ADVANCED HEALTHCARE MATERIALS

Supporting Information

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Angiogenesis in Liquid Tumors: An In Vitro Assay for Leukemic Cell Induced Bone Marrow Angiogenesis

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Supporting information

Supporting Figures

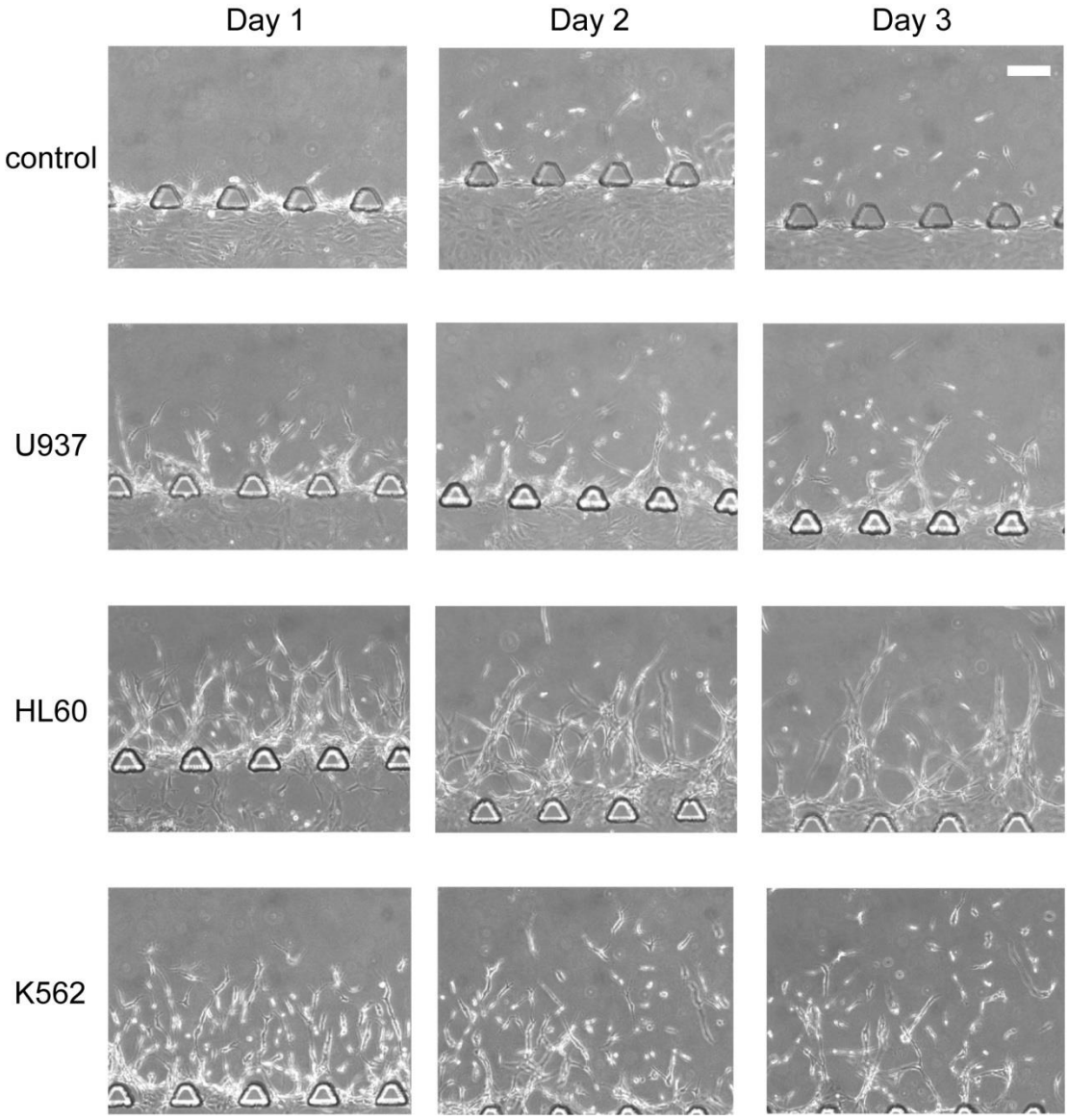

Figure S1. Representative phase-contrast images taken at day 1 - 3 showing directional migration and angiogenic invasion of ECs in the collagen gel towards the leukemic channel where different leukemic cell lines, U937, HL60, and K562, or only growth medium (control) were loaded as indicated. All images were taken close to the collagen gel interface within the endothelial channel. Scale bar, 100 um

