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Retraction: Sp100 as a Potent Tumor Suppressor: Accelerated Senescence and Rapid Malignant Transformation of Human Fibroblasts through Modulation of an Embryonic Stem Cell Program

Introduction

The authors wish to retract the article entitled "Sp100 as a Potent Tumor Suppressor: Accelerated Senescence and Rapid Malignant Transformation of Human Fibroblasts through Modulation of an Embryonic Stem Cell Program," which was published in the December 1, 2010 issue of *Cancer Research* (1).

This was the final article from Dr. Gerd Maul's laboratory. Dr. Maul passed away before the final review and acceptance of this article and his laboratory was subsequently closed. Dr. Louise Showe took the responsibility to complete the submission and now takes the responsibility for the retraction.

This article documents a program of accelerated senescence in the normal human fibroblast cell line, BJ, when the expression of the four major *Sp100* gene isoforms is suppressed by appropriate lentiviral vectors (BJ-S cells). This senescent program is associated with a highly significant, transient expression of an embryonic stem cell signature. The article further reports that BJ-S cells lacking expression of all four major Sp100 isoforms, subsequently give rise to rapidly dividing "small" cells with malignant potential (BJsm cells). The malignant potential of the BJsm cells was confirmed in the study by their ability to form tumors in nude mice.

During the past 6 months, the authors have undertaken to repeat the studies described in Negorev and colleagues' work and have uncovered problems that bring into question the conclusions of the publication that identify *Sp100A* as a tumor suppressor, which when silenced leads to the malignant transformation and the appearance of the BJsm cells. After several months of unsuccessful efforts to repeat this observation, the authors carried out microsatellite studies on various liquid nitrogen stocks of the BJsm "small malignant cells" archived over a period of approximately 2 years by the Dr. Gerd Maul's laboratory. As reported in the article, these cells lack expression of *Sp100* and in addition do not express T antigen. However, microsatellite studies conclusively show that these BJsm cells are not related to the BJ primary fibroblast line but are related to HEK293 cells. Unfortunately, the Dr. Gerd Maul's laboratory also worked with a spontaneous HEK293 variant cell line, 293-S, described in several of their previous publications. These cells lack expression of *Sp100* and T antigen. To further confirm that the BJsm cells described in Negorev and colleagues' work were 293-S derived, we also carried out microsatellite analysis on DNA from the 9 frozen tumors derived from the BJsm cells. These studies confirmed that the BJsm cells injected into the nude mice were 293 cells.

To further confirm the identification of the BJsm cells as 293-S, the authors also compared the microarray gene expression data reported in Negorev colleagues' work with microarray data in Gene Expression Omnibus (GEO) derived from independently published studies from other laboratories on BJ cells and 293 cells. This comparison also supports the

conclusion that the BJsm microarray data are most consistent with published data derived from 293 cells.

Although the investigators took precautions to eliminate 293T cells as a possible contaminant, they did not take into consideration the contamination by the variant 293-S cells, which lack both T antigen and *Sp100* expression. Although the authors can only speculate on the source of the contamination, the observation that BJsm cells appeared in only 5 of 8 experiments was likely due to the way selection was maintained and the different lentiviral stocks prepared for each experiment.

The microarray expression data associated with this publication in GEO (GEO entry: GSE20613) has been modified and the erroneous BJsm data has been removed. The microarray data for BJ-V control and the BJ-S cells remains publicly available.

All authors are aware of and agree to this retraction.

Dmitri Negorev

Formerly with The Wistar Institute, Philadelphia, Pennsylvania

Olga V. Vladimoriva, Andrew V. Kossenkov, Renee M. Demarest, Michael K. Showe, Frank J. Rauscher III, and Louise C. Showe The Wistar Institute, Philadelphia, Pennsylvania

Elena V. Nikonova Fellow, Global Medical Affairs at Sanofi, Swarthmore, Pennsylvania

Anthony J. Capobianco University of Miami, Miami, Florida

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