

# **Research Misconducts in Korea;**

- Past, present, and future

Eun Seong Hwang

Department of Life Science, University of Seoul

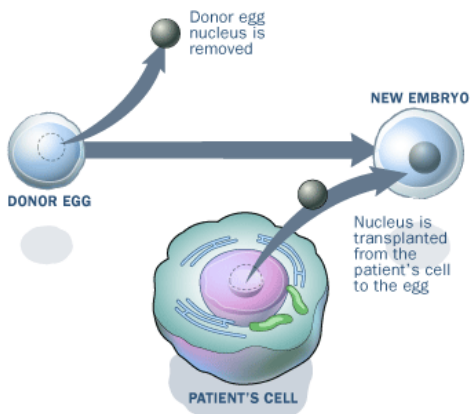
# ***1. The beginning***

# 2005. 12. Stem-cell cloning scandal of Hwang, Woo-Suk

SPECIAL



## How Stem Cells Work: Therapeutic Cloning



Published online 15 December 2005 | Nature | doi:10.1038/news051212-14  
**Corrected** online: 16 December 2005

**News**

## Stem-cell pioneer accused of faking data

**South Korean television airs unconfirmed allegations over landmark research.**

David Cyranoski

The credibility of work by Woo Suk Hwang, South Korea's high-profile cloning researcher, has again been called into question. News stations across Korea have broadcast allegations from a collaborator that the pioneering work in deriving stem cells tailored to individual patients, published by *Science* in May 2005, was based on fabricated data.

Hwang, who works at Seoul National University, has not commented on the reports, and *Nature* has been unable to verify or refute any of the allegations.



Hwang faces more controversy.

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## South Korean Scientist Apologizes for Deception; Hwang Says Data Were Doctored by Others

[FINAL Edition]

The Washington Post - Washington, D.C.

Subjects:

Biomedical research; Apologies; Stem cells; Fraud

Author:

Faiola, Anthony

Date:

Jan 12, 2006

Start Page:

A.12

Section:

A SECTION

[Hwang Woo Suk]'s apology came two days after an academic panel at the university, where Hwang's team conducted much of its research, concluded that virtually all of his professed stem cell breakthroughs were faked. Hwang had risen to international fame as a result of his team's claims of having extracted stem cells from cloned human embryos, a technology that held out hope for millions of patients worldwide with currently incurable diseases.

Hwang blamed two collaborating researchers at the MizMedi Hospital, a fertility clinic in Seoul where Hwang's team obtained most of the human eggs used in its research, for falsifying the data. The hospital's researchers had played a crucial role in Hwang's work because they were tasked with cultivating the cloned human embryos

### 2006.3.6 – “Hwang admitted that he ordered fabrication of data on stem cells”

Prosecution reported that Professor Hwang Woo-suk confessed that he ordered the manipulation of the samples related to the 2005 scientific paper. The prosecution is acknowledging that Hwang instructed Kwon Dae-ki to manipulate DNA fingerprint analysis samples related to stem cells 4-11 in the 2005 paper (NT-4-11). According to Kwon Dae-Ki of Seoul National University, he has divided the somatic cells corresponding to NT-4 and No. 11 into two samples, and one of them is a somatic cell sample and the other is a patient-customized stem cell. - [www.nocutnews.co.kr/news/130155](http://www.nocutnews.co.kr/news/130155)

sily intense ecologically, even if their macro-evolutionary consequences are unlikely to have been significant.

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- We thank NSF (Geology and Paleontology Program, grants EAR-9903225 and 9905655), the Petroleum

Research Fund (grants AC 37737 and AC 40735), and the Fulbright Commission for financial support; F. Gahan, B. Deline, E. Roberts, M. Tuura, and P. Shaffer for help in processing museum samples; and S. Xiao, J. Huntley, G. Diehl, and two anonymous reviewers for useful comments on the manuscript.

