Published in final edited form as:

Clin Cancer Res. 2013 September 15; 19(18): 5256–5257. doi:10.1158/1078-0432.CCR-13-1914.

Retraction

Retraction: Critical Role of Notch Signaling in Osteosarcoma Invasion and Metastasis

The authors wish to retract the article titled “Critical Role of Notch Signaling in Osteosarcoma Invasion and Metastasis,” which was published in the May 15, 2008, issue of *Clinical Cancer Research* (1).

Many years after this article was published, we obtained new information showing that two of the cell lines used in this publication, OS 187 and COL, are not osteosarcoma cell lines. Both lines were first reported by us (2).

Each of these cell lines has now been tested by DNA fingerprint analysis. OS 187 tested identically to the common NCI60 colon cancer line HCT 15, even in a vial from passage 2 in our laboratory that had been frozen in 2002. Injection of OS 187 into the cecum of NOD/SCID/IL-2R $\gamma^{-/-}$ mice yielded a colonic primary with metastasis to the liver (data not shown). Therefore, all of our published results with OS 187 likely reflect the biology of colon cancer. Given the subsequent report by another group that Notch pathway signaling promotes invasion and metastasis of colon cancer (3), the data we reported for OS 187 are not surprising.

The pattern observed for tumor growth after injection of COL cells into the tibia of NOD/SCID/IL-2R $\gamma^{-/-}$ mice (no bone primary, rapid growth of liver tumors, with additional masses arising in skin and retro-orbital spaces) suggested that this cell line likely represented neuroblastoma. We have recently reported the subsequent testing confirming that COL is a neuroblastoma (4).

In this article, OS 187 and COL were included in Figs. 1 and 2. OS 187 was among the cell lines shown in Fig. 3 and is the only cell line shown in Figs. 4 and 5. When these two cell lines are removed from the data presented, two findings reported should be interpreted with caution. First, the only real osteosarcoma cell lines in which Notch was directly manipulated genetically were SAOS2 (with low levels of Notch) and LM7 (a subline of SAOS2 with high levels of Notch). Although transduction of SAOS2 with constitutively active intracellular Notch1 (ICN1) or the Notch target gene Hes1 increased *in vitro* invasiveness, LM7 was not able to grow after transduction with these constructs, as indicated in the original publication. Thus, we have not proved that osteosarcoma invasiveness can be increased by further upregulating Notch activity in Notch-positive osteosarcoma. Second, because only OS 187 was used *in vivo* in this report, we can no longer say that our publication proves Notch’s role in metastasis *in vivo* for osteosarcoma. However, the subsequent confirmation of this function of Notch by other groups (5) renders it likely that

this conclusion remains valid for osteosarcoma. Nonetheless, because the data provided from bona fide osteosarcoma cell lines are no longer adequate to support the assertions and conclusions of the article, the authors respectfully request its retraction.

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Published online September 17, 2013.

doi: 10.1158/1078-0432.CCR-13-1914