

How Could a Scientist Become a National Celebrity? Nationalism and Hwang Woo-Suk Scandal

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Abstract In Korea, scientific excellence has been perceived as one of the key elements of modern nation-building. Moreover, from the late 1990s to the early 2000s, the government represented biotechnology as the future engine of the economy. Hwang succeeded in representing himself as the hero of Korean science by appropriating the public eagerness for scientific achievement. However, he relied on nationalist rhetoric too often against criticisms, which eventually made a considerable part of the public turn skeptical about his integrity. Although various forms of techno-nationalism are still pervasive in Korea, Hwang's scandal has given a valuable chance for reflection on the relationship of science and nationalism.

Korean Abstract 한국의 근대사에서 과학기술의 발전은 근대적 민족국가를 이룩하기 위한 의제 가운데 하나로 받아들여졌다. 더욱이 1990년대 말부터 정부가 생명공학을 전폭적으로 지원하면서 생명공학 분야의 우수한 연구에 대한 사회적 관심이 높아졌다. 황우석은 이를 적절히 이용하여 자신을 한국 과학의 대표주자이자 국민적 영웅으로 자리매김하는 데 성공했다. 그러나 황우석은 연구 윤리와 연구 진실성에 대해 문제가 제기되었을 때 자신의 명성과 민족주의 담론에 지나치게 의존하여 합리적인 대응을 하지 못했다. 이는 결과적으로 연구자로서 그의 진실성에 의문을 품도록 하는 계기가 되었고, 뒷날 그의 연구 결과가 허위로 드러나자 대다수의 대중들은 그에 대한 지지를 철회했다. 황우석의 퇴장으로 과학기술 분야에서 민족주의가 극복된 것은 아니지만, 이 사건을 계기로 과학기술과 민족주의의 관계에 대한 성찰을 시도할 수 있게 되었다.

Keywords Hwang Woo-Suk · Scientific misconduct · Nationalism · Techno-nationalism · Science and nation-building

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Just “Blinded”?

Since the dawn of 2006, there has been considerable research analyzing the Hwang Woo-Suk¹ scandal. Then what is the use of another analysis, especially focusing on the role of nationalism? The key term “nationalism” can make the analysis more perplexing, for Koreans generally are stereotyped as “fervent nationalists.” What happened at the end of 2005 in South Korea seemed to reassure that stereotype. Despite Hwang’s dramatic confession of his misbehavior in research and publication, the radical sector of Hwang’s supporters became more and more aggressive, as well as isolated. Their nationalistic, sometimes even militant, rhetoric caught the eyes of the foreign press. The *New York Times Internet* posted a photo of still-wholehearted Hwang supporters demonstrating and carrying candles, along with a title, “Blinded by Pride,” sarcastically making fun of the supporters’ praise to Hwang, the “Pride of Korea.” The *Washington Post* also had a similar title: “Koreans ‘Blinded’ to Truth about Claims on Stem Cells”(Faiola 2006; Onishi 2006).

Although the *New York Times’s* and the *Washington Post’s* title were timely and witty, they were in some sense superficial. In fact, the “blindness” did not last very long; in only 1 or 2 months after Hwang admitted his fabrication, most of the public turned silent or indifferent. Most Koreans still seemed to be sympathetic to Hwang. An internet poll carried out by *Donga Science* (monthly popular science magazine) at the end of 2005 shows that 69 percent of the respondents (762 in total) voted for “give them a chance again” (Donga Science 2005a). *Joongang Ilbo* internet carried out an Internet poll around 1 year later, and got almost similar result: 76.8 percent of the 700 respondents showed sympathy to Hwang (Lee 2007). However, their sympathy should not be misunderstood as support. It is very common for Koreans to show sympathy—somewhat “paternalistic”—for the failure of a promising celebrity, whatever one actually did.

That kind of sympathy clearly is different from the attitude of the hard-lined Hwang supporters, who even refused to admit Hwang’s failure in research. It is noteworthy that while the sympathy for Hwang still echoed amongst the public, the crowd on the Internet that promised to donate their own ova suddenly disappeared altogether. In an internet café, *I Love Hwang Woo-Suk* (<http://cafe.daum.net/ilovehws>), the number of pledges for ova donations had reached 725 by early December 2005. But on December 28, 2005, the café manager announced that no more conversation about ova donation would be posted. Some members were angered by that decision and gathered in several other cafés [e.g., *Hwang Woo-Suk Supporter Netizens’ Alliance* (<http://cafe.daum.net/dammmbc>)], but there were few new pledges. Chen Jung-huan analyzes the changing number of active users in *I Love Hwang Woo-Suk*, and suggests that the active users decreased dramatically in early January 2006 (Chen 2006). The real “supporters,” who did not cease to protest in front of the MBC building, quickly were reduced and marginalized.² It took just a couple of months more for the average public to forget about Hwang and the related professional jargons, such as “SCNT-hES-1,” “blastocyst,” “teratoma,” etc.

¹All Korean names in the text are written in the East Asian order; family name comes first.

²In the *Wikipedia* article “Hwang Woo-Suk,” the postings in the “Discussion” tab were jamming from December 2005 to January 2006, but it is almost forgotten now.

