

Introduction: Problem-Based Collaboration

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The articles in this double special issue of the *Journal of Literature and Science* address the topic of genetic privacy in literature, film, and TV, from the early decades of the twentieth century, when the eugenics movement was just becoming aware of genetics, to the twenty-first century, when clones, chimeras, and gene-editing are as common at the multiplex as in the laboratory. Genetic privacy is a matter of increasing concern in today's society. High profile events such as the capture of the Golden State Killer have dramatized how publicly accessible genetic information can be used by law enforcement to track suspects. Some commentators worry that genetic information could lead to discrimination in health insurance or employment; stigmatize people with genetic conditions; reinforce ethnic, racial, sexual, and gender bias; lead to new forms of eugenics; or be used by governments to infringe on individual and collective rights.

The eight articles about genetic privacy in this issue are the fruits of a unique collaboration. Supported by a multi-year grant from the U.S. National Institutes of Health, the authors worked together with other researchers at Vanderbilt University from genetics, bioinformatics, bioethics, law, and the social sciences to explore a shared set of questions: What risks do the creation of large biobanks of genetic information pose to individual privacy? How are communities affected by the disclosure of genetic data about their members, whether intentionally by consumers who use direct-to-consumer genetic testing services (DTC-GT) or unintentionally, through breaches of data security? What protections – through laws, institutional practices, passwords, and anonymization – exist to protect our genetic data, and how effective are those protections? Finally, how do literature, film, TV, and social media affect people's attitudes toward genetic privacy?

Our group, the Culture Team, was charged with exploring this last question. Our first step was to assemble the most comprehensive dataset of films and television episodes with genetics content ever collected (775 unique items, dating from 1912-2020, coded for 109 different attributes). Our method of collecting and coding these texts and our analysis of the data from the perspectives of genre, medium, and time period are detailed in the first article in this issue (Gibbons, Stovall, and Clayton). Other publications from the team, in this issue and elsewhere, have focused on genetic privacy in literature and social media. All our work, regardless of its subject matter, has benefitted from this dataset in varying degrees.

The key to making this transdisciplinary collaboration successful has been our focus on a single, urgent problem. Problem-based research differs from traditional approaches to literary criticism, in which the scholar generally lets the text itself, in dialogue with current issues in the field, shape the course of analysis. Allowing a shared problem to set the terms of our investigations makes us vulnerable to the charge that we are not reading the literary work for its own sake but rather instrumentalizing the text. This risk, however, seems worth hazarding for the chance to demonstrate the value of literature and the arts – as well as the humanities methods we bring to their study – for speaking to urgent social issues and contributing to policy recommendations meant to solve those issues. The nascent movement to establish Humanities Labs at U.S. universities to foster collaborative initiatives is making the concept of problem-based research more familiar. Humanities labs at Arizona State University, UC-Berkeley,

University of Michigan, University of Iowa, the Curb Center at Vanderbilt University, and elsewhere bring together students and faculty in the humanities to work alongside community partners to address pressing social challenges. The Obermann Centre based at the University of Iowa details collaborations of this kind on its website, "Humanities for the Public Good." Digital Humanities projects oriented toward the Public Humanities are also introducing collaborative approaches to issues of concern to local, national, and global communities. Still, problem-based research is far from the norm in the humanities.

The researchers on our grant were encouraged to approach the problem of genetic privacy from their own disciplinary perspectives and to employ their own research methods. Our publications, too, are targeted for readers in our own fields. But the goal of these individual studies is to contribute toward a collective fund of knowledge about the many dimensions of genetic privacy. We share that knowledge with one another in bi-weekly meetings, where we give papers, workshop each other's article drafts, host visiting lecturers, and discuss assigned readings. As a result, readers of this special issue will find frequent references to publications and presentations from our group in areas far removed from literary and film studies – in law, bioinformatics, computer science, genetics, and bioethics – not to mention cross-references to other articles in the issue.

Another unusual feature of this collaboration is its reliance on the kind of vertical integration common in the lab sciences, which enables undergraduates, graduate students, postdoctoral fellows, and faculty to work together as a team. At many universities, undergraduates regularly work in science labs and make contributions to their mentor's research that allow them to become authors on papers. This practice is less common in the humanities, however. Our project has given more than twenty students, from first-year undergraduates to graduate students completing their PhDs, the opportunity to contribute to collaborative literary scholarship and to be authors on more than a dozen peer-reviewed articles. Because multi-authored publication is uncommon in the humanities, we have appended a list of the roles and contributions of all the members of the Culture Team to this issue at the end of the Introduction.

