

Research Ethics Timeline (1910-2017)

Source for 1932-2009: Resnik, D. NIEHS National Institute of Environmental Sciences. Retrieved on June 3, 2011 from:

<http://www.niehs.nih.gov/research/resources/bioethics/timeline.cfm>

Source for additional items* and pre-1932 and 2010-Present: Schaller-Demers, D. Memorial Sloan Kettering Cancer Center.

1910-1924* Robert A. Millikan, Nobel Prize winner in 1924, was the most famous US scientist of his time. He won largely due to his important and innovative measurement of the charge on the electron in 1910 -- one of the most central physical constants that scientists of that era had been seeking to determine. An examination of Millikan's own papers and notebooks revealed that he picked and chose among his data, including some but not all in his published accounts.

1932-1972 The Tuskegee Syphilis Study, sponsored by the US Department of Health studied the effects of untreated syphilis in 400 African American men. Researchers withheld treatment even when penicillin became widely available. Researchers did not tell the subjects that they were in an experiment. Most subjects who attended the Tuskegee clinic thought they were getting treatment for "bad blood."

1939-45 German scientists conduct research on concentration camp prisoners.

1940 Two Nazi refugee scientists, Frisch and R.E. Peierls, warn the US about Germany's nuclear weapons program. Albert Einstein writes a letter to President Truman warning him about the Nazi threat.

1942-1945 The US begins the \$2 billion Manhattan Project to develop an atomic bomb.

1944-1980s The US government sponsors secret research on the effects of radiation on human beings. Subjects were not told that they were participated in the experiments. Experiments were conducted on cancer patients, pregnant women, and military personnel.

1945 The US drops two atomic bombs on Japan.

1945 Led by President Eisenhower and a-bomb scientist Robert Oppenheimer, the "atoms for peace" movement begins.

1945 Vannevar Bush writes the report *Science: the Endless Frontier for Roosevelt*. The report argues for a major increase in government spending on science and defends the ideal of a self-governing scientific community free from significant public oversight. It promotes investment in science and technology as a means of promoting national security and economic development.

1946-48* US PHS research involved intentionally exposing and infecting vulnerable populations to sexually transmitted diseases without the subjects' consent in Guatemala (see 2011 Bioethics Commission report).

1947 The Nuremberg Code for research on human subjects is adopted. The Allies use the document in the Nuremberg Trials to convict Nazi scientists of war crimes.

1948 Alfred Kinsey publishes *Sexual Behavior in the Human Male*; *Sexual Behavior in the Human Female* followed in 1953. Both of these books were very controversial. Kinsey funded the research through the Kinsey Institute.

1949 The Soviet Union tests a hydrogen bomb; the Cold War begins.

1951* a scientist at Johns Hopkins Hospital in Baltimore, Maryland, created the first immortal human cell line with a tissue sample taken (without her, or her family's knowledge or consent) from a young black woman with cervical cancer. Those cells, called HeLa cells, quickly became invaluable to medical research—though their donor remained a mystery for decades (see 1954, Southam and 2010 – Skloot).

1951* Albert M. Kligman, MD, PhD was asked by prison officials to examine the 1,200 inmates at Holmesburg Prison in Philadelphia, due to the prevalence of athlete's foot in the population. Dr. Kligman, a dermatologist from the University of Pennsylvania, was known for his research interest in ringworm, a biological relative of the athlete's foot fungus. Later, Dr. Kligman would describe his reaction, "All I saw before me were acres of skin. It was like a farmer seeing a fertile field for the first time." Dr. Kligman's visit marked the beginning of 23 years of unethical, non-therapeutic human subject research at Holmesburg. Deodorants, shampoos, detergents, and foot powders, as well as more hazardous materials such as dioxin, radioactive isotopes, and mind-altering drugs, were among the products tested on the inmates under his direction. Although the inmates received small payments for their participation, they received very little information about the tests—and the possible harm—to which they were being subjected. The experience left many with debilitating long-term health conditions. Twenty years after they began, author Allen M. Hornblum **discovered the abuses** when teaching an adult literacy program at the prison. (Source: [Ampersand](#))

1953 James Watson and Francis Crick discover the structure of DNA, for which they eventually would share the Nobel Prize in 1962. They secretly obtained key x-ray diffraction data from Rosalind Franklin without her permission. She was not awarded a Nobel Prize because she died in 1953 from ovarian cancer (at age 37), and the prize is not awarded posthumously.

