

## Three-dimensional dynamics optical coherence tomography for tumor spheroid evaluation: supplement

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# Three-dimensional dynamics optical coherence tomography for tumor spheroid evaluation

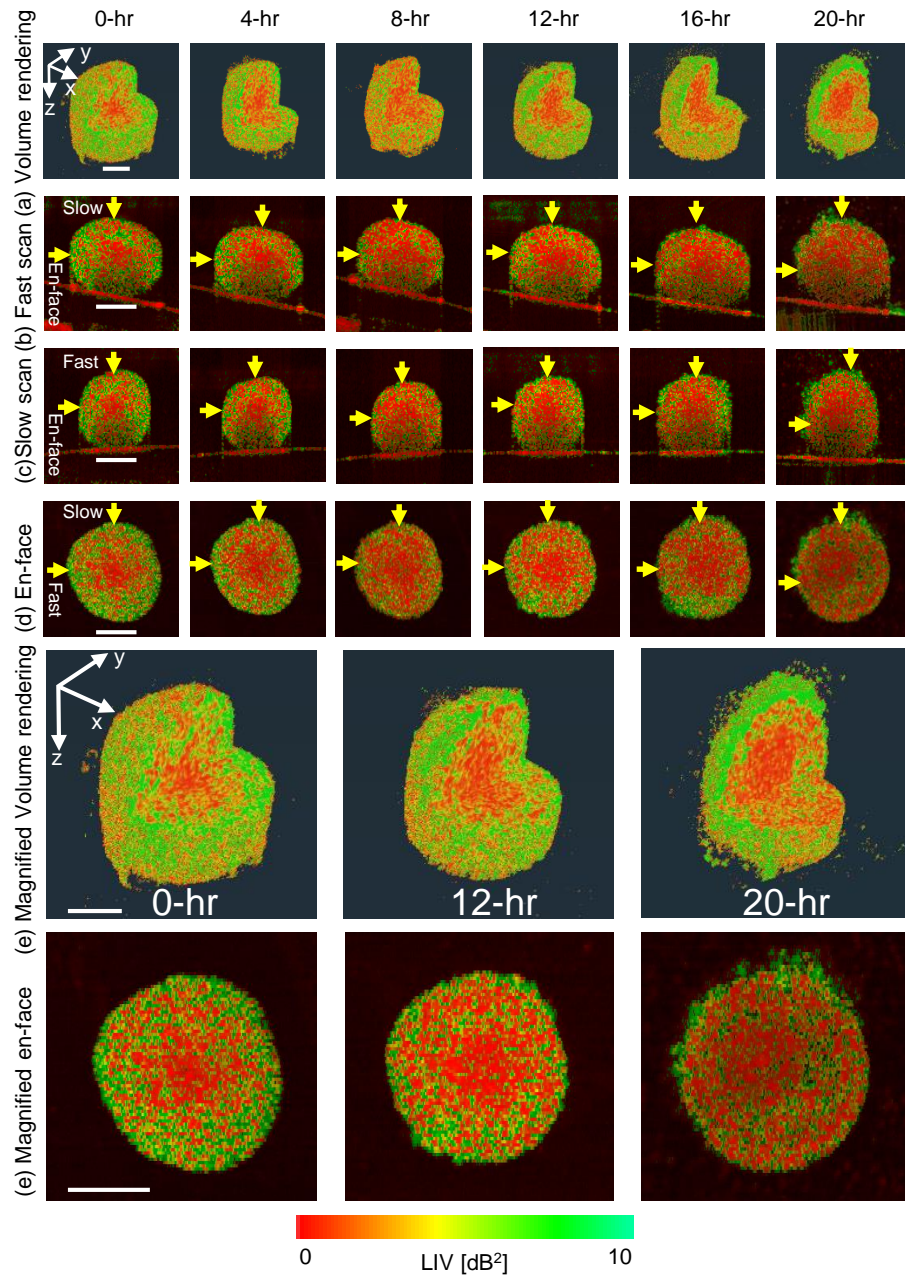
Here we present an additional time-course evaluation of Human breast adenocarcinoma (MCF-7) spheroid formed by initially seeding 500 tumor cells. The results are consistent with the same cell line presented in the full length manuscript.

