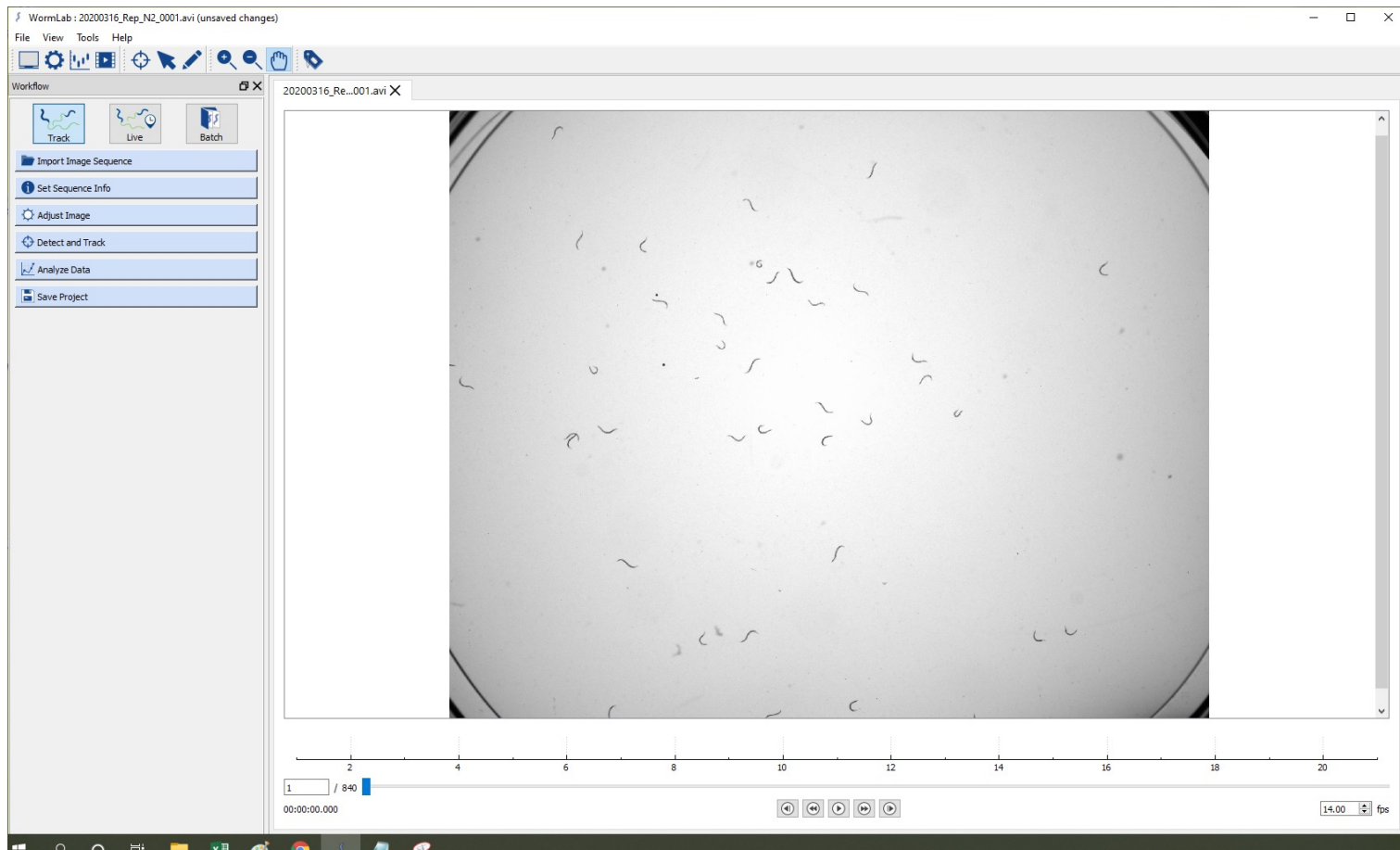


A



B

The screenshot displays the WormLab software interface. The main window shows a video frame titled "20200316_Re...001.avi" containing several small, dark, worm-like organisms. Below the video frame is a timeline with a scale from 0 to 20 and a play button. The interface includes a menu bar (File, View, Tools, Help), a toolbar, and a workflow panel on the left with buttons for Track, Live, Batch, Import Image Sequence, Set Sequence Info, Adjust Image, Detect and Track, Analyze Data, and Save Project. A red dot is visible on the left side of the workflow panel. On the right, the "Sequence Info" panel displays the following details:

