Skin Scan Digital Dermoscopy Skin Cancer Training Software

William V. Stoecker[1], Sherea Stricklin[1], Elizabeth Black[1,] Randy H. Moss[2] , R. Joe Stanley[2], Bijaya Shrestha[2]

[1]Stoecker & Associates; [2] Missouri S&T

Skin Scan digital dermoscopy skin cancer detection software, developed by Rolla's S&A in collaboration with Missouri S&T, can now detect critical features of early melanoma. There is also a need for diagnostic help for the other 95+% of skin cancers. The need for diagnostic improvement in screening for skin cancers may be greatest for those nurse practitioners who now see the majority of elderly patients in some underserved areas. Underserved clinical arenas with a greater than average incidence of skin cancer and a significant number of nurse practitioners include both civilian and military clinics in the rural Midwest, where S&A is located. This innovative software is a timely development designed to solve problems every healthcare consumer has encountered: too long a wait to get specialty care, uncertainty about the diagnosis when one does get the care, and too much overall expenditure in providing the care.

Our ongoing research includes a completed Phase II project in melanoma detection and a Phase I study for basal cell carcinoma, submitted December, 2009. The BASAL features for basal cell carcinoma (Blue-gray ovoids, Arborizing telangiectasia, Semitranslucency, Atraumatic ulceration, and Leaf-like structures/dirt trails), described by Stoecker and Stolz, Archives Dermatology 2008, will be programmed during Phase I of the new proposal and incorporated in our early detection system.   Additional work during Phase I will allow acquisition of more clinical and dermoscopy images, will allow training of the first nurse practitioner, and will allow development of a hierarchical neural network for diagnosis of basal cell carcinoma.

With over a decade of development, using thousands of images from dermatology practices in the United States and Europe, Skin Scan at the end of the Phase II research period will have demonstrated effectiveness in an early cancer detection clinical trial. This trial provides a bridge to market for a product that will result in increased access to high quality care by providing automated diagnostic assistance for the most deadly skin cancer, melanoma, and the most common skin cancer, basal cell carcinoma, through its ability to detect key early features of these skin cancers. The software is designed to guide the non-specialist nurse practitioner or physician assistant, helping to make the biopsy/no biopsy decision, the most critical decision in early detection of skin cancer.