Measuring Epidermal Thickness
• Create a VivaStack Profile with 3 um step sizes that images to 100 um deep.
• Locate a flat area of skin with no skin lesions, large wrinkles, hair follicles or sweat ducts.
• Step the objective above the surface of the skin (see example on right)
• Locate an image similar to the example, and take two more steps ABOVE this so the image is VERY out of focus.
• Capture the stack
• Repeat in 2-4 other similar locations
How to Measure

- Open the stack of images.
- Locate the surface of the stratum corneum as described on slides 4-5.
- Record the image number.
- Step through the VivaStack until you locate the BOTTOM of the rete (between the dermal papillae) as shown in slide 6. You should not be able to see any basal cells between the papillae.
- Record the image number.
- Subtract the final image number from the first image number.
- Multiply the value by 3, which is your step size in microns. This is your final thickness.
- Repeat this procedure for remaining stacks to obtain an average.

Circled areas show an absence of basal keratinocytes between the papillae.
Image 26 from VivaStack
Surface of skin NOT in focus

Image 27 from VivaStack
Surface of skin ALMOST in focus
Surface IN FOCUS

This image is too deep, so Image 28 is the surface of the skin.
Locate the Bottom of the DEJ

Image 43 from VivaStack
Image too shallow, keratinocytes still visible

Image 53 from VivaStack
Keratinocytes no longer visible. This is the bottom of the DEJ.
Image 53 - Image 28 = 25 steps
25 steps x 3 um = 75 um epidermal thickness