.[229] He uses the example of an ideal family, in which members primarily interact with natural affection.[230] In such scenarios, the principles of justice, such as individual rights and fairness, are seldom seen as lacking, or called upon. This is not due to the prevalence of injustice, but rather because a prevailing spirit of generosity diminishes the necessity to assert one's rights or share.[231] In communities characterized by a high degree of kindness, Sandel argues, the role of justice is not as a foremost virtue, but rather something that is only invoked in a corrective capacity under rare circumstances.[232]

In addition, Sandel asserts that living within a community, or "polis," is essential for the full realization of our human nature.[233] Sandel focuses on the importance of communal values and the integral role they play in shaping our identities and experiences as human beings, as evidenced by the following declaration:

> If we understand ourselves as free and independent selves, unbound by moral ties we haven't chosen, we can't make sense of a range of moral and political obligations that we commonly recognize, even prize. These include obligations of solidarity and loyalty, historic memory and religious faith—moral claims that arise from the communities and traditions that shape our identity. Unless we think of ourselves as encumbered selves, open to claims we have not willed, it is difficult to make sense of these aspects of our moral and political experience.[234]

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227. SANDEL, DISCONTENT, *supra* note 184, at 281–83; SANDEL, LIBERALISM, *supra* note 184, at 82–95, 143–44; *see also* Michael J. Sandel, *The Procedural Republic and the Unencumbered Self*, 12 POL. THEORY 81, 82–91 (1984) (critiquing liberalism's focus on procedural justice and the autonomous self, and arguing for a conception of the self embedded in community and shared moral commitments).

228. SANDEL, JUSTICE, *supra* note 184, at 225–28, 234–43, 261–69; SANDEL, DISCONTENT, *supra* note 184, at 13, 267–80, 336–41.

229. SANDEL, LIBERALISM, *supra* note 184, at 31, 33.

230. SANDEL, JUSTICE, *supra* note 184, at 225–26; SANDEL, LIBERALISM, *supra* note 184, at 28–40.

231. SANDEL, LIBERALISM, *supra* note 184, at 33–35.

232. *Id.*

233. *See* SANDEL, JUSTICE, *supra* note 184, at 184–207; SANDEL, DISCONTENT, *supra* note 184, at 250–55, 259–67.

234. SANDEL, JUSTICE, *supra* note 184, at 220.

Overall, Michael Sandel's philosophical exploration of justice highlights the intricate interplay between individual aspirations and collective well-being. It eloquently illustrates the harmonious relationship between personal autonomy, shared responsibilities, and the common pursuit of justice.

Genetic reciprocity, as influenced by the work of Sandel, represents a nuanced perspective, advocating for a balance between individual interests and the common good while encouraging the development of moral and civic virtues in dealing with genetic material and information. It suggests that our choices concerning these resources should be guided by both personal interests and social welfare. It posits that individuals ought to be prepared to undertake costs—encompassing financial, emotional, social, or other forms of contributions—in order to support others with whom they share genetic similarities.

To conclude, the concept of genetic reciprocity encourages a shift toward a more relational approach, one that respects self-ownership while recognizing collective responsibilities. This novel concept aligns with Cudd's view that our selves are shaped not just internally, but also by our interactions and responsibilities within a social network. It also mirrors Sandel's perspective, where justice is seen as a collective endeavor to cultivate virtues and uphold the common good.

Before proceeding, two clarifications are warranted. The first is that Cudd's and Sandel's theories may not be the only ones that could support genetic reciprocity. They are used as illustrative examples of theories that seriously take into account the relational dimensions of the self.

The second clarification pertains to the differences between Cudd's theory, Sandel's theory, and the theory I have developed in this Article. Sandel's theory centers on the concept of justice, specifically distributive justice, and his interest lies in how societies can be organized around the common good more broadly. This includes considerations of civic education, market roles, neutrality, and resource allocation. Cudd's theory is a metaphysical investigation into the self, focusing on the dual obligations—positive, to offer support to others, and negative, to avoid causing harm—that emerge from our interconnectedness, particularly with respect to our bodies. My theory of genetic reciprocity takes a more focused approach, dealing specifically with obligations related to genetic material and information.

The differences between the three theories influence the questions each theory addresses and crucially, the nature and extent of the obligations each theory imposes on individuals. For instance, although the theories of Sandel and Cudd might support a *moral* obligation to share genetic material and information, they do not necessarily extend to a *legal* obligation to share, as I propose in Part IV. There is a difference between the actions prescribed by one's conscience, which Sandel and Cudd have focused on, and those mandated by law.[235]

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235. Given Sandel's advocacy for compulsory military service, one might infer he would also support the obligatory sharing of genetic material and information. Yet considering the significant differences between the benefits of mandatory military service and the sharing of genetic material and information, Sandel's position could diverge on this issue. *See* SANDEL, JUSTICE, *supra* note 184, at 84–91. In contrast, Cudd's perspective, which emphasizes individual choice in contribution to others, might lead her to be more cautious

Another distinction among the three theories relates to their views on market dynamics. Sandel has been vocal in his opposition to the commodification of the human body, highlighting the demeaning impact of market values and transactions on certain goods and practices, including the sale of organs and commercial surrogacy.[236] Given her feminist stance, it is plausible that Cudd would also disapprove of these practices, aligning with the critique of commodification.[237] Conversely, my theory of genetic reciprocity diverges on this point; it does not object to the commodification of genetic material and information, advocating in fact for the possibility of individuals deriving economic benefits from these resources.[238]

Despite these differences, all three theories underscore a shared theoretical departure from the extreme individualism promulgated by traditional libertarian and liberal ideologies, which argue against the existence of nonvoluntary obligations to benefit others. In contrast, the approaches advanced by Sandel, Cudd, and me present a relational conception of the self—one that integrates collective interests without neglecting individual ones. They propose a framework not driven solely by personal interests but by a comprehensive consideration of all stakeholders involved, aiming to discern a just outcome in the given circumstances.

IV. IMPLEMENTING GENETIC RECIPROCITY

In a time when developments in genetics and genomics are reshaping our understanding of individual sovereignty and control over oneself, the significance of balancing individual rights and liberties with the common good becomes paramount.[239] Genetic reciprocity introduces a new approach to achieve this balance. This approach embraces the principles of relationality and "networked governance,"[240] acknowledging the need to protect the interests of various stakeholders and to employ a range of mechanisms to address the intricate governance issues related to genetic material and information.

This Part focuses on the practical implementation of genetic reciprocity. The goal is to delineate some of the key steps and considerations that will be crucial for effectively integrating genetic reciprocity into genome governance. These steps and considerations are necessary for altering the existing governance of genetic material and information, ensuring a more nuanced and comprehensive approach that adequately addresses all the interests at play.

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about imposing such an obligation. *See* Cudd, *Feminism and Libertarian Self-Ownership*, *supra* note 69, at 136–38.

236. *See generally* MICHAEL J. SANDEL, WHAT MONEY CAN'T BUY: THE MORAL LIMITS OF MARKETS (2012) (developing a broader critique of how market reasoning can corrupt the meaning of certain social goods and relationships).

237. *See* Cudd, *Feminism and Libertarian Self-Ownership*, *supra* note 69, at 135–36.

238. *See* Simana, *supra* note 29, at 1118–23, 1129–33, 1154–57.

239. Ilaria Galasso & Susi Geiger, *Genetic Research and the Collective Good: Participants as Leaders to Reconcile Individual and Public Interests*, 51 J. MED. ETHICS 710, 710–11 (2023), https://doi.org/10.1136/jme-2022-108867 [https://perma.cc/S6PK-L5QB].

240. Sara Bannerman, *Relational Privacy and the Networked Governance of the Self*, 22 INFO. COMMC'N & SOC'Y 2187, 2188 (2018).