1954-56* Chester Southam of Sloan Kettering injects HeLa cells into cancer patients and healthy prisoners.

1956-1980 Saul Krugman, Joan Giles and other researchers conduct hepatitis experiments on mentally disabled children at The Willowbrook State School. They intentionally infected subjects with the disease and observed its natural progression. The experiments were approved by the New York Department of Health.

1950s-1963 The CIA begins a mind control research program, which includes administering LSD to unwitting subjects.

1957 The Soviets launch Sputnik, the first satellite, which triggers the US government to increase its investments in science and technology to avoid falling behind in the space race.

1961 John F. Kennedy commits the US to the goal of putting a man on the moon by the end of the decade.

1961 Rachel Carson publishes *Silent Spring*, which alerts people to the harmful effects on the environment of various toxins and pollutants, including DDT. Her book launches the environmentalist movement.

1961-1962 Stanley Milgram conducts his "electric shock" experiments, which proved that many people are willing to do things that they consider to be morally wrong when following the orders of an authority. He publishes *Obedience to Authority* in 1974.

1964 World Medical Association, *Helsinki Declaration* - ethical principles for research on human subjects. Revised several times, most recently in 2001.

1964 The US Surgeon General's office issues its first of several reports on health problems related to smoking.

1966 Henry Beecher publishes an article in *N. Engl. J. Med.* exposing 22 unethical studies in biomedicine, including the Tuskegee syphilis study and the Willowbrook hepatitis study.

1960s The Department of Defense begins to work on a project to connect its computers scattered around the US at various universities and research labs. This was followed by the development of the ARPANET (1972), BITNET and USENET (1981), NSFNET (1985), the Internet (1988), and the World Wide Web (1995).

1960s/1970s Animal rights movement; Congress adopts the Animal Welfare Act (1966, 1970, 1976, 1985), which excludes rodents and birds. States adopt animal welfare laws; US Public Health Service, Policy on the Humane Care and use of Laboratory Animals; American Association for the Accreditation of Laboratory Animal Care (AAALAC).

1969 The US lands the first man on the moon.

1971* **The Stanford Prison Experiment, remains among the most notable—and notorious—research projects ever carried out at the University. For six days, half the study's participants endured cruel and dehumanizing abuse at the hands of their peers. At various times, they were taunted, stripped naked, deprived of sleep and forced to use plastic buckets as toilets. Some of them rebelled violently; others became hysterical or withdrew into despair. As the situation descended into chaos, the researchers stood by and watched—until one of their colleagues finally spoke out.** **2015** A theatrical movie debuts "[The Stanford Prison Experiment](#)." According to *The New York Times*: "The research, now 44 years old, may today seem as if it merely confirmed the obvious, but the film, by Kyle Patrick Alvarez, certainly makes you feel the claustrophobic intensity of what went on."

1972 The national media and Congress focus on unethical research practices with human subjects, including the Tuskegee study.

1974 Congress passes the National Research Act, which authorizes federal agencies to develop human research regulations, e.g. 45 CFR 46, 21 CFR 50,54,56.

1974 **William Summerlin admits to fabricating data by using a marker to make black spots on white mice at Sloan Kettering Cancer Institute. He was developing a technique for transplanting skin grafts.**

1974 Monsanto and Harvard reach a deal for the first major corporate investment in a university.

1975 Scientists gather at Asilomar, CA to discuss the benefits and risks of recombinant DNA research; the NIH forms the Recombinant DNA Advisory Committee.

1975 Peter Singer publishes *Animal Liberation*.

1975 E.O. Wilson publishes *Sociobiology*, which re-ignites centuries-old "nature vs. nurture" debate. His book proposes biological and evolutionary explanations of human behavior and culture.

1978 Louise Brown, the world's first test-tube baby, is born.

1979 The National Commission releases *The Belmont Report*, principles of ethical research on human subjects. The Report becomes a key document in human research ethics regulations in the US.

1980 Congress passes the Bayh-Dole Act, which allows researchers to patent inventions developed with government funds; the Act is amended by the Technology Transfer Act in 1986.

1980 In *Diamond v. Chakrabarty* the US S. Ct. rules that a genetically modified bacterium can be patented because it is the product of human ingenuity. This sets a precedent for patents on other life forms and helps to establish solid intellectual property protection for the new biotechnology industry.

