MCC Calculator Workflow Procedures: REG / CBF / ASL

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## Installation & Setup Prerequisites

- MATLAB installed and properly licensed

- Access to sample datasets / image sets used by MCC tools

- Sufficient disk space for importing and exporting image sets

MATLAB Requirements

- MATLAB R2020b or later

- Image Processing Toolbox

- Signal Processing Toolbox (for CBF analysis)

- Parallel Computing Toolbox (recommended for REG tool)

Procedure - MCC_Calculator_REG - Elastic Registration

1. Launch **RegCalculator.mlapp**.
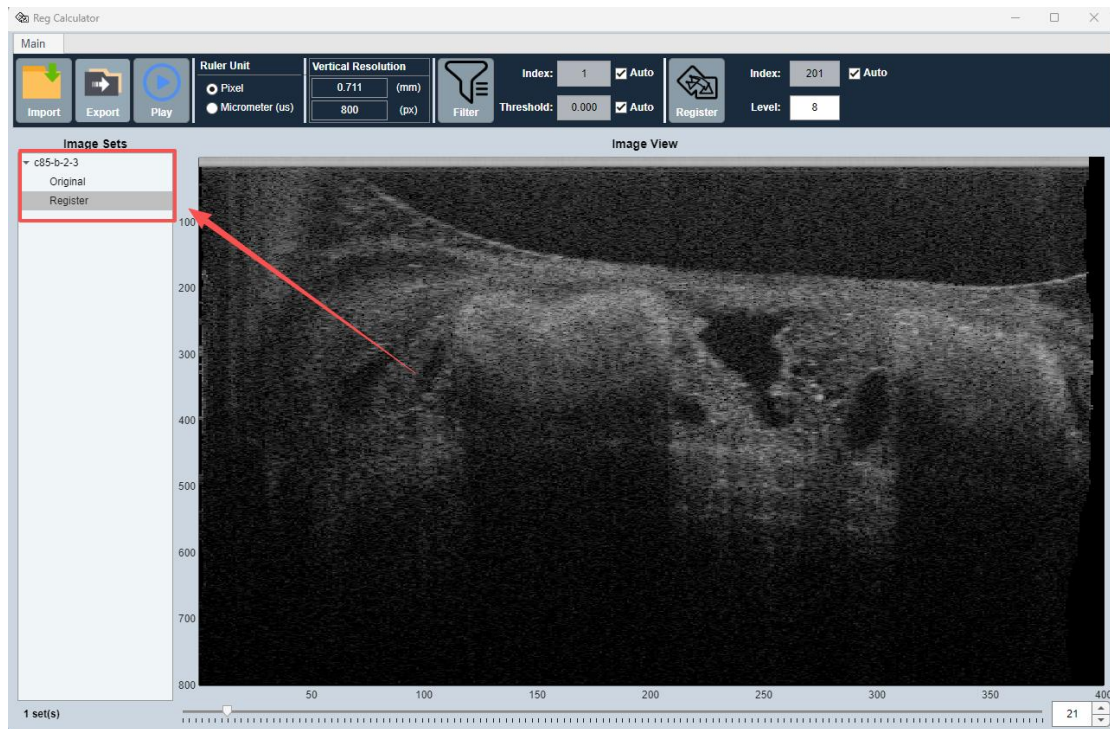2. Click **Import** to load the image set.
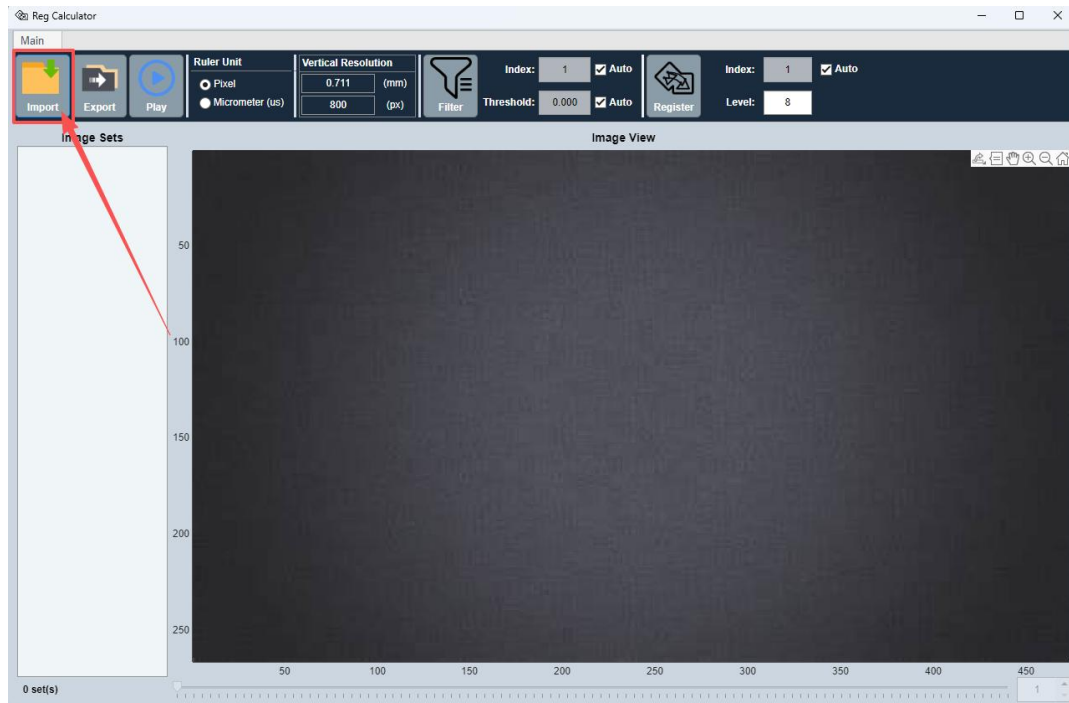