As discussed below, this Article further develops my previous work, which has proposed treating genetic material and information as a commons under a common property regime.[241] A key characteristic of this regime is its focus on establishing *appropriate*, rather than exclusive, control over genetic material and information. This approach considers various factors, including the type of genetic component and the intended use. These factors help ensure that individuals, in certain situations, can exert greater influence over the use of their genetic material and information. Conversely, in other scenarios, they will be required to exercise more collaborative and responsible behavior, ensuring different stakeholders have access to their genetic material and information.[242]

This Part proposes additional strategies essential for advancing the collaborative and responsible behavior expected from individuals under the common property regime. These strategies involve a legal obligation to share genetic material and information toward the establishment of a universal genomic biobank and database. This would facilitate access to genetic material and information for entities that work toward enhancing collective welfare. Given the potential for pushback and the extended timeframe needed for acceptance, alternative strategies such as opt-out mechanisms and behavioral nudges could be pursued to facilitate the collection of genetic material and information and the establishment of the biobank and database. Moreover, there should be a legal obligation to disclose genetic conditions to those who are closely genetically related to an individual.

At this point, it is important to highlight the shift from moral obligation to legal obligation. While the idea of genetic reciprocity starts with a moral argument—where individuals have an ethical responsibility to share genetic material and information for the benefit of others—transforming this into a legal requirement means ensuring that this responsibility is enforceable.[243] Unlike moral obligations,

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241. Simana, *supra* note 6, at 193–216. In *Genetic Property Governance*, I explain that genetic material and information diverge significantly from traditional commons. Natural commons, such as fisheries or grazing lands, typically have well-defined boundaries, are governed by relatively small and localized groups, and involve resources that are directly observable. By contrast, genetic material and information combine physical and informational elements, lack clear boundaries, and attract a wide and diffuse range of users. The rise of accessible and inexpensive DNA sequencing has further disrupted traceability, making it far easier for genetic information to circulate beyond the original source without clear oversight. Still, the core insight of commons theory—that shared resources can be collectively managed under the right institutional conditions—remains applicable. It provides a promising lens through which to imagine governance structures capable of balancing shared benefit with individual protection in the genetic context.

242. *Id.* at 206–16.

243. The proposal that individuals bear a legal obligation to contribute genetic material and information for the public good admittedly goes beyond what the law currently requires in most contexts. In general, U.S. law recognizes no affirmative legal duty to assist others, even in cases of imminent harm, unless a special relationship exists (such as between parent and child or common carrier and passenger). Moral duties to rescue or assist, while widely acknowledged, are not typically enforceable. Thus, proposing a legal duty to contribute material and information challenges a longstanding boundary between legal compulsion and moral appeal—a boundary that the law has only occasionally crossed, and

which rely on personal choice, legal obligations compel individuals to act, backed by law and potential consequences for noncompliance. This shift requires careful thought about how to make these obligations clear, fair, and workable in practice, while still respecting the interests of individuals.

A. Reframing Genome Governance

Before delving into the additional practical steps required to implement genetic reciprocity, I wish to situate this Article within the context of my earlier contributions to the discourse on genome governance.

I have previously explored in greater depth the growing tendency among scholars and policymakers to support individual ownership rights over genetic material and information.[244] I have argued that this perspective poses several challenges.[245] For instance, it necessitates consent for *each* use of genetic material and information, a requirement that overshadows the substantial societal benefits these resources offer.[246] Additionally, it implies that individuals exist in isolation from each other, an outlook that is overly simplistic.[247]

Therefore, rather than treating genetic material and information as a unique possession of a single individual, I have suggested recognizing them as resources that, while deeply personal, have familial and societal implications.[248] To put it differently, I have argued in favor of creating a legal structure where genetic material and information are governed in a more collective way.[249] I have sought to move away from absolute ownership models, which prioritize the interests of one party over others, toward more inclusive governance, which considers diverse interests and ensures fair and equitable governance of genetic material and information.[250]

Specifically, I have proposed conceptualizing genetic material and information as a commons and implementing a common property regime, including proportionality and reasonableness as analytical tools for reconciling competing interests.[251] Given the complexity of aligning different interests, I have offered two criteria for determining control over genetic material and information: the types of genetic component (e.g., information on single nucleotide polymorphism or information on the whole genome)[252] and the purpose of the stakeholder's use (e.g., not-for-profit or for-profit scientific endeavors).[253]

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then only in narrowly defined circumstances. *See* Don M. Reckseen, *The Duty to Rescue*, 47 IND. L.J. 321, 321–22 (1972).

244. Simana, *supra* note 6, at 149–53, 160–68.

245. *Id.* at 176–93.

246. *Id.* at 177–82.

247. *Id.*

248. *Id.* at 177–82, 193–201.

249. *Id.*

250. *Id.* at 193–96.

251. *Id.* at 196–212.

252. Single nucleotide polymorphism refers to a single base-pair in the DNA sequence. *See SNP*, SCITABLE BY NATURE EDUC., https://www.nature.com/scitable/definition/snp-295/ [https://perma.cc/PCE4-C2PL] (last visited Sep. 30, 2025).

253. Simana, *supra* note 6, at 206–12.

Drawing upon Elinor Ostrom's commons theory and the knowledge commons framework,[254] I have argued that the implementation of a common property regime can lead to more effective and sustainable governance of genetic material and information, surpassing the limitations associated with government and private property regimes.[255] Under a common property regime, multiple stakeholders—as opposed to only one entity—possess a protected ownership interest over genetic material and information.[256] However, not all of the stakeholders would exert equal control or hold identical privileges.[257] On the whole, a common property regime in the genetic context would enable people to maintain some degree of ownership over their genetic material and information while, at the same time, promoting economic and societal progress, including advances in scientific research and public safety. It would facilitate cooperation between several stakeholders and help to build trust among them.

To clarify, while a common property regime reinforces collective benefit, it does not negate personal interests. Individuals should maintain *appropriate* control over their genetic material and information within a framework that respects wider implications. The goal is not to overshadow individual interests but to incorporate them harmoniously into a broader vision of collective advancement.

In this Article, I expand upon my earlier work by delving deeper into the implications of treating genetic material and information as a commons and what it would require to implement a common property regime. I explore what this approach to genome governance means for *individuals*, particularly in terms of the obligations they hold within such a regime. Adopting a common property regime involves recognizing that individuals possess not only rights that need to be protected but also duties that must be established and enforced.[258]

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254. *See generally* ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION (2015) (offering a foundational account of how communities can successfully manage shared resources through self-governance and institutional design, challenging the inevitability of the "tragedy of the commons"); Katherine J. Strandburg, Brett M. Frischmann & Michael J. Madison, *The Knowledge Commons Framework*, *in* GOVERNING MEDICAL KNOWLEDGE COMMONS 9 (Katherine J. Strandburg, Brett M. Frischmann & Michael J. Madison eds., 2017) (articulating an analytic framework for understanding and managing shared knowledge resources, emphasizing collective governance and contextual variation).

255. Simana, *supra* note 6, at 193–201.

256. *Id.*

257. Charlotte Hess & Elinor Ostrom, *Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource*, 66 LAW & CONTEMP. PROBS. 111, 124–26 (2003).

258. *See generally* Simana, *supra* note 29 (offering a framework for understanding how power asymmetries shape the responsibilities of entities that govern human genetic material and information). Specifically, I have explored the obligations that powerful entities bear toward individuals, providing a complementary perspective to this Article's exploration of individual obligations. I have argued that the property and privacy rights of individuals create quasi-fiduciary duties for powerful entities involved in collecting, analyzing, and sharing of human genetic material and information. This applies to a range of entities, from direct-to-consumer genetic testing and genetic genealogy companies to biotech companies, biobanks, laboratories, hospitals, research institutions, and government agencies.

A second point I wish to touch upon at this stage is the contrast between a "public health" approach and the commons governance approach I have formulated in my earlier work and further refine in this Article. Although both approaches have commonalities, like advocating for systemic interventions and orienting around the evaluation of risks and benefits, and are both considered "relational" with a tendency toward a more communitarian ethos, they possess important distinctions.

First, a public health approach implies that *society collectively* possesses a property right over genetic material and information. In contrast, a commons governance approach suggests such right is limited to a *specific, highly interested group* of stakeholders.