1981 The Whitehead Institute is established at MIT, another major private investment in a university.

1981 The DHEW conducts major revisions of the federal human research regulations on human subjects research.

1981 **John Darsee, a postdoctoral fellow at Harvard, is accused of fabricating data.**

1982 William Broad and Nicholas Wade publish *Betrayers of Truth*, claiming that there is more misconduct in science than researchers want to admit. Their book helps to launch an era of "fraud busting" in science.

1984-1993 Luc Montagnier accuses Robert Gallo misappropriating an HIV strain. Gallo is found innocent of misconduct. Gallo and Montagnier also have a dispute about who should be credited with discovering HIV and who can patent a test for the virus. The US and French governments reach an agreement to settle the controversy.

1986 Roger Boisjoly warns NASA about possible O-ring failure, due to cold weather, in the space shuttle Challenger. NASA decides to go ahead with the launch, and the Challenger explodes, killing the entire crew.

1987 NIMH panel concludes that Steven Breuning fabricated and falsified data in 24 papers. Breuning is convicted of defrauding the federal government in 1988.

1987 Martin Luther King is accused of plagiarizing his PhD dissertation.

1987* After decades of deplorable conditions and questionable experimentation on mentally retarded and other vulnerable persons, Willowbrook State School is closed.

1987-1996 Margot O'Toole, a post-doctoral student at the Whitehead Institute, has some questions about a data presented in a paper authored by six of her colleagues published in the journal *Cell* in 1986. She asks to examine Thereza-Imanishi-Kari's lab notebooks, which seem to be inconsistent with published results. She accuses Imanishi-Kari of fabricating or falsifying data. The ensuing investigation leads to inquiries by M.I.T. and Tufts as well as NIH and a Congressional committee chaired by Rep. John Dingell. Nobel Prize winner David Baltimore is one of the co-authors on the disputed paper. Although he was not accused of misconduct, Baltimore resigned as President of The Rockefeller University. He described the investigation, which was covered by the *New York Times*, as a "witch hunt." An appeals board at the DHHS eventually exonerated Imanishi-Kari, who admitted only to poor record keeping.

1988 Harvard and Dow Chemical patent a genetically engineered mouse used to study cancer.

1989 The PHS forms two agencies, the Office of Scientific Integrity and the Office of Scientific Integrity Review to investigate scientific misconduct and provide information and support for universities. It also amends its definition of misconduct. The two agencies are reorganized in **1992** as the Office of Research Integrity (ORI).

1989 The NIH requires that all graduate students on training grants receive education in responsible conduct of research (RCR). Requirement is revised and expanded in **2009** and **2011** to include all trainees on NIH Institutional Research Training Grants, Individual Fellowship Awards, Career Development Awards (Institutional and Individual), Research Education Grants, Dissertation Research Grants, or other grant programs with a training component that requires RCR instruction.*

1989 Stanley Pons and Martin Fleischmann hold a press conference at the University of Utah to announce that they have discovered a way to produce nuclear fusion at room temperatures. Dozens of labs across the world fail to reproduce their results. They are accused of fraud, sloppiness, and self-deception.

1989 The NAS publishes *On Being a Scientist* (revised in 1994 & 2009), a short book on research ethics for scientists in training.

1990 The US launches the Human Genome Project, a \$20 billion effort to map and sequence the human genome.

1990 W. French Anderson begins the first human gene therapy clinical trial on patients with ADA deficiency, a genetic disease that affects the immune system.

1990 In *Moore v. Regents of the University of California*, the California S. Ct. rules that researchers have intellectual property rights in a cell-line derived from Moore's tissue but that Moore did not have any property rights in his own tissue. The Court also rules that the researchers violated Moore's right to informed consent by not disclosing their commercial interests in his tissue sample to him.

1990 Congress investigates conflicts of interest involving Pharmatec and the University of Florida.

1990s-present Europeans oppose the introduction of genetically manipulated foods and crops. Consumers in the US are more receptive to GM plants and animals. Europeans finally allow GM foods but require them to be labeled as such.

1991 Revision/unification of human research regulations. All US government agencies, except the EPA, now accept one basic regulatory framework, known as "the common rule" (45 CFR 46).