When someone tries to analyze the Hwang scandal with the term “nationalism,” one might be strongly tempted to underline the aggressive rhetoric and actions of Hwang supporters. But that temptation can mislead the researcher to the marginal part of the story. What really is interesting is not that the majority of Koreans were “blinded” temporarily, but that the most of them withdrew their support and interest so easily and quickly. This article attempts to explain why and how they could change their mind so rapidly and so easily. Naturally, those who “kept the faith” are not dealt with here.³ They already have been studied in several serious sociological or anthropological researches, including an ethnographic study on Hwang’s fervent supporters by Kim (2007a). While the stubborn supporters of Hwang stuck to personal belief in him, the majority of Koreans took him as just an “agent” for realizing the imagery of “the leading country in science.” Thus, it is not surprising that when it became evident that he was not the one they had waited for, people could withdraw the support to Hwang quite soon, although being perplexed for a while.

It is not a phenomenon unique in Korea to praise leading scientists as national star and to represent their work national pride (Felt 1993; Nelkin 1995). However, the historical context of modern Korea made this case more dramatic. The emergence of a “world-class” Korean scientist has been so anticipated because it has been an essential component of nation–state building. This article tries to show why and how a scientist could become the celebrity in Korea and become more popular than any mass media star and more trusted than any politician. First two sections begin by summarizing how Hwang had built his career, rising from a skillful veterinarian to the “Supreme Scientist” blessed by the government. The next section deals with historical context, reviewing briefly what the word “science” had meant to Koreans. I will argue with Koreans’ enthusiasm about Hwang can be explained by why and to what extent they had needed a “scientist-hero.” The fourth section focuses on the sociopolitical context, especially the one that had been shaped since the financial crisis in the late 1990s. The interaction of the (broader or deeper-rooted) historical context and the recent sociopolitical one had framed the public’s understanding of science and scientists. The fifth section shows how these frames worked when MBC’s *PD Su-cheop [Producers’ Note]* raised the problem. In conclusion, I will add that this case shows the need for the more detailed and careful analysis of various kinds of nationalist rhetoric related to scientific issues.

Ascent of Hwang: How a Skillful Veterinarian Became the “Supreme Scientist”

Although it is not clear whether Hwang intended to appeal to nationalistic sentiment or just behaved unconsciously in nationalistic way, there is little question that nationalism was the most powerful political resource for him.

Hwang’s career is slightly different from what people usually expect of a “bioscientist.” His major was veterinary science, neither medicine nor biology; his place was a cattle shed, not a shiny laboratory. His experiments mainly were not

³Chen Jung-huan classified “Hwang Woo-Suk syndrome” into three types: the third-party group (most of the public), the core (radical) supporters, and the politically oriented intellectuals who appropriated this scandal to attack their rivals (Chen 2006, 388–389).

focused on publication, but rather on practical application to dairy farming. Since 1995, he had published several books and articles about cloning cattle by transplanting nuclei of fertilized eggs, but he still was unknown to the public. In August 1998, his name began to spread. The daily newspaper *Hankyoreh* reported that Hwang succeeded in cloning cow by transplanting somatic cell nuclei (Kim 2006a). His clone cow *Yeongrong-i* [*Splendor*], born in February 1999, drew nationwide attention and brought Hwang nationwide fame. Of course, it was not because the public was interested in veterinary science, but because *Yeongrong-i* was introduced as a possible counterpart of the famous clone, Ian Wilmut's *Dolly*. Hwang was reported to the public not as a "veterinarian," but as a "world-class expert in cloning," which was perceived as the frontline of bioscience. Hwang also recognized that he was accepted as a scientist. He gradually expanded his research group, inviting more coworkers, and made more efforts to publish research articles in foreign journals (Kim 2006a, 30–31).

The impact of the word "world-class" in Korea is much stronger than can be imagined outside. It gave the veterinarian, who was unnoticed at all by the public before, the mighty wings that brought him up to the society of the famous scientists. He interpreted a foreign popular science book for kids, and co-authored several books with famous scientists or scholars, usually more famous than him before.⁴ And he was very generous in accepting any kind of request for public speeches and contributions. It is without doubt that these activities made him even more famous to the public. With his fame, he had the chance to promote himself more easily; he often invited journalists to his research farm to announce new improvements in his research.

Soon, Hwang went even further; he did not remain as "one of the famous scientists." With ceaseless appearances in the mass media, he was received by the public as *the* scientist in Korea. Since 1999, he had been covered repeatedly by TV. No individual scientist in Korea had enjoyed such intense public notice; he must be the most-often-broadcast scientist ever in Korea, even before the scandal (see table below). Major newspapers also praised Hwang as a promising scientist who was standing at the frontline of the worldwide competition in science.

Date	TV	Title (translated by the author)
2003-05-01	KBS	"Revolts of the Cells" (as an entry in <i>Science 21</i> [popular science show] series)
2004-02-22	MBC	"Cheering up the Science and Engineering Students in Korea"
2004-12-04	KBS	"Stem Cells: Dreams for Eternal Life" (in "Bio-revolution" subseries in <i>Science 21</i>)
2004-12-18	KBS	"Animals that Lay Golden Eggs" (in "Bio-revolution" subseries in <i>Science 21</i>)
2005-01-09	SBS	"The Future of Science in Korea: Hwang Woo-Suk, the World-leader in Biotechnology" (interview)
2005-06-01	EBS	" <i>Yeongrong-i</i> 's Daddy: Hwang Woo-Suk and His Team"
2005-06-04	EBS	"Challenge and Revolution of Hwang Woo-Suk"
2005-06-07	EBS	"Conversation with Hwang Woo-Suk by <i>Kwanhun Club</i> " ⁵
2005-10-23	KBS	"Hwang Woo-Suk: Why the World is Watching Him?"