Second, a commons governance approach gives greater weight to the interests of individuals, unlike a public health approach, which tends to sideline these interests. For instance, as discussed in the following Sections, under a commons governance approach, there is a legal mandate for individuals to share their genetic material and information, yet there is an option for individuals to buy their way out of this mandate—a flexibility that a public health approach would probably not accommodate.[259] Moreover, a public health approach might be more supportive of requiring the sharing of genetic material and information as a prerequisite for access to services such as healthcare or education, a policy less aligned with the commons governance approach.

B. Mandatory Sharing of Genetic Material and Information

The concept of genetic reciprocity, as introduced in Part III, advocates for a shift in how individuals view their genetic material and information. Classic libertarian and liberal perspectives, which influence current genome governance, fail to recognize the shared nature of these resources by considering them individualistic and requiring consent for each use.[260] Genetic reciprocity promotes viewing these resources as key contributors to societal advancement and endorses the imposition of *nonvoluntary* obligations concerning their use to facilitate benefits for others. Compared to the libertarian and liberal focus on individual rights and freedoms, genetic reciprocity shifts the focus to a collective mix of interests surrounding the use of genetic material and information.

A significant implication of genetic reciprocity is the mandated collection of genetic material and information from every individual within the country.[261] The collection could be implemented at various life stages. One approach could involve obtaining a DNA sample from each newborn. However, I lean toward an alternative

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259. *See* discussion *infra* Section IV.B. It should be noted that allowing individuals to buy their way out of the mandate might create discrepancies based on socioeconomic background. There are several possible ways to address this concern. The most obvious one is to implement a sliding scale fee structure based on the individual's income or financial situation. This ensures that the buyout option remains accessible to individuals from all socioeconomic backgrounds.

260. *See* discussion *supra* Section I.A.

261. This Article focuses on the United States, but as I discuss later, the ultimate goal is to create a universal genomic biobank and database. Therefore, the obligations outlined in this Article will apply not only to individuals within the United States but potentially to individuals in other countries as well.

approach, which entails collecting a sample once a person is legally recognized as an adult (perhaps during a routine blood test, though there might be additional opportunities).[262] This approach better respects individual interests and addresses ethical concerns that arise when sampling newborns, who cannot express their opinion. In addition, the required collection would include provisions for exemptions, such as for religious or other reasons, as well as the opportunity for individuals to buy out of this requirement by paying a specific fee.[263]

The ultimate goal would be to create a universal genomic biobank and database. This envisioned biobank and database would be more than just a collection; it would represent a fusion of individual contributions toward a larger societal objective. It would merge the personal with the collective, acknowledging that while our genetic codes make us distinct, they also weave us into the fabric of humanity.[264] Ideally, the management of the biobank and database, along with the collection of genetic material and information, would be handled by a neutral entity, a "genetic intermediary," that would serve as a reliable facilitator of the sharing of these resources.

To date, multiple suggestions have been put forward regarding the establishment of a universal *forensic* DNA database.[265] Advocates argue that a DNA

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262. A separate but related question concerns whether the obligation to contribute genetic material and information applies posthumously. This issue becomes less pressing if individuals are required to provide samples while alive, as part of a universal collection system. However, I believe that the obligation persists even after death—and may, in fact, be stronger. The dead no longer possess legally protected interests in autonomy or privacy in the conventional sense, which weakens many of the usual objections to compelled collection. In this context, the potential societal benefits of posthumous genetic contributions can justifiably outweigh concerns that might otherwise govern the use of a living person's genetic material and information.

263. The funds will be used to support the objectives of the sharing program, such as funding research or supporting public health initiatives. Implementing an option for individuals to buy their way out of a mandate to share their genetic material and information is a unique and sensitive proposal. Although there may not be exact precedents, similar mechanisms in various fields could provide a framework or inspiration. For instance, companies and individuals can purchase carbon offsets to compensate for their emissions, effectively allowing them to "buy out" of the direct responsibility to reduce emissions. Additionally, in some countries with mandatory military service, individuals have historically been able to pay a fee or find a substitute to fulfill their service requirement. These examples illustrate analogous approaches to allowing individuals to pay a fee to opt out of sharing genetic material and information.

264. Incorporating protections for individuals into the universal genomic biobank and database is crucial, especially given the sensitive nature of genetic material and information. Blockchain technology offers a possible solution in this context. *See* Mahsa Shabani, *Blockchain-Based Platforms for Genomic Data Sharing: A De-Centralized Approach in Response to the Governance Problems?*, 26 J. AM. MED. INFORM. ASS'N 76, 76–79 (2019); Gal Zarchi et al., *Blockchains as a Means to Promote Privacy Protecting, Access Availing, Incentive Increasing, ELSI Lessening DNA Databases*, 4 FRONTIERS DIGIT. HEALTH Jan. 10, 2023, at 1, https://doi.org/10.3389/fdgth.2022.1028249 [https://perma.cc/F5WT-UMWV].

265. *See, e.g.*, D.H. Kaye & Michael E. Smith, *DNA Identification Databases: Legality, Legitimacy, and the Case for Population-Wide Coverage*, 2003 WIS. L. REV. 413,

database could significantly enhance crime-solving capabilities, absolve the innocent, and reduce racial inequities in the criminal justice system.[266] Given its potential advantages, the prospect of such a database is highly attractive for enhancing public safety and improving criminal justice outcomes. Advocates also contend that a universal forensic DNA database would remove the government's motivation for conducting extensive familial DNA searches and reduce law enforcement's inclination to access public, direct-to-consumer, or research databases for investigation reasons.[267] In addition, proposals have been made to create a comprehensive DNA database solely for research purposes.[268] These proposals seek to expedite scientific advancements by providing researchers with access to a vast array of genetic or genomic data.[269]

The universal genomic biobank and database I envision will go beyond merely solving crimes or supporting research. Unlike current databases that include only limited portions of a person's genome,[270] this biobank will incorporate the complete genetic material and information from all individuals.[271] By capturing the

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437–40; Arnold H. Loewy, *A Proposal for the Universal Collection of DNA*, 48 TEX. TECH L. REV. 261, 261–67 (2015); J.W. Hazel et al., *Is It Time for a Universal Genetic Forensic Database? Bias and Privacy Concerns Cloud Police Use of Genetics*, 362 SCIENCE 898, 898–900 (2018); Kirsten Dedrickson, *Universal DNA Databases: A Way to* Improve *Privacy?*, 4 J.L. & BIOSCI. 637, 639–41 (2017). In the United States, the national Combined DNA Index System database serves as a central repository where participating states and agencies collect, store, and share lawfully obtained genetic profiles. *See* Ram, *America's Hidden National DNA Database*, *supra* note 29, at 1268–70 (discussing the risks associated with expanding DNA databases and the potential ethical issues, particularly regarding the use of newborn screening samples for forensic purposes). While CODIS has been instrumental in solving crimes, it has also raised significant concerns about privacy, surveillance, and the potential for misuse. Critics argue that large-scale DNA databases, especially those not tightly regulated, could lead to the erosion of privacy rights and disproportionately impact certain communities.

266. Ram, *America's Hidden National DNA Database*, *supra* note 29, at 1268–70.

267. Hazel et al., *supra* note 265, at 898–900.

268. D.M. Roden et al., *Development of a Large-Scale De-Identified DNA Biobank to Enable Personalized Medicine*, 84 CLIN. PHARMACOL. & THER. 362, 365–67 (2008). In fact, a comprehensive database known as GenBank, overseen by the National Institutes of Health ("NIH"), serves as an annotated repository of publicly accessible DNA sequences. *See GenBank Overview*, NAT'L CTR. FOR BIOTECH. INFO., https://www.ncbi.nlm.nih.gov/genbank/ [https://perma.cc/4K3C-4DFP] (last visited Sept. 30, 2025).