1992 NAS publishes *Responsible Science: Ensuring the Integrity of the Research Process*. The book estimates the incidence of misconduct, discusses some of the causes of misconduct, proposes a definition of misconduct, and recommends some strategies for preventing misconduct.

1993 In *Daubert v. Merrell Dow Pharmaceuticals* the US S. Ct. rules that judges serve as the gatekeepers for admitting scientific testimony in court and that they can use a variety of criteria, including testability, reliability, peer review, and general acceptance.

1993 Fertility researchers successfully create identical twins by artificially dividing a human embryo.

1994 Harvard psychologist Richard Herrnstein and Charles Murray publish *The Bell Curve*, a controversial book that re-ignites the centuries old debate about biology, race and intelligence.

1994 Roger Poisson admits to fabricating and falsifying patient data in breast cancer clinical trials in order to qualify his patients to participate in research and have access to experimental treatments.

1994 The NIH applied for patents on thousands of gene fragments in order to undercut private efforts to patent gene fragments. The Patent Office rejected the NIH's applications.

1994-1995 The Ryan Commission, convened by the NIH, holds meetings on scientific misconduct.

1994 The Clinton Administration declassifies information about secret human radiation experiments conducted from the 1940s-1980s and issues an apology.

1994 Two scientists who worked at Philip Morris, Victor DeNobel and Paul Mele, testify before Congress about secret research on the addictive properties of nicotine. If the research had been made public, the FDA or Congress might have taken additional steps to regulate tobacco as a drug. Many states and individuals brought litigation against tobacco companies, which led to a \$206 billion settlement between tobacco companies and 46 states. The scientific community also publishes more data on the dangers of second-hand smoke.

1995 Boots Pharmaceuticals pressures Betty Dong to withdraw a paper from publication in JAMA showing that its drug, synthroid, is not more effective than generic equivalents at treating hypothyroidism.

1995-2003 Dozens of studies are published in biomedical journals which provide data on the relationship between the source of research funding and the outcomes of research studies, the financial interests of researchers in the biomedical sciences, and the close relationship between academic researchers and the pharmaceutical and biotechnology industries.

1995 The NIH and NSF revise their conflict of interest policies. (New NIH revisions are due Summer 2011).

1995 Scientists and defense analysts become concerned about the use of chemical or biological weapons by a terrorist group after Aum Shinrikyo, a Japanese doomsday cult, releases sarin gas in a Tokyo subway, killing 12 people and sending 5,500 to hospitals. The group also attempted (unsuccessfully) to spray anthrax spores over Tokyo. In 1998, terrorism experts warn about the use of biological or chemical weapons by Osama bin Laden and Saddam Hussein.

1995 Over 200 religious leaders, led by biotechnology critic Jeremy Rifkin, protest the patenting of plants, animals, and human body parts in Washington, DC.

1996* The Dickey Amendment (a.k.a Dickey-Wicker Amendment) is signed by President Bill Clinton. The amendment restricts the use of federal funds for research that would create, destroy, or knowingly injure human embryos.

1996 Dolly, the world's first cloned sheep, is born; her birth is announced in 1997. Several European nations ban human cloning. Congress considers a bill to ban all human cloning but changes its mind after scientists argue that the bill would undermine biomedical research.

1996* Health Insurance Portability and Accountability Act of 1996 (HIPAA) - established national standards to protect individuals' medical records and other personal health information. The HIPAA Privacy Rules require appropriate safeguards to protect the privacy of personal health information (PHI), and sets limits and conditions on the uses and disclosures that may be made of such information without patient authorization.

1997 The ICMJE, representing over 400 biomedical journals, revises its authorship guidelines.

1997 In an article published in N. Engl. J. Med., Peter Lurie and Sidney Wolfe accuse the NIH, WHO, UN and CDC of designing unethical studies on the prevention of mother-child transmission of HIV in developing countries. The dispute spurs a reexamination of international research ethics codes.

1998 Scientists create one of the first human embryonic stem cell lines. Some countries ban the research; others promote it.

1998 Craig Venter forms Celera Genomics and begins a private effort to sequence the human genome, using dozens of automated sequencing machines.

1998* The VCU Case raised concerns about whether a family member of a research participant should be considered a secondary research participant requiring informed consent. The family member became a subject by virtue of the survey instruments being used to seek family information.