3. Browse and select the **target sample data folder**.
4. The **reference image** and **threshold** will be calculated automatically. Click **Register** to start elastic registration.
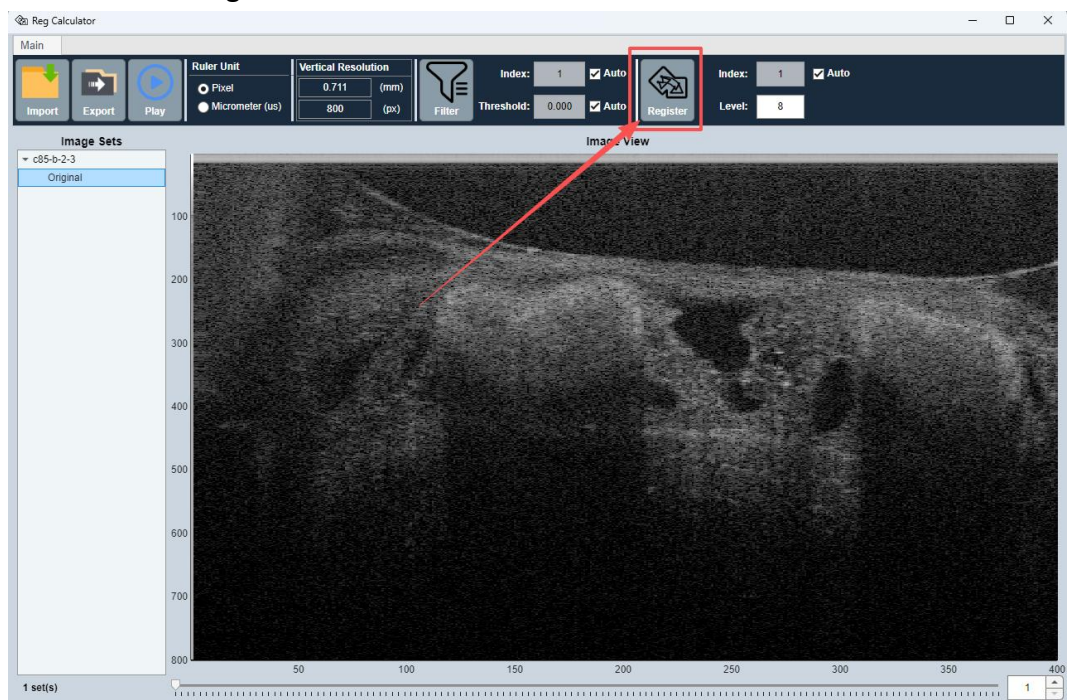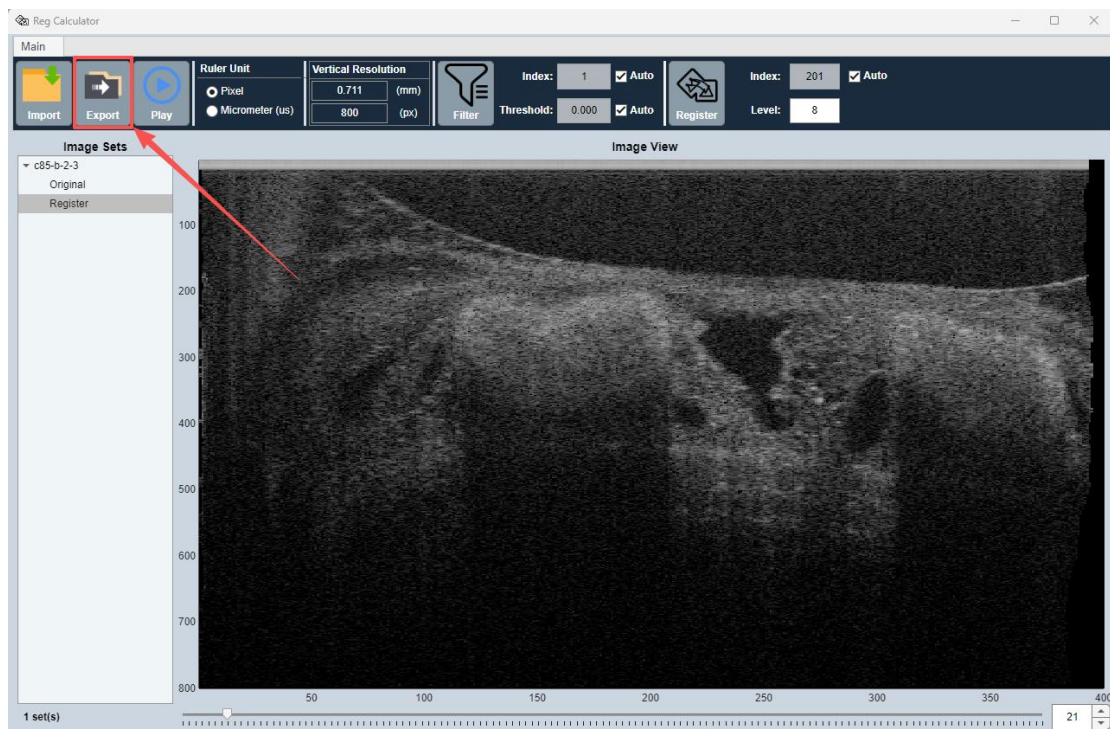
5. Wait for the registration to complete (typically **5 – 8 minutes**, depending on dataset size and PC performance).