Finally, the mixture of quantitative, qualitative, and close reading methods in the articles that follow has allowed us to test the findings of data-driven inquiries against more focused interpretations of individual works of literature, film, and television. Quantitative analysis of our dataset identified six genres of film and television shows that had a significant number of entries with extensive genetic content. In descending order, those genres were: science fiction (115 films/247 TV), drama (24 films/158 TV), mystery/thriller (9 films/95 TV), comedy (18 films/32 TV), action (34 films/6 TV), and horror (38 films/1 TV). (Every item was coded for up to three genres, but the numbers in the prior sentence reflect only a work's primary genre.) We then asked researchers to select representative films or TV shows from each of the genres for close reading (the article on comedy is appearing in a different venue). For example, we chose three works from what we are calling the *Blade Runner* canon as representative of science fiction (Oliver, et al.) and four works in the *I Am Legend* sequence as representative of horror (Feldman and Clayton). The choice of prominent sequences of adaptations, in those two cases, allowed the authors to chart changes in the representation of genetics over time as well as within a genre. The same is true of the article on medical dramas, which explored the dominant form in which genetics surfaces in TV dramas over nearly sixty years of programming (Furman and Clayton). Quantitative analysis of other features of each genre enabled us to establish the representative

character of the chosen works with more rigor than is common in most humanities scholarship.

The value of close reading for our project emerged forcefully through the themes that were found to resonate with genetics, topics that might never have surfaced in a purely quantitative approach: racial capitalism and body horror in *District 9* and *Sorry to Bother You* (Taylor and King); queer kinship in *Orphan Black* (Casey and Clayton); Nazi eugenics in Marvel's *X-Men* films (Porter); family, kinship, and belonging in novels about cloning (Hamann-Rose).

Taken together, the articles in this issue illustrate that depictions of genetic privacy vary in relation to media, as well as historical and generic contexts. Attention to these representations matters because treatments of genetic science in popular media are not only reflective but also constitutive of public discourse. Fictional texts should not be understood as existing outside of or in contrast to scientific, journalistic, or policy-oriented discussions of genetics because they shape and are shaped by such discourses and also influence public attitudes about genetic science. Film and television texts are particularly important objects of analysis because, as audio-visual texts capable of generating strong affective responses, they have unique affordances for shaping public opinion. The articles that follow make clear that the positions these media texts take about genetics – implicitly or explicitly – intersect with other cultural discourses, including ones about race, ethnicity, gender, and sexuality.

Several key themes link the articles in this issue. First, fictional texts often use narratives about genetics to raise questions about identity and Otherness. Second, these representations also address identity in relation to family relations and kinship structures, raising insistent questions about both belonging and autonomy. Third, fictional representations of genetics change in relation to historical and cultural contexts, but they almost always center on ethical considerations of what defines the human.

Porter's essay on Germanness and genetics in the *X-Men* films contends that popular films in the U.S. often use depictions of those coded as Other to construct and confirm hegemonic discourse about Americanness. Cinematic representations of German history, and the Holocaust in particular, become central sites at which U.S. films attempt to define America's exceptionalism and differentiate fantasies of Americanness from other national identities. The choice to deploy events associated with the Holocaust as screen memories through which to imagine both the present and future of the U.S. in the late 20th century corresponds with increased public interest in and debate about genetic science and its implications for understandings of what humanness means. Taylor and King similarly consider how contemporary cultural anxieties get refracted through historical lenses, particularly in relation to such atrocities as chattel slavery, the Holocaust, and Apartheid. The science films, *District 9* and *Sorry to Bother You*, deploy narratives about genetic manipulation and mutation to allegorize the horrors of racial capitalism. Like the *X-Men* films, the centrality of embodiment and physical transformation to these films enables them to visualize the material and affective implications of exploitation and dehumanization.

In addition to generational trauma and historical atrocity, depictions of genetics and genetic privacy in media also entail attention to more intimate and interpersonal relations. Of central importance are constructions of the family. Literature, film, and television each have particular affordances for questioning, and even challenging, normative figurations of familial relations. For example, essays by Casey and Clayton and Hamann-Rose position the narrative device of cloning as a resource for reimagining the contours of kinship structures. Casey and

Clayton read the science fiction series *Orphan Black* as offering capacious visions of kinship structures by depicting clones who develop a sisterhood, or "sestrahood" in the parlance of the show. These fictional families of choice, Casey and Clayton argue, become important lenses through which audiences can imagine new forms of sociality, which have particular relevance for people who find themselves in family relations that differ from the normative nuclear family model, including LGBTQIA+ folks and donor siblings. Similar thematics, argues Hamann-Rose, abound in realist literary fiction, as illustrated by such works as Fay Weldon's *The Cloning of Joanna May* (1989), Eva Hoffman's *The Secret* (2001) and Kazuo Ishiguro's *Never Let Me Go* (2005). These novels take up the subject of cloning as an opportunity to ask ethical questions about individual autonomy and agency. Though offered in fictional contexts, such questions have, as Hamann-Rose contends, direct implications for bioethical research and science policy related to such issues as the definitions of genetic privacy and informed consent.

Science Fiction is not the sole province for questions about the ethical implications of genetics and genetic privacy. Television medical dramas, which typically operate in a realistic (if also melodramatic) mode, also attend to this subject, using medical settings as opportunities to address the emotional and affective dimensions of genetics. Often depicting families who must turn to physicians and scientists for help in answering life-or-death questions, the relatively long history of televised medical dramas offers a useful view of changing attitudes toward genetics in popular media and public discourse. In their account of 65 medical dramas from 1961 to 2020, Furman and Clayton consider how public sentiment about genetics gets refracted through sentimentalized stories about personal struggle or loss.

