News and Views
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New cases of scientific fraud shake Scandinavian research

Norway had not yet recovered from the scandal with cancer researcher Jon Sudbø when new accusations of scientific fraud emerged, this time targeted at the University of Life Sciences. And Sweden had a high-profile case when a successful researcher was caught having manipulated the analysis of data about the regulation of flowering, research that had been hailed as one of the world's top scientific findings.

Sweden

The Swedish case was announced in early April 2007. A guest scientist at Umeå Plant Science Center published an article in the reputable journal *Science* in 2005. The article showed how flowering is regulated in *Arabidopsis thaliana*. The results were selected by *Science* as one of the top scientific breakthroughs that year. The scientist was part of professor Ove Nilsson's world-renowned team. The falsification was discovered by his group about a year after publication. They reanalysed the data and undertook new experiments, and also reported the suspected fraud to SLU (the Swedish University of Agricultural Sciences).

A commission was set up to investigate the accusations, and they came to the conclusion that data had been manipulated by the researcher, who is now back in his home country.

Ove Nilsson is distressed by the situation.

"This is the worst thing that can happen to a research team", he says in a statement from SLU. "The description of how flowering is regulated is still valid, but the article could not prove the mechanism in detail".

For over 70 years, scientists have searched for the mysterious factor that controls flowering. The article in Science 2005 was the first to report that this factor was a transfer substance (mRNA) from the FT gene. This scientific breakthrough was however based on manipulated data. The study was conducted on Arabidopsis thaliana.

Norway: Revealed by a student

The other case is the Norwegian researcher who, during his nine years at UMB (University of Life Sciences) received over 10 million NOK from the Norwegian Forest Council. The researcher was accused of scientific misconduct, possibly the result of incorrect analysis of data. It was a former PhD student who suspected that the background data had deficiencies, and reported this. The researcher had made some changes to the data series, but he had not documented what had been done.

The research involved dealt mainly with the ecological relationships between soil, plants and fungi in temperate and tropical conditions. The results have been published in several international journals and books.

The researcher also had a part time position as a professor at the University of Oslo, in the Center for Development and the Environment.

An international commission lead by the Finnish professor Kim von Weissenberg is currently investigating the allegations on behalf of both UMB and University of Oslo. A report will be ready in September this year and, according to the universities involved, the content will be made public.

"Publish or perish"

"These two examples are definitely not the first cases of scientific fraud (see next page). And not the last", predicts Bengt Gustafsson, professor in astrophysics and an authority in the field of ethics in science.

Bengt Gustafsson tells the magazine *Forskning och framsteg* that the number of cases of scientific misconduct has increased in the last few decades. This increase is not the result of low moral standards, but of pressure from the system. The competition is a battle on a knife edge, and only the best receive funding or the attractive positions.

The pressure to publish large numbers of papers may make some researchers prone to take shortcuts to success. Sometimes going as far as fabricating or manipulating data to better fit the theories.

Peer review is no guarantee

The scientific system relies on quality examination, mostly by colleagues (peer review), and the system generally maintains the quality. Professor Thomas Söderqvist at the University of Copenhagen has said that researchers spend half their time criticizing others – by reviewing articles, being members of examination committees etc.

However, peer review can seldom go into how the researcher handled the raw data, and it is not a guarantee against lies.

Financing…

The tough competition for finance is a factor that may drive researchers off the straight and narrow of good science ethics. An article in *JAMA (the Journal of the American Medical Association*) compared scientific papers financed by drug companies and those produced with independent financing. The article claimed that drug-company financed papers presented more positive effects of the drugs than the independent papers.