1998-1999 Apotex forces Nancy Olivieri, a clinical researcher at the University of Toronto, to withdraw a paper that exposes safety concerns about its drug deferiprone, which is used to treat thalassemia. The company tries to discredit Olivieri and have her fired.

1999 Jessie Gelsinger dies in a human gene therapy experiment at the University of Pennsylvania. The event triggers heightened scrutiny of conflicts of interest in human subjects research, including institutional conflicts of interest. The University of Pennsylvania settles with the Gelsinger family for an undisclosed amount of money.

1999-present Human research lawsuits increase dramatically. Alan Milstein, from the law firm Sherman, Silverstein, Kohl, Rose & Podolsky, P.A., instigates 13 lawsuits against researchers, universities, pharmaceutical companies, and Institutional Review Board members.

1999 The NIH and the OHRP require all people conducting or overseeing human subjects research have some training in research ethics.

2000 The Office of Science and Technology Policy finalizes a federal definition of misconduct as “fabrication, falsification or plagiarism” but not “error honest error or differences.”

2000 ORI proposes mandatory training in responsible conduct of research for all researchers on PHS grants, including junior senior investigators, students, and technicians. Several scientific associations and universities oppose the policy as an unnecessary and un-funded mandate. The Bush Administration suspends the ORI proposal in 2001 on the grounds that the agency failed to follow proper procedures for proposing new government regulations. The ORI proposal is still in limbo.

2001 Celera and the Human Genome Project both complete 99% complete drafts of the human genome and publish their results in *Science* and *Nature*.

2001-2009 Congress debates legislation on human cloning.

2001 Several journals, including *Nature* and *JAMA*, experiment with requiring authors to describe their responsibilities when publishing research.

2001 The Bush Administration issues an Executive Order restricting federal funding for human embryonic stem cell research to lines on the NIH Registry which met certain criteria and were generated prior to August 9, 2001. New embryonic stem cell lines cannot be derived using federal funds.

2001* Ellen Roche, 24-year-old volunteer in an asthma study at Johns Hopkins University dies because those who approved the study overlooked numerous clues to the danger of the chemical she was given to inhale.

2001 Terrorists hijack 3 airplanes on September 11 and kill over 5,000 people. Several weeks later, an unknown terrorist sends 4 letters containing anthrax, killing 5 people and infecting 23.

2002 The President's Council on Bioethics recommends that the US ban reproductive cloning and enact a moratorium on research cloning.

2002 Historian Stephen Ambrose is accused of plagiarism.

2002 A panel of independent investigators finds that Jan Hendrick Schön, a physicist at Bell Labs, fabricated or falsified data in 17 papers published in *Science*, *Nature*, and *Physical Review Letters*.

2002 The NAS publishes *Integrity in Scientific Research*, which recommends that universities develop programs for education in responsible conduct of research (RCR) as well as policies and procedures to deal with research ethics.

2002 North Korea admits that it has a secret nuclear weapons program and warns that it has other "more powerful" weapons.

2002 Scientists publish several papers in prominent journals with direct implications for bioterrorism. A paper published in the *Journal of Virology* described a method for genetically engineering a form of mousepox virus that is much deadlier than the naturally occurring strain. A paper published in *Science* show how to make poliovirus by obtaining supplies from a mail-order company. In 2003, the American Society for Microbiology (ASM), the National Academy of Sciences, and the Center for Strategic and International Studies held a meeting to discuss the censorship biological research that poses security risks. Journals agree to self-censor some research.

2003 The US invades Iraq with the stated purpose of eliminating its chemical, biological, and nuclear weapons programs. So far, the US has found evidence of weapons programs but no actual weapons.

2004 The NIH and other agencies adopt the OSTP misconduct definition.

2004 Ronald Reagan, Jr. makes a presentation in support of federal funding for embryonic stem cell research to the Democratic Convention. Stem cell research and therapeutic cloning become hot issues in the 2004 Presidential election.

2005 Seoul University research Woo Suk Hwang admits to fabricating data in two papers published in the journal *Science*. In the papers, Hwang claimed that he had used nuclear transfer techniques to develop patient-specific human embryonic stem cells.

2005 University of Vermont researcher Eric Poehlman admits to fabricating or falsifying data in 15 federal grants and 17 publications. He becomes first researcher to be sentenced to federal prison – one year and a day.

2005* A new regulation, *PHS Policies on Research Misconduct*, became effective on June 16th. The regulation is codified at 42 C.F.R. Part 93.