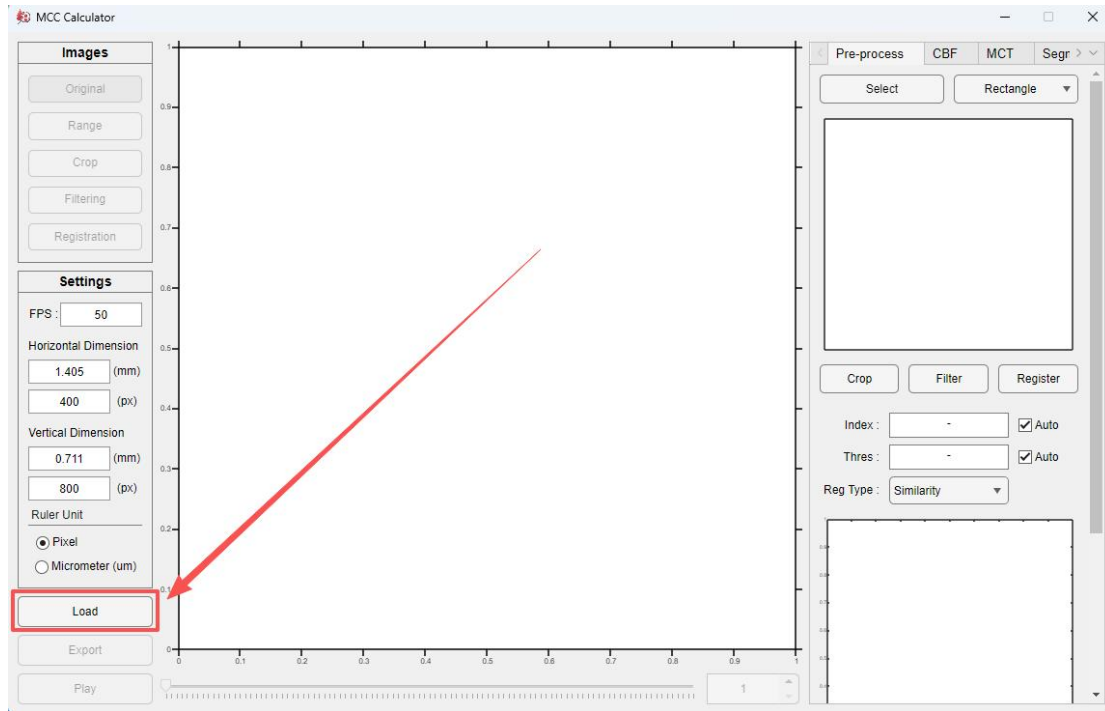6. Review the registered results in the **left preview panel**.