⁴Hwang interpreted Hazel Richardson and Andy Cooke's *How to Clone a Sheep* (Franklin Watts, 2001) into Korean. An example of the co-authored book is Hwang Woo-Suk, Choe Jae-Chun and Kim Byeong-Jong, *Na-eui Saengmyeong Iyagi* [*Our Talks on Life*] (Seoul: Hyohyeong Chulpan, 2004) (in Korean).

⁵*Kwanhun Club* is a social gathering of mainstream journalists in Korea. It often arranges forums about big issues like presidential elections.

One TV program described Hwang's lab as the birthplace of "animals that would lay golden eggs." Hwang himself was a golden goose for bookmakers. From 2000 to 2003, Hwang and his work usually were a part of books introducing "promising scientist in Korea." But after his 2004 *Science* article, there came an avalanche of books about Hwang, ranging from management books such as *Hwang Woo-Suk Leadership* to biographies for kids, or even comics like *Find Stem Cells!*

Behaving as a National Hero

He recognized very well that he had become a national hero. After he published the 2004 *Science* article, he told a press conference in Seoul that he wrote a memo saying "at the heart of the U. S. A., I just put up *Taegeuk'ki* [Korean national flag] on top of the mountain of biotechnology, which once had been believed to be unreachable by 2010" (Kim and Go 2004). This sounded sweet to most Koreans, except for a few who felt uneasy about the manifest metaphor of war. This illustrates that he thought, or wanted to make people believe he thought, that his research was a part of a national project. It was not the first time he advertised his nationalistic motivation. One year after *Yeongrong-i*, he claimed that he made a somatic cell clone of "Han-u" (韓牛, native Korean cow), *Jin-i* (Kim 2006, 30). It was not a coincidence that Hwang chose Han-u as his next clone. Like "Wagyu (和牛)" in Japan, Han-u is believed to give high-quality meat, and to be intertwined with Korean history and culture. It also is interesting that the one who named that cow, at Hwang's request, was President Kim Dae-Jung himself. Soon after, Hwang announced to the press that his team was launching an ambitious project of cloning Korean (Siberian) tigers and Korean wild wolves, to save them because they were threatened with extinction. He ran several more practical projects, including development of BSE-resistant cow and "aseptic pigs." He claimed that these projects were intended "to increase Korean farmers' income" or "to improve Korean beef, as a response to the opening of the beef market." Hwang also appealed to Koreans by attributing his achievement to the "ingenuity of Koreans." In an interview with *New York Times* in February 17, 2004, Hwang's coworker Mun Shin-Yong said "it's something in our Korean culture." Mun claimed "our researchers had an almost Zen-like sense of concentration; they could sit for 10 h in one spot and carefully manipulate the eggs. It was almost like a meditation." And Hwang added "I also think, quite seriously, that our Korean finger techniques helped. Koreans eat with metal chopsticks, which are very slippery. We are trained from an early age how to manage them" (Dreifus 2004).⁶ This remark was reported back to Korea and made Koreans proud (Fig. 1).

Hwang repeatedly stressed that his research is not for himself, but for Korea and Koreans. In *Kwanhun Forum*, arranged after the 2005 *Science* article, he said "I want to put 'made in Korea' mark on stem cells" (Hwang 2005; Kim 2005a). He also proudly asserted to newspapers that his research would be able to "feed Koreans" in 10 or 15 years, like Samsung did in the 2000s. He even gave a threatening message: "we don't have time to hesitate; while the Korean economy now is driven by IT and

⁶Hwang also referred to metal chopsticks in the interviews with the *Los Angeles Times* (February 18, 2005) and *Nature Medicine* (May 16, 2005).



◀ **Fig. 1** In the first *World Baseball Classic* in March 2006, Korean players literally “put up *Taegeuk’ki* at the heart of the U. S. A.,” after they beat Japan twice at Anaheim. Surprisingly, this clearly offensive action was hailed in Korea

the semiconductor industry, we must prepare what would be the next in decades later” (Ahn 2004). Samsung Semiconductor was (and, more or less, still is) sometimes identified with the Korean economy itself. Thus, Hwang intended to lift himself up to the same level as Samsung, and to make people identify his personal career with the future of Korea.

Another example that shows his nationalistic rhetoric is the importation of “aseptic pigs.” Hwang claimed that he could not bring live pigs from the USA because of quarantine restrictions. However, he also claimed that he sneaked out embryo cells and cloned them into perfect aseptic pigs. Boasting about this episode to the mass media, he compared himself to Mun Ik-jeom, a fourteenth-century figure who is famous for “smuggling in” cottonseed, which was forbidden to be taken out from China at that time (Kim 2005b). Hwang clearly wanted to make himself a patriotic scientist, who even can run a personal risk for his country.

