The purpose of the low dose "kit" is to minimize radiation damage by having the first electrons to interact with a field-of-view be used to form the image. However, a user does look at areas of interest (fields-of-view of interest) at lower magnification. But, focusing is done in a field of view adjacent to the field-of-view of interest. The process is 1) search for an area of interest at low magnification, 2) focus at high magnification adjacent to the area of interest, and 3) record image of area of interest at high magnification.

Starting Low Dose
1. Start a microscope session as you would without doing low dose, except alignments should be done in the "exposure" mode of low dose
2. To start low dose, select the "low dose" tab and click on "Low Dose" in the "Low Dose" panel.
3. Set magnification levels for the different modes, click button for each mode and set value
   -search mode, set to 2000x to 5000x
   -exposure mode, set to a magnification appropriate for your specimen
   -focus mode, set to same magnification or higher than that set for exposure mode
4. Set spot sizes for the different modes. In general, 5 or 6 are good settings, especially for exposure and focus modes. Higher numbers have more coherent beam.
5. In the following steps, magnification and spot size will automatically change to the settings you set in steps 3 and 4.

Using Low Dose
1. Find an appropriate grid square. Setting a very low magnification setting (e.g. 200x to 300x) for the normal microscope mode ("Low Dose" button off) can be an effective way to search the grid for appropriate grid squares.
2. Go to search mode and, at least for each new grid square, adjust z height
3. In search mode, find an area of the grid that looks promising (an appropriate field-of-view)
4. "Blank" beam. This should be done as soon as possible to minimize exposure to the electron beam.
5. Go to focus mode.
6. Unblank beam, focus as quickly as possible, blank beam.
7. Go to exposure mode
8. Click "Expose" button. The program will automatically record an image for you. The program will unblank and blank the beam to record the image.
9. Repeat steps 3 to 8. If new area of interest is close to the previous area (and you are satisfied with the focus setting), you may skip steps 4 and 5.

Ending Low Dose
Click on "Low Dose" button. You will be taken to the normal microscope mode. End microscope session as you would a "normal" session.

by David Belnap, August 14, 2013