7. Click **Export** to save the registered image set for further processing.
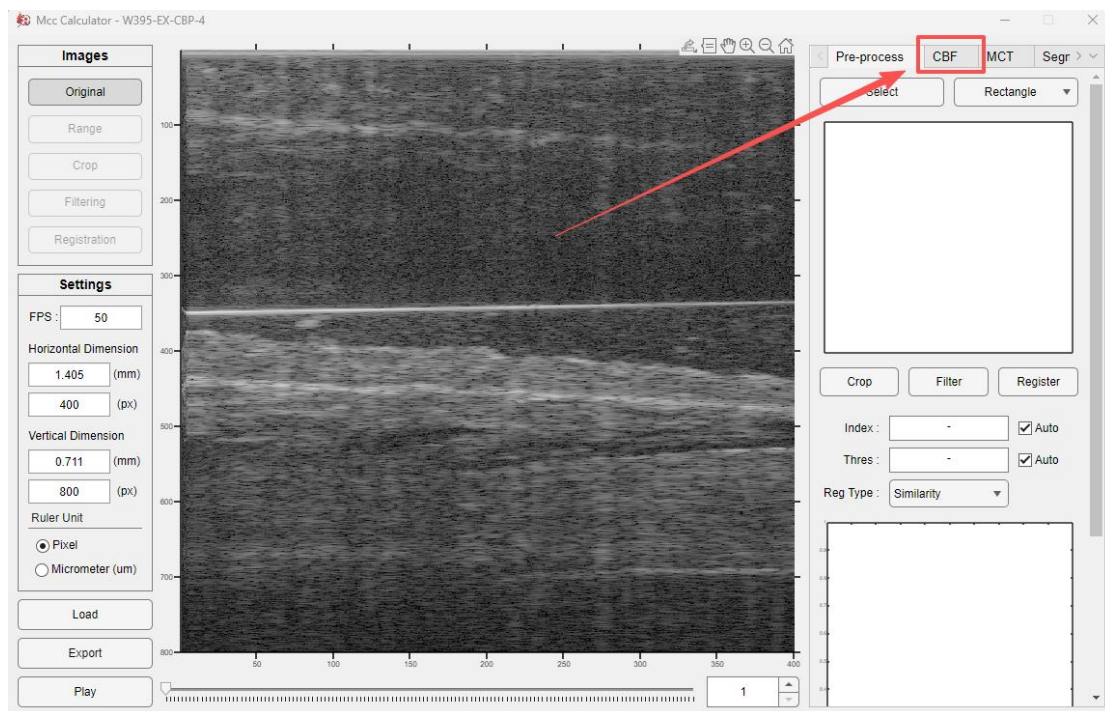
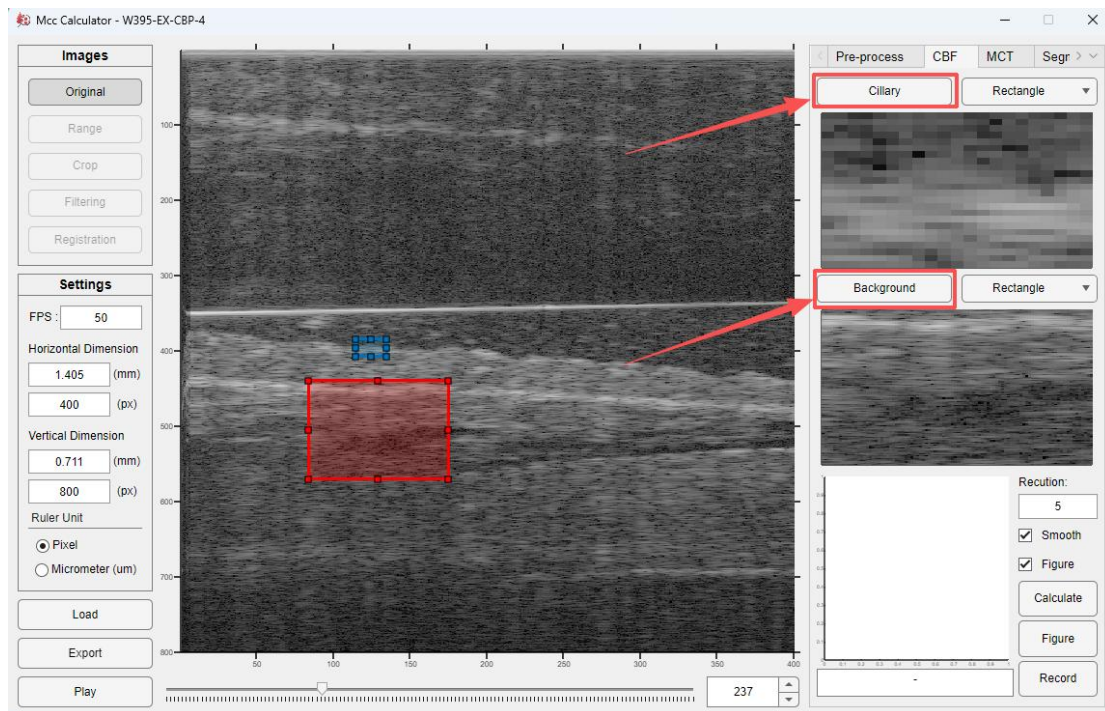# Procedures - MCC_Calculator_4 - CBF Measurement