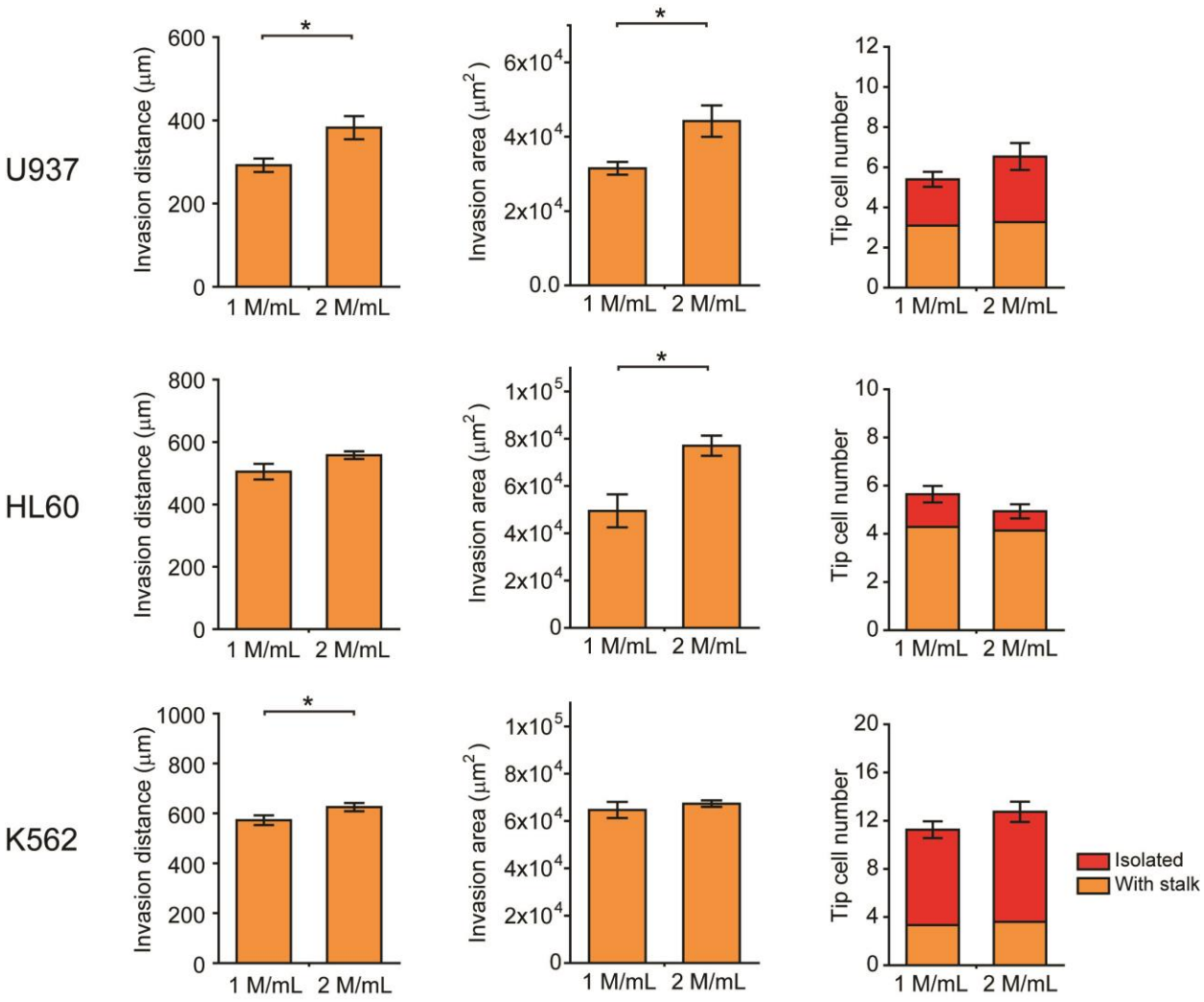

Figure S2. Bar plots of invasion distance, invasion area, and number of tip cells (isolated: red, with stalks: yellow) for U937, HL60, and K562 cells as a function of leukemic cell concentration by day 3. Error bars, s.e.m., with n = 10 - 15 measurement areas from 3 devices. P-value was calculated using two group t-test with respect to control. *, $P < 0.05$.

