

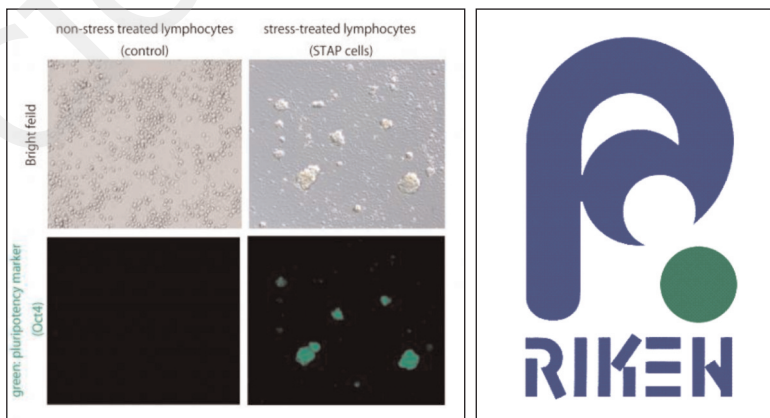
After the gold rush

by Marco Confalonieri

*"They were flying
Mother Nature's silver seed
to a new home in the sun"(1)*



In the previous issue of *Shortness of Breath*, I briefly reported (2) about the surprising two papers (3, 4) published on last January 29th issue of *Nature* dealing with a method to reprogram mature cells into an embryonic state by exposing them to mechanical stress or mild acid bath. That method, called STAP (Stimulus-Triggered Acquisition of Pluripotency cell), promised to be a radically simpler technique of stem cell generation than previously known methods to induce pluripotent cell (iPS), as it requires no manipulation of the cell nucleus. Soon after publication of the papers on STAP cells, however, comments began appearing on science blogs noting what appeared to be anomalies or inconsistencies with some of the images that were published along with the paper. Some suggested that one image had been spliced, others that parts of a placenta shown in one image may have been reused in another. Moreover, in the weeks following the *Nature* articles' publication, all the scientists who tried to duplicate STAP results failed to get them and suspicion arose that errors or fraud occurred. An investigation into alleged irregularities was launched by the RIKEN Center for Developmental Biology in Japan, the scientific Institute where the first Author of the papers on STAP worked when she wrote them. The allegations question the use of seemingly duplicated images in the papers, and report failure to reproduce her results in other prominent stem-cell laboratories. *Nature* also announced they are investigating. To address the problem of reproducibility in other laboratories, STAP researchers published some technical 'tips' on the protocols while promising the detailed procedure will be published in due course.



Lastly, during a news conference held at Osaka the first Author of the two papers on STAP cells admitted unintentional errors in the manuscript, but saved study conclusions, and refused to retract the article. She stated STAP cell discovery not fabrication, claiming Riken dissuaded her from giving her side of story earlier. On Internet people was split between detractors and believers of STAP. Actually, I'm on the fence, and time is on my side because falsifiability is a matter of science, and STAP theory is a real scientific theory that may be shown to be false with time by tests and experiments. In fact, far to be apologetic, science is based on falsifiability according to Karl Popper, the famous Austrian-British philosopher of science who first rejected the classical inductivist view on the scientific method in favour of the idea that any scientific theory can be and should be scrutinized always by decisive experiments (5). Riken is the Japan largest comprehensive research institution renowned for high-quality research in diverse range of scientific disciplines, so its mission is to foster research of the highest quality at the most rigorous level. Starting from the same Institute where STAP cells were firstly studied it's now beginning a global gold rush to demonstrate or to destroy the STAP cell theory. However, just after this scientific gold rush verifying if STAP cells are false or true cells, we will have the opportunity to use them or leave them. We have only to wait the right time to check out and reproduce the experiments step by step, as they were described on *Nature*. Otherwise, the Authors of the debated STAP research shall retract their papers from *Nature*, no alternative option exists to date.

References

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3. Obokata H, et al. Stimulus-triggered fate conversion of somatic cells into pluripotency. *Nature* 2014;505:641-7.
4. Obokata H, et al. Bidirectional developmental potential in reprogrammed cells with acquired pluripotency. *Nature* 2014;505:576-80.
5. Popper K. *The Logic of Scientific Discovery* (Taylor & Francis e-Library ed.). London and New York 2005: Routledge/Taylor & Francis e-Library. p. 17.