2005* Anne Butkowitz, a 48-year-old clinical study coordinator was sentenced to 1 year of probation and a \$1,000 fine when she pleaded guilty to with one count of making false statements. As part of her plea agreement with the Government, she agreed to never participate in any manner in the conduct of studies intended for or required for submission to the FDA.

2005* Court of Appeals finds qualified immunity for whistleblower at BTI. Allegations of scientific misconduct were made against Dr. Meena Chandok after she submitted data in 2002 that could not be replicated or confirmed by others. Chandok sued Dr. Daniel Klessig, research team director for defamation and lost the case in court.

2005* In October, the federal DHHS concluded that Jessica Lee Grol, former neurological surgery research project coordinator at the University of Pittsburgh, had fabricated records for 15 patients in a cerebral aneurysm study funded by the NIH.

2005* ORI began to develop a training program for institutional research integrity officers (RIOs) that produced an orientation video in 2006 and boot camps in 2007.

2007* As a result of export violations, the Center for Atmospheric Research at UMass Lowell entered into a [settlement agreement](#) (2013) with the [Bureau of Industry and Security](#) (BIS) of the US Department of Commerce. The institution agreed to pay a fine of \$100,000 that may be waived if no further violations occur during a two-year probationary period. UMass Lowell

also agreed to make the details of the violations and the terms of the settlement agreement public information, as an example for others to learn from.

2009 The Obama Administration issues an Executive Order revoking the Bush Administration restriction on federal funding of stem cell research. Novel cell lines may be submitted to the NIH registry, but federal funds still may not be used for their derivation.

2010 NSF expects institutions to be able to verify that undergraduate and graduates students and postdoctoral researchers who receive NSF funds (support from salary and/or stipends to conduct research on NSF grants) will obtain RCR training.

2010 In her book, *The Immortal Life of Henrietta Lacks*, journalist Rebecca Skloot tracks down the story of the source of the amazing HeLa cells, Henrietta Lacks, and documents the cell line's impact on both modern medicine and the Lacks family.

2010 An August 23rd ruling by US District Court Judge Royce Lamberth temporarily blocked President Obama's March 2009 executive order that expanded federal funding for human stem-cell research. The judge ruled that "the statute reflects the unambiguous intent of Congress to enact a broad prohibition of funding in which a human embryo is destroyed." August 31st DOJ appeals judge's order. September 7th judge denies DOJ's motion to stay. September 8th DOJ files motion to stay with the Court of Appeals. **April 29, 2011** Court of Appeals votes to vacate the injunction. **July 27, 2011** – the case is finally dismissed by Judge Lamberth – a victory for the Obama Administration. (See 2013 for more on this case).

2011 As of June, 93 embryonic stem cell lines have been approved for use in NIH funded research.

2011 ORI debuts "The Lab: Avoiding Research Misconduct," an interactive movie in which the viewers become the lead characters and make decisions about integrity in research that can have long-term consequences. The simulation addresses RCR topics such as avoiding research misconduct, mentorship responsibilities, handling of data, responsible authorship, and questionable research practices.

2011 The Presidential Commission for the Study of Bioethical Issues Chair Amy Gutmann, PhD., announced on 8/29/11 that the Commission has concluded its investigation into the US Public Health Service studies done in Guatemala in the 1940s which involved intentionally exposing and infecting vulnerable populations to sexually transmitted diseases without the subjects' consent.

2012 A three-year investigation by the University of Connecticut has found that the Dipak K. Das, director of its Cardiovascular Research Center falsified and fabricated data at least 145 times. Das is best known for his work on resveratrol, a compound present in grapes and other foods that some research suggests can have beneficial effects on the heart and could slow aging, though recent studies have cast doubt on the latter claim.

2012 On January 18, 2012, John Reese Roth, former professor of electrical engineering at the University of Tennessee in Knoxville, began serving a four-year sentence for his September 2008 convictions of conspiracy, wire fraud, and 15 counts of exporting "defense articles and services" without a license.

2012 Based on the report of an investigation conducted by Harvard and additional analysis conducted by ORI, ORI found that Marc Hauser, PhD, former Professor, Department of Psychology, Harvard, engaged in research misconduct (falsification and fabrication) in research supported by National Center for Research Resources (NCRR), National Institutes of Health (NIH), National Institute on Deafness and Other Communication Disorders (NIDCD), and National Institute of Mental Health (NIMH).