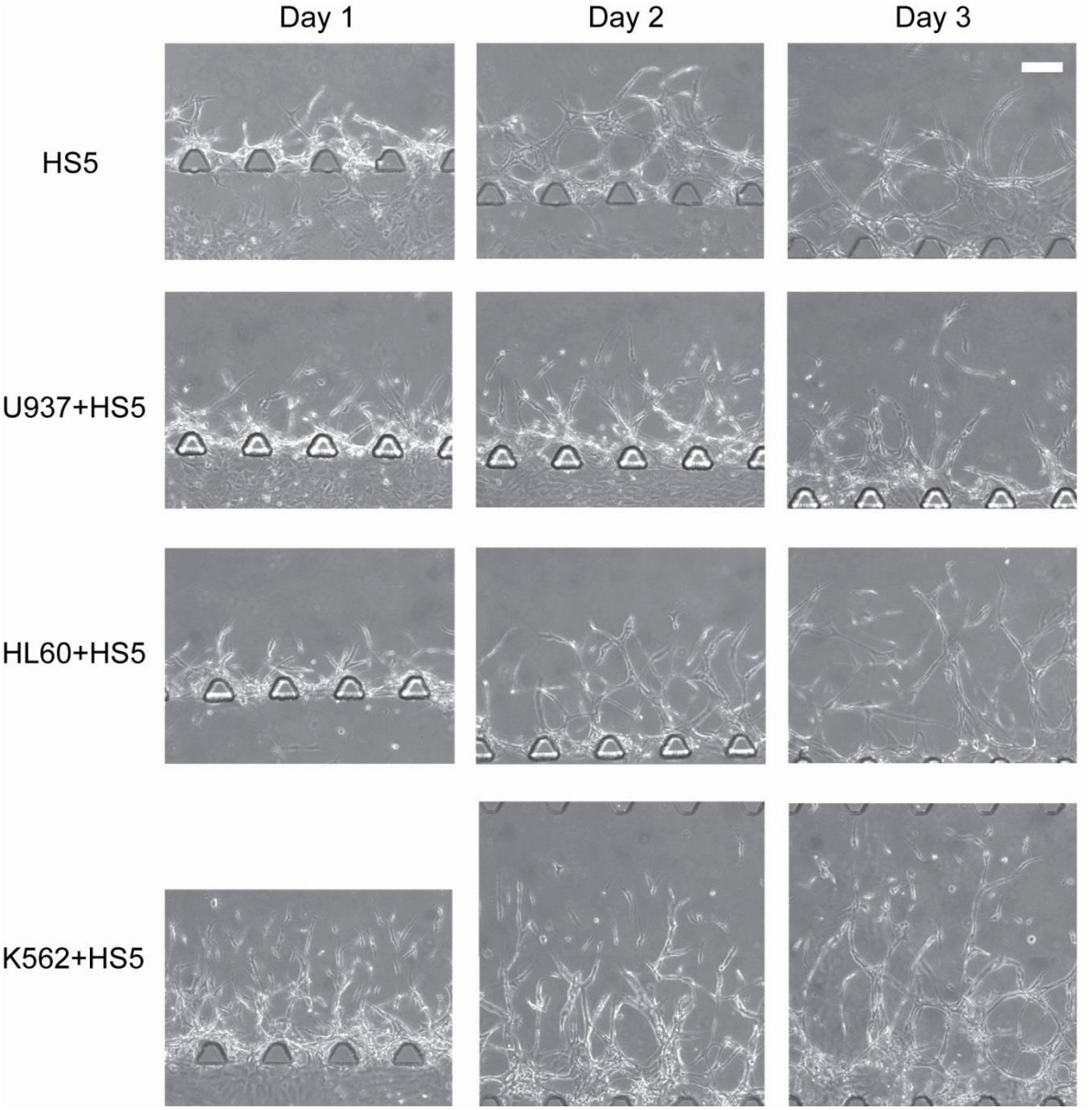

Figure S3. Representative phase-contrast images taken at day 1 - 3 showing directional migration and angiogenic invasion of ECs in the collagen gel towards the leukemic channel. The leukemic channel was seeded only with the bone marrow stromal cells HS5, or cocultures of HS5 with different leukemic cell lines, U937, HL60, and K562, as indicated. All images were taken close to the collagen gel interface within the endothelial channel. Scale bar, 100 um

