

## **Introduction: Biotechnology in East Asian Societies: Controversies and Governance**

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Since the turn of the millennium, biotechnology has been undergoing a paradigm shift. While conventional medicine seeks to kill germs, relieve patients of symptoms, or remove failed organs, genomic medicine is seeking to identify health risks inherent in each individual's genetic make-up and intervene directly at that level. Likewise, while traditional organ transplantation endeavors to surpass organ failures under the scarcity of available organs that match, stem cell sciences are beginning to produce matching human tissues and use them to reverse the process of organ failures.

Although the prospect of medical progress seems to promise an encouraging future of healthcare, these paradigmatic shifts have also raised ethical, legal and social concerns. Because the research and application of genomic medicine requires collecting and analyzing sensitive genetic information that implicate health risks not only of individuals, but also of their family members or the ethnic group they belong to, profound ethical, legal, and social issues arise which require re-examination of research ethics as well as protection against privacy violation and social discrimination. Likewise, because the development of stem cell sciences often utilizes human embryos that enjoy special protection in many cultures, the very permissibility of embryonic stem cell research has raised fierce policy debates in Europe, the USA, and many other countries.

Despite these ethical, legal, and social concerns, East Asian governments have been more open toward funding and providing favorable policy environment for the development of biotechnology. Except for South Korea, East Asian countries have no deep-rooted tradition in Christianity which has led many countries in the world to be torn between adhering to fundamental religious values and allowing human

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embryonic stem cell research to proceed in a way that threatens such values. Hence, governments in these East Asian countries face less controversy when they deal with human embryonic research that is critical for the development of stem cell science.

Moreover, many of these initiatives are backed by governmental funding. Compared to Europe or the USA that has a large pharmaceutical industry capable of funding its own research and development, biotechnology in East Asian countries, except perhaps for Japan, relies more heavily on governmental funding and promotion for its research and development (Chaturvedi and Rao 2004). For instance, among all the human embryonic stem cell research centers in countries such as China, Japan, South Korea, Singapore, and Taiwan that participate in the Stem Cell Network of the Asia-Pacific Region (SNAP), a network of major stem cell research centers in the region, all but some private universities in Japan are nationally funded universities or research centers (Elstner et al. 2009).<sup>1</sup>

Under this backdrop, at least Japan, Taiwan, and Singapore are already in the process of establishing population-based biobanks to facilitate research in genomic medicine. To facilitate and guide the development of biotechnology, at least the governments of Japan, Korea, Singapore, and Taiwan have also passed different forms of statutes or guidelines to regulate embryonic stem cell sciences. As a result, China, Japan, Singapore, South Korea, and Taiwan all allow therapeutic cloning which is banned in most European countries.<sup>2</sup>

With the dependency of biotechnology for its development on public funding and more lenient regulations, particularly those regarding embryonic stem cell research, East Asian societies face the challenge of how to govern biotechnology to legitimize their policy. It is essential for them to meet this challenge not only because democratic governments must be accountable to the public, but also because as members of the international community, these countries still must comply with certain international bioethical standards. The United Nation's Declaration on Human Cloning in 2005 highlights this point. It imposes on each member state a duty to "prohibit all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life."

But whether therapeutic cloning is "incompatible with human dignity and the protection of human life" is an ethical question to be resolved through each country's political process situated in its particular context of social, economic, and cultural view toward human embryos. From the ethical, legal, and social perspectives, some

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<sup>1</sup> As of February, 2008, members of SNAP are stem cell research centers from Australia, China, India, Japan, Singapore, South Korea, and Taiwan. The stem cell center from China are Chinese Academy of Sciences (Beijing, Shanghai, and Guangzhou), those from Japan are RIKEN CDB, national and private university (Kyoto, Tokyo, and Keio), those from Singapore are Institute of Molecular Cell Biology and Institute of Medical Biology established under Agency for Science, Technology and Research and National University of Singapore, the one from South Korea are National Stem Cell Center, Seoul National University, and those from Taiwan are Academia Sinica and National Yang Ming University.

