Investigation on the influence of the skin tone on Hyperspectral Imaging for free flap surgery

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Supplement 8:

MatLab Program for conversion of RGB values to LAB and calculation of ITA.

```
%% Extraction of RGB values

        R = mean(squeeze(double(ROI_RGB(:,:,1))),'all');
        G = mean(squeeze(double(ROI_RGB(:,:,2))),'all');
        B = mean(squeeze(double(ROI_RGB(:,:,3))),'all');

        % STD
        Rc = squeeze(double(ROI_RGB(:,:,1)));
        Gc = squeeze(double(ROI_RGB(:,:,2)));
        Bc = squeeze(double(ROI_RGB(:,:,3)));

        Rstd = std(double(Rc(:)));
        Gstd = std(double(Gc(:)));
        Bstd = std(double(Bc(:)));

        RGB = [R G B];
        RGBstd = [Rstd Gstd Bstd];

% RGB values normalized to 0-1 by division with 255 (rgb2lab function needs value
range from 0 - 1 -> see function documentation)

      LAB=rgb2lab(RGB./255,'WhitePoint','d50','ColorSpace','srgb');

% Calculation of ITA as in:
% S. Del Bino und F. Bernerd, "Variations in skin colour and the biological
consequences of ultraviolet radiation exposure", Br J Dermatol, Bd. 169, S. 33-40,
Okt. 2013, doi: 10.1111/bjd.12529.

      ITA = atan((LAB(1)-50)/LAB(3))*180/pi;
```