#### Supporting Online Material

www.sciencemag.org/cgi/content/full/308/5729/1774f  
DC 1  
Materials and Methods  
SOM Text  
Fig. S1  
Tables S1 to S5  
References

8 April 2005; accepted 21 April 2005  
10.1126/science.1113408

## Patient-Specific Embryonic Stem Cells Derived from Human SCNT Blastocysts

Woo Suk Hwang,<sup>1,2\*</sup> Sung Il Roh,<sup>3</sup> Byeong Chun Lee,<sup>1</sup>  
Sung Keun Kang,<sup>1</sup> Dae Kee Kwon,<sup>3</sup> Sue Kim,<sup>1</sup> Sun Jong Kim,<sup>3</sup>  
Sun Woo Park,<sup>1</sup> Hee Sun Kwon,<sup>1</sup> Chang Kyu Lee,<sup>2</sup> Jung Bok Lee,<sup>3</sup>  
Jin Mee Kim,<sup>3</sup> Curie Ahn,<sup>4</sup> Sun Ha Paek,<sup>4</sup> Sang Sik Chang,<sup>5</sup>  
Jung Jin Koo,<sup>5</sup> Hyun Soo Yoon,<sup>6</sup> Jung Hye Hwang,<sup>6</sup>  
Youn Young Hwang,<sup>6</sup> Ye Soo Park,<sup>6</sup> Sun Kyung Oh,<sup>4</sup> Hee Sun Kim,<sup>4</sup>  
Jong Hyuk Park,<sup>7</sup> Shin Yong Moon,<sup>4</sup> Gerald Schatten<sup>7\*</sup>

Patient-specific, immune-matched human embryonic stem cells (hESCs) are anticipated to be of great biomedical importance for studies of disease and development and to advance clinical deliberations regarding stem cell transplantation. Eleven hESC lines were established by somatic cell nuclear transfer (SCNT) of skin cells from patients with disease or injury into donated oocytes. These lines, nuclear transfer (NT)-hESCs, grown on human feeders from the same NT donor or from genetically unrelated individuals, were established at high rates, regardless of NT donor sex or age. NT-hESCs were pluripotent

# Wrongdoings

1. Data Fabrication in 2004, 2005 Science papers and other papers
2. Released fabricated results to press without a journal verification
  - “Youngrongii” so-claimed cloned calf. No DNA evidence has been shown, and no samples supporting its existence was stored.
3. Unethical practice in collecting ovum in the cloning experiments (e.g. from students)
4. Misdeed in research practice and poor research mentoring
5. Wasting research funds (69 billion won from Ministry of science and technology, Ministry of Information and Communication, Ministry of health and welfare, National Agricultural cooperative federation, Kyunggi province, Posco, and from Hwang’s supporters association)

## ***2. Research misconducts past***

*- remarkable cases and lessons*

# 1. Scandal on data fabrication in *Science & Nature Chem biol*



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**Live-Cell Analysis Handbook**  
A guide to live-cell analysis inside the incubator



NEWS OF THE WEEK

The Scientist » The Nutshell

## Korean researcher fired for fraud

A South Korean scientist who once said he wanted "to become another Hwang Woo-Sul Korea"

By Elie Dolgin | March 3, 2008



A South Korean scientist who once said he wanted "to become another Hwang Woo-Suk for Korea come ironically close to his goal. Kim Tae-kook, a bioscience professor at the Korea Advanced Institute of Science and Technology (KAIST) in the central South Korean city of Daejeon, was suspended on for fabricating data in two papers, according to Agence France-Presse (AFP). linkurl:One of the papers;http://www.sciencemag.org/cgi/content/full/309/5731/121, published in *Science* in 2005, developed a technique for identifying molecular targets in human cells, and has been cited 34 tim

### SCIENTIFIC MISCONDUCT

## *Science* Retracts Discredited Paper; Bitter Patent Dispute Continues

In an unusual decision, *Science* this week retracted a 2005 report without the agreement of all the authors (see p. 463). The report, authored by a group at the Korea Advanced Institute of Science and Technology (KAIST) and at CGK Co., both in Daejeon, South Korea, describes a method, dubbed MAGIC, to identify drug targets by tracking protein movements in live cells (*Science*, 1 July 2005, p. 121). The retraction is based on an investigation by KAIST that concluded that although the technique might be valid, data in the paper were fabricated and "the extent of the fabrication is serious enough to damage the authenticity of the entire paper." The same group claimed in the journal *Nature Chemical Biology* in July 2006 that it had used MAGIC to identify an antiaging molecule;

evidences will be provided to prove that MAGIC technology and anti-aging compounds in two papers are real," chemical geneticist Tae Kook Kim, formerly at KAIST, wrote in an e-mail to a *Science* reporter. He added that he intends to take legal action "against several parties for my defamation and libel."

