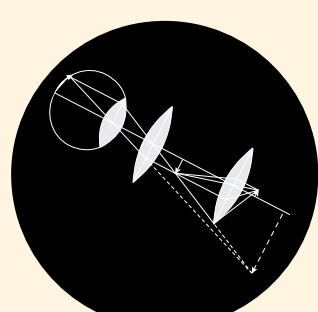
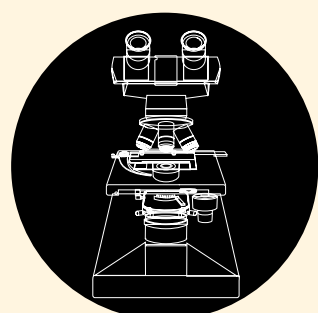


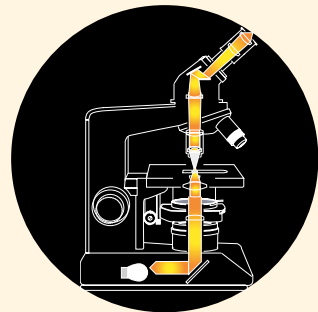
Leeuwenhoek's Microscope



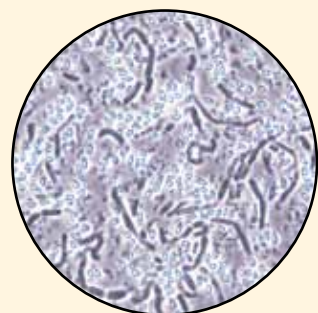
Compound Image



Compound Microscope



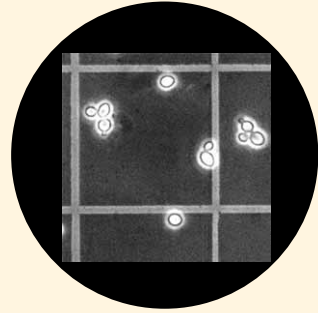
Brightfield Lightpath



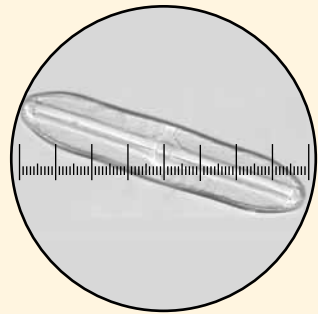
Bacillus endospores



Bacillus macrofibers



Saccharomyces



Pinnularia



Streptomyces

III Microscopy 1-9

- 1 Microscope Theory I, 2 Microscope Theory II, 3 The Compound Microscope, 4 Brightfield Microscopy, 5 Phase-Contrast Microscopy, 6 Wet Mount & Hanging Drop, 7 Total Cell Count, 8 Cell Dimensions, 9 Colony Morphology

Microscopy 1 Microscope Theory I

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- Objectives\Key Words
- Units of length
- Limit of Resolution
- Accomodation & Resolution
- Leeuwenhoek's Microscope
- Stereomicroscope
- Compound Microscopes
- Magnification
- Resolution
- Contrast

- **Microscopy Quick Quiz 1A: Units**
- **Microscopy Quick Quiz 1B: Microscope Theory**
- **Microscopy Question Bank 1.1'-1.4**

- 18 interactive pdf pages,
- 32 illustrations, 26 images of microbes
- ✓ 1 Best Practice animation

Microscopy 2 Microscope Theory II

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- Objectives\Key Words
- Electromagnetic Spectrum
- Wavelength & Amplitude
- Resolution & Wavelength
- Biconvex Lens
- Spherical Aberration
- Chromatic Aberration
- Objective Lenses
- Angular Aperture
- Numerical Aperture
- Immersion Oil
- Real & Inverted Image
- Virtual & Unverted Image
- Compound Microscope Images 1-2

- **Microscopy Quick Quiz 2: Light, Lenses & Images**
- **Microscopy Question Bank 2.1'**

- 18 interactive pdf pages
- 19 illustrations. 2 images of microbes
- ✓ 1 Best Practice animation

Microscopy 3 The Compound Microscope

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- Objectives\Key Words
- Microscope Components
- Light Source**
- Microscope Stage**
- Condenser**
- Condenser Diaphragm*
- Ocular & Objective Lenses
- Interocular Distance*
- Diopter Adjustment*
- Objective Lenses***
- Coarse & Fine Focus*
- Working Distance
- Field of View
- Inverted Image
- Microscope Adjustments*

- **Microscopy Quick Quiz 3: Compound Microscope**
- **Microscopy Question Bank 3.1****

- 18 interactive pdf pages
- 15 illustrations
- * 15 techniques videos
- ✓ 1 Best Practice animation

Microscopy 4 Brightfield Microscopy

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- Objectives\Key Words
- Brightfield Lightpath
- Proper Microscope Technique
- **Carrying a Microscope****
- **Microscope Setup***
- **Focusing Microscope Slide***
- **Focusing Low Power 10x Objective***
- **Binocular Head***
- **Centering the Condenser**
- **Nelson Illumination***
- **Köhler Illumination***
- Cells at 100x Magnification
- **Focusing High Power 40x Objective***
- Cells at 400x Magnification
- **Focusing Oil-Immersion 100x Objective***
- Cells at 1000x Magnification
- **Removing Slide*/Cleaning Objectives***
- **Putting Microscope Away***

- **Microscopy Quick Quiz 4: Brightfield Microscopy**
- **Microscopy Question Bank 4.1'-4.5**

- 25 interactive pdf pages
- 46 illustrations, 21 images of microbes
- * 13 techniques videos
- ✓ 1 Best Practice animation

