Reviewer's report

Title: Therapeutic effects of STAT3-decoy oligodeoxynucleotide on human lung cancer in xenograft

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Reviewer: Brent Cochran

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General

Zhang et al present evidence that STAT3 decoy oligonucleotides inhibit the growth of the A549 lung cancer cell line in vitro and in vivo. There is relatively little new here as it has been previously been shown that targeting STAT3 can inhibit the growth of this line and that the STAT3 ODNs function in vivo. The new part is showing that these ODNs function in this particular cell line. This paper would have greater significance if they were able to demonstrate an effect of the ODN in a transgenic of chemically induced model of lung cancer rather than a xenograft at an ectopic site. In addition, there are a number of problems with the paper as detailed below.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Grammatically the paper needs significant improvement throughout.

In general, the results section and figure legends need to be expanded as they do not adequately describe the experiments performed.

The background section needs to be expanded. A more detailed explanation of the previously identified role of STAT3 in lung cancer should be provided. The statement in the introduction about “in vivo evidences..” is misleading. The Grandis lab has previously demonstrated that STAT3 ODNs do work in vivo.

There is no reference for the STAT3 ODN sequence used given in the methods. Is this the same sequence the Grandis lab uses or a different one? Does it compete for binding to other STATs? No data is even presented or referenced that STAT3 is even activated in the A549 cells though others have shown this. The authors also do not give the concentration of primary antibody used the Western blot section.

In Figure legend 2a, the authors state that they are performing assays to measure cell proliferation. However, they may be seeing largely effects of increased apoptosis or a balance between apoptosis and inhibition of proliferation. This should be stated or measured in some way.

In Figure 4, the western blot of bcl-xl is not convincing.

In Figure 6, the name of the protein examined should be put directly in the figure in both panels. It is not at all clear how the quantitation was obtained in panel B. In any case, a western blot and RT-PCR of the entire tumor sample would provide a more accurate indication of the overall effect of the ODNs in vivo. How long after ODN treatment were these experiments performed? Data on the percentage of cells that take up the STAT3 decoy ODN in vivo should also be presented.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)
What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.