1. On the Microscope PC, make sure:
   - In area ① outlined in red, the HV is at “100.0 kV” as seen in the window. If it is not, in the “HV Filament operation” turn HV “On”
   - the magnification is 120 k.
   - the Filament is “Off”
   - the Beam is “Off”
   - In area ② highlighted red, the stage is centered by clicking “Holder reset”
   - In area ③ highlighted red, the screen is “In”

2. On the Camera PC, make sure:
   - “EMMENU” is open. If it is not open, click on “EMMENU5” (highlighted in red).
   - For EMG, open the “EMG-NYSBC Leginon Client” (highlighted in red).
   - For NCCAT, open the “NCCAT Leginon Client” (highlighted in red).

2. Please look for the icons as they may have moved
Microscope Operation

1. After insertion:
   - In the area outlined in red, wait for vacuum to read at least 4.0E-05 Pa.
   - Then click “On” for the filament, when ready it will read “30 V” (takes ~15 min).
   - Once the filament is ready, click “On” for the Beam, it should read “7.0 uA”.

2. Please follow diagram for insertion and retraction and note:
   - In the highlighted area ①, make sure the beam is “Off”, when inserting and retracting.
   - In the highlighted area ②, make sure holder is rest, by clicking “Holder Reset”
   - To change the specimen position, use the dropdown labeled “Specimen”. If this does not appear as an option, make sure for “Present” the holder selected is “HT7800-SS 2ND”
Starting a Leginon Session

1. On the Leginon PC. Open a Terminal window.
   - For EMG, type in the command `betaleginon`.
   - For NCCAT, type in the command `nccatleginon`.
   - Once the Leginon window appears, select “Create a new session”, then click “Next >”

2. Please do not change the given session name. Select the holder “HT7800-MS2”, then click “Next >”
3. Enter a description of your session (ex: Hitachi– Testing), then click “Next >”

4. Select a project, then click “Next >”. If there is no project listed, please submit a project here for NCCAT https://nccatdeon.nysbc.org OR here for EMG https://deon.nysbc.org, then click “Next >”
5. Check the directory path, then click “Next>”:
   • If the user is on NCCAT, make sure the directory is /beegfs/leginon/username.
   • If the user is on EMG, make sure the directory is /gpfs/leginon/username
   • If the directory is not correct, please let the assisting staff member know.

6. Click “Edit”. Select “ht78-xf416” from the dropdown menu, then click + sign to add it. Click “OK”, then click “Next>”.
7. Check that the C2 size is set to 100, then click “Finish”.

8. Select “Application” then “Run”  
   - Application = “HT MSI-Raster Screen”.  
   - If the option is not visible click “Show All”, then search the dropdown again.  
   - Scope and camera = “ht78-xf416”  
   - Main = “ht78leginon”
9. In the HPresets_Manager Node, click the load preset icon.

- TEM = “HT7800”
- Digital Camera = “TVIPS-XF416”
- Click “Find”. Select the most recent session. Select all presets (gr, sq, hl, fa, fc, and el), click “Import” and then “Done”
Screening

1. Go to the \textit{HPresets\_Manager} Node, select the \textit{gr} preset and click \includegraphics[width=0.1\textwidth]{image1.png}.
   - On the Microscope PC, click Screen “In”. On the hand panel use the \textbf{Stage Control} track ball to center on a square.
   - Make sure the beam is centered. If it is not centered, use the \textbf{Alignment} knobs on the hand panel to center the beam. Then click on \includegraphics[width=0.1\textwidth]{image2.png}, then next to “\textbf{Beam Shift}” click \includegraphics[width=0.1\textwidth]{image3.png}. Then click “\textbf{Save}”.
   - Repeat these steps for the \textit{sq, hl} and \textit{el} preset. For the \textit{el} preset save any changes made to the Beam shift for the \textit{fc} and \textit{fa} preset as well.

2. Go to the \textit{HZ\_Focus} Node, then click the simulate target icon \includegraphics[width=0.1\textwidth]{image4.png}. Wait for it to complete.

3. Go to the \textit{HGrid\_Targeting} Node. Click on the settings icon \includegraphics[width=0.1\textwidth]{image5.png}.
   - Enter a label for the grid and the radius. Largest atlas is 0.009 m (33 targets). Then click \includegraphics[width=0.1\textwidth]{image6.png} and then \includegraphics[width=0.1\textwidth]{image7.png}.
4. Go to the HSquare_Targeting Node to view the atlas.
   - select the cursor \( \square \) next to "acquisition". Select square(s) to image.
   - Click

5. In the HSubsquare_Targeting Node,
   - select the cursor \( \square \) next to "acquisition". Select one area to image.
   - Select the cursor \( \triangle \) next to "focus", place a focus target near the acquisition target.
   - Click \( \triangledown \). If there is a queue click \( \square \) after selecting targets for each image, when done click \( \square \).

6. Go to the HExposure_Targeting Node
   - select the cursor \( \square \) next to "acquisition". Select a few areas to image.
   - Select the cursor \( \triangle \) next to "focus", place one focus target in the center of the acquisition targets.
   - Click \( \triangledown \) to submit. If there is a queue click \( \square \) after selecting targets for each image, when done click \( \square \).
1. On the Microscope PC, make sure:
   - In area ① outlined in red, the HV is at “100.0 kV” as seen in the window. If it is not, in the “HV Filament operation” turn HV “On”
   - the magnification is 120 k.
   - the Filament is “Off”
   - the Beam is “Off”
   - In area ② highlighted red, the stage is centered by clicking “Holder reset”
   - In area ③ highlighted red, the screen is “In”
2. On the Leginon PC, make sure to log off.