Reviewer’s report

Title: A novel microfluidic device capable of maintaining functional thyroid carcinoma specimens ex vivo provides a new drug screening platform

Version: 0 Date: 20 Dec 2018

Reviewer: Aaron Diaz

Reviewer's report:

Riley et al. describe a novel microfluidic culture device for thyroid carcinoma specimens and suggest it would be a suitable platform for drug screens.

1. While the authors do a reasonable job of demonstrating that their culture system enables slice culture of thyroid carcinomas for a few days with decent fidelity, it is not clear that the system described is superior to other systems for organotypic slice culture. It is incumbent on the authors to demonstrate a significant improvement over status quo approaches via a quantitative comparison.

2. If the platform is to be used for screening then it is necessary to assess inter-culture heterogeneity, under treatment with positive and negative controls, i.e. demonstrate that technical variability across cultures is low compared to treatment effects. How many replicate cultures would be required to observe a treatment effect of a given magnitude?

3. I may have missed it but I don't find a statement of informed consent and IRB approval for tissue use.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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