## 1. RESULTS

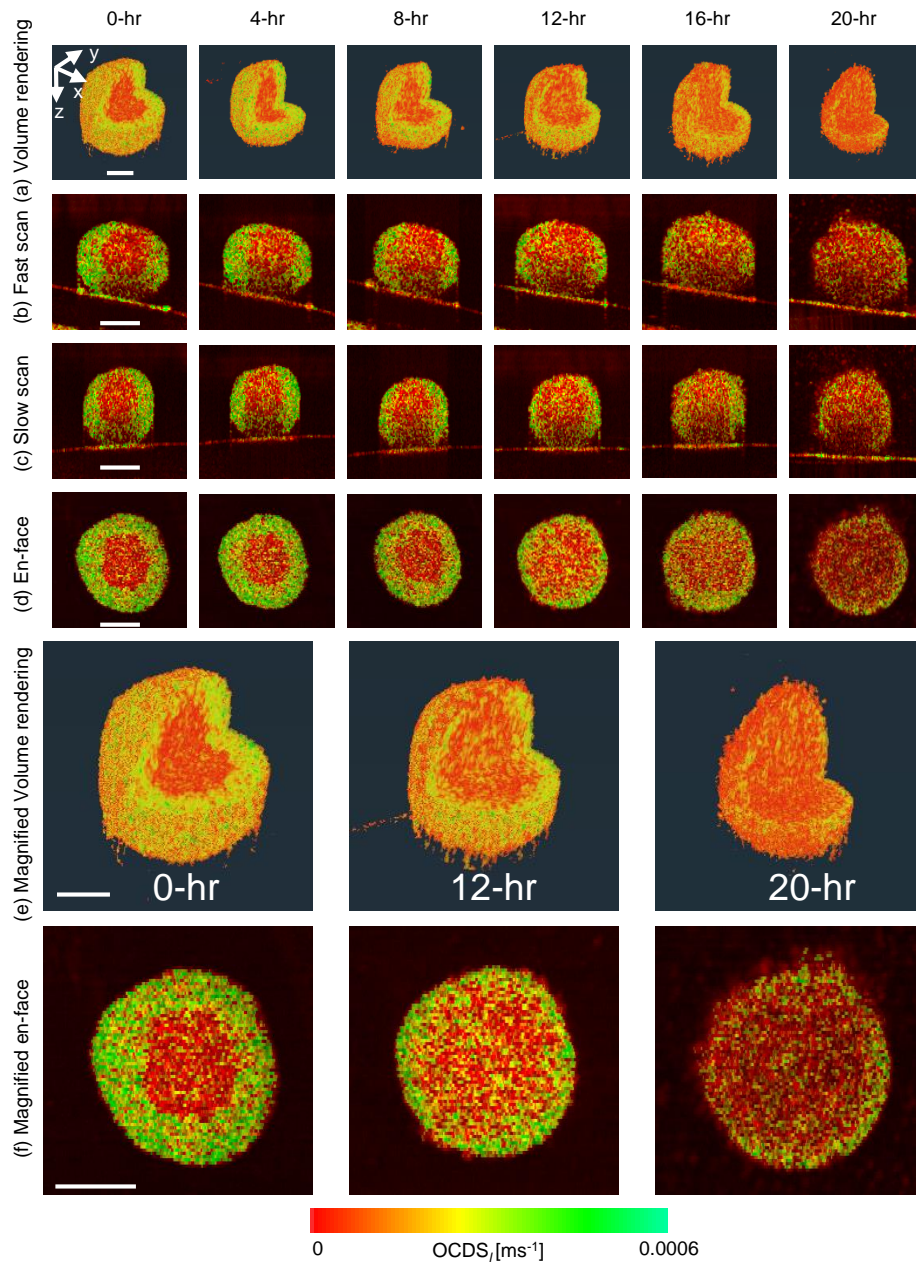
Figure S1 summarizes the LIV time course of MCF-7 spheroid formed by initially seeded with 500 human breast cancer cells. At 0 h, the spheroid shows high LIV layer surrounding the low LIV region as shown in the volume rendering and cross-sections. By following the time course, the high LIV at the spheroid periphery is fading over the time until the low LIV signal (red) covers almost all the spheroid volume. These results are consistent with Fig. 3 in the full length manuscript.

