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An New *ex vivo* Model To Study Angiogenesis

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Angiogenesis is the formation of new blood vessels from pre-existing vasculature. Angiogenesis is essential for embryonic development, wound healing and postischemic tissue repair. Angiogenesis is also associated with diseases like diabetes, psoriasis, and cancer (1). The Vascular Endothelial Growth Factors (VEGF) is a family of secreted glycoproteins that control angiogenesis. Recent studies have shown that different strains of inbred mice have a 10-fold range of response to VEGF-induced angiogenesis (2). Thus, unknown genetic factors must control VEGF responsiveness in mice. The discovery of the genes behind these differences could lead to new angiogenic therapies.

We describe here a new quantitative *ex-vivo* skin biopsy model to evaluate angiogenic response. Our method is unique for the following reasons: First, the microvasculature of the skin is well-suited for angiogenic response because it is a primary site of neovascularization in wounding and the skin is a common site of tumor formation. Second, our skin-based approach is performed on multiple samples per individual, decreasing the potential for biological variation. Finally, because our method is performed on euthanized three-day-old mice, we can perform mapping crosses in an efficient manner. Our preliminary findings have shown that FVB/NJ mice, a mouse strain that has previously shown poor response to VEGF-mediated angiogenesis in other assays, produced the highest amount of blood vessels when compared to C57BL/6J mice.

References:

1. Carmeliet, P. Nature Med. 9, 653–660 (2003).
2. Rohan RM, Fernandez A, Udagawa T et al. FASEB J 2000; 14: 871–86