<sup>2</sup> See article 22 of South Korea's Bioethics and Safety Act, amended June 5, 2008; article 4 of Taiwan's "Ethical Guidance of Research Ethics on Human Embryo and Embryonic Stem Cell (人胚胎及胚胎幹細胞研究政策指引)"; Japan's Act on Regulation of Human Cloning Techniques, Act No.146 of 2000; and article 5 of Singapore's Human Cloning and Other Prohibited Practices Act of 2004; Elstner et al. (2009); Isasi and Knoppers (2006) and website of <http://www.libraryindex.com/pages/2266/Cloning-GLOBAL-POLICIES-ON-HUMAN-CLONING.html>.

scholars from East Asia sought to establish bioethical norms distinctive of East Asia and seek guidance from such norms (Fan 1997; Lee 1997; Tsai 2005; Tai and Lin 2001; Sakomoto 1999; Macer 1999). Most of these scholars offer normative analysis which resorts to Confucius or other ancient theories. Nevertheless, whether these theories about East Asian bioethics really reflect ordinary people's sense of morality in East Asia today and whether they really influence the daily medical practices or research ethics are yet to be examined. Moreover, even if one can identify a traditional East Asian bioethics which is independent of the mainstream bioethics rooted in the Nuremberg Code, the Declaration of Helsinki, and the Belmont Report, whether it yields legitimate standards that can withstand theoretical or practical challenges from other standards, such as those fundamental to a contemporary democratic society, remains to be seen.

Indeed, notwithstanding these normative efforts, whether there are distinctive East Asian bioethical standards also requires empirical study that explores such questions as: How do people in East Asian societies understand and engage with biotechnology? How do these societies govern biotechnology through different mechanisms? And what are the values that actually shape the research and practices of biotechnology in East Asian societies?

These questions bring us to the first theme of this issue on Biotechnology in East Asian Societies, namely, how governments in these societies sought to govern the research and development of biotechnology. One way to legitimize policies pertaining to governance is to enact legislation that draws the line between the permissible and the impermissible. Having explored the relationship between law and science, Jasanoff noted the need to explore the processes and practices of science and law; and these two disciplines raises different questions about the relationship between power and knowledge because of their different cultural attributes and ambitions (Jasanoff 2007).

Although Jasanoff's study mostly focused on the interaction between law and science in the court (Jasanoff 1995, 2002), another forum worth investigating that touches more directly on the relationship between science and political power is the process of a national bioethics advisory committee drafting a bill to regulation biotechnology. Following this line of investigation, Yoon, Cho, and Jung's article (Volume 4(2), 2010, forthcoming) provides insights into the confrontation between scientists and advocates for bioethics during the process of drafting the Bioethics and Bio-safety Act in South Korea that governs the controversial human embryonic stem cell research. They observe that good governance requires scientists and other stakeholders to communicate with and understand each other, which unfortunately has been lacking in South Korea. Although the South Korean government sought to rectify the gap between government agencies, scientists, and nonprofit organizations, all of whom embrace different positions, by bringing them together in the National Bioethics Advisory Committee to draft the Bioethics and Bio-safety Act, the parties failed to reach a consensus and the resulting legislation was received with grudges among the scientific community.

South Korea is not alone in relying upon a national bioethics advisory committee for addressing the ethical, legal, and social issues raised by the research and development of stem cell sciences. Yet, recognizing its members' role more as experts rather than as representatives, Singapore's Bioethics Advisory Committee

reached out to mobilize public opinion through public consultation. By examining the knowledge and value-claims presented in forums of public consultation and the process of deliberation, Ho, Capps, and Voo's article in this issue uncovers a "civic epistemology" in which a group consisting of members from religious, healthcare, and professional institutions who actively participated in forums created by the Advisory Committee and who could be taken to form a "public" working together to shape the stem cell policy in Singapore.

