

Pt2, voiceover

00:00

The following analysis in *IsletNet* generated the results summarised in Fig 6.

00:04

The re-trained *IsletNet* model is compared to the original model, with both training dates stated.

00:10

In this clinical isolation, high, medium, and low purity fractions were collected.

00:17

The first high purity fraction is represented by three sample images.

00:22

In the visual QC window we explore the contours of the first sample image **1VC1_H1**, by moving, zooming, and toggling the contour display on and off.

00:30

The contour placement is valid except for three islets with failed separation of adjacent islets, which were manually added and submitted.

00:50

The image was automatically re-analyzed and marked blue in the Inspection window.

00:56

Now, we proceed with the next sample image **1VC1_H2** to the visual Quality Control window. Contour placement was valid, but one islet separation line was added.

01:15

We proceed to the third sample image **1VC1_H3**. One automatic separation line is slightly misplaced but acceptable. A large islet is split into three, which is invalid. This error that is impossible to correct manually and the image was excluded.

01:34

Now we move to the original model to compare the results on the same three images.

01:39

In the first image, the contours were slightly more conservative and six separation lines needed to be added.

01:49

The second image again required addition of one separation line.

01:55

In the third image, displayed the same slightly misplaced separation line as well as the incorrect

splitting of the large islet. The sample was removed.

02:13

Now we move back to the re-trained model.

02:16

The first sample image **1VC2_H1** from the second high purity fraction batch contains an islet located under a bubble, but its contour is correct.

02:23

There are several small islets with apparently missing contours. However, they are present on the islet segmentation view, which means that their sizes are below the 50 μm threshold. The contours are shown only for islets that are counted.

02:40

Also the contours on the remaining images were considered valid.

02:55

Now we move to the original model, which failed to identify correctly the islet under the bubble. The next image required addition of a separation line. Contours in the third one were considered valid.

03:15

We move back in the re-trained model, to the medium purity fraction batch. It is challenging due to the presence of exocrine tissue.

03:20

In the first sample image, even the embedded islets have valid contour placement.

03:26

The same is true for the remaining two sample images.

03:43

Now, we move to the original model for comparison. Here exocrine tissue was mistaken for islets in all the images and the samples were excluded.

04:03

Back in the re-trained model, after reviewing the remaining images, we open the Summary.

04:09

In the last column we can see that there batches were finally represented by two replicate samples only.

04:17

The Report PDFs were downloaded.

04:21

The summary from the original model shows that only the high purity batches generated useful results.

04:29

Back in the re-trained model, the *Complete Report* shows contour visualization, including manual modifications, which are summarised at the bottom of each sample image page.

04:45

The values generated on the excluded images are shown in black and are not part of the final islet count.

05:54

The report presents technical information as well as the analysis of individual batches, including the number of used images.

05:00

At the top of the Report, there is the final summary specifying the yield, pellet, islet size index, and histogram.

05:08

In comparison to manual counting, IsletNet was slightly more conservative, especially with embedded islets, dependent on the subjective assessment by the manually counting expert.

05:08

END