269. NAT'L CTR. FOR BIOTECH. INFO., *supra* note 268.

270. *See, e.g.*, *Frequently Asked Questions on CODIS and NDIS*, FED. BUREAU OF INVESTIGATION, https://www.fbi.gov/how-we-can-help-you/dna-fingerprint-act-of-2005-expungement-policy/codis-and-ndis-fact-sheet [https://perma.cc/3CQ7-3T4L] (last visited Oct. 15, 2025).

271. It is important to recognize that genetic information alone may not be enough for many medical and research applications. To fully understand the implications of genetic data, it is necessary to incorporate linked medical records, updated health information, and phenotypic data. This additional context, which may include surveys and clinical histories, enhances the utility of genetic information by improving the prediction of disease risks, personalizing treatments, and advancing public health outcomes. As a result, a comprehensive approach to genomic databases should integrate these various types of information alongside genetic profiles.

full diversity of the human genetic pool, this biobank will ensure a more accurate representation of human genetic diversity. This comprehensive approach is crucial for understanding genetic variations and their implications, ultimately realizing significant public benefits.

For instance, the genomic biobank and database would be instrumental in identifying individuals, solving crimes, and resolving paternity cases.[272] Moreover, it would be invaluable for research into genetic disorders, allowing for the development of treatments that are effective across different genetic backgrounds.[273] Additionally, it would play a key role in advancing personalized medicine, making healthcare more responsive to the genetic needs of individuals from diverse backgrounds.[274] Finally, the genomic biobank and database would serve as a tool for uncovering new insights into human evolution and migration patterns, enhancing our understanding of the human species as a whole.[275]

Envisioned as a living, evolving "entity," the biobank and database would continuously expand with new samples, data, and insights, ensuring its ongoing relevance and utility. Its dynamic nature would allow it to adapt over time and serve a variety of purposes.

The suggested policy, presenting a stark contrast to the prevailing genome governance that predominantly draws from libertarian and liberal ideologies, might encounter substantial opposition. This is because many individuals seem to hold the conviction that they should possess absolute control over their own bodies, encompassing genetic material and information, and are strongly opposed to paternalistic interventions.[276] Additionally, there is a strong likelihood that the idea of a universal genomic biobank and database will be contested on the grounds of privacy invasion and the potential for discrimination.[277]

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272. Hazel & Slobogin, *supra* note 41, at 721–29.

273. *See* sources cited *supra* note 40.

274. Wylie Burke & Bruce M. Psaty, *Personalized Medicine in the Era of Genomics*, 298 JAMA 1682, 1682–84 (2007).

275. *See* discussion *supra* Section II.B.

276. *See, e.g.*, Anna Middleton et al., *Global Public Perceptions of Genomic Data Sharing: What Shapes the Willingness to Donate DNA and Health Data?*, 107 AM. J. HUM. GENET. 743, 743–52 (2020).

277. Dedrickson, *supra* note 265, at 641–45. In the United States, the Genetic Information Nondiscrimination Act ("GINA") provides protections against genetic discrimination in health insurance and employment. However, its scope is limited, and numerous scholars have expressed concerns about its effectiveness and design. Critics argue that GINA does not cover life insurance, disability insurance, or long-term care insurance, leaving significant gaps in protection. Additionally, there are concerns that the act's enforcement mechanisms are insufficient to safeguard individuals' genetic privacy fully and prevent discrimination. As a result, there is ongoing debate about the need for more comprehensive legislation to address these shortcomings. *See, e.g.*, Sonia M. Suter, *GINA at 10 Years: The Battle Over "Genetic Information" Continues in Court*, 5 J.L. & BIOSCI. 495, 523–26 (2018); Mark A. Rothstein, *GINA at Ten and the Future of Genetic Nondiscrimination Law*, 48 HASTINGS CTR. REP. 5, 5 (2018); Prince, *supra* note 93, at 177.

However, it is important to recognize that the government frequently enacts policies that influence our bodies, sometimes without our consent.[278] For example, vaccinations are often mandated for public health reasons to achieve adequate herd immunity.[279] Governments have historically implemented requirements like premarital disease screenings.[280] The government is permitted to collect blood samples from criminal suspects without infringing on Fifth Amendment rights against self-incrimination and can also mandate cheek swabs for DNA profiling.[281] In cases of severe contagious diseases, the state has the authority to enforce quarantine on affected individuals.[282] Thus, the mandate to share genetic material and information is not an anomaly but falls within the scope of these precedents, aiming to serve the greater public interest. To mitigate concerns about government control over the biobank and database, I have proposed that the collection of genetic material and information, along with the management of the biobank and database, be overseen by an independent genetic intermediary.

Furthermore, the suggestion to mandate the sharing of genetic material and information for a universal genomic biobank and database does not imply a disregard for privacy and antidiscrimination safeguards.[283] For example, measures should be taken to ensure genetic material and information are kept in secure facilities with restricted access, and associated names would be stored independently. Access would be granted only to entities demonstrating a substantial public benefit and individuals would have the ability to track the use of their genetic material and information through blockchain technology, which utilizes encryption keys that could be divided among multiple parties to enhance security.[284]

An additional layer of protection might include anonymization and encryption of genetic material and information. This would involve assigning a unique, nonidentifiable code to genetic material and information, effectively decoupling personal identity from these resources. Moreover, stringent penalties, including fines and criminal charges, could be enforced to deter any misuse of the genomic biobank and database. Finally, as I discussed extensively elsewhere, it would be crucial to inform individuals about how their genetic material and information are used and to provide them with the option to request the destruction of their genetic material and information under specific circumstances, further reinforcing the commitment to privacy and self-ownership.[285]

In addressing concerns about privacy risks associated with sharing genetic material and information, it is important to recognize the pervasive nature of privacy

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278. Wertheimer, *supra* note 91, at 138–39.
279. Cheng & Lepe, *supra* note 38, at 82–85.
280. Wertheimer, *supra* note 91, at 160.
281. *Id.*
282. *See, e.g.*, Jacobson v. Massachusetts, 197 U.S. 11, 25–30 (1905).
283. Dedrickson, *supra* note 265, at 641–47.
284. *See, e.g.*, Dennis Grishin et al., *Accelerating Genomic Data Generation and Facilitating Genomic Data Access Using Decentralization, Privacy-Preserving Technologies and Equitable Compensation*, 1 BLOCKCHAIN IN HEALTHC. TODAY 1 (2018), https://blockchainhealthcaretoday.com/index.php/journal/article/view/34/101 [https://perma.cc/2SGT-MXMC].
285. *See* Simana, *supra* note 29, at 1154–57.

challenges in today's activities. Almost every human endeavor carries some inherent risk of privacy infringement.[286] Moreover, the concept of privacy itself is undergoing profound transformation amid rapid technological advancements that facilitate extensive data collection and analysis.[287] As our society becomes more interconnected and data driven, the lines between public and private spheres blur, necessitating a reevaluation of our privacy expectations and norms.

Additionally, individuals who choose to use genetic testing kits already engage in sharing their genetic material and information with third parties. While their primary motivation may be personal, such as gaining insights into health, traits, or ancestry, this decision exposes them to potential privacy risks. By voluntarily participating in these activities, individuals implicitly accept a level of vulnerability to privacy violations. Therefore, it is essential to contextualize concerns about privacy within the broader landscape of societal shifts toward increased data sharing and connectivity.

1. The Use of Nudges and Opt-Out Mechanisms

Many individuals might perceive the proposal to mandatorily share their genetic material and information for the creation of a universal genomic biobank and database as a profound infringement of their rights, barring a substantial psychological change. Until such a transformation occurs—if it ever does—the concept of genetic reciprocity also suggests the implementation of softer policies such as the use of nudges and opt-out mechanisms to create the genomic biobank and database.[288] It is important to note that these policies could also find justification within certain liberal and libertarian ideologies, as they permit individuals to *voluntarily* share their genetic material and information *without mandating* them to do so, unlike the policy outlined in the previous section.

