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### PROJECT

## Hello Dolly! Representations of Biotechnology and the Production of the Future

Advances in stem cell biology, cloning, and genome engineering are sparking a new vision for regenerative medicine. At the same time, they raise deep concerns about the concrete possibility of engineering the human germline and shaping a new territory of scientific and social opportunities that challenge the constitutive features of our species' history: our relationship with our body and its aging, the genetic and cultural link among generations, the increasingly blurred border between health and enhancement. In this uncharted territory, science is by no means alone in drawing the map. The broad goal of my Branco Weiss Fellowship project is to investigate how various sources of ordering power (science, law, polity, economics) interact with each other to carve spaces of existence for the novel entities of the biotechnological world. But a politically useful description of these processes cannot limit itself to the final output (for example laws), since these are intrinsically linked to the imaginary through which human societies incorporate - and shape - scientific developments.

Therefore, as an initial step in the exploration of this imaginary, I will trace in literature and advertisement the articulation of metaphors and representations of contemporary biotechnology, trying to relate them to more general trends in the interaction between science and society. This will include also my own fiction writing as a form of hands-on experience with the challenges and opportunities of narrating the homo biotechnologicus.

### Recommended Reading

Testa, Giuseppe and John Harris. "Ethics and Synthetic Gametes" *Bioethics* 19, 2 (2005): 146-66.

Testa, Giuseppe and John Harris. "Ethical Aspects of ES Cell-Derived Gametes." *Science* 305 (2004): 1719.

Testa, Giuseppe, Kristina Vintersten, Youming Zhang, Vladmir Benes, Joep P. P. Muylers and A. Francis Stewart. "Engineering the mouse genome with bacterial artificial chromosomes to create multipurpose alleles." *Nature Biotechnology* 21, 4 (2003): 443-447.

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COLLOQUIUM, 08.12.2005

## Reprogramming Genomes and Reframing Rights: Legal Cultures of Cloning

What is a clone? Different legal and political systems have been struggling with this apparently simple question for the past decade, in the process of crafting policies to regulate, accommodate or resist some of the latest developments in human biotechnology. The result of this collective and fragmented effort is a rich tapestry of

options that reach beyond the issue of cloning and represent various models of coping with technological change; models that pose genuine challenges to the traditional view of science as a universal neutral practice automatically at ease within increasingly globalized economies and societies.

I refer here to "genome reprogramming" as both the growing body of knowledge which blurs previously established borders between lineages in terms of cell identity and differentiation potential, and increasingly also the technology, which enables to derive from a variety of adult cell types either embryos (as in therapeutic and reproductive cloning), ES cells, gametes, or else embryonic lineages.

The aim of my work is twofold. First, I would like to understand how the same scientific-technological objects (in this example the clones) come to be framed in entirely different ways in different political cultures. I will present a comparative analysis of different legislations within Europe and the United States that points to the multiple ways in which scientific developments and political practices co-produce each other and traces the underlying assumptions that have inspired both scientific inquiry and political action.

The second aim of my work is to identify the challenges that the variegated regulatory landscape described above poses for the governance of biotechnology in the global age. This appears to be one of the main sites in which the theories and practices of democracy are being tested and questioned. For the past three decades governments and courts have been charting the most uncertain terrain between the embryo "in vivo" and the embryo "in vitro", but now yet other problematic and fascinating artifacts are coming to the fore: the various reprogrammable states of our genome and their biological derivatives. And the search for new paradigms to describe cell lineages and the unforeseen flexibility of their supporting genetic networks, combined with the technology to imitate, control and ultimately stretch this flexibility for defined goals, are clearly "reprogramming" not only genomes and cells, but much more profound notions about what is private or public in our relationship with our bodies.

And so here we face two closely intertwined efforts. On the one side science, which tries to make sense of these new reprogrammed entities resorting to the large scale tools of genomics and proteomics. On the other political and legal systems, which also struggle to define identities and rights for the new biological artifacts (cloned embryos, ES cells, synthetic gametes), at times borrowing from science increasingly blurred boundaries, while (re)negotiating their own networks of values and codes to interpret, and thereby shape, evolving biological knowledge.

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#### PUBLICATIONS FROM THE FELLOW LIBRARY

Testa, Giuseppe (Cambridge, Mass,2010)

Naked genes : reinventing the human in the molecular age

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=62592956X>

Gläsernen Gene. <engl.>

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=62592956X>

Testa, Giuseppe (Frankfurt am Main,2009)

Die gläsernen Gene : die Erfindung des Individuums im molekularen Zeitalter

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=58715943X>

Edition Unselde ; 16

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=58715943X>

Testa, Giuseppe (Köln,2005)

Beitrag über das Wissenschaftskolleg

<https://kxp.k10plus.de/DB=9.663/PPNSET?PPN=669199044>