…and honour are driving forces

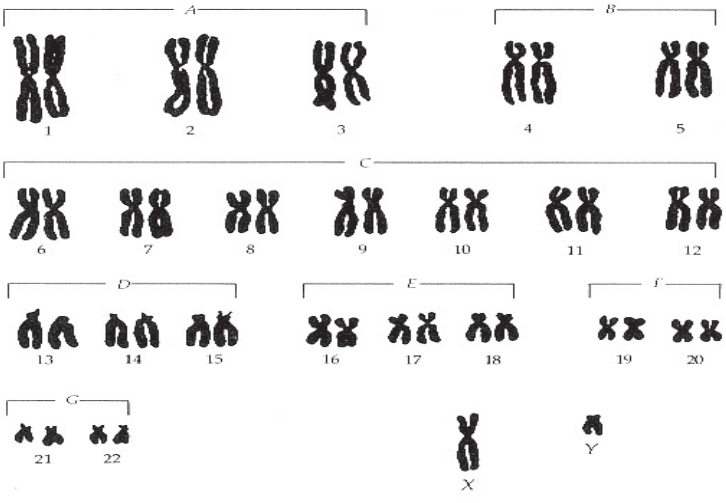
Success is important to many researchers. Birgitta Forsman is part of an expert panel at the Swedish Research council. She draws parallels with sport. There are always some people who struggle harder for success. The desire for honour and fame can lead the sportsman to abuse banned drugs, and the researcher to tamper with the data, she says in an article to *Sydsvenska Dagbladet*.

Whistle-blowers

The Norwegian student was a typical whistle-blower, the person who first reports their suspicions. However, history tells that whistle-blowing may be a hazardous game. Many of those who dare to report allegations are also challenging the authorities, and there are many examples of people who have been stopped in their careers after questioning research undertaken by their senior colleagues.

The fear of offending the authorities may have stopped much good research, as the example with the human chromosomes showed. In 1912, a researcher showed that human beings had 48 chromosomes, but many researchers after that were doubtful about the figure. It was not until 1956, however, that the Swedish researcher Johan Albert Levan published data showing conclusively that humans normally have 46 chromosomes.

For more than 40 years, the scientific community believed that humans had 48 chromosomes. It was not until 1956, that a scientist dared to question the established "truth".



Fraud is not new

Manipulation of data is not new, and the question is whether some major discoveries would have become accepted if data had not at least been adjusted for some noise. Gregor Mendel, for example, has been accused of presenting data on genetic segregation that, statistically, are too exact, although they fitted the theory exactly. The debate raged in the early 20th century, but today not many would accuse Mendel of scientific fraud.

Germany

Jan Hendrik Schön was a German physician who, for a short time, held a prodigious reputation as a researcher. In four years he published over 100 articles, often in the highest ranked journals. He received several awards, and was often mentioned as a potential Nobel Prize winner. In 2001 he claimed to have produced a transistor of organic material at a molecular scale, a discovery that would revolutionize the computer industry. In his field, nano-technology, he also published outstanding articles on superconductors.

But some researchers became suspicious about his overly precise data and that the same results appeared under different experimental conditions. Duplicate data were suspected in 25 of his papers, and upon request, Schön was unable to show his original data, claiming that it had been erased from his computer due to limited space.

In September 2002 a committee found evidence of scientific misconduct in at least 16 of his articles. He was fired from Bell Labs and his PhD degree from the University of Konstanz was changed to a record of "dishonourable conduct".

Korea

The actions of the Korean stem cell researcher, professor Woo Suk Hwang shook the scientific community in 2006. Hwang had published a number of papers in journals such as *Science*, which were later retracted. In 2004 he reported the first cloning of a human embryo. A year later, he followed it up with results showing that he had

cloned eleven human embryos from patients with diseases, and produced patient-specific stem cells. Some brave Korean journalists started to question his results, and soon he had to admit that he had been cheating the scientific community. The human eggs needed for the stem cells were donated by one of his students. A co-worker also admitted that 9 of the 11 cell lines never existed. The professor was immediately suspended from his job.

However, South Korea is still in the front of the world´s leading nations in stem cell research.

Norway

Jon Sudbø was a cancer researcher in Norway with an excellent reputation. In October 2005, he published an article in the high quality journal *The Lancet*, in which he claimed that anti-inflammatory drugs could lower the risk of cancer of the mouth. However, the test subjects and the tests never existed, the data were all fabricated. Jon Sudbø lost his medical licence and his doctoral degree.

Sweden

Several Swedish cases exist. One of the most widely reported recent cases was the psychiatry professor and DAMP researcher Christopher Gillberg of Göteborg.

DAMP is the acronym for Deficiency in Attention, Motor Control and Perception. Gillberg was accused by other researchers of fabricating the data behind his conclusions. He refused to show his material upon request. Expressing concern for their patients' privacy, his colleagues destroyed all the background data – 25 years of research material. Professor Gillberg was found guilty of misconduct by a court.

