

## Stellingen

1. Extending the commonly used wavelength range of 500 to 1000 nm up to 1600 nm enables the measurement of additional absorption peaks of water and lipid with absorption values that are an order of magnitude higher than those in the lower wavelength region. (Chapter 3)
2. Judging on the confidence intervals computed for each estimated parameter, having an additional spectrometer to measure up to 1600 nm provides up to four times higher confidence on the estimation of the water and lipid related parameters due to the presence of additional absorption features above 1000 nm. (Chapter 3)
3. The relation to the ratio between sampling volume and diffusion length is obvious: when sampling larger volumes, inhomogeneities cause spatial changes in fluence rates that diffusion theory mistakenly interprets by assuming incorrect optical properties. (Chapter 1)
4. By applying ultrasonication to phantoms to shrink the particle size, the slope of the reduced scattering increased without affecting the estimation of water and lipid content (Chapter 2)
5. In comparison to MR spectroscopy, high accuracy of fat estimation is reached with NIR spectroscopy in a much shorter acquisition time however it has the disadvantage of being invasive whereas MR spectroscopy is non-invasive (Chapter 4)
6. Lipid is a much better adipose tissue discriminator with sensitivity–specificity of 98%-99% for lipid versus 68%-92% for  $\beta$ -carotene. (Chapter 8)
7. A comparison of different classification techniques to discriminate malignant and non-malignant tissue showed varying performance that can highly depend on the classification algorithm. (Chapter 8)
8. Ultimately, incorporation of diffuse reflectance spectroscopy technology into biopsy needles may improve tip localization of the biopsy needle within the tissue compared to image-guided localization. (Chapter 7)
9. I love those who yearn for the impossible. (Goethe)
10. It is a very sad thing that nowadays there is so little useless information. (Oscar Wilde)
11. Imagination is intelligence with an erection. (Victor Hugo)
12. A little knowledge that acts is worth infinitely more than much knowledge that is idle. (Khalil Gibran)