SUPPLEMENTARY INFORMATION

Titles: **Novel Phenotypic Fluorescent Three-Dimensional Platforms for High-throughput Drug Screening and Personalized Chemotherapy**

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Running Title: Novel 3D Models for Chemosensitivity Screening

Key Words: *Three-dimensional; Fluorescent; Angiogenesis; Metastasis; High-throughput; Drug screening; Personalized chemotherapy*
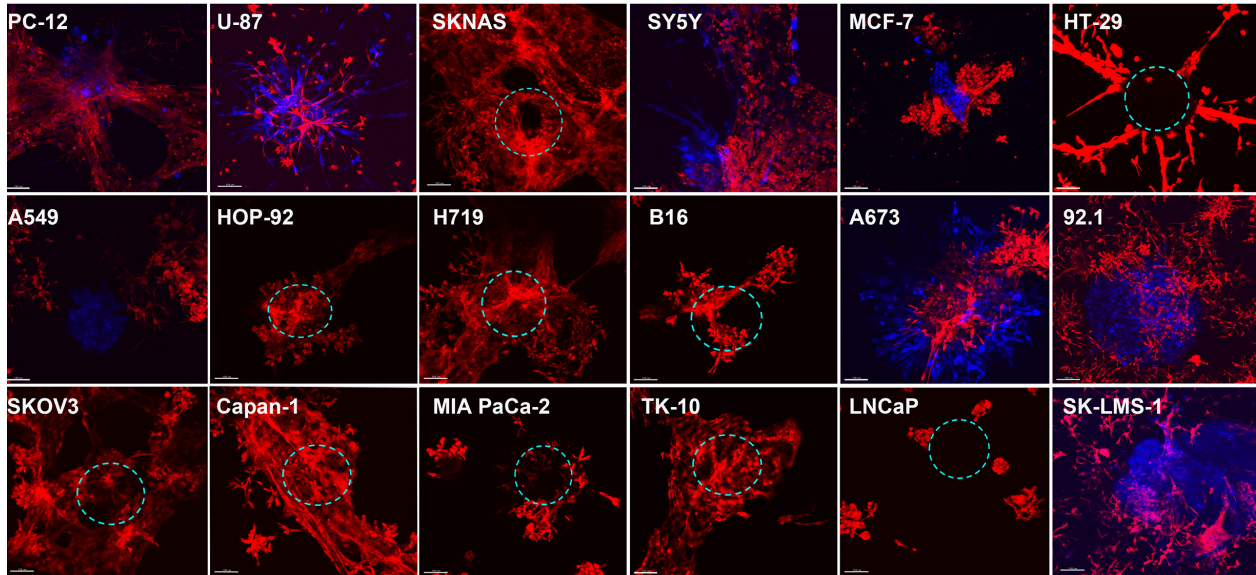
Supplementary Figure 1 Overview of Vascularization Induced by Various Tumor Colonies in the Basic Phenotypic Fluorescent Three-Dimensional (3D) Platforms after 9 Days in Culture.