In this atmosphere, Hwang’s 2004 and 2005 *Science* articles were received readily as accomplishments of Korea, not just of an individual scientist. Although Hwang stressed the humanistic or philanthropic aspect of stem cell research, he never forgot to add that the fruit of the expansion of stem cell therapy market must be of Koreans. A patriot needs support. The government assigned him as the first—and actually the last—“Supreme Scientist” and poured research funds to his team; SNU hospital established the “World Stem Cell Hub”; the press also was busy reporting estimates of the expected economic effects of Hwang’s research.

He also was very cautious and skillful in maintaining public support. In February 2004, right after the publication of the *Science* article, he suddenly declared that he would suspend human cloning research for a year, waiting for “social consensus about the ethical issues.” The major newspapers blamed bioethics activists and some STS researchers for “interfering in” the worldwide competition in stem cell research, even implying that their action might help the foreign rivals of Hwang (Kim 2004; Hwang 2005). Eight months later, when it became apparent that ethical critics had lost impetus, Hwang modestly announced resumption of research in a television interview, saying “when the rivals in the UK, Japan, and China spurs their research, ... [we should resume research] for tens of millions of patients in the world, who are suffering from ‘obstinate disease’” (YTN 2004).⁷ Another example can be found one year later. In February 2005, it was reported that Hwang would stand as a candidate for the dean of the College of Veterinary Medicine. When the mass media rushed to Hwang for an interview, he did not clarify his position and just waited. Public opinion was against “distracting our ‘national treasure’ from research”. Two days later, he declared his resignation from the candidacy, “according to what our people

⁷The term “obstinate disease [‘nanchi-byeong(難治病)’ in Korean]” was another powerful political resource for Hwang. He always emphasized that his cloning research was aimed to serve humanitarian purposes, and preferred to use the term “*therapeutic cloning*.”



Fig. 2 Hwang was not just a famous scientist, but a national celebrity or hero. Returning from the USA after the publication of a 2005 *Science* article, Hwang is smiling to the cameramen in front of a special signboard in Incheon Airport, designating him as “Pride of Korea.” *Yonhap News* 2005 (May 20)

want,” and to “happily devote myself to research” (Hwang 2005, 112–15). Whether he had intended to run or not, it is obvious that he behaved very politically (Fig. 2).

Hwang Woo-Suk was really a celebrity in Korea. And it should be pointed out that he had become a celebrity by the help of the mass media. With his political sense and ambition, it is natural that Hwang needed mass media as a self-promoting ambitious scientist. But why did the mass media need him? Some historical analysis may be helpful to explain this.

Historical Context: Needs for a Scientist-Hero

For most Koreans, science is not simply a field of knowledge. Learning and mastering scientific knowledge has been a key agenda in modernization, and excellence in science has been regarded as a sign of being modernized.

At the end of the nineteenth century, several preliminary attempts at modernization were made by the Royal Family of the Joseon Dynasty, but the court lost its hegemony soon when imperialistic forces rushed into the Korean peninsula. Japan survived the struggle for a monopoly on the Korean peninsula and colonized Joseon by “annexation,” from 1910 to 1945. Thirty-six years of Japanese occupation introduced various “modern” stuff, systems, and institutions, but Koreans are still very reluctant to call them the result of “modernization,” because “modernization” or “modernity” has never been a value-free term in Korea. “Modernity” must be

anything good and desirable Koreans can think of, and “modernization” must be the process to bring Korea and the Koreans toward that goal. As the images of modernity and modernization have been more and more idealized, the real historical experience of modernization, which has been thought to be initiated and driven by “Others,” has become less and less important than the imagined future of modernization, which is expected to bring Koreans to such ideals as a solid and united nation–state, mature democracy, developed economy, cutting-edge science and technology, etc. Actually, Korean ideals—or, more precisely, fantasy—of modernity often is mixed with a desire to become an international power.

After successive disasters, including colonial exploitation, segregation into North and South, and devastation by civil war, Korea (especially the south) accomplished an outstanding result. South Koreans have made their country wealthy, democratic (relatively), and culturally affluent. Despite all of those surprising achievements in only a few decades, however, Koreans still want to be assured that they are “modernized enough.” That feeling of something lacking comes mainly from the mentality that Korea has failed to achieve two most important agenda items of the modernization: nation–state and science–technology. Korea’s division into north and south in 1945, right after the liberation from Japanese occupation, postponed indefinitely the establishment of modern nation–state; the underdevelopment of higher education during Japanese occupation and the brain drain in the 1950s and the 1960s made a deep impression on Koreans that their science–technology had fallen behind the leading group.

It may sound strange that Koreans still feel anxious about their science and technology. In 2004, total R&D expenditure in Korea was around 20 billion dollars (2.91% of the GDP), seventh in the world. Samsung, LG, and several other companies are among the leaders in the world market in some specific fields, such as semiconductors, mobile phones, and PDP and LCD panels. The major universities in Korea are running fairly competitive science and engineering departments, and their alumni have achieved considerable reputations. But what the average Koreans feel is that they still lack some comprehensible “symbol,” something like a Nobel Prize medal. Koreans’ enthusiasm for the Nobel Prize has risen along with Korea’s economic development, especially when Korea’s neighboring—in fact, usually believed as “rival”—countries, Japan and PRC, already have more than a handful of Nobel laureates.⁸ To prove their belief that they are talented in scientific ingenuity, Koreans have been eager to have their own “star” in science and technology.