Sources: www.vr.se, www.slu.se, Forskning och framsteg, www.science.org, www.uio.no, newspaper articles, www.wikipedia.org

New Swedish project for better utilization of bioenergy

80 million Swedish crowns will be devoted to a new project on energy-wood research. The aim is to improve technological systems for obtaining and exploiting bioenergy from the forests.

Rolf Björheden

The project, which will last four years, will be coordinated by Skogforsk (the Forestry Research Institute of Sweden) and participants will include academic researchers, representatives of the forest and energy industries, and relevant authorities.

Currently, about 10–15 TWh equivalents of biomass is annually harvested for bioenergy production in the form of tops, branches and small wood from thinnings in Sweden. According to Skogforsk, this amount could be doubled by using more efficient bioenergy systems.

"An efficient process from the forest to the energy consumer will increase the supply of bioenergy. This will also reduce competition with industrial roundwood", says Lennart Rådström who is a research director at Skogforsk.

The project will be led by professor Rolf Björheden, who has been recruited to Skogforsk from Dalarna University.

Read more: www.skogforsk.se
Contact: rolf.bjorheden@skogforsk.se

A forestry voice in Brussels

"Decision-makers react to what is written in the press. Communication must therefore be targeted for this purpose". This is one of the lessons taught by Martin Einfeldt of the Danish Forest Association. He is responsible for the Family Forestry Website, a key information point for the decision-makers in Brussels.

One of the purposes of the website is to increase awareness of the forest issues of the Nordic countries.

Martin Einfeldt

It is important to have a "man in Brussels" who knows which news is of interest and which people to approach, says Martin Einfeldt.

The four Nordic forest countries have their joint secretariat, employing one member of staff, in Brussels. His duty is to select which news to focus on and which people to send it to.

The organization Nordic forestry has its own free newsletter, appearing 40 times per year.

Read more: www. Nordicforestry.org

Shortcuts

Sweden: Forestry faculty reorganises

Fewer but stronger departments. That is one result of a major reorganisation of the Forest Faculty at SLU (the Swedish University of Agricultural Sciences). Most of the faculty is located in Umeå.

The Dept of Forest Ecology and Management is a merger of the former departments of silviculture, ecology and vegetation ecology.

The Dept of Forest Products assembles research on forest products and wood science. It is the faculty's only department located in Uppsala.

The Dept of Wildlife, Fish and Environmental studies is a merger of aquaculture and animal ecology.

The Dept of Forest Resource Management assembles research on forest measuration and technology.

Other research departments, not so different from before, are Forest Genetics and Plant Physiology, the Southern Swedish Forest Research Centre and Forest Economics.

Source: www.slu.se

FTP expands to Russia

The Forest Technology Platform, which provides a common "roadmap" for future research and development in the European forest-based sector, is expanding to Russia. The platform was presented at a meeting in St. Petersburg in autumn 2006. As well as 34 scientific institutions and universities, many companies expressed interest in being involved in the FTP.

FTP sets priorities among research topics. Those of mutual interest to both Russia and Europe include:

- Assessment of land cover in Northern Eurasia
- Decision-support systems for sustainable forest management
- Forestry and other land uses on abandoned farmland
- Production of chemicals and composites from organic matter

Source: EFI News 1/2007

Denmark: Arboretum with urban trees

The Danish urban tree arboretum is unique in the sense that pruning and trimming are undertaken systematically, and the tree's reactions to it are systematically recorded.

The arboretum was established in 2001 and has two main components – one with about 80 full-size tree specimens, and one with smaller trees such as *Prunus*, *Crataegus* and *Sorbus* spp.

Those who are interested in maintenance of urban trees can find updated information on the internet. The website: *www.bytraearboretet.dk* describes the species in detail, and shows photographs of the tree crowns with and without pruning. The text is in Danish only.

Source: Forest & Landscape Denmark, www.sl.life.ku.dk

Danish forests have recovered since the 1980s

The decline in forests in the 1980s was the incentive for a long-term assessment of the forest health in Denmark. Last year, the monitoring celebrated its 20th anniversary by concluding that needle loss has decreased.

In Norway spruce, needle loss was at a maximum, over 30%, in the early 1990s, but last year it was only some 5%.

The cause of the needle loss was initially blamed on pollution, but is now considered more an effect of weather.

The monitoring will continue, and includes needle loss in conifers as well as the health of beech and oak."

Read more in Skoven 11, 2006.

Photo: Orjan Fritz

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- relevant to the Journal
- interesting for the readers.

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