High-resolution phenotypic 3D confocal microscopy Z-stack iso-surface rendered images generated by Imaris 7.4.0 (Bitplane). The endothelial cells (red) are immortalized porcine aortic endothelial cells (PAE). The tumor colonies are either in blue or indicated by light blue dotted-circles. PC-12, a rat pheochromocytoma cell line; U-87, a human glioblastoma cell line; SKNAS and SY5Y, human neuroblastoma cell lines; MCF-7, a human breast adenocarcinoma cell line; A549, a human lung adenocarcinoma cell line; Hop-92 and H719, human non-small cell lung carcinoma cell lines; B16, a mouse melanoma cell line; A673, a human rhabdomyosarcoma cell line; 92.1, a human ocular melanoma cell line; SKOV3, a human ovarian carcinoma cell line; Capan-1, a human pancreas adenocarcinoma cell line; MIA PaCa-2, a human pancreas carcinoma; TK-10, a human renal adenocarcinoma cell line; LNCaP, a human prostate carcinoma; and SK-LMS-1, a human leiomyosarcoma cell line. Scale bar = 100μm.
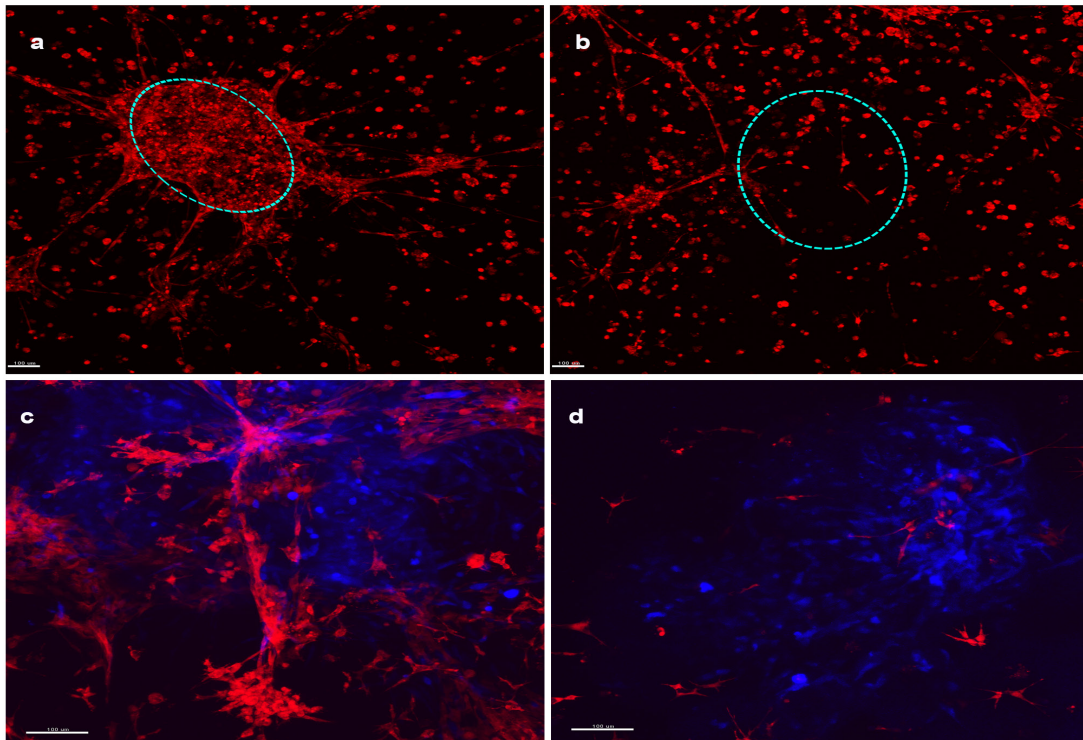
Supplementary Figure 2 Angiogenesis Variation among Different Anatomical Biopsies from the Same Human Tumor Mouse Xenografts. (a) and (b), mouse xenograft biopsies (xeno-biopsy) from a human leiomyosarcoma cell line (SK-LMS-1, light blue dotted-circles) induced vascularization of endothelial cells (red). (c) and (d), Human xeno-biopsies from a human ocular melanoma cell line (92.1, blue) induced l vascularization(red). (a), a peritumoral biopsy. (b), a non-necrotic centritumoral biopsy. (c), a peritumoral biopsy. (d), a non-necrotic intratumoral biopsy. Endothelial cells are immortalized porcine aortic endothelial cells (PAE). Scale bar =100μm.

Movie 1 A Panoramic View of Vascularization in Our Basic Phenotypic Fluorescent 3D Platform. A panoramic video of the basic 3D platform live after 9 days in culture was rendered from the confocal microscopy z-stack images using maximum intensity panorama projection (Zen2007, Zeiss) and converted into a MP4 format using MPEG Streamclip software (Squared 5). An immortalized porcine aortic endothelial cells (PAE, red). Blue spheroid is a colony from a human ocular melanoma cell line (92.1, blue).

Movie 2 Angiogenesis Initiated by a Tumor Colony in a Basic Phenotypic Fluorescent 3D Platform. A high-resolution phenotypic 3D Z-Stack confocal microscopy time-lapse images of our 3D platform were taken every 10 minutes for 72 hours and the video was rendered using the snapshot maximum intensity projection (Nikon) before being converted into a MP4 format using MPEG Streamclip software (Squared 5). Red cells are an immortalized porcine aortic endothelial cell line (PAE) and blue spheres consist of tumor cells from a human ocular melanoma cell line (92.1).