The convoluted saga began in July 2004 when Kim and several partners established CGK Co. to commercialize a technique for identifying drug targets. The method, MAGnetism-based Interaction Capture, works by coating a magnetized nanoparticle with a molecule of interest. The coated nanoparticle is then introduced into a cell in which a target protein has been tagged with a fluorescent label. Applying a magnetic field forces the nanoparticle to move. If the



## 2. Plagiarism cases caught and criticized in *Nature*, 2008



International weekly journal of science

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Published online 8 October 2008 | *Nature* **455**, 715 (2008) | doi:10.1038/455715a

**News**

# Entire-paper plagiarism caught by software

**Thousands of 'similarities' found between papers.**

Declan Butler

When Eric Le Bourg, a French biogerontologist, came across a paper in a Korean journal recently, he almost fell off his chair; the entire article — text and graphs included — had been taken from one of his earlier articles. "It was plagiarism from beginning to end," he says. "I was astonished; it was pure cut and paste."

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# Reported case #1. Complete duplication



ELSEVIER

Experimental Gerontology 34 (1999) 319–336

Review

Experimental  
Gerontology

A review of the effects of microgravity and of hypergravity on aging and longevity<sup>☆,☆☆</sup>

## Abstract

This article reviews the literature dealing with the effects of acute or chronic exposure to microgravity (spacecrafts) or hypergravity (centrifuge) on longevity and the aging process. Even if space flights are now common, the effects of these two kinds of environment on aging are still poorly documented, particularly in mammals. However, there is a growing interest for the use of the fruit fly *Drosophila melanogaster*, and this species may be now considered as a model organism in gravitational biology studies dealing with aging. © 1999 Elsevier Science Inc. All rights reserved.

*Korean J Biol Sci 4: 231–237, 2000*

## Effects of Microgravity and Hypergravity on Aging and Longevity of Insects

Hak Ryul Kim

*Department of Biology, College of Sciences, Korea University, Seoul 136–701, Korea*

*melanogaster*

The effects of microgravity and hypergravity on aging are still poorly documented, particularly in mammals. However, there is a growing interest for the use of the fruit fly, *Drosophila melanogaster*, and this species may be now considered as a model organism in gravitational biology studies dealing with aging.



## Chemoprevention of *Scutellaria bardata* on Human Cancer Cells and Tumorigenesis in Skin Cancer

Seok-Jong Suh<sup>1</sup>, Jong-Won Yoon<sup>1,2</sup>, Tae-Kyun Lee<sup>3</sup>, Un-Ho Jin<sup>1</sup>, Sun-Lim Kim<sup>4</sup>, Myung-Sunny Kim<sup>5</sup>, Dae Young Kwon<sup>5</sup>, Young-Choon Lee<sup>6</sup> and Cheorl-Ho Kim<sup>1\*</sup>

sion and immortality can be applied. Progression in invasion and metastasis but these fundamental features of human cancer occur infrequently in primary animal tumors. The process of chemical carcinogenesis can be divided into three general stages, and chemopreventive agents have been categorized according to the stage that they inhibit (Wattenberg, 1993). Our extract inhibits cellular events associated with tumor initiation, promotion and progression. The SB was identified on the basis of its ability to inhibit the cyclooxygenase activity of COX-1 (median effective dose  $ED_{50} = 25 \mu\text{g/mL}$ ), and this activity correlates with antitumor promotion. There was no effect on COX-2 activity (Fig. 1). Thus, the SB-mediated inhibition was specific for the cyclooxygenase activity of COX-1 (Fig. 1), an inducible form of the enzyme associated with responses such as inflammation (Gierse *et al.*, 1995). Although its inhibitory activity was less than that of certain NSAIDs such as indomethacin ( $ED_{50} = 5 \mu\text{M}$ ), it was much greater than that mediated by compounds such as aspirin ( $ED_{50} = 1200 \mu\text{M}$ ). Also, unlike indomethacin and most other NSAIDs (Fig. 1), the SB inhibited the hydroperoxidase