Benjamin Wiso Lee (1935–1977), a theoretical physicist, often has been misunderstood as that hero. He was perhaps the most successful Korean physicist, who was a professor of physics at the University of Chicago, and head of the theoretical physics department at Fermi National Accelerator Laboratory. His success story was intermittently reported into Korea from the late 1960s to the early 1970s, with the wishes that he could be the first Korean Nobel laureate. But it was only after his abrupt death by an accident that his myth began in Korea. In the

⁸In winter 2002, when Koichi Tanaka won the Nobel Prize in Chemistry, several conferences were organized instantly to discuss “how to make the first Korean Nobel Laureate,” for example, the “National Forum for Nobel Prize in Science,” held in November 5, 2002.

mid-1970s, the Park Chung Hee government often conflicted with the Carter administration, and it was almost an open secret that Park wanted to develop nuclear weapons, preparing for Carter's withdrawal of US forces from South Korea. Thus, "a sudden death of a Korean nuclear physicist in the U. S." was a perfect ingredient for a tragic myth. Various rumors spread quickly, and even the public media dealt seriously with that possibility. Two weeks after Lee's death, an assemblyman openly referred to 'conspiracy,' asking the minister of science if there had been any secret in Lee's death (National Assembly 1977). Newspapers again underlined his remarks, and the rumors about Lee were gradually taken as 'real.' From the late 1980s, several books dealing with these rumors were published. The climax of the myth was marked by a novel, *Mugunghwa kkochi pi-eot seum ni da* [*Mugunghwa (Korean national flower) Blossoms*] (Kim 1992). *Mugunghwa's* author intermingled Ben Lee's myth with an ultra-nationalistic narrative that South and North Korea cooperate to develop a nuclear bomb, based on the blueprint Lee had handed over to Korean government at the cost of his life, to retaliate for Japan's invasion (again!).⁹ Despite its coarse plot and awful worldview, *Mugunghwa* became a million-copy seller and even was made into a movie in 1995 (Kim 2007b).

In fact, Lee's major field (quantum electrodynamics, or more generally, elementary particle physics) had practically nothing to do with making nuclear weapons, and Lee himself was very critical of Park's dictatorship (Kang 2006). Moreover, it is not even clear if he was patriotic at all. Lee was a stereotypical physicist, who was indifferent to political issues and social life. It is not easy to find his apparent contribution to Korean scientists' communities, either in Korea or the USA. But what the people want is not the details of the fact. It is remarkable that many people, after various refutations even including lawsuits, still believe that Lee had something to do with the nuclear weapon program. And it is more interesting that this wrong belief is the major source of Lee's popular reputation in Korea. Lee still is remembered rather as a "patriotic genius" than as a "theoretical physicist who laid a theoretical foundation for renormalizing quantum electrodynamics (Fig. 3)."

Hwang Woo-Suk's exceptional reputation can be understood more adequately in that context. As a "representative" scientist in Korea, Benjamin Lee was well known by name, but what he had really done was under debate and very hard to understand. On the other hand, Hwang Woo-Suk perfectly fit the ideal model of Korean "star" scientist. First, he was the "world-class" scientist who had been so anticipated; although he was neither the only nor the first Korean scientist to publish articles in prominent journals like *Science* and *Nature*, he was received as a world-leading scientist because his topic, cloning, was perceived as so cutting-edge in itself. Second, and more important, his topic was "tangible" to the public; his cloned animals are far easier to describe and understand than abstract formulas filled with Greek letters. Third, he had the "virtues" exactly opposite to the stereotypical scientists. He had been portrayed to be an open-minded, kind, and warm-hearted gentleman. Moreover, contrary to most scientists who want to act "cosmopolitan," he kept showing the mass media his interest in how his work can contribute to the

⁹Because of the lawsuit brought by Lee's family, the author could not use Lee's real name. But everybody can recognize that "Lee Yong-Hoo," a fictional figure, denotes Benjamin Lee himself.



Fig. 3 Benjamin (Wiso) Lee. When Hwang faced criticism about morality and integrity, his supporters claimed that he was trapped by an international conspiracy, and compared him to Benjamin Lee. That comparison was based on the fable about Lee, which assumes Lee was killed by the CIA for his contribution to the Korean nuclear program

future of Korea: in other words, his patriotism. All of these characteristics appealed successfully to the nationalistic sentiment of the public.

Nationalism was not the only ideological resource for Hwang, however. Hwang also appealed to the public by emphasizing his “commonness,” which makes the people identify him with themselves. After his 2004 *Science* article was reported with various praises, one easily could find his biography—usually the illustrated kid’s version—in the first stack at bookstores. Those biographies were filled with episodes typical for “people’s hero”: a quiet childhood with love of nature and science, hard school days, and eventual success by ceaseless efforts, epitomized by “Mon, Tue, Wed, Thu, Fri, Fri, and Fri,” etc. Hwang’s exemplary personality, such as diligence, also was an important source of his reputation. Hwang was famous for beginning every day at 4 o’clock, by mediating “what I can do for my country and people.” People showed great sympathy with his career. He did not belong to the mainstream in Korean scientists’ community; his major field (veterinarian medicine), his career (his doctorate is not from the USA, unlike most SNU professors), his clear and even bold rhetoric to the public (while the mainstream scientists appreciated modest rhetoric and despised Hwang’s emotional speech style), etc., were marginal

in the learned circle in Korea. In this sense, the public not only supported Hwang, but also identified themselves with him to some extent. In other words, Hwang's popular fame was the other side of the public's disappointment and frustration at the current mainstream scientific activities, which had looked incomprehensible and meaningless. Hwang went in the exact opposite direction. He often emphasized "patriotic" and "humanistic" motivation of his research, and that message was totally comprehensible to the public. So it is no wonder that he got so many fervent supporters, and that most Koreans tried to find some excuses to forgive him, even after the disclosure of human oocyte abuse.