Nudges are subtle encouragements that can change people's behavior without restricting choices or substantially altering economic incentives.[289] This approach is different from policy mechanisms that steer behavior by enforcing mandates, imposing bans, or using economic incentives.[290]

Traditionally, nudges have been applied in scenarios where individuals might not make the best decisions for *themselves*, such as in health and dietary selections.[291] Beyond these applications, nudges can also navigate the boundaries of human rationality to boost the probability of choices that support *prosocial*

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286. Daniel J. Solove, *A Taxonomy of Privacy*, 154 U. PA. L. REV. 477, 490–91 (2006).

287. Dedrickson, *supra* note 265, at 641–47.

288. In addition to nudges and opt-out mechanisms, incorporating transparent usage policies on the use of genetic material and information to ensure contributors have a clear understanding of how their contributions are used can enhance trust and participation willingness. By combining nudges with transparent information practices, we could see a marked improvement in participation levels.

289. THALER & SUNSTEIN, *supra* note 92, at 6.

290. Shlomo Benartzi et al., *Should Governments Invest More in Nudging?*, 28 PSYCH. SCI. 1041, 1042 (2017).

291. THALER & SUNSTEIN, *supra* note 92, at 5–6.

behavior.[292] The aim of these nudges is to use people's cognitive and self-control limitations, as well as moral beliefs, to steer their behavior in ways that result in positive externalities.[293]

For example, highlighting stories where contributions have led to key medical advancements or enhanced patient care can create an engaging story. In addition, conducting educational campaigns that underline the shared advantages and the possibility for each contribution to support scientific research, improve public health, or enhance public safety can promote a shared sense of duty. Moreover, since people tend to follow perceived social norms, subtle encouragements can effectively steer behavior toward more prosocial actions.[294] In the genetic context, a simple yet impactful encouragement might be to inform people that many are already sharing their genetic material and information, provided this is true. Lastly, offering modest rewards or public acknowledgment to those who share their genetic material and information, such as certificates or social media badges, could act as a motivation, gently persuading more people to participate in sharing these resources.

Another applicable nudging technique is the introduction of opt-out mechanisms, which employ preset default choices.[295] This approach marks a departure from the informed-consent models, as it assumes consent and participation unless an individual explicitly decides to opt out.[296] Opt-out mechanisms set the option preferred by policymakers as the standard choice, leading to a higher number of individuals adopting this option by default.[297]

Up until now, opt-out mechanisms have been applied to address several challenges in public health.[298] For instance, there has been a surge in the implementation of opt-out testing protocols in areas grappling with high HIV rates,

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292. Valerio Capraro et al., *Increasing Altruistic and Cooperative Behaviour with Simple Moral Nudges*, 9 SCI. REPS., Aug. 15, 2019, at 7–9, https://www.nature.com/articles/s41598-019-48094-4 [https://perma.cc/FGM4-UT8H].

293. Hunt Allcott & Judd B. Kessler, *The Welfare Effects of Nudges: A Case Study of Energy Use Social Comparisons*, 11 AM. ECON. J.: APPLIED ECON. 236, 236 (2019).

294. *Id.*

295. THALER & SUNSTEIN, *supra* note 92, at 248.

296. Akke Vellinga et al., *Opt-Out as an Acceptable Method of Obtaining Consent in Medical Research: A Short Report*, 11 BMC MED. RSCH. METHODOL. 40, 40–41 (2011); Kelton Tremellen & Julian Savulescu, *A Discussion Supporting Presumed Consent for Posthumous Sperm Procurement and Conception*, 30 REPROD. BIOMED. ONLINE 6, 8–9 (2015).

297. Haoyang Yan & J. Frank Yates, *Improving Acceptability of Nudges: Learning from Attitudes Towards Opt-In and Opt-Out Policies*, 14 JUDGMENT & DECISION MAKING 26, 26–27 (2019).

298. The debate over the use of opt-out mechanisms in healthcare settings has garnered significant attention in academic discussions. While some researchers support the implementation of these mechanisms, others oppose them, viewing them as an infringement on individual autonomy. *See* THALER & SUNSTEIN, *supra* note 92, at 175–82; Kyle Powys Whyte et al., *Nudge, Nudge or Shove, Shove—The Right Way for Nudges to Increase the Supply of Donated Cadaver Organs*, 16 AM. J. BIOETHICS 32, 32 (2012); Douglas MacKay & Alexandra Robinson, *The Ethics of Organ Donor Registration Policies: Nudges and Respect for Autonomy*, 16 AM. J. BIOETHICS 3, 3 (2016).

such as sub-Saharan Africa and U.S. prisons.[299] Evidence suggests that moving from a voluntary (opt-in) to a mandatory-unless-declined (opt-out) testing policy has resulted in increased testing, diagnosis, and treatment rates.[300] Another example is organ donation. Contrary to the opt-in model used in the United States, countries like Austria, Belgium, France, Wales, and Spain have adopted an opt-out model.[301] Since 2021, Nova Scotia has distinguished itself as the first jurisdiction in North America to implement an opt-out model for organ donation.[302]

Genetic reciprocity supports the use of opt-out mechanisms regarding genetic material and information. This means that the use of genetic material and information is allowed in cases where there is no expressed objection, implying consent is presumed in the absence of a refusal.[303] By assuming consent while allowing easy opt-out, these mechanisms avoid forcing individuals into participation. The presumption of consent applies in specific contexts where bodily substances are routinely collected, such as during healthcare visits, genetic screening programs, or other public health initiatives (e.g., newborn screening, routine health check-ups, or participation in research studies). In these cases, individuals are understood to have consented to the collection and use of their bodily substances for these purposes unless they actively opt out. In practice, this means that when individuals engage in these systems, such as attending a medical appointment or participating in a public health initiative, their bodily substances may be collected as part of routine procedures, with the understanding that they can refuse or opt out at any time. Aligned with my earlier recommendations, the introduction of opt-out mechanisms should not negate obligations toward individuals. Therefore, in scenarios where consent is assumed, individuals must be informed about the use of their genetic material and information. They should also be given the choice to have these resources destroyed under specific conditions and to benefit from any gains derived from their use.

The genetic intermediary mentioned in the previous Section would be responsible for implementing the opt-out mechanisms. The assumption would be that individuals agree to contribute their genetic material and information to the universal genomic biobank and database, intended for activities that yield significant societal benefits. Nevertheless, individuals would be afforded the choice to opt out. The genetic intermediary would distribute a form to individuals, potentially during

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299. Derek Soled, *Public Health Nudges: Weighing Individual Liberty and Population Health Benefits*, 47 J. MED. ETHICS 756, 758 (2021).

300. *Id.*

301. Karthik K. Tennankore, Scott Klarenbach & Aviva Goldberg, *Perspectives on Opt-Out Versus Opt-In Legislation for Deceased Organ Donation: An Opinion Piece*, 8 CAN. J. KIDNEY HEALTH & DIS., June 16, 2021, at 1, https://journals.sagepub.com/doi/10.1177/20543581211022151 [https://perma.cc/7Q6J-PGD8].

302. Keith Doucette, *N.S. Presumes People Want to Donate Organs When They Die, But Program Uptake Unclear*, CBC (Dec. 06, 2021, at 7:20 ET), https://www.cbc.ca/news/canada/nova-scotia/ns-presumed-consent-organ-donation-uptake-1.6274777 [https://perma.cc/KDJ3-7W27].

303. As I have argued elsewhere, interactions with individuals must also incorporate strategies that ensure they fully grasp the ramifications of using genetic material and information. *See* Simana, *supra* note 29, at 1129–33, 1154–63.

a blood-test visit, allowing them to decline the sharing of their genetic material and information, and to opt out of being included in the biobank and database. Along with the form, comprehensive guidance would be provided, elucidating the significance of their opt-out decision and informing them that their genetic material and information will be exclusively accessed by entities projected to derive significant societal benefits from these resources.