## Cancer Chemopreventive Activity of Resveratrol, a Natural Product Derived from Grapes

Meishiang Jang, Lining Cai,\* George O. Udeani,

The process of chemical carcinogenesis can be divided into three general stages, and chemopreventive agents have been categorized according to the stage that they inhibit (6). Resveratrol inhibits cellular events associated with tumor initiation, promotion, and progression. As noted above, the compound was identified on the basis of its ability to inhibit the cyclooxygenase activity of COX-1 (median effective dose  $ED_{50} = 15 \mu\text{M}$ ) (Fig. 2A), and this activity correlates with antitumor promotion. Although its inhibitory activity was less than that of certain NSAIDs, such as indomethacin ( $ED_{50} = 2.3 \mu\text{M}$ ) (Fig. 2A), it was much greater than that mediated by compounds such as aspirin ( $ED_{50} = 880 \mu\text{M}$ ). Also, unlike indomethacin and most other NSAIDs, resveratrol inhibited the hydroperoxidase activity of COX-1 ( $ED_{50} = 3.7 \mu\text{M}$ ) (Fig. 2B). Resveratrol-mediated inhibition was specific for the cyclooxygenase activity of COX-1 because there was no discernable activity when oxygen uptake was assessed with COX-2 (Fig. 2A), an inducible form of the enzyme associated

### 3. Authorship extorted by owner of the hospital

조기 난소부전 환자에서 실시간 중합효소 연쇄 반응을 이용한 사립체 DNA copy 수의 정량적 분석

차병원 여성의학연구소 산부인과학교실, \*유전학 연구실,  
† 고려대학교 의과대학 산부인과학교실, † 병리과

김정환 · 이 [redacted] · 조 [redacted] \* · 정 [redacted] \* · 김 [redacted] \* · 이 [redacted] · 나 [redacted] †

Kim, Junghwan

김 [redacted] † · 윤 [redacted] · 강 [redacted] †

=ABSTRACT=



Fertility and Sterility

Volume 84, Issue 6, December 2005, Pages 1712-1718



Reproductive endocrinology

#### RETRACTED: Quantification of mitochondrial DNA using real-time polymerase chain reaction in patients with premature ovarian failure

Presented at the 60th Annual Meeting of the American Society for Reproductive Medicine, Philadelphia, Pennsylvania, October 16-20, 2004.

Kwang-Yul Cha, M.D., Ph.D.<sup>a</sup>, [redacted] Lee, M.D., Ph.D.<sup>a,b</sup>, [redacted] Chung, Ph.D.<sup>c</sup>,  
[redacted] Baek, Ph.D.<sup>c</sup>, [redacted] Cho, M.S.<sup>b</sup>, [redacted] Kwack, Ph.D.<sup>d</sup>

Available online 14 December 2005

사회 | [SUNDAY 추적] 원저자 대신 병원장이 제1 저자 된 이유는  
Reason for a hospital director became the 1<sup>st</sup> author.

기사 | 나도 한마디 (4)

2007.05.20 02:58 입력

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혐의로 서울중앙

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Credit for U.S. journal article at issue

*A leader of a Hollywood hospital's parent firm was listed as the fertility piece's main author. But a fellow Korean says it's a copy of his thesis.*

February 18, 2007 | Charles Ornstein | Times Staff Writer

후배에게서 이런  
할리우드 차병원  
소한 사건이었  
국제기사로 짧

A prominent fertility scientist whose firm owns Hollywood Presbyterian Medical Center in Los Angeles is embroiled in a plagiarism dispute that straddles two continents, has triggered legal battles in South Korea and has raised questions about the practices of a leading U.S. fertility journal.