2013 On January 7th the US Supreme Court ended an effort to shut down government support of human embryonic-stem-cell research, by refusing to hear a case that challenged the legality of funding for the work by the National Institutes of Health (NIH). The high court's refusal to consider an appeal in the case of *Sherley v. Sebelius* ends a more than 3-year effort by the plaintiffs, two adult-stem-cell researchers, to stop NIH backing of the work, which holds the promise of treatments for a variety of diseases, but which depends on the destruction of days-old human embryos.

2013 Henrietta Lacks, *The Sequel: Scientists sequence the genome of HeLa cells and upload HeLa's genome to a public Web site called SNPedia, without the family's knowledge or consent.* By August 2013 it was agreed that NIH-supported researchers will deposit any DNA sequences derived from HeLa cells into NIH's dbGAP database, and have established a process through which researchers can request controlled access to that data. Such requests will be reviewed by a working group consisting of physicians, scientists, a bioethicist, and two members of the Lacks family.

2013 Researchers at Oregon Health and Science University successfully derive human embryonic stem cells by somatic cell nuclear transfer, opening the door to the possibility of patient-matched embryonic stem cells, as well as new therapies for mitochondrial disease. (<http://www.cell.com/retrieve/pii/S0092867413005710>) The paper comes under fire for errors and is criticized for the use of duplicate cell images and scatterplot graphs. The authors state that they were honest errors and will submit an erratum to the paper. The journal is criticized for an inadequate and rushed review of the paper: the article was accepted only three days after submission and published after another twelve. (<http://www.nature.com/news/stem-cell-cloner-acknowledges-errors-in-groundbreaking-paper-1.13060>)

2013 The BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative develops technologies to understand how the brain's billions of neurons work together to produce thought, emotion, movement and memory. But, along with the discoveries, it could force scientists and society to grapple with a laundry list of ethical issues: the responsible use of

cognitive-enhancement devices, the protection of personal neural data, the prediction of untreatable neurodegenerative diseases and the assessment of criminal responsibility through brain scanning. See: <http://braininitiative.nih.gov/> for the latest on this initiative.

2014 Li Chen, PhD, postdoctoral fellow in the Department of Gene and Cell Medicine at Mount Sinai School of Medicine was found guilty by the Office of Research Integrity (ORI) of intentionally, knowingly, and recklessly fabricating and falsifying data reported in four (4) publications, one (1) submitted manuscript, and four (4) grant applications. As a result he was debarred from any contracting or subcontracting with any agency of the US Government and from eligibility for three (3) years.

2014 Amid a growing chorus of concern, from scientists and laypeople, that the complex system for ensuring the reproducibility of biomedical research is failing and is in need of restructuring, leaders of the National Institutes of Health (NIH), plan to implement significant interventions. This includes developing a training module on enhancing reproducibility and transparency of research findings, with an emphasis on good experimental design. This will be incorporated into the mandatory training on responsible conduct of research for NIH intramural postdoctoral fellows. (See module link below).

2014 The Center for Disease Control (CDC) conducts a nationwide search of its cold storage units after discovering vials of smallpox in a Food and Drug Administration (FDA) cold storage room at the National Institutes of Health facility in Bethesda, Maryland. Along with the vials of smallpox were 327 other pathogens including vials labeled for dengue, influenza, and rickettsia. This news comes as the CDC is under multiple investigations for unsafe practices. In addition, as many as 75 CDC scientists may have been exposed to live anthrax bacteria after potentially infectious samples were sent to laboratories unequipped to handle dangerous pathogens. In response, NIH declares September 2014 [National Biosafety Stewardship Month](#) which calls on all institutions to review their policies and procedures in regard to biosafety and security.

2014 Dr. Haruko Obokata, a Japanese stem cell scientist, published supposedly groundbreaking research in *Nature* showing stem cells could be made quickly and cheaply. There were irregularities in data, no other group in the world could repeat her findings, and her own institution concluded it could not be done. She claimed that stem cells could be produced from normal adult cells by dipping them into acid for a 30-minute shock period. The announcement of the creation of these "Stap" cells (stimulus-triggered acquisition of pluripotency) sent shockwaves around the world. She was found guilty of research misconduct by the RIKEN. RIKEN is Japan's largest comprehensive research institution renowned for high-quality research in a diverse range of scientific disciplines. Prof. Yoshiki Sasai, 52, her mentor was cleared of direct misconduct by an investigation, but faced criticism for his oversight and for not spotting inconsistencies in the publications that were ultimately retracted. In August of 2014 the disgraced Sasai was found dead of an apparent suicide.