It is worth mentioning that Iceland had planned to implement a similar policy.[304] The island nation is a genetic outlier: originally settled by a small group of Norsemen and Celts in the ninth century A.D. and largely untouched by subsequent immigration, it is one of the most genetically homogeneous countries in the world.[305] As a result, in 1998, the country passed legislation to create the Iceland Health Sector Database.[306] The plan was to use the existing medical and genealogical records of all Icelanders and merge this information with genetic information derived from tissue samples taken from the entire population.[307] The legislation allowed the transfer of medical record data to a licensee for commercial development without individuals' consent, based on a "presumed consent" rule.[308] Moreover, data of deceased individuals could be included automatically.[309] Individuals had six months from the database's establishment to opt out.[310] The national database, however, failed to materialize.[311] Several factors contributed to the failure of this initiative. A major issue was public resistance driven by privacy concerns.[312] The project aimed to create a centralized database that combined genetic, health, and genealogical information for nearly the entire Icelandic population. However, many individuals were uneasy with this extensive data collection and its potential for misuse.[313] Public trust further eroded with the perception that the genetic information was being commercialized for profit rather than serving the interests of Icelanders.[314] This led to widespread sentiment that corporate priorities were being placed above individual or national welfare.[315] Additionally, the project faced significant financial challenges. The high costs of maintaining and expanding the database ultimately overwhelmed deCODE

304. Hróbjartur Jónatansson, *Iceland's Health Sector Database: A Significant Head Start in the Search for the Biological Grail or an Irreversible Error?*, 26 AM. J.L. & MED. 31, 31–32 (2000).

305. *See* Agnar Helgason et al., *mtDNA and the Origin of the Icelanders: Deciphering Signals of Recent Population History*, 66 AM. J. HUM. GENET. 999, 999–1000, 1012–13 (2000).

306. Henry T. Greely, *Iceland's Plan for Genomics Research: Facts and Implications*, 40 JURIMETRICS 153, 170 (2000).

307. *Id.* at 176.

308. David E. Winickoff, *Genome and Nation: Iceland's Health Sector Database and Its Legacy*, 1 INNOVATIONS: TECH., GOVERNANCE, GLOBALIZATION 80, 80–82 (2006).

309. *Id.* at 82–83.

310. *Id.* at 83.

311. Alison Abbott, *Icelandic Database Shelved as Court Judges Privacy in Peril*, 429 NATURE 118, 118 (2004).

312. *See* Greely, *supra* note 306, at 185–86.

313. *Id.*

314. *Id.* at 176–78.

315. *Id.*

Genetics, which declared bankruptcy in 2009.[316] The company was later acquired by Amgen, a biotechnology firm that shifted its focus away from the original vision.[317]

Moreover, the idea of opt-out mechanisms gained attention in the context of health research when discussions around the first significant revisions to the "Common Rule"—the primary federal guidelines governing research involving human subjects—were underway.[318] The Department of Health and Human Services, in its 2011 Advance Notice of Proposed Rule Making ("ANPRM"), posed the questions: "Is it desirable to implement the use of a standardized, general consent form to permit future research on biospecimens and data? Are there other options that should be considered, such as a public education campaign combined with a notification and opt-out process?"[319] One of the Department's suggestions was to implement a common consent form that would cover all future research endeavors, providing individuals with the option to opt out of future research or certain types of studies.[320] This proposal was further discussed in the 2015 Notice of Proposed Rule Making ("NPRM").[321] Ultimately, the Revised Common Rule allows for the use of broad consent, enabling participants to agree to future uses of their identifiable private information and biospecimens without specifying the exact nature of that research.[322] The implementation of opt-out mechanisms is not

316. Monya Baker, *Big Biotech Buys Iconic Genetics Firm*, 492 NATURE 321, 321 (2012).

317. *Id.*

318. Brett A. Williams & Leslie E. Wolf, *Biobanking, Consent, and Certificates of Confidentiality: Does the ANPRM Muddy the Water?*, *in* HUMAN SUBJECTS RESEARCH REGULATION: PERSPECTIVES ON THE FUTURE 207, 210–11 (I. Glenn Cohen & Holly Fernandez Lynch eds., 2014).

319. Human Subjects Research Protections: Enhancing Protections for Research Subjects and Reducing Burden, Delay, and Ambiguity for Investigators, 76 Fed. Reg. 44512, 44524 (July 26, 2011) (codified at 45 C.F.R. pt 46).

320. The ANPRM reads as follows: "In most instances, the consent requirements described above would have been met at the time that the biospecimens or data were initially collected, when the subject would have signed a standard, brief general consent form allowing for broad, future research. This brief consent could be broad enough to cover all data and biospecimens to be collected related to a particular set of encounters with an institution (e.g. hospitalization) or to any data or biospecimens to be collected at anytime by the institution. Importantly, this standardized general consent form would permit the subject to say no to all future research. In addition, there are likely to be a handful of special categories of research with biospecimens that, given the unique concerns they might raise for a significant segment of the public, would be dealt with by check-off boxes allowing subjects to separately say yes or no to that particular type of research (e.g., perhaps creating a cell line, or reproductive research)." *Id.* at 44519–20.

321. Protection of Human Subjects, 82 Fed. Reg. 7259, 7273 (Jan. 19, 2017) (codified at 45 C.F.R. pt. 46(A)).

322. Christine Grady et al., *Broad Consent for Research on Biospecimens*, *in* SPECIMEN SCIENCE: ETHICS AND POLICY IMPLICATIONS 167, 168–69 (Holly Fernandez Lynch et al. eds., 2017). The Revised Common Rule is less stringent than the ANPRM and the NPRM, which aimed to widen the scope of "human subject" to include biospecimens from which identifying information had been removed. Had this redefinition been adopted, conducting secondary research on deidentified biospecimens without acquiring consent

required. This approach, as set forth by the Revised Common Rule, differs from the one presented in this Section because it requires initial consent; presuming consent is not allowed.

Opt-out mechanisms (coupled with the duties entities have toward individuals) have the potential to find the balance between self-ownership and the collective benefits of genetic material and information. They offer the individual the choice to withdraw, respecting personal preferences and privacy concerns, yet also acknowledging the importance of genetic material and information for societal benefit.

Opt-out mechanisms provide several advantages, particularly in the realm of data collection for large-scale genetic research and public health initiatives. These mechanisms have the potential to streamline data acquisition by assuming participation, which contrasts with the often logistically challenging and time-consuming traditional informed-consent processes.[323] This facilitation of data collection would accelerate research and enhance its potential benefits.

Moreover, opt-out mechanisms tend to result in higher participation rates.[324] This is because they require individuals to actively choose to withdraw, rather than opt in. This approach often leads to larger and more representative sample sizes, which improves the validity and generalizability of the findings.[325] In contrast, informed-consent models frequently suffer from lower participation rates, which can introduce sample bias.[326]

Lastly, in our digital age, where individuals are constantly asked to consent to various services and data usage, "consent fatigue" is a growing concern.[327] Opt-out mechanisms address this issue by lessening the frequency and complexity of consent decisions that individuals need to make. This reduction helps prevent the occurrence of automatic or uninformed consent, which is common in traditional consent models.[328]

C. Legal Obligation to Inform Genetically Related Individuals of Genetic Conditions

Scholars with libertarian or liberal viewpoints advocate for patient independence and a strict rule of confidentiality.[329] They propose a perspective

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would have become unfeasible. *See* Suzanne M. Rivera et al., *Introduction* to SPECIMEN SCIENCE, *supra*, at 1, 7.

323. *See* Yvonne de Man et al., *Opt-In and Opt-Out Consent Procedures for the Reuse of Routinely Recorded Health Data in Scientific Research and Their Consequences for Consent Rate and Consent Bias: Systematic Review*, 25 J. MED. INTERNET RSCH., Feb. 23, 2023, at 1, https://www.jmir.org/2023/1/e42131/PDF [https://perma.cc/7379-NUBH].

324. Cornelia Junghans et al., *Recruiting Patients to Medical Research: Double Blind Randomised Trial of "Opt-In" Versus "Opt-Out" Strategies*, 331 BMJ 940, 940–41 (2005).

325. *Id.* at 940–42

326. *Id.* at 940.

327. de Man et al., *supra* note 323, at 16–17.