Microscopy 5 Phase-Contrast Microscopy

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- Objectives\Key Words
- Wavelength & Amplitude
- Superimposing Light Rays
- Transmission & Diffraction
- **Phase-Contrast Microscope**
- Diaphragm & Phase Plate
- **Matching Optics***
- **Aligning Optics—Telescope***
- **Phase-Contrast Microscopy (wet mount, BSL1)***✓**
- **Phase-Contrast Microscopy (wet mount, BSL2)**✓**
- Phase-Contrast Microscopy
- Prokaryote Cells & Motility***
- **Prokaryote Nucleoids 1**~2**
- Bacterial Capsules
- Bacterial Endospores
- Diatom Striae
- Bacterial Capsules
- Bacterial Endospores
- Protist Cells & Motility 1-2****
- Diatom Striae

- 26 interactive pdf pages
- 43 illustrations, 34 images of microbes
- * 3 techniques animations
- * 6 techniques videos
- ✓ 3 Best Practice animations

- † 12 motility videos
- † Amoeba pseudopodia—brightfield
- † Amoeba pseudopodia—phase
- † Amoeba Motility, 5x
- † *B. megaterium*—phase-contrast
- † *Blepharisma* cilia—phase-contrast
- † *Blepharisma* flagella—brightfield
- † *Euglena* flagella—brightfield
- † *Euglena* flagella—phase-contrast
- † *E. coli*—brightfield
- † *S. epidermidis*—phase-contrast
- † *Microscopy Unknown 5A*
- † *Microscopy Unknown 5B*

- **Microscopy Quick Quiz 5A: Phase-Contrast**
- **Microscopy Quick Quiz 5B: Best Practice**
- **Microscopy Question Bank 5.1'-5.4****

Microscopy 6 Wet Mount & Hanging Drop

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- Objectives\Key Words
- Wet Mount & Hanging Drop
- Preparing a Wet Mount (Biosafety Level 1)**✓
- Preparing a Wet Mount (Biosafety Level 2)**✓
- Preparing a Wet Mount (disposable loop)**✓
- Preparing a Hanging Drop (BSL1)**✓
- Preparing a Hanging Drop (BSL2)**✓
- Microscopy of Wet Mounts 1***
- Darkfield Microscopy*
- Interference Microscopy*
- Microscopy of Wet Mounts 2
- Microbe Motility***
- Binary Fission*
- Cyanobacteria 1**2
- *Bacillus mycoides* macrofibers
- Spirochetes & Spirilla 1*, 2***

- 30 interactive pdf pages
- 66 illustrations, 55 images of microbes
- * 5 techniques animations
- * 9 techniques videos
- ✓ 6 Best Practice animations

- † 1 binary fission video
- † 14 motility videos*
- † Brownian Movement
- † True Motility
- † Wet Mount "Streams"
- † *Oscillatoria*—Brightfield
- † *Oscillatoria*—interference
- † *Rhodospirillum rubrum*—darkfield
- † *Rhodospirillum rubrum*—interference
- † *Rhodospirillum rubrum*—phase-contrast
- † Spirochete Motility
- † *Spirulina* Motility
- † *Spirulina* Motility 3x
- † Unknown Motility 6A
- † Unknown Motility 6B

- **Microscopy Quick Quiz 6A: Wet Mount**
- **Microscopy Quick Quiz 6B: Prokaryotes**
- **Microscopy Quick Quiz 6C: Best Practice**
- **Microscopy Question Bank 6.1'***, 6.3**~6.8**

Microscopy 7 Total Cell Count

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- Objectives\Key Words
- Counting Chambers, Grid Dimensions
- **Serial Dilutions (Overview)****
- **No Mouth Pipetting'✓**
- Serological Pipettes
- **Serial Dilution Procedure 1**✓, 2**✓, 3**✓**
- **Filling a Counting Chamber**✓**
- **Focusing on the Grid****
- **Counting Cells**
- **Total Cell Count**✓**

- **Microscopy Quick Quiz 7A: Total Cell Count**
- **Microscopy Quick Quiz 7B: Best Practice**
- **Microscopy Question Bank 7.1'**

- 17 interactive pdf pages
- 15 illustrations, 6 images of microbes
- * 4 techniques animations
- * 4 techniques videos
- ✓ 7 Best Practice animations

Microscopy 8 Cell Dimensions

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- Objectives\Key Words
- Cell Dimensions
- Ocular & Stage Micrometers
- Units of Ocular Micrometer Scale
- Micrometer Scales
- **Calculating Field Diameters**
- **Aligning Micrometer Scales***
- **Comparing Stage & Ocular Scales**
- **Calibrating Ocular Micrometer**
- **Preparing a Wet Mount (BSL1)**✓**
- **Preparing a Wet Mount (BSL2)**✓**
- **Measuring Microbes**✓**

- **Microscopy Quick Quiz 8A: Cell Dimensions**
- **Microscopy Quick Quiz 8B: Best Practice**
- **Microscopy Question Bank 8.1'-8.3**

- 18 interactive pdf pages
- 24 illustrations, 11 images of microbes/blood cells
- * 3 techniques animations
- * 4 techniques videos
- ✓ 4 Best Practice animations

9 Colony Morphology

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- Objectives\Key Words
- **Quadrant Streak Plate (BSL1, BSL2)**✓**
- **Quebec Colony Counter**✓**
- Colony Morphology
 - Size
 - Color
 - Form
 - Margin
 - Elevation
 - Surface Appearance
 - Opacity

- **Microscopy Quick Quiz 9A: Colony Characteristics**
- **Microscopy Quick Quiz 9B: Best Practice**
- **Microscopy Question Bank 9.1'-9.8**

- 22 interactive pdf pages
- 46 illustrations, 43 images of microbes
- * 1 techniques animation
- * 3 techniques videos
- ✓ 3 Best Practice animations