

## The STAP Case: A case study analysed by the method of Teaching Research Ethics Tool

### Introduction

In January 2014, Haruko Obokata, a biochemist at the RIKEN Centre for Developmental Biology in Kobe, Japan, published two breakthrough papers in *Nature*. (Obokata et al. 2014a; Obokata et al. 2014b) Scholars in the field of stem-cell research and cloning were among the co-authors of the articles. Obokata claimed to have discovered a simple and inexpensive way of producing stem cells; the STAP (stimulus-triggered acquisition of pluripotency) method. The method consisted of converting mouse cells into an embryonic state by inducing them to stress, such as physical pressure or exposure to acid.

### Description

Soon after the publication, serious allegations were made. Initially, commentators noted errors in the figures, duplications, and a plagiarized text in the article. Subsequently, many scientists reported their inability to replicate the results and suggested that the cells were not what they were purported to be. Within a few months, an investigation led by officials at the RIKEN Centre found evidence of data falsification and fabrication. The co-authors requested the retraction of the papers. However, Obokata maintained that her findings were real. A few months later, Obokata agreed to retract both papers and she was invited to verify the original findings, under surveillance, at the RIKEN Centre.

### Analysis

#### 1. *Determination of facts*

Haruko Obokata was a biochemist at the RIKEN Centre for Developmental Biology in Kobe, Japan who published (and later retracted) two papers in 2014 in the journal of *Nature*. Obokata claimed to have discovered an inexpensive method for producing stem cells. The STAP (Stimulus-Triggered Acquisition of Pluripotency) method consisted of converting mouse cells

into an embryonic state by inducing them to stress, such as physical pressure or exposure to acid.

She was accused of image manipulation, duplication, and plagiarism. Subsequently, within a few months, an investigation led by officials at the RIKEN Centre found evidence of data falsification and fabrication. While Obokata's co-authors requested the retraction of papers, she maintained that her findings were real. Eventually, after agreeing to retract both papers, she was invited to verify the original findings under surveillance, at the RIKEN Centre.

## *2. Identification of morally problematic situations*

- Although Obokata did not initially confess, the investigation concluded that she had committed data fabrication and falsification.
- The co-authors failed to check the validity and accuracy of the data before the paper was published.
- The quality of the peer review process is also questionable. Some of the issues could have been identified during the editorial process.

## *3. Identification of possible courses of action*

- Obokata might be investigated in order to assess the validity of her previous studies.
- Obokata might be punished for data fabrication and falsification.
- Obokata might be required to verify the original findings and demonstrate that the data is valid.
- Investigators might want to raise awareness about the case.
- Investigators might want to explore co-authors and their responsibilities in relation to the published results.
- The journal might develop a policy to require additional pre-publication precautions and verifications.
- Alternative solutions might be explored in order to prevent similar kinds of cases (e.g., preregistration, data sharing).

## *4. Distinguishing “moral questions”, “moral disagreements”, and “moral conflicts”*

The discovery of data fabrication and falsification took place after publication of the results. Nevertheless, Obokata continued to deny the accusations. Disagreement existed between Obokata and her peers regarding the validity of her published results. She may not have intended to commit data fabrication and falsification. However, sloppy data management informed the conclusion. Those conducting the investigation alleged that Obokata was aware of the risks. The editorial team could have identified some of the errors prior to publication, but perhaps the presence of some of the most trusted names in the field among the co-authors may have affected their judgment.

5. *Establish a hierarchy of values related to morally problematic situations*

- I. Honesty
- II. Reliability
- III. Respect for collaborators

6. *Justification of the moral choice*

After both papers were retracted, Obokata was still able to verify the original findings under close RIKEN surveillance. The STAP case is now closed. However, we can still stipulate about post-case moral choices. One of those choices might involve deciding upon ways in which cases such as this can be prevented. Various stakeholders have been involved in the case (Nature, Obokata, her co-authors, the RIKEN Centre, other stem-cell researchers). These stakeholders might reflect on their respective roles and responsibilities and consider raising awareness about morally problematic issues associated with the case.

## References

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