Sociopolitical Context: Neo-liberalist Reform in Economy and Academy

The economic crisis in the late 1990s, which attacked the whole Asian economy, looked to pessimists in South Korea as a sign that assured their gloomy forecast that Korea has not enough resource to transform her economy into an advanced model. Moreover, as economic growth slowed down, the supply of scientists and engineers from colleges and universities exceeded the demand of the job market, and that seriously discouraged those who want to be, or have their children be, scientists or engineers. To find a breakthrough for both the ideological and practical crises, the government relied on the easiest, or the most mediocre, solution: to find and advertise a role model for scientist or engineer. At the end of the 1990s, one could find various campaigns intended to encourage scientists and engineers on work, or to inspire middle- or high-school students, such as "Science Ambassador," "Science Culture" movement, appointment of "Scientist who I want to take after and to be," etc.¹⁰ At the dawn of the twenty-first century, Korea needed a "hero" in science–technology, more urgently than ever. The presence of a hero in science–technology was not a matter of mere "national pride," but to some extent a matter of Koreans' *raison d'être*; people believed it could give a part of, if not the whole, answer to such questions as whether Korea's high-rate economic growth since the 1960s was a house of cards or not, or whether Koreans could recover from the economic crisis and have their economy take off on the "right track" again.

Hwang Woo-Suk appealed to the anxious public by showing them understandable and tangible goals, such as humanitarian new ways of therapy or economic prospects, and by showing them the "signs," the publications in *Science* or foreign scientists visiting his lab. It was very natural that laypersons believed he was the most promising candidate for the first Korean Nobel laureate, even though very few working scientists agreed. Hwang skillfully appropriated and privatized the people's deep-rooted anticipation to science–technology, derived from the historical trauma of delayed modernization. Thus, many of Korean laypeople could not discard Hwang easily, not just because of pride, but because Hwang had constructed his image so

¹⁰The show still goes on; SBS, the nationwide broadcasting station, sponsors the "First Korean Astronaut" program, and periodically reports the training of the candidates in Yuri Gagarin Astronauts' School in Russia, making it as a kind of "reality show."

firmly that he became a personification of Korean science–technology, an enterprise the Koreans needed to support and defend against “external” threat.

The economic crisis also forced a totally new paradigm of neoliberalism in Korea. Kim Dae-jung, who won the presidential election in the winter of 1997, promoted IT industries to boost up the ruined economy. The dot-com boom helped the recovery of the Korean economy in the early 2000s, but the market soon was saturated. Thus, the government designed its “National Basic Plan for Science and Technology (2002–2006),” which emphasizes the promotion of so-called “6T”s—I[nformation]T [echnology], B[io]T, N[ano]T, E[nvironmental]T, S[pace]T, and C[ulture]T. This scheme was inherited by the Roh Moo-hyun administration, which was inaugurated after the election in the winter of 2002. The field that benefited the most under the Roh administration was BT. IT already was grown-up, and the goals for the other fields were more futuristic than realistic. BT’s goal was unclear at the outset, but BT researchers soon found a nice role model. Hwang Woo-Suk’s outstanding performance, patriotic and humanitarian motivation, and optimism were followed as good examples. Soon BT was received as a new cornucopia for Koreans, not only profitable but also humanitarian. And it was out of the question that Hwang was received as the icon of “BT Korea (Fig. 4).”

The academic circles also needed star scientists. Neoliberalist reform had changed the standard of universities from quality to quantity. It was from the late 1990s to the early 2000s that the “publish or perish” rule was introduced to Korea. The “IF (impact factor)” of journals became vital for the scholars and the universities because the education budget was to be distributed according to the universities’



Fig. 4 President Roh Moo-hyun (*center*) visiting Hwang’s lab (December 10, 2003). Roh was so deeply impressed by Hwang’s presentation (he used the word “electrified”) that he promised firm support to Hwang’s future research, while the questions about ethical issues already were raised then

performance, usually assessed by the number and the IF of the publications from the respective institutions. Thus, the universities put more effort into advertising their performance. When someone in their institution published an article in major journals, such as *Science*, *Nature*, or *Cell*, the universities became busy in reporting themselves to the mass media. As a result, the major journals, which have high IF, became overemphasized to the public. The news about Hwang's publication thus was treated more strikingly than could be imagined outside Korea.

Hwang was welcomed by various actors for various reasons. Scientists needed a star as their representative, for more solid public support and more government funding. Journalists tried to keep a close personal relationship with Hwang, to get a "scoop" on other papers. Politicians competed with each other in visiting Hwang's farm and taking photos with him (Kim 2006b; Kang 2007). Most of all, the public found nothing wrong in having their own scientific hero—at least until *PD Su-cheop* raised ethical questions in fall 2005.

