Reviewer's report

Title: Quantum dots in sentinel lymph node mapping: biodistribution study

Version: 2 Date: 4 November 2007

Reviewer: Hak Soo Choi

Reviewer's report:

General

Sentinel lymph node (SLN) biopsy is very important process for breast cancer treatments. This is a well-written manuscript which reports the results of some important studies concerning the SLN mapping of inorganic (CdSe/ZnS) quantum dots in mice. The studies appear to be well done technically and the results are clear-cut and rigorously evaluated by the authors.

But, as the authors mentioned in the manuscript, the red dots have limitations to use in vivo imaging because of the autofluorescence in the body. This is a major problem of this study. They should select other ranges of emission wavelengths to avoid the overlap of tissue absorption.

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

1. What is the merit of red dots (Em 655 nm) you used in this paper compared to near-infrared dots used for SLN mapping by other groups?

2. There is also great concern about the toxicity of quantum dots in general with regard to generation of reactive oxygen species on particle surfaces. Some ESR studies might be informative. Even though the dots are nontoxic when they are stable in the body, toxicity is potentially amplified if they are biodegraded and the core metal ions are exposed.

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

1. The authors mention the size of quantum dots is 16 nm. Describe about the measurement in detail including solvents and analytical methods.

2. This quantum dots have a carboxyl group coating, which allow protein binding in serum. It should be addressed about the size and fluorescence changes of quantum dots in serum. Also it might be helpful to understand the biodistribution of quantum dots in vivo if those effects are cleared in vitro.

3. The authors should show more organs to trace the dots over time. For example, at 24 hr postinjection, there’s no mention about the distribution of dots except for SLN (Figure 1).
4. Why the major part of injected dots were remained at the injection site? Is there any biological reason?

5. Figure 4 shows ASLN mapping with/without skins. The dots were not detected over the skin because of the tissue absorption, there’s no reason to use nude mice for this study.

Discretionary Revisions (which the author can choose to ignore)

What next?: Accept after discretionary revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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