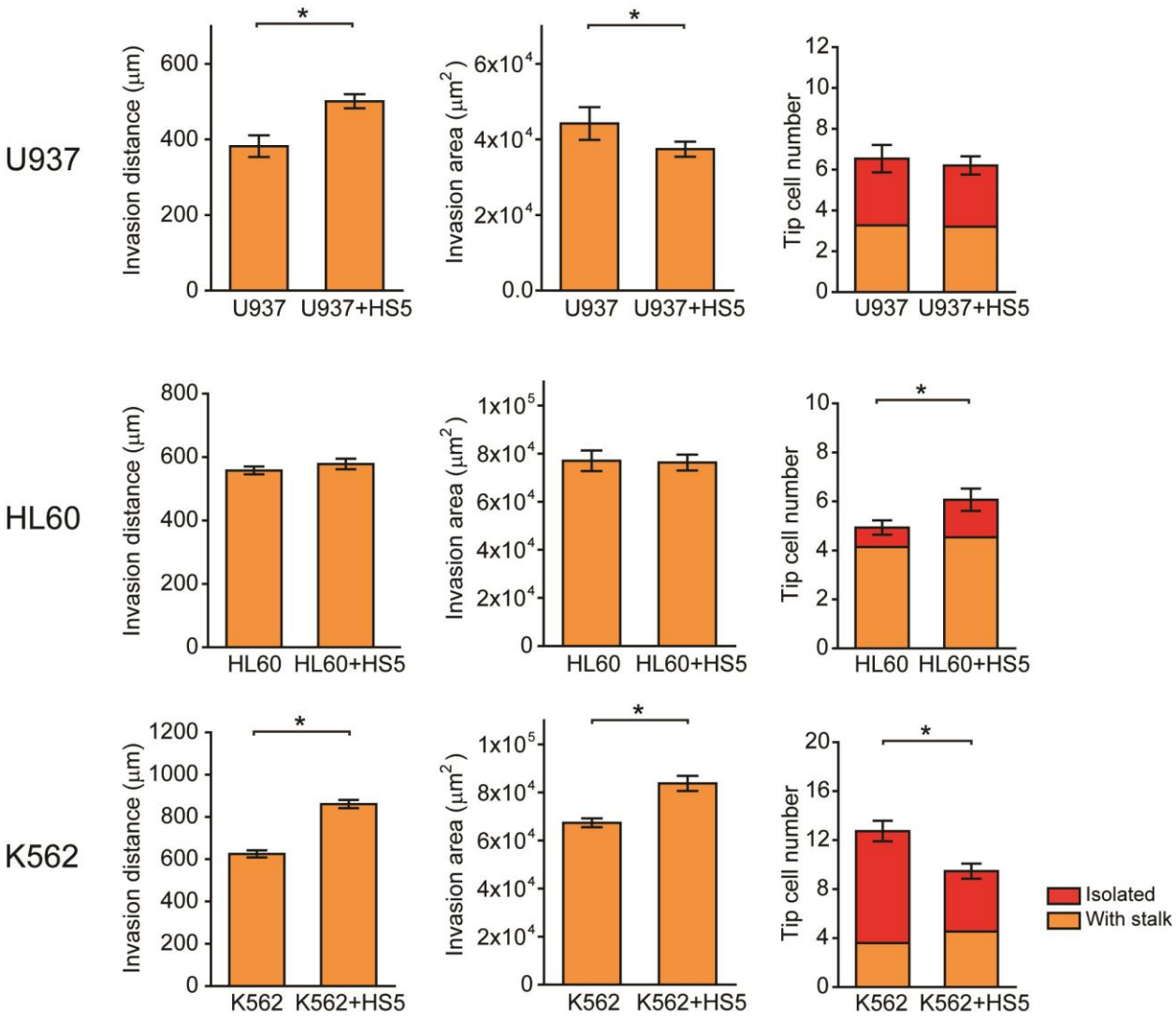

Figure S4. Bar plots of invasion distance, invasion area, and number of tip cells (isolated: red, with stalks: yellow) for monocultures and cocultures of U937, HL60, and K562 cells with HS5 as indicated, by day 3. Comparisons of tip cell numbers are based on the total number of tip cells (isolated + with stalks). Error bars, s.e.m., with n = 10 - 15 measurement areas from 3 devices. P-value was calculated using two group t-test with respect to control. *, $P < 0.05$.