Abusing Nationalism? Hwang's Response Toward Criticisms

When *PD Su-cheop* raised ethical questions, an overwhelming majority of Koreans expressed firm support for Hwang, and blamed MBC for being too hasty and not giving Hwang enough chance to explain himself. Not only laypersons but also well-known intellectuals openly scolded MBC and referred to delicate topics such as "a clash between Oriental morals and Western law." Their typical logic was that researchers' egg donations sometimes are acceptable, especially in Korea, because physical sacrifice as a result of one's endeavor largely has been accepted, and sometimes even encouraged, in Korea. They went further, arguing that it would be too crude and hasty to apply Western rules mechanically, such as *the Declaration of Helsinki*, without appreciating this context. Although this kind of rhetoric reminds somebody of the 1970s' shallow propaganda of "Korean-style democracy," which was coined to legitimize the oppressive military regime, a lot of people readily embraced it and quoted it to defend Hwang and his teammates. In an Internet poll by *Donga Science* asking "what do you think about the Western scientists' claim that there can be no 'voluntary ova donation' with the hierarchy of lab leader and researcher?", 72% answered "it is possible in Korea" (*Donga Science*, November 28, 2005). More and more people were gathering every evening, hoping for Hwang's recovery—from self-hospitalization—and resumption of research. MBC seemed to be in a tight corner.

Hwang seemed to be actively engaged in arousing public opinion to support him. He deliberately made use of nationalistic rhetoric, rather than to be passively benefited by it. He carefully managed his connection to journalists, and even "hired" some ex-journalists to his private team to deal with the press; one of them later was found to be the manager of *I Love Hwang Woo-Suk*, the largest Internet café supporting Hwang. Hwang's personal relationship with key members in government also worked as a strong shield for him.

Hwang's government and media network really acted like fortresses. Tens of assemblymen, regardless of party, gathered to organize "Hwang Woo-Suk's supporters in Assembly" after MBC's criticism (*Yonhap News*, December 6,

2005). When some young scientists raised crucial questions about the credibility of data in 2004 and 2005 articles, some journalists earnestly tried to defend him with articles that contrasted Hwang's absence with the "chase" of other countries. Japan, of course, is always the best catalyst for triggering nationalism in Korea. For example, *Chosun Ilbo*, an influential right-wing newspaper, delivered an article reporting that Japanese researchers had published an article about stem cell research, right next to the article on the hospitalized Hwang (Lee 2005). Although it is obvious that there was no causality between these two events, they were enough to spur Koreans. Other conservative newspapers and writers did not lose this chance to attack MBC (Song 2005).¹¹

The Internet was the battleground for supporters and critics of Hwang. At first, the Internet users were unanimously sympathetic to Hwang. After Hwang was hospitalized, there came postings bearing so-and-so titles such as "copied from Hwang team's one young researcher's blog." These postings usually claim that Schatten's sudden farewell is a part of American Jews' conspiracy to check the growth of Korean BT industry and maintain their hegemony. Although Korea has been insulated from anti-Semitism in Europe, this particular conspiracy theory drew full attention on the Internet, and was copied and pasted everywhere. Soon, personal homepages and blogs became filled with various versions of anti-Semitic, anti-Japanese, and anti-American conspiracy theories.¹² The Internet writers easily could postulate "logical" connections between Jews, American Neo-cons, and Japanese: they all want Korea's decline!

But the Internet was not a uniform space, as always. Looking back now, Hwang seemed to rely too much on nationalistic rhetoric. A considerable number of Internet users, especially those who were versed in how scientists (ought to) act in scientific debates, became puzzled by Hwang's behavior. If there was nothing wrong in his research, why should he lay in bed so long? Hwang's emotional tactics worked for the majority of laypersons, but provoked critical reaction from young scientists, because it was not what they had learned in school. Scientists, they believed, should not appeal to any kind of emotion, but should prove themselves only by evidence. Although this idealistic belief is somewhat different from what STS has shown in decades of research and debate, it is true that Hwang's "abuse" of nationalism made many Internet users curious about his integrity. And it did not take even a month before young scientists found evidence of fabrication in Hwang's articles (Fig. 5).

Hwang's supporters did not vanish all of a sudden, of course. Even after Hwang's former co-author Roh Seong-il revealed at a press conference that there is no SCNT-stem cell, many of Hwang's supporters did not believe him. Instead, Roh Seong-il

¹¹The conservative media's hard line against *PD Su-cheop* had another improper motivation. In the 2002 presidential election, *Chosun Ilbo* supported Lee Hoi-chang, a candidate from the conservative GNP (Grand Nation Party), but he was defeated by Roh Moo-hyun. *Chosun Ilbo* blamed its defeat on the rival media—TV and the Internet. So it tried to make use of this chance to challenge the credibility of TV investigative reports.

¹²In this context, Chen claims "America is still the most important father, the rapist and the nightmare. [...] The myth of Hwang had begun by the 'recognition' of America, and was ended by America." Chen also argues that, in this context, it is understandable that the public blames America for what they cannot handle or make sense of (Chen 2006, 403–404; translated by the author).