328. *Id.*

329. Roy Gilbar, *Communicating Genetic Information in the Family: The Familial Relationship as the Forgotten Factor*, 33 J. MED. ETHICS 390, 390–93 (2007); *see* Sandi

focused on the patient's rights, allowing for the sharing of genetic information without explicit consent only in rare instances, where it is necessary to prevent *life-threatening* situations for others.[330] Similarly, legal institutions have largely been unsuccessful in recognizing that an individual's genetic information is involuntarily and immutably shared with close genetic relatives.[331]

The concept of genetic reciprocity, however, presents a different approach. It argues for a more flexible stance on confidentiality. Instead of strictly adhering to patient confidentiality, genetic reciprocity highlights the necessity of considering the interconnectedness of those who are closely related, especially in situations where sharing genetic information could significantly affect their lives and health, even if these impacts are not life-threatening.

As discussed in Part II of this Article, our genes intertwine us in intricate networks of genetic connections,[332] and a genetic test can reveal information that is not only pertinent to the individual tested but also to their relatives. For instance, awareness that a person has a BRCA1 or BRCA2 mutation (genes associated with a substantially increased risk of breast and ovarian cancer) holds significance for relatives.[333] Moreover, there are tests available that can identify a range of other medical conditions, including those related to genes for Alzheimer's disease, bipolar disorder, coronary heart disease, obsessive-compulsive disorder, and pancreatic cancer.[334]

This interconnectedness underscores the importance of open communication and sharing information about genetic conditions. When an individual learns of a genetic condition or predisposition, it often has implications for their siblings, parents, children, and other relatives.[335] Sharing this information is important: it can inform them of potential health risks, aid in preventive measures, and support informed reproductive decisions.[336] Disclosing the information should

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Dheensa, Angela Fenwick & Anneke Lucassen, '*Is This Knowledge Mine and Nobody Else's? I Don't Feel That.' Patient Views About Consent, Confidentiality and Information-Sharing in Genetic Medicine*, 42 J. MED. ETHICS 174, 174–78 (2016).

330. Gilbar, *supra* note 329, at 390; Mark A. Rothstein, *Reconsidering the Duty to Warn Genetically At-Risk Relatives*, 20 GENET. MED. 285, 287–88 (2018); INST. OF MED., ASSESSING GENETIC RISKS: IMPLICATIONS FOR HEALTH AND SOCIAL POLICY 278–80 (Lori B. Andrews et al. eds., 1994); *Opinion 2.131 - Disclosure of Familial Risk in Genetic Testing*, 11 AM. MED. ASS'N J. OF ETHICS 683, 683 (2009), https://journalofethics.ama-assn.org/sites/joedb/files/2018-06/code1-0909.pdf [https://perma.cc/SX9V-2BT9].

331. Ram, *supra* note 143, at 898–99.

332. *See* discussion *supra* Part II.

333. *Talking to Family About Your BRCA Gene Mutation*, CDC (Aug. 8, 2024), https://www.cdc.gov/breast-ovarian-cancer-hereditary/conversation-tips/index.html [https://perma.cc/Z7WC-EY2X].

334. Ram, *supra* note 143, at 889.

335. Kenneth Offit et al., *The "Duty to Warn" a Patient's Family Members About Hereditary Disease Risks*, 292 JAMA 1469, 1469–70 (2004).

336. *See* Mary B. Daly, *A Family-Centered Model for Sharing Genetic Risk*, 43 J.L. MED. & ETHICS 545, 545–47 (2015); Edward S. Dove et al., *Beyond Individualism: Is There a Place for Relational Autonomy in Clinical Practice and Research?*, 12 CLIN. ETHICS 150, 155–57 (2017); Amicia Phillips et al., *Digital Tools for Sharing Genetic Information with Family Members*, 21 LANCET ONCOL. 891, 891 (2020); Phillips et al., *supra* note 83 at 2038.

not be considered a breach of confidentiality, but rather a necessary step for health and well-being.

To date, courts in the United States have been reluctant to recognize the interests of genetic relatives.[337] Yet some courts have recognized that medical professionals have an obligation to implement "reasonable steps . . . to assure that the [genetic] information reaches those likely to be affected or is made available for their benefit."[338] It is important to note, however, that this legal obligation is specifically directed at *physicians*, rather than the patients themselves, indicating that the physician's duty can be adequately met by advising the *patient*, without a requirement to directly notify family members.[339]

Genetic reciprocity advocates for establishing a legal obligation for individuals to notify their genetic relatives of conditions that could affect them. Establishing this obligation would represent a more balanced approach between the interests of individuals and their relatives, and it is rooted in the reciprocal nature of social relationships, emphasizing the reliance individuals have on each other to achieve their life goals.[340] This obligation would apply not only in situations where the genetic condition is clinically actionable, with prevention or treatment available (as with Lynch syndrome, for example), but also in instances where the knowledge of such conditions could significantly influence choices, including decisions regarding reproduction, as well as financial and career planning.[341]

Establishing a legal obligation to disclose information about genetic conditions poses significant challenges.[342] This process demands a delicate approach

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337. Ram, *supra* note 143, at 876–77.

338. Safer v. Est. of Pack, 677 A.2d 1188, 1192 (N.J. Super. Ct. App. Div. 1996); *see also* Pate v. Threlkel, 661 So. 2d 278, 282 (Fla. 1995) (holding that the duty to warn runs to the patient, who may then inform relatives). There is a third relevant case, but this case is quite distinct from *Safer* and *Pate* since it involves a mother and her minor children, focusing on whether a physician conducting genetic tests on a child has an obligation to share medical information with the parents. *Compare* Molloy v. Meier, 679 N.W.2d 711, 719–20 (Minn. 2004) (finding a duty to inform parents of genetic findings from a child's testing), *with* Blouin v. Koster, 319 A.3d 654, 660–663 (R.I. 2024) (declining to impose a duty to warn parents, emphasizing confidentiality); *see also* Sonia Suter, *Legal Challenges in Genetics, Including Duty to Warn and Genetic Discrimination*, 10 COLD SPRING HARB. PERSPECT. MED., Apr. 2020, at 7–8, https://pmc.ncbi.nlm.nih.gov/articles/PMC7117950/pdf/cshperspectmed-GEN-a036665.pdf [https://perma.cc/ET2B-ATMB] (providing a comprehensive overview of evolving legal obligations surrounding genetic information, including debates over the scope of physicians' duty to warn at-risk relatives, the tension between confidentiality and prevention of harm, and related issues of genetic discrimination).

339. In *Safer*, the court pointed out that under certain conditions, a physician may be required to directly inform relatives at risk. Yet this decision was essentially reversed in 2001, when the New Jersey Legislature passed legislation forbidding the disclosure of genetic information without the individual's consent. Rothstein, *supra* note 330, at 286.

340. Roy Gilbar, *The Passive Patient and Disclosure of Genetic Information: Can English Tort Law Protect the Relatives' Right to Know?*, 30 INT'L J.L. POL'Y & FAM. 79, 84 (2016).

341. Amicia Phillips et al., *Informing Relatives of Their Genetic Risk: An Examination of the Belgian Legal Context*, 30 EUR. J. HUM. GENET. 766, 767 (2022).

342. Gilbar, *supra* note 329, at 393.

due to the potential distress caused by revealing sensitive information (some scholars even contend that individuals possess a "right not to know" their genetic information[343]). People face intricate emotional, psychological, and social dynamics while handling this information, as demonstrated in the three stories highlighted earlier in the Article, where the implications of genetic knowledge extend beyond individual concerns to affect familial relationships and societal responsibilities.[344]

Practical issues also arise, including determining which individuals should be informed, how to effectively communicate the information, and handling various reactions. Addressing these issues falls outside the purview of this Article, yet I believe that resolving them is not unattainable. As suggested by Roy Gilbar, a legal scholar and bioethicist, "[i]f reliance on the patient's sense of moral responsibility alone does not sufficiently raise the relatives' awareness and knowledge of their genetic risks, society should intervene and use the legal duty-to-warn as a tool to encourage patients to act responsibly."[345] To this end, a structured framework could be developed to facilitate communication between individuals and their relatives. One approach might involve creating a centralized registry, where individuals can voluntarily list close family members, ensuring that those who need to be informed are notified efficiently. This system could be paired with an opt-out mechanism, where individuals are made aware of their responsibility to inform family members but are given the ability to opt out if they prefer not to disclose their genetic information. Moreover, the legal duty to warn could be enforced through civil liability, holding individuals accountable if they fail to make reasonable efforts to inform their relatives. The definition of "reasonable effort" could be codified, ensuring that the duty is not overly burdensome. For example, individuals could be required to attempt notification through various channels, e.g., phone, email, or mail. Health professionals and public health organizations could be tasked with supporting this process, perhaps by providing guidelines for how to fulfill the duty or offering assistance in communicating with family members.

