Reviewer’s report

Title: The anticancer activity of lytic peptides is inhibited by heparan sulfate on the surface of the tumor cells

Version: 2 Date: 5 March 2009

Reviewer: Andrew Vickers

Reviewer’s report:

There are two problems with the statistics here. First, as pointed out by the previous reviewer, there is no call for a paired test. Paired tests are used for, e.g. data taken from a patient at baseline and then at follow-up, not for comparing two independent samples.

Second, it is sometimes unclear what hypothesis is being tested and why. For example, in figure 6, the p values refer to a comparison of what with what? Each group with control? Here is the key point: the hypothesis that the authors want to test appears to be this that the inhibitory effect of cell surface GAGs is due to HS, and not to CS. Yet they do not appear to do an analysis that tests this hypothesis. If I am right in my understanding of what the authors did, they made a common error in lab research. Investigators typically have a hypothesis such as that condition A makes a bigger difference than condition B, and report p values for A versus control and B versus control. This is testing two separate hypotheses (does A make a difference? Does B?) rather than one (does A make a bigger difference than B?). To test the second hypothesis, the authors need an estimate and standard error for the effect of A and the effect of B. It is straightforward to get a p value for two estimates with associated standard errors.

In sum: the authors need to be much clearer about the specific hypothesis they want to test and much more careful about matching the statistical method to that hypothesis.