1. Launch **MccCalculator.mlapp**.
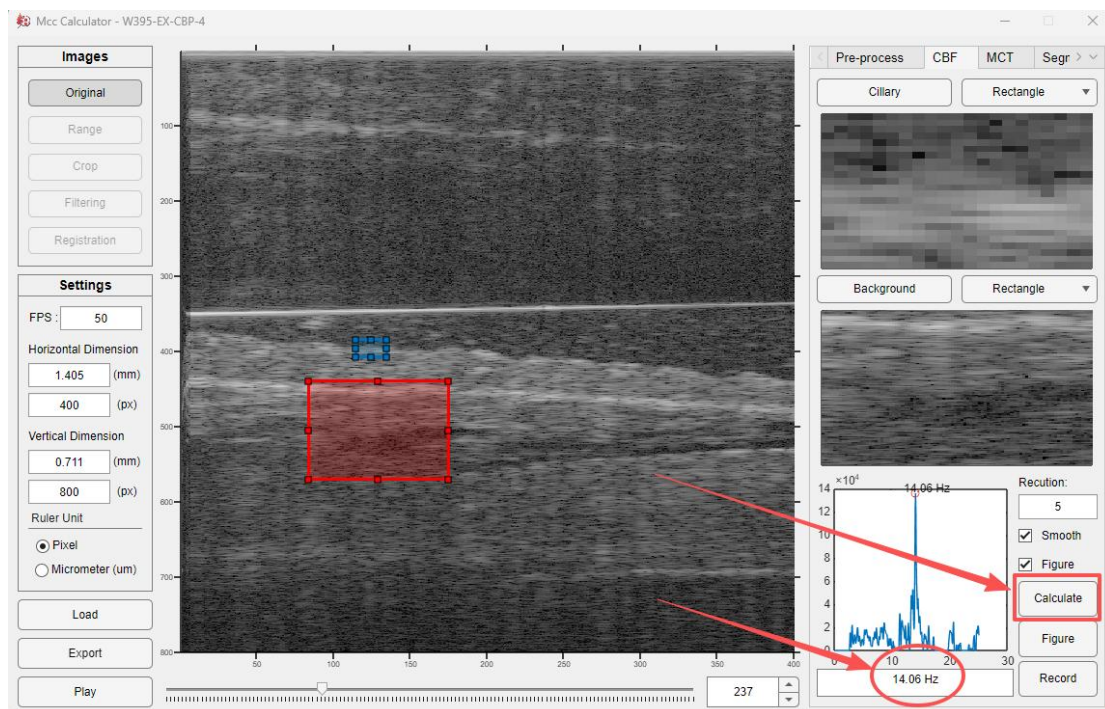2. Click **Load** to import the image set.

3. Browse to and select the target sample data folder.
4. Go to the **CBF** tab (top-right corner of the interface).

5. Using dynamic observation of the image sequence, manually define:
   (1) the **cilia region** (ROI), and
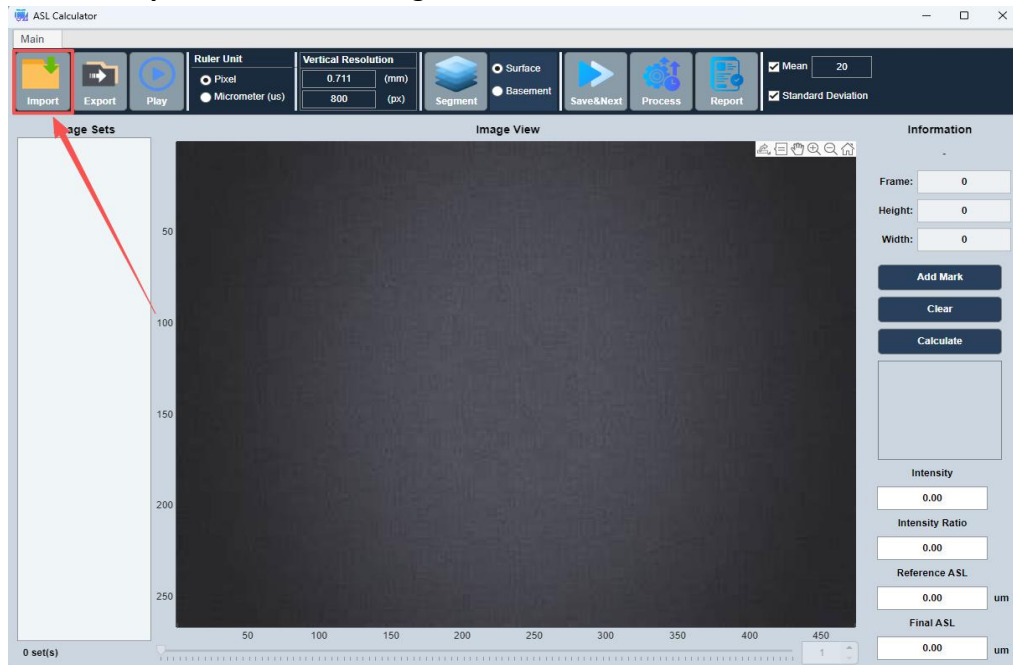   (2) a **background region** (ROI) for reference.