2015 NIGMS (NIH) debuts RCR modules to enhance data reproducibility.

<http://www.nigms.nih.gov/training/pages/clearinghouse-for-training-modules-to-enhance-data-reproducibility.aspx>

2015 The journal *Science* released a new set of [comprehensive guidelines](#) for publishing research studies in an effort to make them more transparent. The release comes after the [high-profile retraction](#) of a study that purported to measure the ease with which individuals changed their opinions on the issue of gay marriage.

2015 Dong-Pyou Han, former biomedical scientist at Iowa State University is sentenced to 57 months in prison for fabricating and falsifying data in HIV vaccine trials. He was also fined \$7.2 million and will be subject to three years supervised release after he leaves prison. In 2013 when the incident occurred, ORI debarred him from receiving federal funds for research for three years. However, the case caught the attention of Senator Charles Grassley, who complained to the ORI about the misuse of taxpayer's dollars. Insiders admit that criminal prosecution of a "medium-level" fraud case like this one is highly unusual.

2015 The US Department of Health and Human Services and fifteen other Federal Departments and Agencies announce [proposed revisions](#) to modernize, strengthen, and make more effective the Federal Policy for the Protection of Human Subjects that was promulgated as a Common Rule in 1991. Controversial issue surrounding the informed consent and use of biospecimens in research garners many voices of opposition from the research community, but support from the [private sector](#).

2016 Final [NIH policy](#) on the use of a single Institutional Review Board for multi-site research went into effect on June 21, 2016, to establish the expectation that a single IRB of record will be used in the ethical review of non-exempt human subjects research protocols funded by the NIH that are carried out at more than one site in the United States. The goal of this policy is to enhance and streamline the IRB review process in the context of multi-site research so that research can proceed as effectively and expeditiously as possible.

2016 New York University's medical school shut down 8 studies at its prominent psychiatric research center and parted ways with a top researcher, Dr. Alexander Neumeister, after discovering falsification of research records and failure to adhere to the study protocol regarding assessment of subjects.

2016 The U.S. District Court of the Western District of Virginia unsealed a whistleblower lawsuit filed by another former employee at Duke against the university, a biologist and her former supervisor, alleging they included fraudulent data in applications and reports involving more than 60 grants. The total amount: \$200 million. If successful, Duke may have to refund three times the amount of allegedly ill-gotten gains, and the whistleblower could himself receive millions.

2017 The US Department of Health and Human Services and fifteen other Federal Departments and Agencies have issued final revisions to the Federal Policy for the Protection of Human Subjects (the Common Rule). The Final Rule was published in the

Federal Register on January 19, 2017. It implements new steps to better protect human subjects involved in research, while facilitating valuable research and reducing burden, delay, and ambiguity for investigators.

2017 The moment the 45th President of the United States was sworn in on January 20, 2017, the LGBT, climate change, health care, and civil liberties pages disappeared from the White House website.

2017 The US Department of Agriculture (USDA) abruptly removes inspection reports and other information from its website about the treatment of animals at thousands of research laboratories, zoos, dog breeding operations, and other facilities.

2017 The March for Science descends on Washington DC and other cities around the world on Earth Day 2017 in protest of massive proposed cuts to federal science funding.

2017 Partners HealthCare System, Brigham and Women's Hospital agree to pay \$10M to resolve allegations that a stem cell research lab fraudulently obtained federal grant funding by including false information in claims made to the National Institutes of Health.

2017 The Ohio State University begins an independent review of its handling of ethics complaints against one of its most prolific scientists. Several misconduct allegations have been made in recent years against Carlo Croce, chairman of the department of cancer biology and genetics, who has received more than \$80M in grants as a Principal Investigator at the University.

2017 Frank Sauer, a biochemist at the University of California, Riverside was anonymously accused via email in October 2011 of falsifying and fabricating his research in at least eight papers over a 16-year period. In July 2017, ORI made its first finding of "recklessness" in this case – six years after the initial allegations.