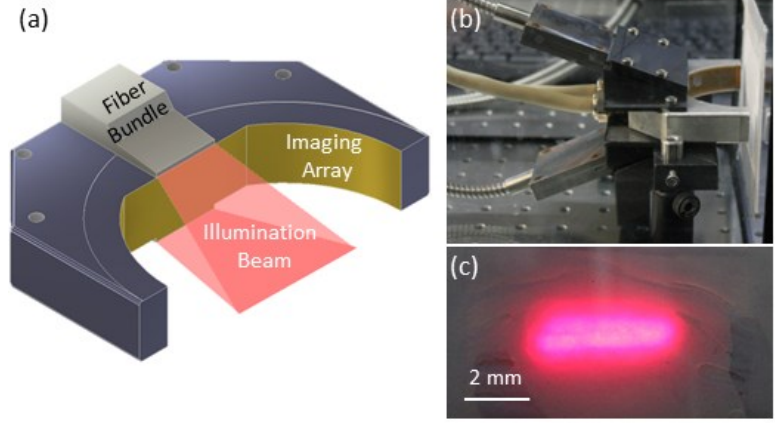




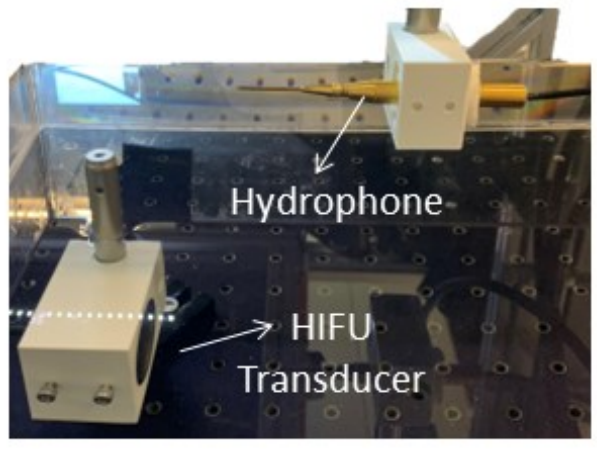
31 **Supplementary Figures:**



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33 **Supplementary Fig. S1.** Light profile at the tissue surface for the OPUS imaging array. (a) 3D rendering  
34 of the multi-segment hybrid imaging array, including the illumination fiber bundle. (b) Actual photograph  
35 of the multi-segment hybrid imaging probe with the attached illumination fiber bundle. (c) Light profile  
36 created by the fiber bundle attached to the multi-segment imaging array at the approximate location of the  
37 tissue surface.

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40 **Supplementary Fig. S2.** Actual photograph of the calibrated hydrophone. The photograph was taken while  
41 scanning towards the HIFU transducer focus to measure the acoustic pressure (MPa) as a function of the  
42 peak-to-peak voltage ( $V_{pp}$ ).

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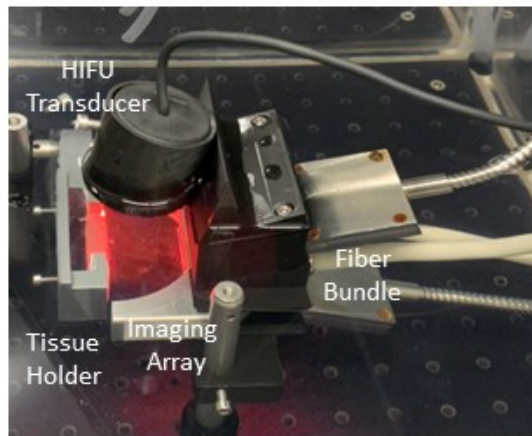
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50 **Supplementary Fig. S3.** Experimental setup of the thermal camera measurements during HIFU ablation.

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53 **Supplementary Fig. S4.** Experimental setup of the OPUS visualization of HIFU lesion progression in fixed  
54 *ex vivo* liver specimens.