To conclude, Part IV has explored a novel approach to the governance of genetic material and information, moving away from the current governance, which is predominantly shaped by libertarian and liberal ideologies that prioritize consent and focus mainly on individual interests. The concept of genetic reciprocity argues for a compulsory sharing of genetic material and information, along with the creation of a universal genomic biobank and database. Achieving this would necessitate a shift in societal norms, and until such a change occurs, genetic reciprocity also suggests the adoption of strategies like nudges and opt-out mechanisms to facilitate the sharing of genetic material and information. Furthermore, genetic reciprocity emphasizes the importance of transparent

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343. Benjamin E. Berkman & Sara Chandros Hull, *The "Right Not to Know" in the Genomic Era: Time to Break From Tradition?*, 14 AM. J. BIOETHICS 28, 28–29 (2014). Like Berkman and Hull, I share the view that the argument against disclosing genetic information to genetic relatives based on their right not to know is weak and unconvincing. The notion that individuals have an absolute right to remain ignorant of potentially important genetic risks fails to adequately account for the broader ethical implications of withholding such information, especially when it may have direct consequences for their health and well-being.

344. *See* discussion *supra* Section II.A.

345. Gilbar, *supra* note 340, at 98.

communication and argues in favor of a legal obligation to notify relatives who may be affected by genetically inheritable conditions impacting their health and welfare. This is not an exhaustive list of strategies. The suggestions presented are initial steps, and there may be other meaningful ways to implement genetic reciprocity as our understanding of genetics and genomics continues to evolve.

CONCLUSION

This Article has argued for a shift in how we understand self-ownership, challenging the dominant libertarian and liberal ideologies that frame it as a purely individual right. Traditional views treat self-ownership as absolute control over one's body and its biological components, with little regard for how personal choices affect others. But self-ownership does not exist in isolation—people live in relationships, communities, and legal systems that shape and are shaped by their decisions. This Article has introduced the concept of relational self-ownership, a perspective that highlights the responsibilities and obligations embedded in self-ownership, especially when personal decisions about one's body and its components affect others.

Relational self-ownership is especially relevant to genetic material and information, which are shared rather than wholly personal. These resources link individuals across generations and populations. A person's genetic profile is not uniquely their own; it carries medical, scientific, and ethical significance beyond the individual. Despite this, current legal frameworks treat genetic material and information as if they were no different from private property, allowing individuals near-total discretion over their use and disclosure without considering the legitimate interests of others.

At the core of this Article's argument is genetic reciprocity, which rethinks how the law should mediate these competing interests. Genetic reciprocity rejects the premise that genetic material and information should be governed purely as personal property, emphasizing instead that those who benefit from genetic material and information also bear moral and legal obligations to share them under appropriate legal and ethical safeguards. Genetic material and information are inherited, passed through generations, and carry implications for public health, medical research, and law enforcement. This reality demands a governance structure that reflects the individual, familial, and collective stakes involved.

The implications of genetic reciprocity extend across multiple domains. First, genetic reciprocity informs the governance of genomic biobanks and databases. Today, individuals benefit from medical advancements made possible by genetic research while retaining the choice to decline participation. This creates a collective-action problem: if too many people refuse to contribute their genetic material and information, research efforts suffer, particularly for underrepresented populations. Genetic reciprocity challenges the notion that participation should be purely voluntary, advocating instead for the establishment of a universal genomic biobank and database. Incorporating contribution-based obligations would help ensure that genetic research remains comprehensive, inclusive, and capable of fostering medical and scientific progress for the benefit of society.

Second, genetic reciprocity has significant implications for the governance of forensic DNA databases and criminal justice. The current model of forensic genetic databases primarily collects DNA from individuals convicted of crimes, which raises concerns about racial disparities and law enforcement overreach. Some scholars have proposed a universal forensic DNA database as a more just alternative—one that ensures fairness, reduces reliance on invasive familial searches, and improves investigative accuracy. Genetic reciprocity aligns with this proposal, arguing that if individuals benefit from the security and crime-solving potential of forensic databases, they also bear a duty to contribute. A well-regulated system could improve public safety while reducing the ethical and legal risks associated with selective genetic surveillance.

Third, genetic reciprocity calls for genetic disclosure obligations. Current laws allow individuals to withhold genetic information from close relatives, even when doing so may place them at risk for preventable diseases. While privacy and autonomy remain important, genetic reciprocity argues that in certain circumstances, individuals should be required to share genetic information, particularly when nondisclosure could cause harm. A few courts have recognized such obligations, but only for medical professionals, leaving individual decision-making largely unregulated. Genetic reciprocity corrects this oversight by acknowledging that genetic risks do not belong to the individual alone—they carry consequences for others.

Finally, genetic reciprocity challenges the current legal approach to genetic privacy and property. Existing frameworks treat genetic material and information as private property, allowing individuals to exercise exclusive control. But this model ignores the reality that genetic material and information hold public value—whether for advancing medical knowledge, improving forensic investigations, or enhancing public health responses. Genetic reciprocity recognizes that privacy and property rights must be balanced against legitimate collective needs, ensuring that genetic material and information are governed in a way that serves both individual and societal interests.

By integrating genetic reciprocity into legal and policy frameworks, this Article has argued for a new governance structure that better reflects the interconnected nature of genetic material and information. The shift is not about eliminating self-ownership but about refining it—ensuring that genome governance is fair, ethical, and capable of addressing modern scientific and societal challenges. As genetic technologies continue to evolve, outdated assumptions of absolute individual control must give way to a more nuanced and collective legal framework. Relational self-ownership and genetic reciprocity provide the necessary foundation for this shift, ensuring that genetic material and information are managed as shared resources that contribute to medical progress, public health, and justice.

The logic of relational self-ownership and genetic reciprocity extends beyond genetics, shaping other critical areas where self-ownership intersects with familial and societal interests. Many of the same tensions—between personal control and the obligations that arise from shared genetic and social ties—are present in debates over vaccination policies, pandemic response, reproductive technologies, and organ donation.

In public health, absolute self-ownership has often been invoked to resist vaccination mandates and other disease prevention measures, despite the direct consequences for family members, vulnerable populations, and society at large. The COVID-19 pandemic underscored that one person's refusal can endanger relatives and entire communities. A relational approach to self-ownership reframes these debates, recognizing that protecting loved ones and the broader public may require limits on absolute bodily autonomy.

Similarly, reproductive technologies, including embryo and gamete donation, gestational surrogacy, and genetic selection, raise profound legal and ethical questions about whether reproductive material should be governed solely by individual discretion. Relational self-ownership suggests that these choices create obligations not only to offspring but also to donors, intended parents, and extended families who are directly affected.

Likewise, organ donation policies often prioritize bodily integrity as an inviolable individual right, limiting efforts to expand organ supply through presumed consent or incentive-based donation models. Yet organ shortages disproportionately affect families and communities, and a relational framework challenges the assumption that self-ownership should categorically outweigh the shared responsibility to facilitate life-saving medical interventions.

Across these domains, an atomistic view of self-ownership has created policy gaps and ethical dilemmas, failing to account for the ways in which personal decisions about bodies and the resources they involve affect family members and wider social networks. By adopting a relational framework, the law can more effectively recognize and address responsibilities arising from biological, genetic, and social interconnectedness.