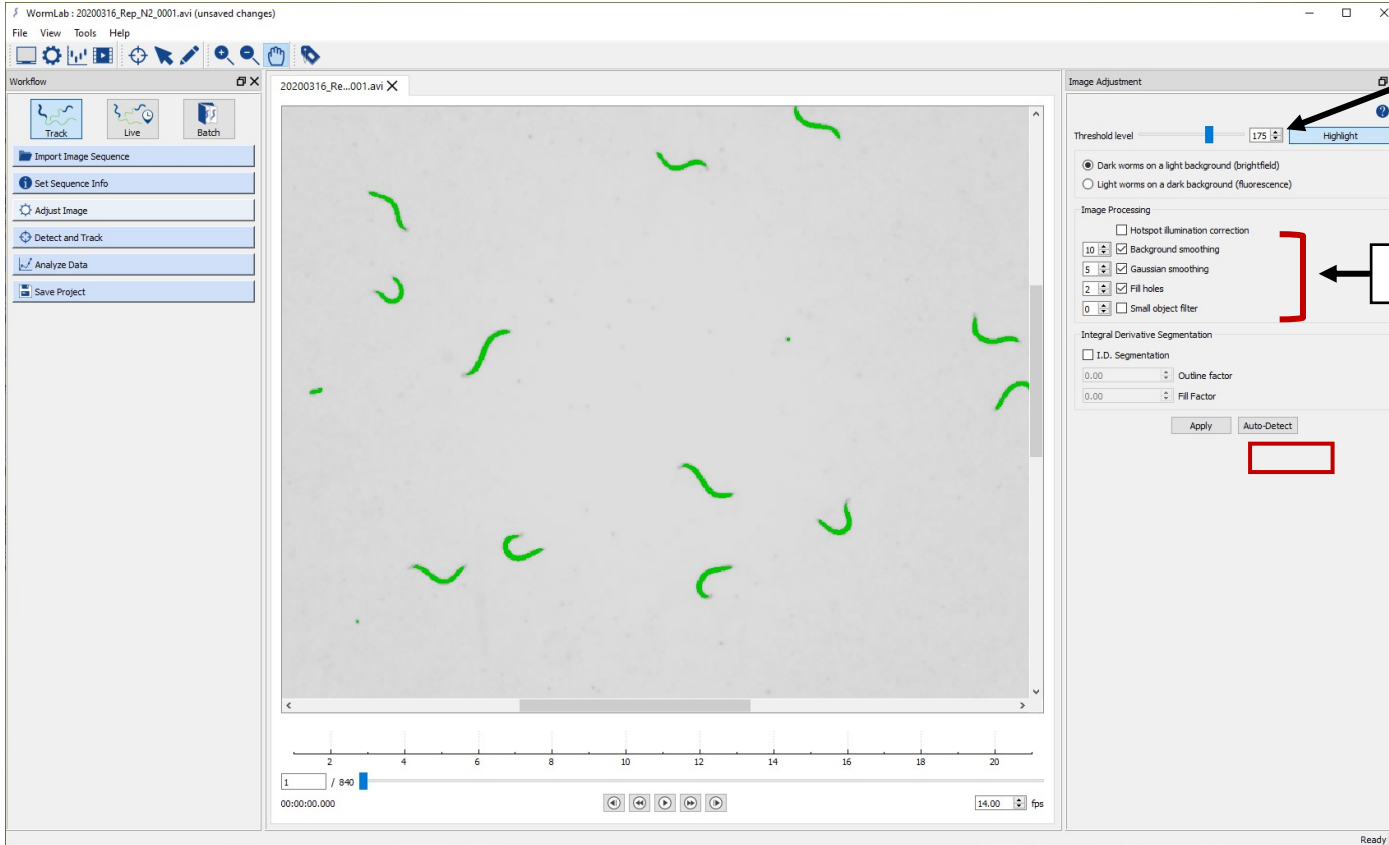
Name: 20200316_Re_N2_0001.avi
Add notes here
Notes:
Filename: 20200316_Re_N2_0001.avi
Creation time: Mon Mar 16 15:00:28 2020
Codec: mpeg4
Frame width: 2456
Frame Height: 2052
Frame rate encoding: Fixed
Captured frame rate: 14.00 fps

Scaling
Scale: 11.43 $\mu\text{m}/\text{pixel}$
Measure: 1000 μm is 87 pixels

1. Use a video image with a horizontal mm ruler
2. Click the Measure button to set the scaling
3. To measure, click and drag to draw a measure line on the image. The software will count the number of pixels.
4. After you release the mouse, the scaling is updated.