Fig. 5 A famous politician visited Hwang in bed. Hwang's 'politician-like' behavior, including his excessive reliance on nationalistic rhetoric, gradually made a lot of people turn critical toward him

and Samsung (respected, but also envied and criticized as much in Korea) was added to the conspiracy map because Mizmedi Women's Hospital, which Roh was in charge of, was backed by Samsung. The map was revised several more times, even after Hwang was fired from SNU. Hwang's supporters also found some formal sentences in the 2005 *Science* article stating "this research was done in Korea, by Korean researchers and Korean instrument," and copied and pasted them in the Internet, as "a sign of his patriotism." In fact, those sentences had nothing to do with patriotism. They were inserted just to prove that this research had not been funded by the US federal budget because human embryonic stem cell research was forbidden to be supported by the federal budget under the Bush administration. But those who could recognize the true intention of these sentences were only a few among the Internet users. Many Internet users actually were moved by these sentences, and blamed—only temporarily, though—the critics of Hwang for their "inhumanness."¹³

As mentioned at the beginning, however, the "blindness" did not last long. On December 23, 2005, Hwang held a press conference and admitted that he had no SCNT-stem cell at all in his hand, while still claiming that he actually had made some but his ex-coworkers "stole" them and replaced them with fake ones. During the conference, he used the word "Korea" or "Korean" as many as eight times, and

¹³It is still an unsolved question how the supporters found those sentences. However serious the supporters were, it is very hard for laypersons to access and read articles in *Science*.

stressed that his lab techniques were unique and should be protected as “techniques of Korea” (Chen 2006, 396–97). Yet his nationalistic rhetoric could not work any longer. Most Koreans were deeply disappointed by his confession, and turned their attention to other topics. The scientist-hero in Korea was respected only when he was believed as the ‘real’ hero. When his achievement was proved to be fabricated, his saga also came to an end.¹⁴

Conclusion

At first sight, Hwang’s scandal looks like the exemplary case that shows how nationalism “distorted” a scientific debate and how it was overcome by “the light of reason.” With a closer look, however, it is not so evident whether the techno-nationalism in Korea was really refuted with Hwang’s decline. The supporters of Hwang insisted that Hwang’s cloning technique would bring wealth and prosperity to Korea. The critics, on the other hand, claimed that rigorous investigation of Hwang’s fabrication is necessary to recover foreign researchers’ trust in Korean scientific community. Although their opinions seem incommensurable, it is noticeable that both parties relied on the same rhetoric: “what would be good for the advancement in science in Korea?” Even the bioethics activist group, who criticized Hwang first for his violation of “universal” ethical standard, also appealed to the public with nationalistic rhetoric—“Korean scientists would not be recognized by foreign scientific community unless we obey the global standard”. It is also remarkable that the last title of *PD su-cheop*’s serial four investigations of Hwang scandal was “Life Science, beyond Crisis” (MBC 2006). MBC tried to comfort the audience by showing younger generation of Korean bioscientists, who they believed to be more sincere and reliable than Hwang and his teammates.

Thus, it would be not only naïve but also misleading to understand Hwang Woo-suk scandal just as an example of the victory of reason (or science) over enthusiasm. As Hong Sungook points out, Hwang’s scandal might even strengthen the stereotypical understanding of the relationship between science, technology, and society (Hong 2006). In fact, however, the last phase of Hwang Woo-suk scandal can be described as the victory of one form of techno-nationalism over another; the difference is that the former was more rational, global-minded, and self-reflective than the latter. When the laypersons believed Hwang’s scientific achievement as real, they favored the nationalist claim that “minor mistakes” can be ignored for the advance of Korean science; when it was turned out that there was no stem cell made by Hwang’s team, however, they turned to the more modest claim emphasizing foreign observers’ trust.

Nationalism in Korea is so subtle and abstract that it can be compared to the transparent and multi-colored cloak. Unlike the western countries, where the

¹⁴It is remarkable that Hwang was abandoned as a scientist-hero *not* because of the ethical misconduct, but because of the fabrication of experiment data. Then, if there was, at the least, one real SCNT-stem cell, what would happen to the first question about the human oocyte abuse? It is very improbable to assume that the ethical issues alone could stop Hwang’s research, or remove Hwang’s aura.

postmodern discourses about nation and nationalism are flourishing, nationalism is still received as a relevant sociopolitical agenda in Korea. Nationalist rhetoric is easily appropriated to justify various, sometimes even contradictory, opinions. In Hwang Woo-suk scandal also, it is very hard to point out any individual or group that was totally free from the nationalist rhetoric.

However, it would be hasty to conclude that Korean society is still dominated by the omnipresent nationalism. Although it is wide and flexible, the cloak of nationalism is not thick enough to make people “blind.” One can easily find many significant differences among the nationalist statements from different groups. Thus, the proper question about the relationship of nationalism and Hwang’s scandal might not be *whether* nationalism was involved in the incident (it was, is, and will be), but *which forms of* nationalism competed with one another and *how* one of them gained support by the public.

Nationalism is a subject to be explained rather than an explanatory term, as it is always articulated in combination with other ideologies. Thus, the desirable next step in understanding the role of nationalism in scientific debates would be analyzing the way which forms of nationalist rhetoric are mobilized by which social groups, and which one of them gains public support under which circumstances. In this article I have just suggested an introductory outline of how a scientist’s effort to mobilize the public support by nationalist rhetoric had succeeded and failed. The details which could not be analyzed here for the limitation of space still await more researches to come.

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