TO THE EDITOR: We thank the commentators for their insightful remarks and for engaging in important dialog on this issue. In our viewpoint article, we asserted that the cutaneous circulation is an accessible microvascular bed that has utility for examining mechanisms underlying microvascular function and dysfunction (3). Microvascular dysfunction a systemic disease process that occurs and progresses in a similar fashion in multiple tissue beds throughout the body (1). Therefore, assessing the mechanisms mediating impaired cutaneous vasoreactivity in clinical populations may provide insights into systemic disease process as well as the underlying mechanisms of lifestyle and pharmacological treatment modalities. Using in vivo skin specific techniques, we and others have demonstrated that cutaneous vascular responsiveness is attenuated in several systemic pathologies, including hypertension, diabetes, heart disease, hypercholesterolemia, aging, renal disease, peripheral vascular disease, and systemic sclerosis. Furthermore, these mechanistic investigations have uncovered similar alterations in specific signaling pathways remarkably similar to those observed in other nutritive vascular beds. The available pharmacological interventions, coupled with skin-specific methodologies to induce vasoconstriction and vasodilation (2), allow for the targeted manipulation of specific vascular signaling pathways in healthy and clinical populations with a degree of insight and rigor not previously available.

Each regional circulation possesses autonomic and localized control mechanisms unique to their underlying functions. It is naive to think that one could simply extrapolate specific findings from one regional circulation to another or from the microcirculation to macrocirculation. While the underlying mechanisms mediating vasoreactivity to specific stimuli can be different in different vascular beds (e.g., reactive hyperemia in skin vs. muscle: Refs. 4, 5), we and others have been able to systematically delineate to signaling mechanisms involved in the skin and how they are altered with various pathologies. It is clear that additional rigorous mechanistic research is necessary to more fully understand the impact of the local tissue environment on microvascular control and the generalizability of findings about specific impairments in vascular signaling in the cutaneous circulation to other microcirculations.

REFERENCES