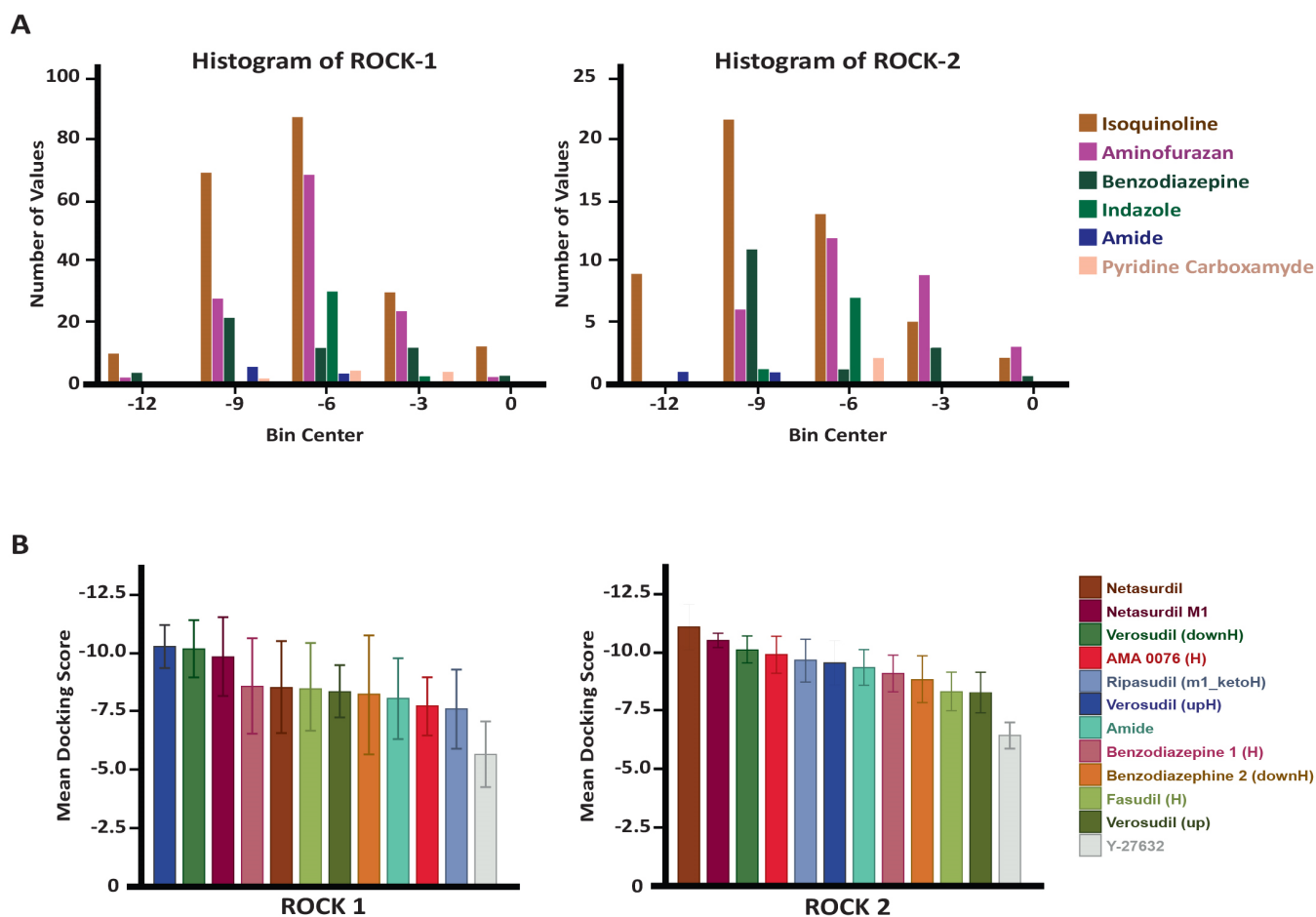


**Supplementary Figure S1.** Semi-automated analysis of endothelial regeneration. (A) and (B) Wounds measuring 3 mm (red dashed line) were stained with trypan blue (day 7 in culture supplemented with AR-13324). (A) peeled wound; (B) scraped wound. (C) & (D) Color Threshold analysis with Image J. The areas circumscribed by the yellow lines were detected and measured in mm<sup>2</sup> by Image J software. Regeneration was measured as the percentage of the area determined by the colour threshold in relation to the area encompassed by 3 mm wound. Scale bars: 500  $\mu$ m.