Singapore's experience highlights the importance of engaging the public when governing a controversial new technology. Yet, without institutionalized efforts to translate technical knowledge into publicly accessible terms and balanced accounts, it is difficult for the public to engage in meaningful debate or deliberation.

Closely relevant to this problem is the second theme of this issue on scientific governance, namely, the nature of scientific knowledge and its relationship to public understanding of science. STS has accumulated abundant insights over this issue in the past. Irwin and Wynne argue that because scientific knowledge embodies implicit assumptions about the social world, we need to attend to both social and technical dimensions to how science often frames public debate (Irwin and Wynne 1996). Moreover, as science intervenes into public life, when scientific knowledge rhetorically claims the superiority of its worldview and rest on a social process of trust, it reflects social interest and underlying social assumptions even though it claims to stand apart from other parts of the society (Irwin and Wynne 1996).

From different points of view, two articles in this issue build upon the foregoing theoretical concerns. Examining newspapers, popular magazines, and relevant books in Japan, Hayashi's article in this issue discovers a tendency of the media to equate gene therapy with the Human Genomic Project, a tendency which conveniently increased the public's acceptance of both. Yet, given the different histories and implications of the two, Hayashi questions whether the public was well-informed when they welcomed the two despite the high risk and uncertainties inherent in the former.

The social nature of frameworks embedded in scientific knowledge not only shapes the public's understanding of science, but also affects the worldview of scientists who are supposed to have more access to diverse and accurate scientific knowledge, which may further shape the public's understanding. Using the design of Taiwan's biobank as an example, Tsai's article (Volume 4(3), 2010, forthcoming) argues that scientists took for granted the concept of "the four great ethnicity groups" that was socially constructed in the 1990s when they designed the project. As a result, Tsai worries that such design may lead to the "biomedicalization of ethnicity" and "ethnicization of biomedicine," and that this may, in turn, unwittingly serve the purposes of some people in Taiwan's ethnic politics.

This latter point highlights the third theme of this issue, namely, how scientists interact with the public and the government within the boundaries framed to govern science. Sleeboom-Faulkner's article in this issue reveals how scientists in China use boundaries between "good science" and "bad science," and between "ethical science" and "unethical science" to shore up their territory to their advantage. Through this boundary drawing, scientists in China accepted, on the one hand, the necessity of bioethics, which appeals to their peers abroad, so as to strengthen their group identity and elicit political support in China; on the other hand, they saw it unnecessary for the public to participate in policy making, and sought to free

themselves from inconvenient scientific governance by arguing for bioethical standards that are supposed to be distinctive of Chinese culture.

Not only might the scientific community shape public understanding and “draw boundaries” to its own advantage, but it might also affect the assumption of the governing framework and influence what information and values gets conveyed, and how scientists behave. Observing the popularity of private cord blood banking in Taiwan, Rei’s article in this issue considers how private cord blood bank successfully framed the practice as a biological insurance, thereby downplaying the uncertainties inherent in the development of science, reinforcing the private nature of the cord blood stored, while impoverishing parents’ understanding and imagination of an alternative biosociality where cord blood can benefit more people. Moreover, by distinguishing between private cord blood banking and medical practice, this analogy of biological insurance also co-produced a more lenient governing framework mainly for consumer transaction, which simultaneously placed physicians in a more vulnerable position to guard against conflicts of interest when providing information to the prospective parents and collecting cord blood during the process of delivery.

Thus, through different focuses in the context of different societies, all articles in this issue on “Biotechnology in East Asian Societies: Controversies and Governance” aim to shed light on the nature and dynamic of scientific governance for biotechnology in East Asian societies. Because democratic governments must take into account the public’s opinions when they govern, and because policies that raise bioethical controversies must be informed with public values, this special issue highlights the significance of enhancing public understanding and engagement with science. In the end, we hope that, while exposing the social forces underlying the interaction between scientists, the public and the governing structure, the articles can also provide some lessons for other societies’ scientific governance when they seek to regulate biotechnology and to strike a balance between bioethical concerns and their eagerness for economic development.

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