**Spectroscopic Pathology Pictorial Documentation**

Version 2, November 2022

## Purpose

The purpose of this document is to provide insight into the desired procedure to collect skin data using a spectroscopic probe. Images are provided to describe each step.

## Setup

The physical setup can be seen below. The stage moves in the x and y using manual fine control knobs. The stand moves in the z using manual knobs. The probe is placed in the stand and the sample is placed on the stage.

A picture containing window

Description automatically generated

Stage

Probe

Stand

## Procedure

1. Place a clear plastic grid on the stage
2. Place the skin specimen in the centre of the stage
3. Optical imaging (photography) of specimen. Please ensure the specimen and grid are full visible.
4. Position the region of interest (ROI) under the probe. The laser should directly illuminate the ROI. Knobs can be used for fine tuning.

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Description automatically generated

1. Once in position. Tell the operator the tissue label. (Cancer, healthy)
2. For each ROI, the area can be sampled as follows
   1. Operator will record a 1 second sample from the spectroscope at each stationary location or
   2. Operator can start the recording and the ROI can be continuous recorded.

Note:

* Point collection takes multiple readings per spatial location, increasing signal to noise ratio.
* Continuous collection is much quicker and is beneficial for larger samples.

1. Data is saved and labeled after each recording.
2. Repeat steps 4 to 7 for each ROI

**Spectroscopic Pathology: Full Documentation**

Version 2, November 2022

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## Setup

The physical setup can be seen below. The stage moves in the x and y using manual fine control knobs. The stand moves in the z using manual knobs. The probe is placed in the stand and the sample is placed on the stage.

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Stage

Probe

Stand

Physical

1. Plug in the light source (40 minute warm up time recommended)
2. Connect the spectrometer to the light source via the red optical cable
   1. Note the optical cable is unidirectional so ensure the “Light source” line is connected to the source and the other end to the spectrometer
3. Connect the spectrometer to the computer using the USB-A to Micro USB
4. Set up the stage and the stand in the above configuration
5. Place the optical probe vertically in the stand

Software

1. Start PLUS server
2. Open 3D slicer
3. Navigate to Spectroscopy -> Broadband Spectroscopy



1. Click connect button to initialize IGT connections

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1. Select the root save location



## Procedure: For each patient

1. Select the Patient Label



## Procedure: For each sample

1. Place a clear plastic grid on the stage (or tissue paper)
2. Place the skin specimen in the centre of the stage
3. Optical imaging (photography) of specimen. Please ensure the specimen and grid are full visible.
4. Position the region of interest (ROI) under the probe. The laser should directly illuminate the ROI. Knobs can be used for fine tuning.

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Description automatically generated

1. Once the doc has confirmed they are in position. Select the class under Data Collection, class selector. (Cancer, healthy)

Table

Description automatically generated with medium confidence

1. Collect the data: either,
   1. If point measurement is desired, select required duration (seconds) and click ‘Collect Sample’.





* 1. If sample is large, click continuous scan to start a continuous recording. When the doc is done, stop the recordings.



Note:

* Point collection takes multiple readings per spatial location, increasing signal to noise ratio.
* Continuous collection is much quicker and is beneficial for larger samples.

1. Data is saved into path and labeled with format
2. **Clean up:** 
   1. Wipe down the plastic grid with a sterilizing wipe
   2. Or throw out and replace the tissue

## Packing up

1. Ensure all equipment touched by tissue has been cleaned
2. Unplug all equipment
3. Store equipment in labeled boxes for transportation