Buttons: Cancel, Save

C



Set threshold such that worms are green

Image Processing Settings

Apply

D

The screenshot displays the WormLab software interface. The main window shows a video frame with several worms. Some worms are highlighted in green, indicating they have been detected. A red box highlights the 'Detection' tab in the 'Detection and Tracking' panel, and a red arrow points to the 'Detect worms' button. The 'Detection Parameters' section includes fields for Area, Length, Width, Width/Length ratio, Detection Fit, and Registration Fit, each with minimum and maximum values. The 'Advanced' and 'Worm Shape' sections are currently collapsed. The bottom of the interface shows a timeline with frame numbers (254, 256, 258, 260, 262, 264, 266) and a playback control bar.

Workflow:

- Track
- Live
- Batch
- Import Image Sequence
- Set Sequence Info
- Adjust Image
- Detect and Track
- Analyze Data
- Save Project

Detection and Tracking:

- Detection
- Tracking
- Repair
- Detect worms
- Delete worms: This frame All frames
- Detection Parameters
 - Detect worms at the edge of the image
 - Area: Min: 90.06, Max: 2032.87
 - Length: Min: 40.44, Max: 89.72
 - Width: Min: 3.04, Max: 6.96
 - Width/Length ratio: Min: 0.04, Max: 0.12
 - Detection Fit: Min: 0.49
 - Registration Fit: Min: 0.25
- Advanced
- Worm Shape

263 / 840
00:00:18.714
14.00 fps
Worm Detected

1. Use cursor to select several worms
2. Click "Detect Worms"
3. Wait for most worms to be highlighted in green

E

The screenshot displays the WormLab software interface. The main window shows a video frame with several worms. The interface includes a menu bar (File, View, Tools, Help), a toolbar, and a workflow panel on the left. The workflow panel has buttons for Track, Live, and Batch, and a list of steps: Import Image Sequence, Set Sequence Info, Adjust Image, Detect and Track, Analyze Data, and Save Project. The 'Save Project' button is highlighted with a red box. A red dot is placed next to the 'Save Project' button. The 'Detection and Tracking' panel on the right is also visible, with the 'Tracking' tab selected and highlighted by a red box. A red vertical line is drawn next to the 'Tracking Parameters' section of the panel. A text box labeled 'Tracking Settings' is positioned to the right of the panel. The video frame shows a timeline at the bottom with frame numbers 254, 256, 258, 260, 262, 264, 266, 268, 270, and 272. The current frame is 263, and the total frames are 840. The video is playing at 14.00 fps. The status bar at the bottom right shows 'Ready'.

