I am delighted to enthusiastically endorse the unique technology of Theraworx, from Avadim Technologies, Inc. . Our laboratory at the University of California San Francisco and the San Francisco Veterans Administration Hospital is actively studying the origins, functions and clinical implications of the skin's 'acid mantle'. Long thought to originate from exogenous sebaceous gland-derived free fatty acids, we showed that four endogenous mechanisms contribute to the strikingly low, pH of normal stratum corneum (the degradation of phospholipids to free fatty acids; the deimination of filaggrin-derived amino acids into polycarboxylic acids; the sodium-proton antiporter type 1; and melanin granule extrusion). Because of differences in their subcellular location, each of these mechanisms regulate different critical functions of the skin. The key functions of the cutaneous acid mantle include: 1) epidermal permeability barrier homeostasis; 2) stratum corneum integrity and cohesion; 3) antimicrobial defense; and 4) antiflammatory activity. Please find attached a recent review article which briefly summarizes our research findings and its clinical implications. Note: this review article follow in the reference documents, no. , pp )

This spectrum of activities in normal skin suggests broad applications for pH-related technology in clinical arenas ranging from infection control to prevention and treatment of inflamed skin. These benefits form the basis for Avadim's unique, pH-dependent technology. We have evaluated the impact of Avadim's Theraworx technology in normal human and hairless mouse skin, and found that topical applications indeed reduces the surface pH of the skin significantly; i.e., from an average of 5.5 to 4.5-5 (note that pH is an exponential function, and this decline translates into a 5-10-fold increase in the proton concentration within the stratum corneum. We have also compared the Theraworx product to Hibiclens in normal hairless mouse skin, and found that the latter does not achieve a comparable reduction in pH, and that it was more drying than the former.

These findings imply that the pH-dependent technology embodied in Theraworx products should provide superior benefits for antimicrobial defense (note that pathogenic flora, like *S. aureus* and *S. pyogenes* grow avidly at a high pH, while the cutaneous normal flora prefer a low pH); enhanced permeability bsarrier function; optimal cutaneous integrity and cohesion; and decreased propensity to develop inflammation. Based upon these studies, I believe that Avadim's novel pH-dependent technology, as embodied in Theraworx formulations, is very worthy of recognition in the form of a Breakthrough Technology Award. Please let me know, if you would like further information about our work in the pH arena, or our pre-clinical studies with the Theraworx formulations.

Sincerely,

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