Proof of concept of a multimodal intravital molecular imaging system for tumour transpathology investigation

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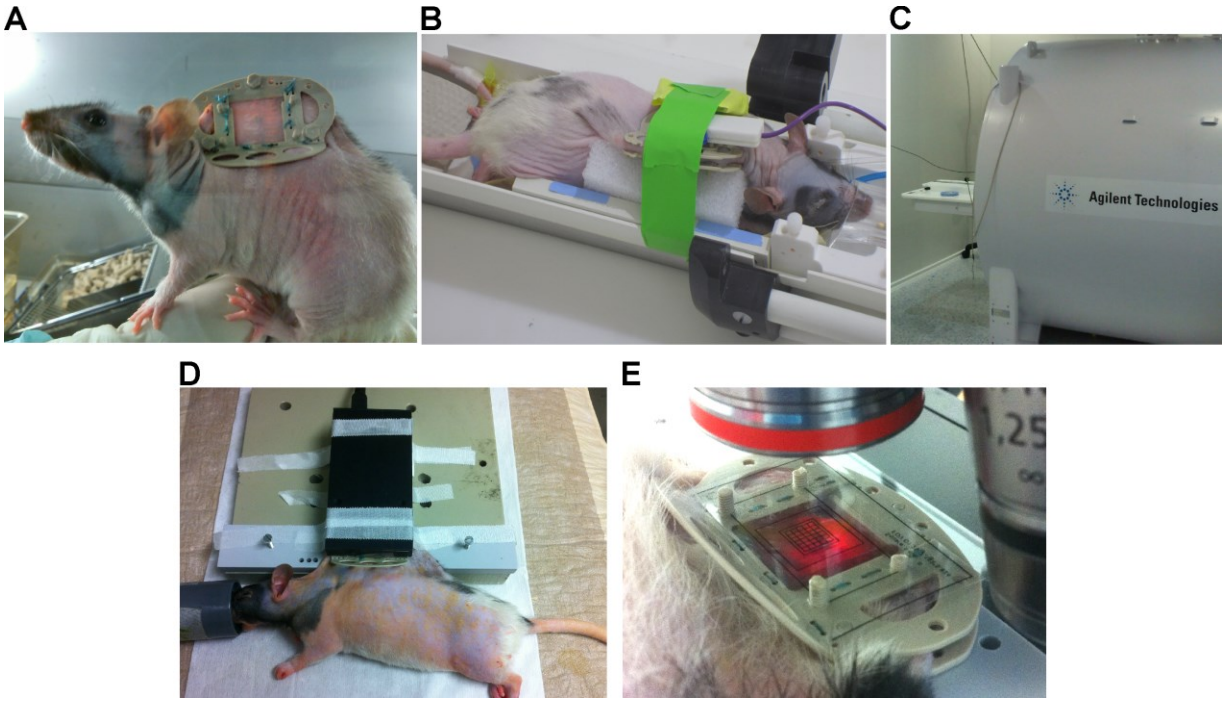
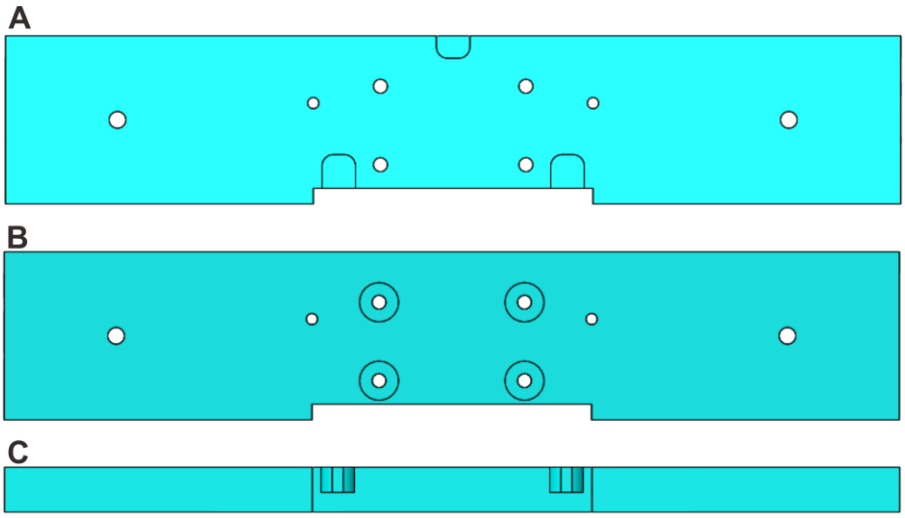
Rat with a multimodal imaging compatible window chamber

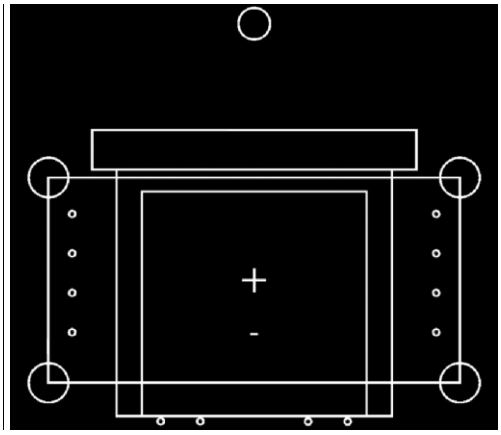


Supplemental Fig. 1 Photos of multimodal compatible rat window chamber tumour model: (A) a rat with the multimodal compatible window chamber; (B) Rat placed on bed prior to insertion into the MR magnet bore, with RF receiver coil affixed to the chamber window; (C) 7 T small animal magnet side view, with animal preparation area at left; (D) the positron imaging setting; (E) the fluorescence imaging setting.

As depicted in Supplemental Fig. 1, the multimodal imaging compatible dorsal skin window chamber was implanted into an RNU rat with ideal compatibility. The RNU rat with the window chamber can move freely in the cage and no abnormal behaviors (such as claw or bite the chamber) were observed. HT-29 tumour cells were successfully transplanted into the skin within the window area. The tumour volume was visible and could be measured with a ruler from day 4 after the transplantation. The window chamber cannot be maintained for longer than ~2 weeks after tumour transplantation because the tumour grows too large. Supplemental Fig. 1B-F show the use of the window chamber for the different imaging modalities.



Supplemental Fig. 2 An assisting adapter designed for fixation of the window chamber during the positron imaging and the microscopic imaging: (A) the upside of the assisting adapter; (B) the downside of the assisting adapter; (C) the side view (bottom) of the assisting adapter.



Supplemental Fig. 3 The reference pattern (transparent plastic plate) for localizing the field-of-view of microscopic imaging on the window chamber. The cross and minus mark help localize the FOV of a 1.25× objective lens of the fluorescence microscopy (7.16 mm × 5.82 mm) in the window chamber, also was used for co-registrations; the lower four black circles are used for mounting to the window chamber and are further used for fiducial markers for imaging co-registration.