미국 유력지인 ‘  
국 ‘브리티시 메  
한국 과학계의  
보도가 없었다.

Dr. Kwang-Yul Cha, whose company also owns fertility clinics and a large hospital in Seoul, is listed as the primary author on a medical paper that appeared in December 2005 in the U.S. medical journal Fertility and Sterility.

But that paper appears to be nearly a paragraph-for-paragraph, chart-for-chart copy of a junior researcher's doctoral thesis, which appeared in a Korean medical journal nearly two years earlier, according to a Times review of both papers and the findings of a Korean medical society.

Cha has denied any wrongdoing.

먼저 서울중앙지  
지' 상태였다. 고  
중지됐던 것이

The allegations mark the latest example of a challenge facing the editors of scientific journals: how to ensure that the work they print is honest and original. Doctors often base medical decisions on articles printed in such journals, and researchers similarly rely on them for their studies.

In an international scandal in late 2005, the work of another South Korean scientist was exposed as fraudulent. Hwang Woo-Suk claimed to have created 11 stem cell lines from the DNA of sick and injured patients, publishing his work in the well-respected journal Science. But the articles had to be retracted after questions were raised about his claims, and he ultimately apologized.

# Problems raised

These research misconducts are causing

1. Waste of research funds and resources
2. Physical and economical loss and chaos in public
3. Public distrust to scientific and academic communities
4. Conflicts between colleagues and loss of peer-ship within research community
5. Breeding of disqualified researchers and loss of 2<sup>nd</sup> – research generation
6. Inappropriate of scientific credit authorization

### ***3. Research misconducts Now***

*- Statistics and some issues*

# Statistics of research misconducts in Korean academia

## Types of misconducts reported

	fabrication	falsification	plagiarism	Inappropriate authorship	duplication	ghostwriting	others	total
2007년	1	0	4	1	3	0	3	12
2008년	1	1	9	1	3	0	1	16
2009년	0	2	6	1	13	0	1	23
2010년	0	0	2	2	7	1	1	13
2011년	0	0	7	0	5	0	2	14
2012년	1	1	3	1	4	0	0	10
2013년	0	0	20	3	5	0	2	30
계	3	4	52	9	40	1	10	119



## Materials to which misconduct were committed in different disciplines

대상 학문 분야	국가연구개발 사업 논문/보고서	석·박사 학위논문	교내 연구과제 논문/보고서	비 R&D 교외기관 지원 논문/보고서	학술 서	무응답	계
인문학	1	4	11	2	3	0	21
사회과학	1	2	7	8	5	0	23
자연과학	3	0	6	1	1	2	13
공학	6	3	7	2	5	0	23
의·약학	1	2	4	1	3	0	11
농·수·해양학	5	2	0	0	0	0	7
예술·체육학	0	6	9	0	2	0	17
복합학	0	1	3	0	0	0	4
계	17	20	47	14	19	2	119

2014. **Current Status of Academic Activities on Research Ethics**  
 . In Jae Lee. Korean National Research Foundation.

## Types of misconduct committed in different disciplines

부정행위유형	분야								
	인문학	사회과학	자연과학	공학	의·약학	농·수·해양학	예술·체육학	복합학	계
위조	0	0	1	0	1	1	0	0	3
변조	0	1	3	0	0	0	0	0	4
<b>표절</b>	<b>10</b>	<b>14</b>	<b>4</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>9</b>	<b>2</b>	<b>52</b>
부당한 저자 표시	1	2	1	3	1	0	1	0	9
<b>자료의 중복 사용</b>	<b>9</b>	<b>5</b>	<b>4</b>	<b>11</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>2</b>	<b>40</b>
논문 대필	0	0	0	0	0	1	0	0	1
기타	1	1	0	2	2	2	2	0	10
계	21	23	13	23	11	7	17	4	119

2014. **Current Status of Academic Activities on Research Ethics**  
. In Jae Lee. Korean National Research Foundation.