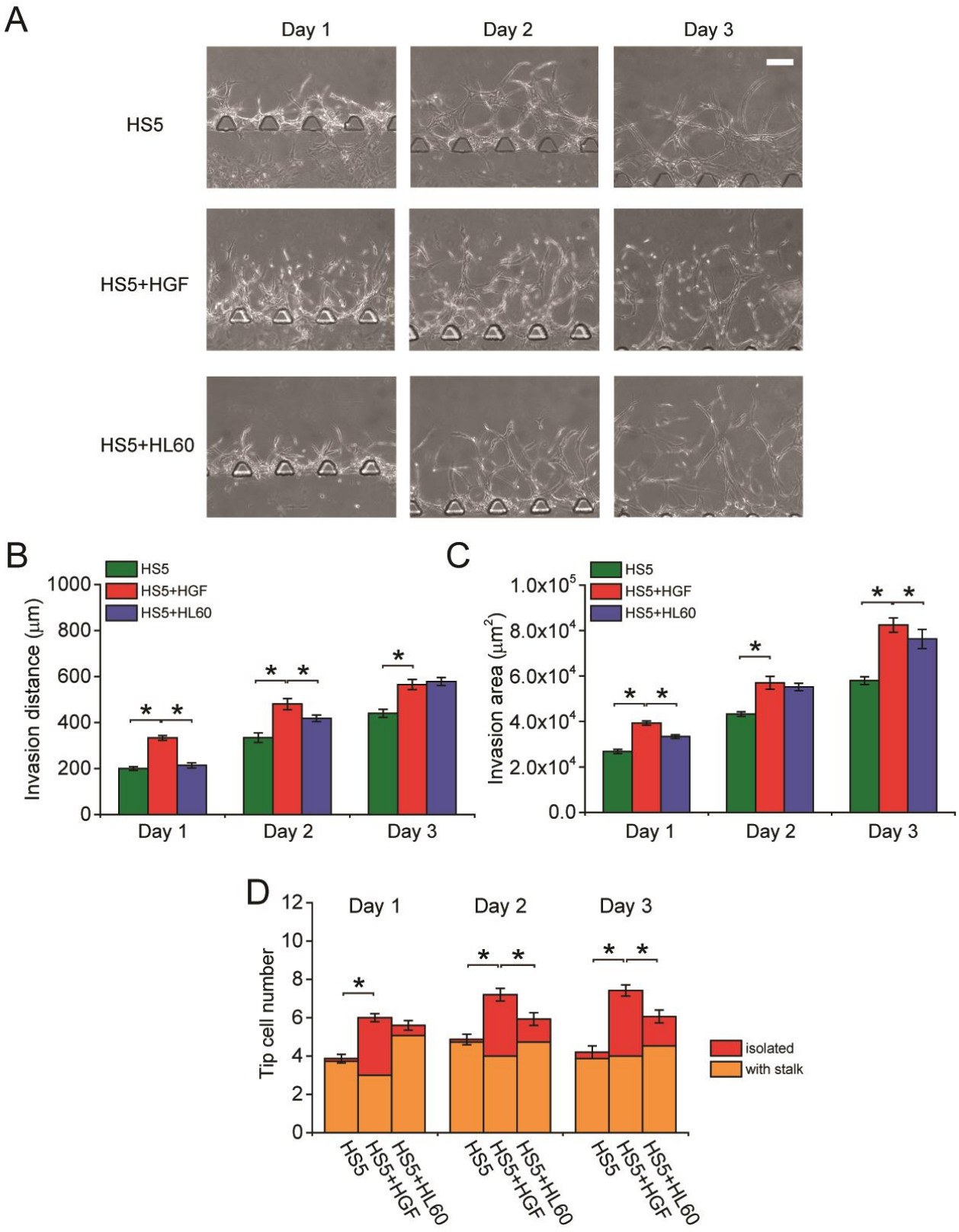

Figure S5. Effect of HGF on angiogenic induction. (A) Representative phase-contrast images taken at day 1 - 3 showing directional migration and angiogenic invasion of ECs in the collagen

gel towards the leukemic channel. Top and bottom panels show angiogenic invasion of ECs when the leukemic channel was seeded with the bone marrow stromal cells HS5 (top) or cocultures of HS5 with HL60 (bottom). Middle panel shows angiogenic invasion of ECs when the leukemic channel was seeded with the bone marrow stromal cells HS5 and the culture medium was supplemented with HGF (20 ng/mL). All images were taken close to the collagen gel interface within the endothelial channel. Scale bar, 100 μm. (B-D) Bar plots of invasion distance (B), invasion area (C), and number of tip cells (D; isolated: red, with stalks: yellow) as a function of culture time. Error bars, s.e.m., with n = 10 - 15 measurement areas from 3 devices. P-value was calculated using two group t-test with respect to control. *, $P < 0.05$. Comparisons of tip cell numbers are based on the total number of tip cells (isolated + with stalks).

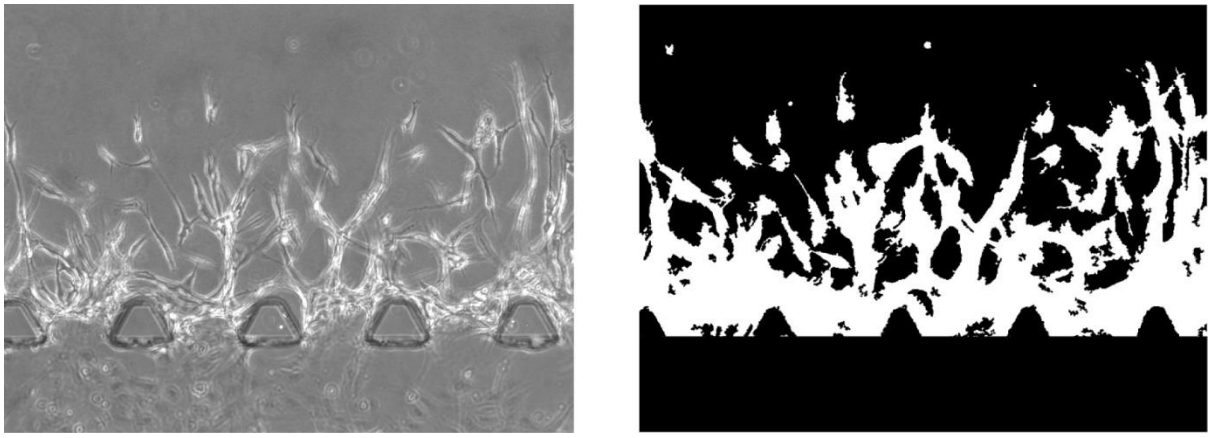

Figure S6. Quantification of endothelial invasion area in the collagen gel. (A) One representative phase-contrast image selected from the 7 *z*-stacked images captured within the same field of view. (B) Binary image obtained from the custom MATLAB algorithm for cell area measurement.

Supporting Video

Video S1. Angiogenic sprouting induced by HL60 (2×10^6 cells mL^{-1}) within 12 hours after seeding.

Video S2. 7 *z*-stacked images captured within the same field of view.