Workflow

- Track
- Live
- Batch

Import Image Sequence

Set Sequence Info

Adjust Image

Detect and Track

Analyze Data

Save Project

20200316_Re...001.avi X

Detection and Tracking

Detection **Tracking** Repair

From frame 1 to 840

Restrict tracking to labelled region

Start Pause Stop

Tracking Parameters

Use back tracking

Track worms at the edge of the image

Max tracked hypotheses 5

Exhaustive hypotheses search

Tracking Mode

Crawling

Swimming

Advanced

Frames worms can touch boundary 50

Frames worms can overlap 500

Position tolerance 0.50

Shape tolerance 0.50

Track Filtering

Minimum track duration (frames) 420

Copy parameters to Clipboard

254 256 258 260 262 264 266 268 270 272

263 / 840

00:00:18.714

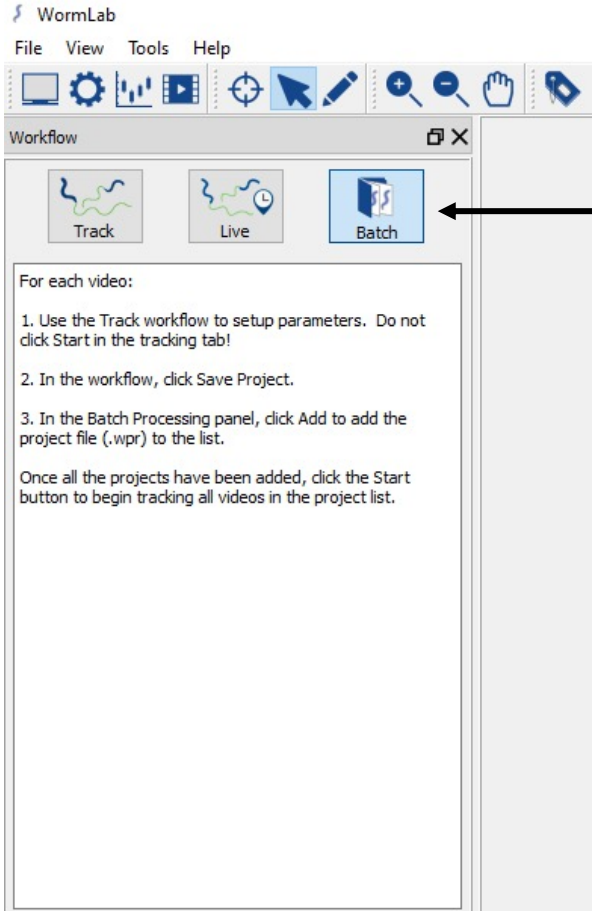
14.00 fps

Ready

Save as project when done!

Tracking Settings

F



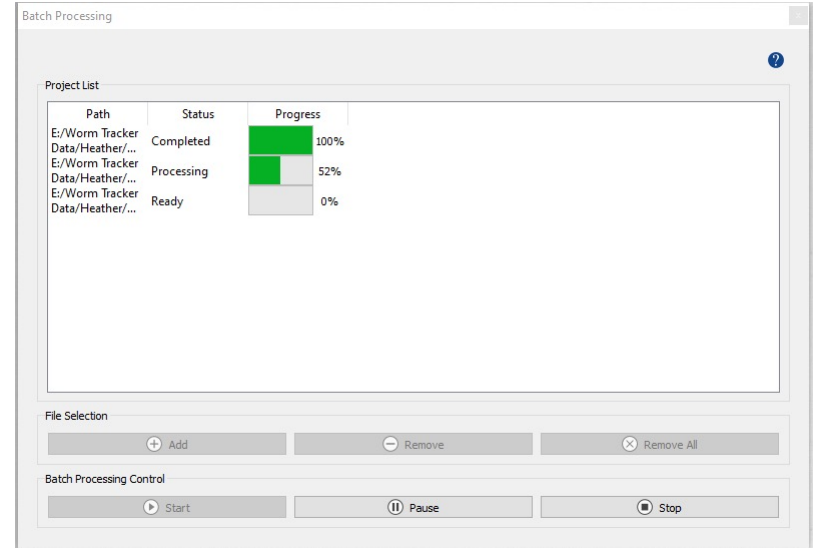
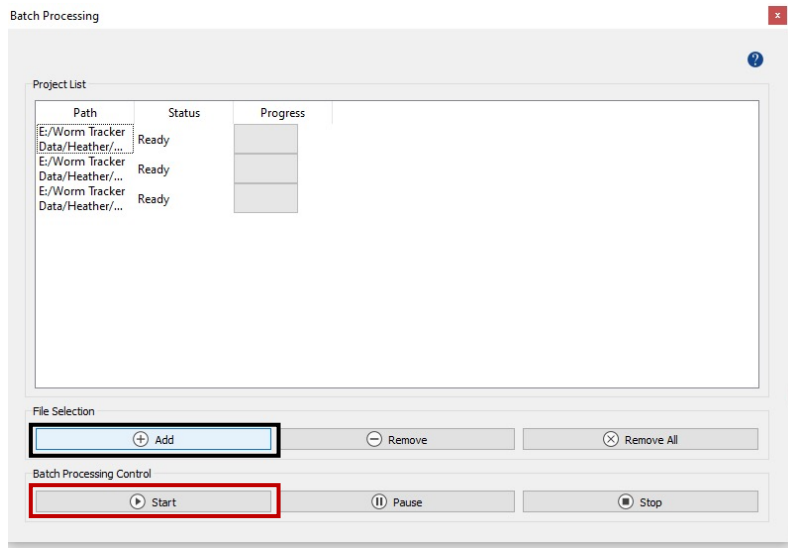
Move to the Batch Workflow

For each video:

1. Use the Track workflow to setup parameters. Do not click Start in the tracking tab!
2. In the workflow, click Save Project.
3. In the Batch Processing panel, click Add to add the project file (.wpr) to the list.

Once all the projects have been added, click the Start button to begin tracking all videos in the project list.

G



Add Project Files,
Click "Start" to Run