### Status of person committed different types of misconduct

신분	유형	위조	변조	표절	부당한 저자 표시	자료중복 사용	논문대필	기타	계
교수		3	3	38	8	40	1	9	102
전임 연구원		0	0	0	1	0	0	0	1
석·박사과정 대 학원 학생		0	0	12	0	0	0	0	12
행정직원·기타		0	1	2	0	0	0	1	4
계		3	4	52	9	40	1	10	119

2014. **Current Status of Academic Activities on Research Ethics**  
 . In Jae Lee. Korean National Research Foundation.

## Measures taken

연도	조치 주 의	경 고	견 책	감 봉	정 직	해 임	파 면	연구 비 회 수	난 문 철회	연구 참여 제한	승 진 상 봉 이 의	보 수 에 반 영	학 위 취 소	임 용 취 소	무 응 답	계
2007년 이전	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
2007년	0	3	2	3	2	2	0	0	0	0	0	0	0	0	0	12
2008년	1	3	1	1	1	0	0	0	2	2	0	1	3	0	1	16
2009년	5	5	0	1	1	1	2	3	1	3	0	0	0	0	1	23
2010년	4	1	3	0	0	1	1	1	0	0	1	0	0	1	0	13
2011년	3	2	0	2	1	0	0	0	1	0	0	0	2	1	2	14
2012년	1	1	0	0	2	2	0	0	2	0	0	0	0	0	2	10
2013년	2	7	1	1	2	0	0	4	0	1	0	0	4	1	7	30
계	16	22	7	8	9	6	3	8	6	6	1	1	9	3	14	119

# Issue 1. Still, frauds are found in papers from decent universities

서울대 "강수경 교수 논문 17편 조작 있었다"(종합2보)

**SNU professor "Data fabrication identified in 17 papers"**



2005년 줄기세포 논문 조작으로 세상을 떠들썩하게 한 황우석 전 서울대 교수와 대척점에 서있던 서울대 수의대 강수경 교수의 줄기세포 논문 17편에서도 연구 조작이 있었다는 조사 결과가 나왔다. 서울대 연구진실성위원회는 5일 오후 "처음 의혹이 제기된 강수경 교수의 14편의 논문 모두에서 위·변조를 포함해 고의적인 연구결과 조작이 있었으며 강 교수가 연구 결과 조작을 주도했음이 확인됐다"고 발표했다.(자료사진)

## Issue 2. Politicians losing face and trust due to plagiarism in their old theses

중앙일보

### Kim, candidate of Minister of Education, accused of self plagiarism

[중앙일보] 입력 2017.06.19 06:07



지난 12일 김상곤 사회부총리 겸 교육부장관 후보자가 인사청문회 준비 사무실이 마련된 서울 여의도 교육시설공제회관으로 들어서고 있다. 강정현 기자

김상곤 사회부총리 겸 교육부 장관 후보자에 자기 논문을 출처 표시 없이 재인용했다는 의혹이 제기됐다.

# Issue 3. Scientists frauds affect public life

"미리 알았다면 살인죄 적용"



Oxy humidifier detergent  
(한빛화학 제조)

Death toll : 103

가습기 살균제  
사망자의 70%

(주) 한빛화학(주) (충청남도 아산시)

TV영양사    원산지    성분-첨가 효리지, 낮 키고 20℃



# SNU professor, alleged to direct fabrication in final report to Oxy

서대웅 기자 | 입력 : 2016.05.09 17:06



National

Business

Opinion

Culture

## National

### Oxy researchers are in hot water

May 06, 2016

Continuing a probe into Reckitt Benckiser Korea, the British manufacturer of a  
arrested a Seoul National University professor who allegedly received bribes fr  
company's Oxy sterilizers.

After prosecutors established a special investigation team early this year to loo  
government tests linking pulmonary illnesses and deaths to the inhalation of fa

Suspecting the reports were manipulated by university professors to favor Rec  
University professor surnamed Cho and banned a Hoseo University professor  
laboratories.

Cho had written reports for the Oxy manufacturer that stated "the causal relatio  
conducted tests under artificial conditions to produce favorable results for Reck  
the sterilizer products, according to the prosecution.