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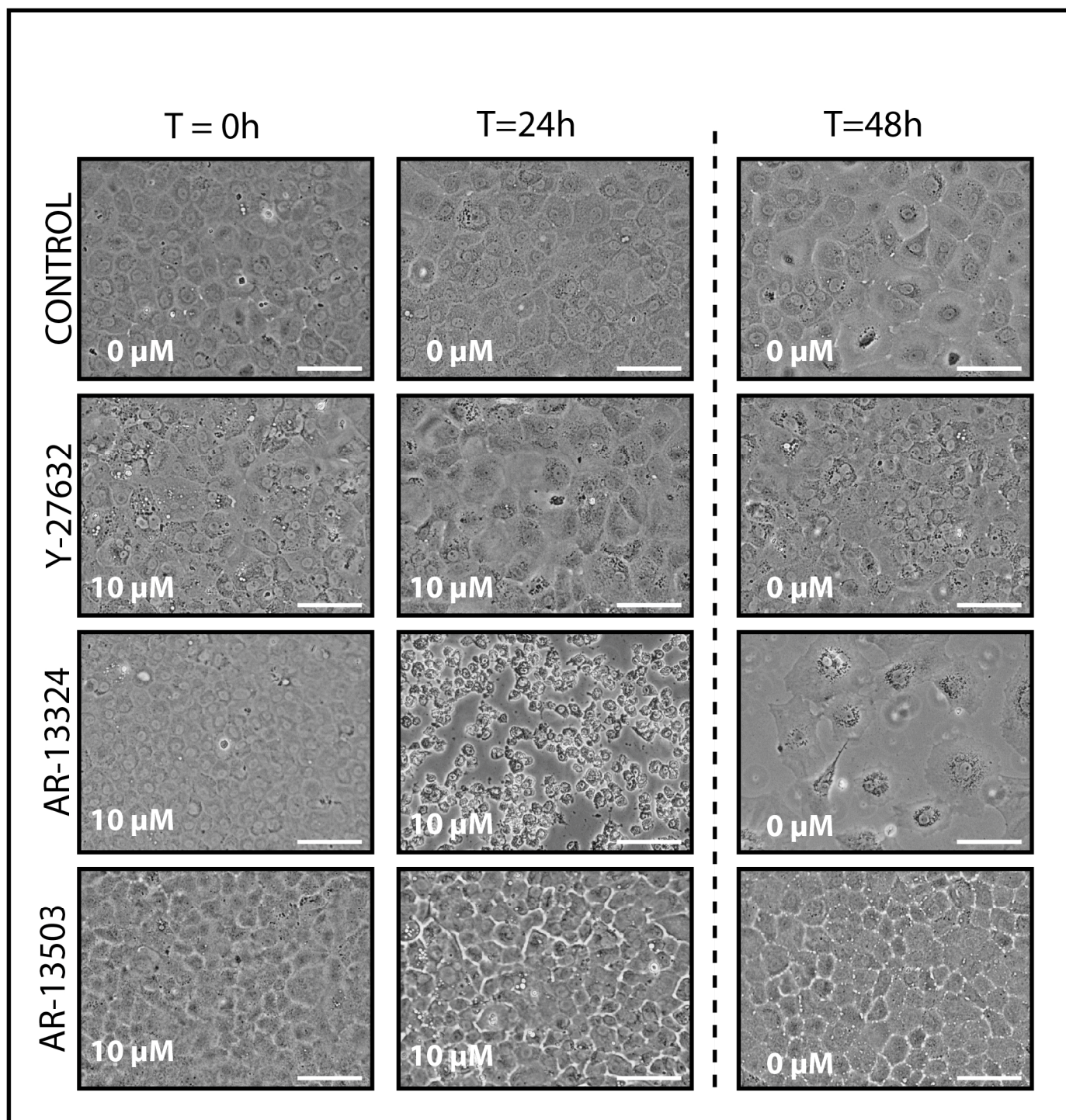
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**Supplementary Figure S2.** *In silico* docking scores of ROCK inhibitors used in this study. Histogram showing the clustered frequency 10 distribution of compounds from ROCK inhibitors from different classes within ranges of docking score for (A) ROCK-1 and ROCK-11 2. (B) Bar chart showing the mean docking scores and standard deviation of the top 10 compounds (out of 46 compounds evaluated) that had the highest docking scores for both ROCK-1 and ROCK-2 and Y-27632.

