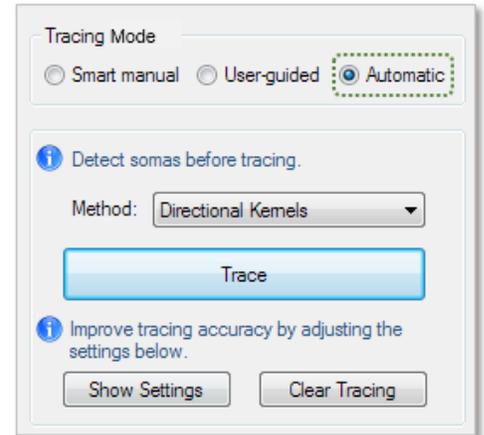


Before you start

- You already loaded your image stack/series of images.
- If applicable, detect somas.
- Click the **Tree** button to display the **Trace Trees** panel.
Under **Tracing Mode**, select **Automatic**.

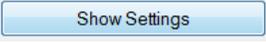


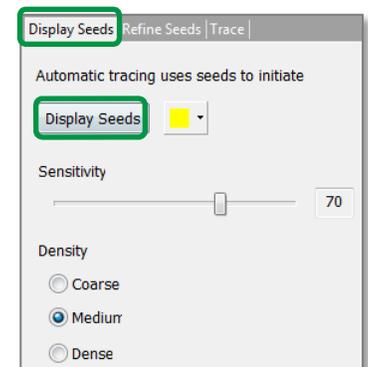
Implementing automatic tracing

There are two ways to implement automatic tracing:

- For a tracing using the defaults, click the **Trace** button.
- For a more accurate or faster tracing, click the **Show Settings** button, adjust the settings, then click the **Trace** button. The settings give you the opportunity to review seed placement, which is used to initiate the automatic tracing.

Tracing after adjusting the settings

1. Click 
2. In the **Display Seeds** tab, click the **Display Seeds** button.
 - **Optional:** To change the seed color, use the color picker next to the **Hide Seeds** button.
 - To adjust the number of seeds, use the slider and the density buttons.

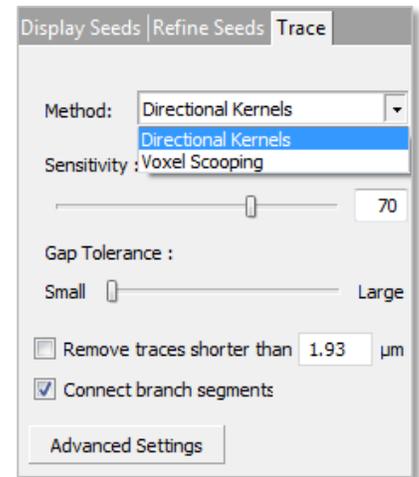


3. Click the **Refine Seeds** tab.
 - a. Click the **Refine Seeds** button. NeuroLucida applies an algorithm to evaluate seed placement. The manual options below the **Refine Seeds** button are now available.
 - b. **Optional:** To decrease the number of unwanted seeds, increase the **Refine filter** value.
 - c. **Optional:** Add seeds by clicking in the image.
 - To change the color of manually added seeds, use the color picker.
 - d. **Optional:** Remove seeds.
 - i. Select the **Remove** radio button.
 - ii. Hover the mouse over a branch to see the circular cursor.
 - iii. Hold down **CTRL** and scroll the mouse wheel to resize the cursor.
 - iv. Click in the image to remove seeds within the cursor radius OR hold down **CTRL** and drag to remove contiguous seeds.



4. Click the **Trace** tab to modify the tracing settings:
 - a. Select a tracing method from the drop-down menu.
 - b. Modify the settings:

- **Sensitivity:** Use the slider or type a value to adjust sensitivity to dim and low-contrast structures.
- **Gap tolerance:** Use the slider to change the maximum acceptable distance between two segments to make a connection.
- **Remove traces shorter than:** Discard segments shorter than the specified value.
- **Connect branch segments:** Check to have NeuroLucida connect branches according to the **Branch Connections Criteria** set in the **Advanced Settings**:



- **Largest gap:** Determines the largest distance that the software will "jump" to make a connection.
- **Max deviation angle:** This is the maximum angle considered by when connecting branches. The maximum value is 180°.
- **Min ratio of diameters:** When two branches are considered for connection based on their respective location in XYZ space, the software compares the branch diameters of each branch's end point. If the ratio of the diameters is greater than the specified value, the software connects the two branches and recolors according to the branch that is closest to the soma (if the soma is traced).

Example: The software compares Branch A and Branch B.

- Branch A's diameter at end point (D_A) > Branch B's diameter at end point (D_B).
- The default ratio is 50%.

The software connects A and B if $D_B \geq (D_A/2)$

5. Click the **Trace** button to start the automatic tracing.
If the automatic traces are incomplete, use the **user-guided tracing** mode to continue tracing.