## ***4. Efforts***

# 1. Efforts and initiatives of government: guidelines and policies

1. 2007 Guidelines for Assurance of Research Ethics (Ministry of Science and Technology)
2. 2011 Guidelines for Research Notes (Executive Committee of the National Ministry of Science and Technology )
3. 2012 Regulations regarding co-management of nationally sponsored R & D projects (Ministry of Science and Technology)
4. 2012 Amendment to the Bioethics and Safety Act (Ministry of public health and welfare)
5. 2012~ Enhancement of responsibilities of the National Bioethics Committee (Ministry of public health and welfare)
6. 2012~ Amendment of the copyright law (Ministry of culture)copyrighted materials.
7. 2009~ Promotion of activities to increase awareness and education of research ethics in academia and their societies

# 2. Institutions established to promote research ethics education and information distribution

## Center for Research ethics information

한국연구재단 지정  
**CRE 연구윤리정보센터**  
Center for Research Ethics Information

검색어를 입력하세요.

동향 연구윤리 주제 학술DB 정책 및 규정 교육자료 커뮤니티 상담센터

CRE MEDIA

거인의 어깨에서 이야기하다

‘거인의 어깨에서 이야기하다’  
날로 경쟁이 심화되는 연구 환경에서도 책임 연구로 연구진실성을 지켜나가기 위해 연구 등 각자의 역할에서 실천할 수 있는 일들을 동영상 교육자료 [more](#) ▶

책임있는 연구 출판윤리 연구공동체

공지사항 기사

**KIRD**  
국가과학기술인력개발원

통합교육 이러닝 고객센터 정부3.0 KIRD소개 클린KIRD

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KIRD는 과학기술인력의 역할별 · 직급별 교육 수요를 반영한 『기본교육』, 전문 · 필수 역량에 기반한 『전문교육』, 특별대상 및 수요 맞춤형 『특별교육』을 제공하며, 과학기술인 상시학습을 위한 『이러닝』을 운영하고 있습니다.

정규교육  
기본교육  
찾아가는교육

대학교육  
정규교육  
찾아가는교육

중소기업교육  
정규교육  
찾아가는교육

찾아가는교육 개설요청

**기본교육**

출연(연) 및 공공연구기관  
국가 R&D 핵심 주제로 성장하기 위한 직위 · 직급별 역량 강화 교육

- 최고경영자, 차관경영진, 보좌자
- 재직(재직급) 연구직 · 행정직
- 승진(사)직임 · 선임, 선임자
- 은퇴예정자

전문기관  
국가 R&D 컨트롤 타워로서의 역할 수행을 위한 핵심 역량 강화 교육

- 국가R&D 관리기관 본직자
- 국가R&D 관리기관 실무자
- 국가R&D 관리기관 신입자

중소기업  
중소기업 R&D 활성화를 위한 교육(연구개발, 인력관리, 경영)

**전문교육**

R&D전주기  
연구수행 전문성 강화를 위한 R&D 전주기 실행 역량 강화 교육

- 국가R&D 전주기 마스터
- 연구기획 · 관리 전문가
- 연구계획서 작성
- R&D사업 기획/관리/평가 실무 등

R&D필수  
올바른 연구 문화 조성을 위한 과학기술인 필수 역량 강화 교육

- 연구윤리
- 연구노력 작성
- 연구비(연구비)관리/실무자
- 연구비 관리(연구비/대외)
- 재난안전관리(사)실무자(제빙)직장
- (수탁) 수요자 맞춤형 연구윤리 시업

**특별교육**

정책수요맞춤  
정부 정책 및 시대적 요구에 부합하는 역량 강화 교육

- 연구소(기업)경영자/실무자/장임 예비자
- 글로벌 기술인력 협력 전략
- 임무중심형 기관평가
- 창조경제혁신센터
- (수탁) 우수전문 인력양성
- (수탁) 연구개발 서비스 전문인력

글로벌  
국내외 과학기술인 대상 글로벌 역량 강화 교육

- 한-Chin Academy
- 한-Chin Academy
- 외국인 연구자 대상 한국 R&D 이해

### 3. Activities in academia

#### **Current Status of Academic Activities on Research Ethics**

2014 Report on activities and awareness on research activities among 262 domestic universities and research institutes and 3077 researchers there

2014. 7.25. In Jae Lee. Korean National Research Foundation.