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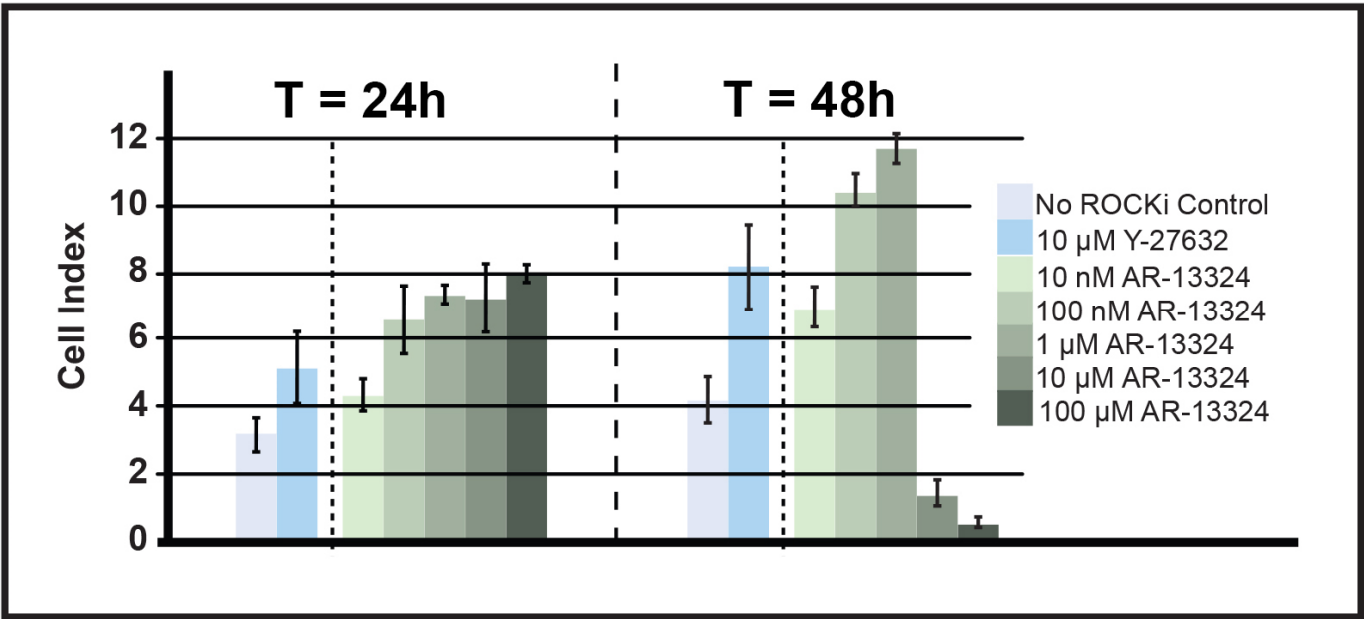
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**Supplementary Figure S3.** Cytotoxic effects of ROCK inhibitors AR-13324 on primary CECs. Dissociated primary CECs (second passage) were seeded and left to attach to establish a monolayer (Time = 0h) before being treated with ROCK inhibitors Y-27632, AR-13324, or AR-13503 at the concentration of 10  $\mu$ M for 24 hours (Time = 24h). Subsequently, ROCK inhibitors were removed with a change of fresh culture medium (depicted by the dotted line) and left for an additional 24 hours (Time = 48h) Scale bars: 100  $\mu$ m.

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**Supplementary Figure S4.** Impedance readings of cellular attachment of CECs in AR-13324. Representative figure showing the effects of the extended range of ROCK inhibitors AR-13324 on primary CECs as recorded by impedance reading with the xCelligence at Time = 24h when seeded without the presence of any ROCKi (No ROCKi Control (light blue)), and in the presence of 10  $\mu$ M of Y-27632 (blue), 10 nM AR-13324 (light green); and 100 nM AR-13324 (remaining 4 CECs populations) for the first 24 hours. On the following day, media were refreshed with the respective concentrations of ROCKi, and its corresponding impedance read-out were subsequently recorded following 24 hours (Time = 48h) of exposure.

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