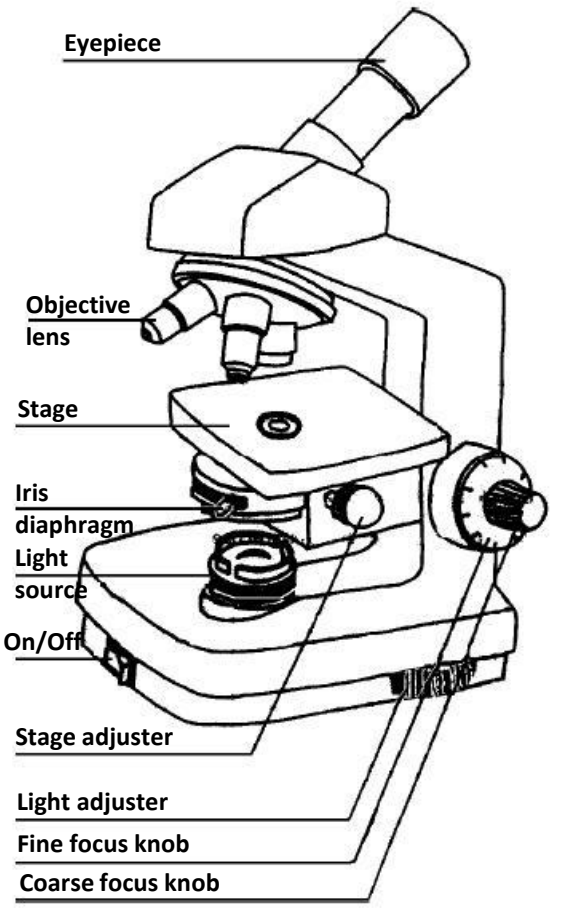
Microscopic Examination of Stream Biofilms

This information is intended as a guide for the examination of the microbial communities within stream biofilms*. For more information about stream biofilms and to request your free copy of the poster 'stream micro-ecology: life in a biofilm', which provides a colourful and richly detailed view of the microscopic world of stream biofilms, see www.streambiofilm.org.nz or contact us on streambiofilm@gmail.com

1. **Collecting Biofilm.** Carefully scrape the biofilm from the surface of a recently collected stream rock and transfer 5 to 10 ml of stream water into a small container to form a biofilm 'slurry'. You can do this 'in the field' .
2. **Preparation of the microscope.** Rotate the scanning power (x4) *objective lens* into position, and using the *coarse focus adjustment knob*, position the objective approximately 1 cm from the lens.
3. **Prepare the microscope slide.** Stir the biofilm slurry gently and then transfer 3-4 drops of this solution onto a clean microscope slide. Gently place a cover slip on top. If you don't have a cover-slip – don't worry! It will still work.

Note: Remember to put rocks back as you found them, as they provide an important habitat for aquatic organisms

4. **Switch on the light source.** Then adjust to about ¾ intensity using the *light adjuster* dial.
5. **Position the slide.** Place the slide into position on the microscope stage and centre the biofilm sample under the x4 *objective lens* using the *stage adjuster*.
6. **Focus on the sample.** Bring the slide onto focus by moving the *objective lens* away from the slide using the *coarse focus knob*. The specimen can then be brought into sharp focus using the *fine focus knob* and the illuminance adjusted with the *iris diaphragm* to provide the best view.
7. **Try using a greater magnification.** To view the specimen at a higher magnification, rotate the higher power (10x or 40x) *objective lens* into the viewing position *while watching from the side* to ensure that the objective does not touch the slide. The specimen can now be brought into sharp focus using the fine focus knob. This procedure can then be repeated to view samples under progressively higher power lenses.



Tips.

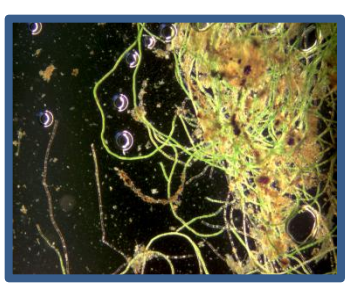
To avoid breaking your slide with the microscope lens, always focus by moving the lens away from the slide. When you need to move the lens closer to the slide do this while watching the microscope from the side, then look down the *eyepiece* and focus while moving the *objective lens* away from the slide.

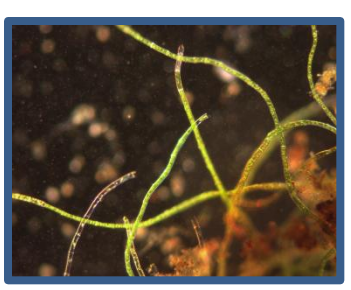
A dirty lens will distort your image. If the lens requires cleaning, only use special lens paper, or a soft facial tissue as the lens is relatively soft and easily scratched.

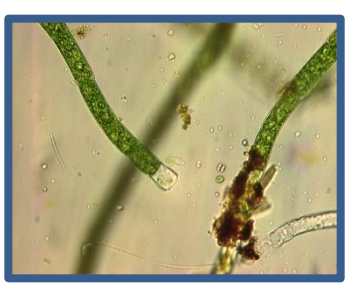
The objective labelled 'oil' is used to visualise samples under higher magnification and requires a different approach to sample preparation, not covered in this guide.

*Microscopes vary widely in their design. This guide details the recommended procedures for the use of a standard compound microscope, which in some cases may be provided on loan (within Auckland) by contacting g.lear@auckland.ac.nz

Example of a stream biofilm sample, viewed at different magnification (note that the eyepiece further increases the objective lens magnification, x10)







Objective lens magnification	X 4	X 10	X 40
True magnification	X 40	X 100	X 400