# Systems implemented

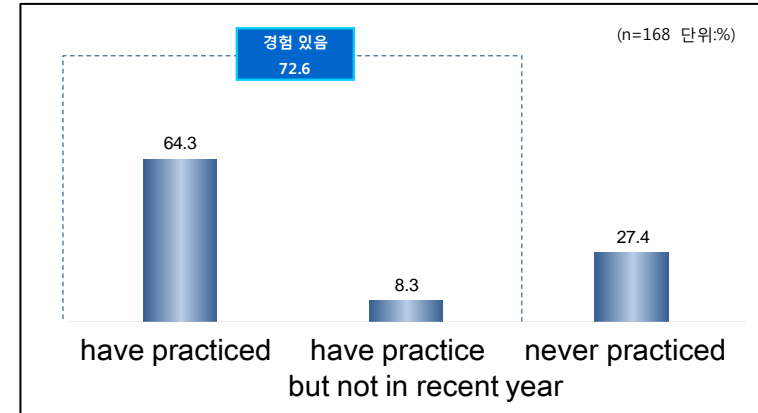
## Research ethics-related rules and guidelines established

	Universties implemented		universities implemented
2012	168개 (87.0%)	2013	149개 (88.7%)

## Research ethics-related committees

types	implemented	not
Committee on research integrity	144(85.7%)	24(14.3%)
Internal Review Board on human research (IRB)	106(63.1%)	62(36.9%)
institutional animal care and use committee	73(43.5%)	95(58.5%)

## Research ethics-related education



# Institution-wide general practice of plagiarism detection

Universities and research institutes: Enforced check for duplication in thesis submission, term papers & reports

Korean journals: Recommended check for duplication in submitted manuscripts in journals

## *iThenticate, CopyKiller*

The image shows a screenshot of the Copy Killer website and a plagiarism report. The website header features the 'Copy Killer' logo and navigation tabs for '표절검사 COPYKILLER', '사용방법 HOW TO USE', '서비스모델 SERVICE', and '공지사항 NOTICE'. Below the header is a banner with the text '표절검사의 기준! 카피킬러' (The Standard for Plagiarism Detection! Copy Killer) and '표절 없는 바람직한 콘텐츠 활용 문화를 만들겠습니다.' (We will create a culture of content utilization without plagiarism). Three circular icons represent '서비스 이용방법' (Service Usage Method), '표절검사 하기' (How to Check for Plagiarism), and '자주 묻는 질문' (Frequently Asked Questions).

On the right, a portion of a plagiarism report is visible, showing a 77% similarity score. The report includes the following entries:

Source	Similarity
of <i>Scutellaria bardata</i> synthesis in skin cancer",	77%
Activity of Resveratrol, <i>Resveratrol</i> , Science, 01/10/1	24%
ji-Bokryung-Hwan on in Mice and Cyclooxy	23%
	23%

On the left, a snippet of a research paper is visible, mentioning 'Tae-Kyun Lee<sup>3</sup>, Un-Ho Jin<sup>1</sup>, ...' and 'M. Jang. "Cancer Chemopreventive Activity of Resveratrol, a phytoalexin found in grapes, was found to act as an antioxidant and anti-initiation activity; it mediated anti-hydroperoxidase functions (antipromotory activity) in traditional Chinese medicine. Resveratrol has been used as an antiinflammatory agent and cancer chemopreventive agent. Resveratrol was found to act as an antitumor agent and hydroperoxidase functions (antipromotory activity) in traditional Chinese medicine.' The text 'chemopreventive activity in assays' is highlighted in red.

## ***5. Prospect and conclusion***

- 1. Education on research integrity (not only the ethics) is utmost important.**
- 2. Establishment of a tradition in research integrity is also urgent.**
- 3. A will of academia not the demand for clean research from public is important.**