6. Click **Calculate** to run the CBF computation.
7. The calculated CBF result will be displayed in the textbox at the bottom-right of the interface.
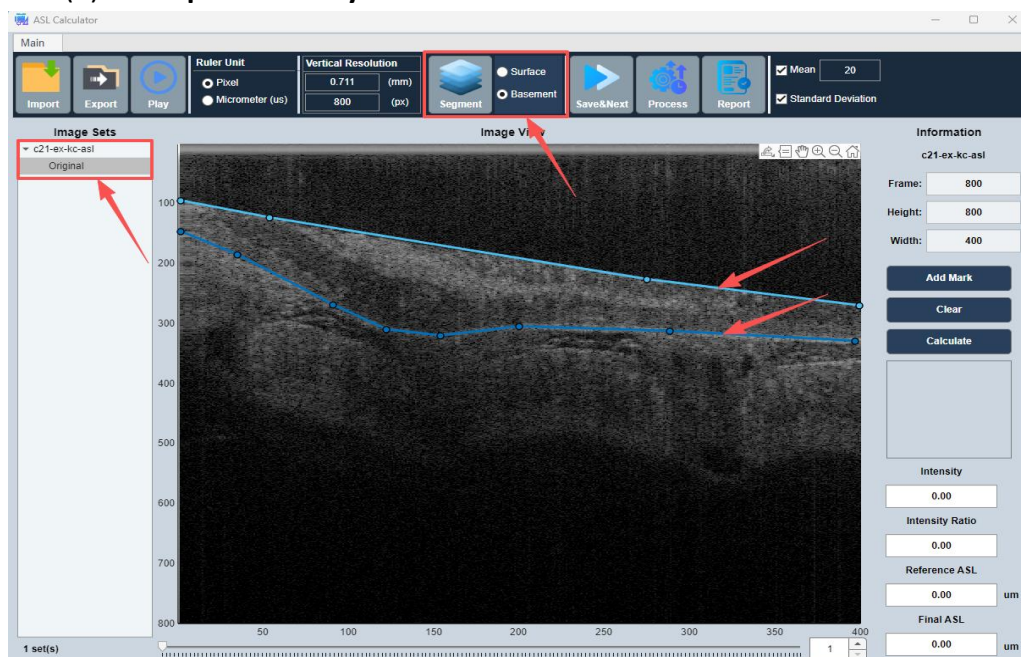
Procedures - MCC_Calculator_4 - ASL Measurement

1. Launch **ASLCalculator.mlapp**.
2. Click **Import** to load the image set.

3. Browse to and select the target sample data folder. Choose the node to load original image set from **left panel**.

4. Click **Segment** on the ribbon bar, then manually segment (draw) the two layers in the image:

    (1) the **upper surface layer**, and

    (2) the **epithelium layer**.

5. Click **Process** to start the ASL measurement.

6. Wait about **2 minutes** for layer segmentation/processing to complete.

7. Review the calculated reference ASL under the "**ASL**" node in the left panel. The ASL thickness result will be displayed in the **textbox at the bottom-right** of the interface.