This emphasis in charting changing attitudes toward genetics also guides essays by Oliver, et al. and Feldman and Clayton, which look at film franchises whose varying contexts and varying depictions of genetic science illuminate evolving understandings of science, genes, and personhood. Sequels, adaptations, and remakes provide excellent occasions for demonstrating changes in public sentiment. For example, Oliver, et al. read Denis Villeneuve's *Blade Runner 2049*, which is a sequel to Ridley Scott's 1982 *Blade Runner*, as manifesting anxieties about genetic privacy that remained implicit, if not unconscious, in Scott's film and its source novel. Reading these films together, the authors argue, allows critics to better see how public sentiments about genetics do not merely arise but develop, often gradually, through and across historical contexts. Likewise, in their analysis of the four iterations of the "I Am Legend" story – from Richard Matheson's source novel to its three cinematic adaptations – Feldman and Clayton argue that apocalyptic narratives about genetic transformation document shifts from fears of geopolitical Others to anxieties about medical science itself.

With this special issue we hope not only to advance scholarly conversations about the place of genetics within cultural imaginaries but also to offer a model for interdisciplinary, collaborative scholarship. As these essays make clear, anxieties about genetics and genetic privacy have a long history within literature, film, television, and public discourse. The themes and motifs in these works should be understood in the context of larger historical currents, changing medical and scientific capabilities, different generic and modal conventions, and evolving media technologies. An adequate grasp of the manifold ways these cultural forms influence public attitudes toward genetics can only be attained by analyses that traverse disciplinary boundaries. While the articles here have focused on literary, cinematic, and televisual texts, future directions for considering the cultural implications of genetic privacy include the study of digital and social media as sites where users seek and circulate information about

genetics. For we believe that a comprehensive approach to how culture intersects with the science of genetics has much to offer to our society.

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Appendix*

Conceptualization	Methodology	Data collection
Jay Clayton, 1, 2, 3, 6, 7, 8	Ethan Gibbons, 1	Ariana Shirvani, 1
Claire Sisco King, 1, 2, 5	Jay Clayton, 1	Isaac Stovall, 1, 3
Ethan Gibbons, 1	Claire Sisco King, 1	Lauren Furman, 1, 3
Cynthia Porter, 2		Ethan Reilly, 1
Paul Hamann-Rose, 4		Andréa Becker, 1
Terrell Taylor, 5		Berkeley Kendrick, 1
Zach Feldman, 6		Nila Sathe, 1
Kendra Oliver, 7		Ayden Eilmus, 1
Marcie Casey, 8		Gabija Tonkunas, 1
		Alice Lillydahl, 1
		Jingyi Liu, 1
Coding	Data analysis	Literature review
Ariana Shirvani, 1	Ethan Gibbons, 1	Ethan Gibbons, 1
Isaac Stovall, 1	Jay Clayton, 1	Isaac Stovall, 1
Lauren Furman, 1		
Ethan Reilly, 1		
Jay Clayton, 1		
Claire Sisco King, 1		
Andréa Becker, 1		
Berkeley Kendrick, 1		
Ayden Eilmus, 1		
Alice Lillydahl, 1		
Interpretation	Writing**	Editing
Jay Clayton, 1, 3, 6, 7, 8	Jay Clayton, 1, 3, 6, 7, 8	Jay Clayton, 1, 2, 3, 4, 5, 6, 7, 8
Claire Sisco King, 2, 5	Claire Sisco King, 2, 5	Claire Sisco King, 2, 5
Cynthia D. Porter, 2	Cynthia D. Porter, 2	
Lauren Furman, 3	Lauren Furman, 3	
Paul Hamann-Rose, 4	Paul Hamann-Rose, 4	
Terrell Taylor, 5	Terrell Taylor, 5	
Zach Feldman, 6	Zach Feldman, 6	
Kendra H. Oliver, 7	Kendra H. Oliver, 7	
Stephanie Higgs, 7	Stephanie Higgs, 7	
Marcie Casey, 8	Marcie Casey, 8	
Project management: Jay Clayton and Ethan Gibbons		

*The numbers beside contributors' names refer to the articles on which they worked. The key is below.

** The first author of each article contributed the major portion of the writing. To be listed as second or third author, one must have written at least 25% of the text.

Article Key

1. Genetics in Film and TV, 1912-2020
2. Germans and Genes on Screen: Marvel's *X-Men* Films
3. Genetics in Television Medical Dramas

4. What We Talk about When We Talk about Cloning: A Literature and Bioethics Perspective on Genetic Privacy, Consent and the Family
5. Monstrous Proletariat: The Racial Chimera in *District 9* and *Sorry to Bother You*
6. Genetics and Ethics in the "I am Legend" Corpus
7. The End of Genetic Privacy in the Blade Runner Canon
8. Queer Kinship: Privacy Concerns in *Orphan Black*