Figure S2 shows the OCDS<sub>l</sub> time course of the same spheroid presented in Fig. S1. And the images show similar tendencies as observed by LIV. The spheroid core shows low OCDS<sub>l</sub>, while the periphery shows high OCDS<sub>l</sub> at 0-h time point and this high OCDS<sub>l</sub> is fading over time. These results are also consistent with that presented in Fig. 4 in the manuscript.

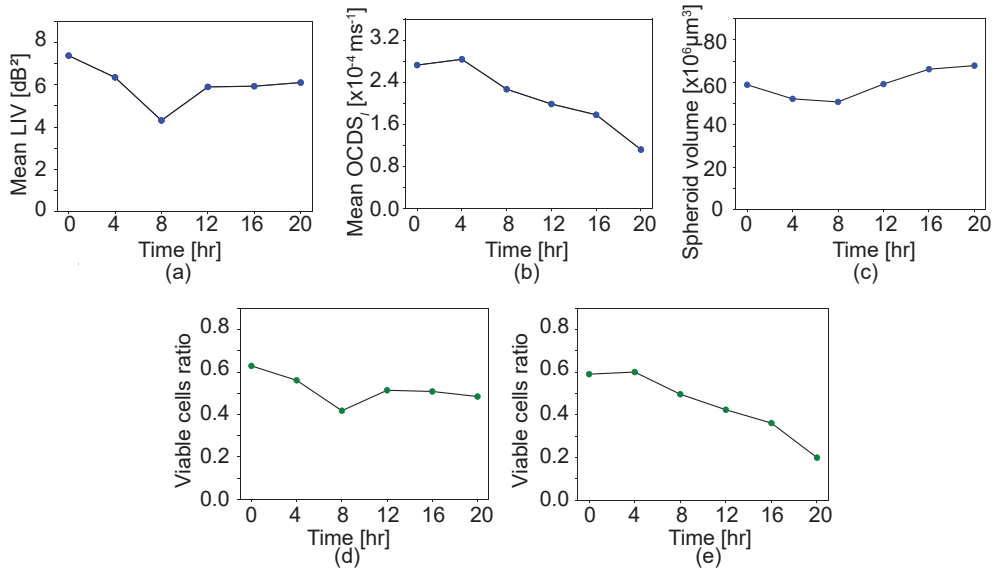
Figure S3 summarizes the quantitative analysis of the time course spheroid data presented in Figs. S1 and S2. The plots show similar tendencies to that presented in Fig. 5 in the manuscript. Namely, clear reduction of the mean LIV [Fig. S3(a)], OCDS<sub>l</sub> [Fig. S3(b)], LIV cut-off based viable cell ratio [Fig. S3(d)], and that based on OCDS<sub>l</sub> cut-off [Fig. S3(e)] were found over time. In contrast, the spheroid volume is slightly increasing along the time as shown in Fig. S3(c).



**Fig. S1.** Time-course LIV visualization of MCF-7 spheroid formed by initial seeding of 500 tumor cells. The first to fourth rows show time-course images of (a) the cut-away volume rendering, (b) the cross-section along the fast scan direction, (c) the cross-section along the slow scan direction, and (d) the *en face* cross-section, respectively. The fifth and sixth rows show magnified images of (e) the volume rendering and (f) the *en face* cross-section, respectively. All the scale bars represent 200  $\mu\text{m}$ .



**Fig. S2.** Time-course  $OCDS_I$  of MCF-7 spheroid formed by initially seeding of 500 tumor cells. The images are displayed in the same manner as those shown in Fig. S1.



**Fig. S3.** Time-course alterations of (a) the mean LIV, (b) the mean OCDS<sub>I</sub>, (c) the spheroid volume, and the viable cell ratios based on (d) the 3-dB<sup>2</sup> LIV cut-off and (e) the  $2 \times 10^{-4} \text{ ms}^{-1}$  OCDS<sub>I</sub> cut-off.