



## II Staining Techniques 1-11

- 1 Preparing a Smear, 2 Negative Staining, 3 Simple Staining, 4 The Gram Stain, 5 Acid-Fast Stain, 6 Cell Walls, 7 Flagella, 8 Capsules & Slime Layers, 9 Endospores, 10 Metachromatic Granules, 11 Conidia, Cysts, Heterocysts, Akinetes**

### Staining 1 Preparing a Smear

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- Objectives/Key Words
- **Labeling Microscope Slides\***
- Preparing a Smear
- **Preparing a Smear, Broth Culture (BSL1)\*\***
- **Preparing a Smear, Broth Culture (BSL2)\*\***
- **Preparing a Smear, Plate Culture (BSL1)\*\***
- **Preparing a Smear, Plate Culture (BSL2)\*\***
- **Smear with Disposable Loops (BSL1, BSL2)\*\*\***
- **Heat-Fixing a Smear (BSL1, BSL2)\*\*\***

- 13 interactive pdf pages
- 21 illustrations, 11 images of microbes
- \* 5 techniques animations
- \* 10 techniques videos
- ✓ 8 best practice animations

- **Staining Quick Quiz 1A: Preparing Smear**
- **Staining Quick Quiz 1A: Best Practice**
- **Staining Question Bank 1.1**

### Staining 2 Negative Staining

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- Objectives/Key Words
- Morphology of Oral Bacteria\*
- **Preparing a Feathered Film (oral bacteria)\*\***
- **Negative Staining/Feathered Film (BSL2)\*\***
- **Feathered Film (DL, BSL1, BSL2)\*\*\***
- Negative Stains

- 15 interactive pdf pages
- 18 illustrations, 14 images of microbes
- \* 3 techniques animations
- \* 4 techniques videos
- ✓ 4 best practice animations

- **Staining Quick Quiz 2A: Negative Staining**
- **Staining Quick Quiz 2B: Best Practice**
- **Staining Question Bank 2.1**

### Staining 3 Simple Staining

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- Objectives/Key Words
- Cell Staining
- Aniline Dyes\*
- **Simple Staining Procedure\*\***
- Morphology of Bacteria
- Morphology of Bacilli 1-3
- Cell Division in Cocci\*
- Prokaryote Cell Structures 1-2

- 17 interactive pdf pages
- 30 illustrations, 28 images of microbes
- \* 1 techniques animation
- \* 1 techniques video
- ✓ 2 best practice animations
- ◆ 2 cell staining/cell division animations

- **Staining Quick Quiz 3A: Simple Staining**
- **Staining Quick Quiz 3B: Best Practice**
- **Staining Question Bank 3.1**

### Staining 4 The Gram Stain

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- Objectives/Key Words
- Gram-Positive & Gram-Negative
- **Gram Stain Procedure\*\***
- Four Steps of the Gram Stain
- Gram Stain Theory
- Gram Stain & Culture Age
- Overdecolorized/Underdecolorized
- Interpreting Gram Stains 1-6

- 25 interactive pdf pages
- 51 illustrations, 49 images of microbes
- \* 1 techniques animation
- \* 1 techniques video
- ✓ 3 best practice animations

- **Staining Quick Quiz 4A: Gram Stain**
- **Staining Quick Quiz 4B: Best Practice**
- **Staining Question Bank 4.1**

### Staining 5 Acid-Fast Stain

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- Objectives/Key Words
- Acid-Fast & Non Acid-Fast
- **Ziehl-Neelsen Acid-Fast Stain\*\***
- **Kinyoun Acid-Fast Stain\*\***
- Steps of the Acid-Fast Stain
- Acid-Fast Theory
- *Mycobacterium tuberculosis*
- *Cryptosporidium parvum*
- Fluorescent Microscopes 1-2
- Fluorescent Microscopy

- 16 interactive pdf pages
- 22 illustrations, 12 images of microbes
- \* 2 techniques animations
- \* 2 techniques videos
- ✓ 4 best practice animations

- **Staining Quick Quiz 5A: Acid-Fast Stain**
- **Staining Quick Quiz 5B: Best Practice**
- **Staining Question Bank 5.1**

### Staining 6 Cell Walls

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- Objectives/Key Words
- The Bacterial Cell Wall
- Cell Arrangement in Bacteria\*
- **Cell Wall Staining Procedure\***
- Cell Wall Stains
- *Collecting Caryophanon!*
- *C. latum* Trichomes & Septa

- 12 interactive pdf pages
- 14 illustrations, 11 images of microbes
- \* 1 techniques animation
- ✓ 3 best practice animations
- ◆ 1 cell morphology animation
- ❖ 1 scenic microbiology, 1 image
- ❖ *Collecting Caryophanon!*

- **Staining Quick Quiz 6A: Cell Wall Stain**
- **Staining Quick Quiz 6B: Best Practice**
- **Staining Question Bank 6.1**

### Staining 7 Flagella

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- Objectives/Key Words
- Flagella Structure
- Flagella Arrangement\*
- **Flagella Smear 1 Microscope Slides\*\***
- **Flagella Smear 2 Motile Cell Suspension\*\***
- **Flagella Smear 3 Motility Check\*\***
- **Flagella Smear 4 Arrowhead Smear\*\***
- **Leifson's Staining Procedure\*\***
- Flagella Stains
- "Runs & Tumbles"
- **Flagella Motility 1 Wet Mount (BSL1)\*\***
- **Flagella Motility 2 Wet Mount (BSL2)\*\*\***
- **Flagella Motility 3 Microscopy\*\*\***
- **Proteus Swarming 1\*\***
- Motility Agar Deep 1
- **Motility Agar Deep (Biosafety Level 1)\*\***
- **Motility Agar Deep (Biosafety Level 2)\*\***
- **Motility Agar Deep (disposable needle)\*\*\***
- Motility Agar Deep 5

- **Staining Quick Quiz 7A: Flagella Structure**
- **Staining Quick Quiz 7B: Flagella Techniques**
- **Staining Quick Quiz 7C: Best Practice**
- **Staining Question Bank 7.1**

- 28 interactive pdf pages
- 37 illustrations, 18 images of microbes

- \* 10 techniques animations
- \* 15 techniques videos
- ✓ 15 best practice animations

- ◆ 1 flagella arrangement animation

- † 9 motility videos
- † Peritrichous flagellate bacteria
- † Polar flagellate bacteria
- † Brownian movement
- † *Chilomonas* Motility
- † *Chlamydomonas* Motility
- † Unknown Motility 7A: diatom
- † Unknown Motility 7B: spirochete
- † Unknown Motility 7C: bacillus

### Staining 8 Capsules & Slime Layers

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- Objectives/Key Words
- Glycocalyx: Capsules & Slime Layers
- **Capsule Staining Procedure\***
- **Gin's Capsule Stain\***
- **Maneval's Capsule Stain\***
- **Anthony's Capsule Stain\***
- **Capsule Wet Mount Procedure\*\***
- Capsule Stains
- Capsules in Medicine
- *Capsules in the Environment*
- *Zoogloea & Sewage*

- 17 interactive pdf pages
- 33 illustrations, 26 images of microbes
- \* 5 techniques animations
- \* 1 techniques video
- ✓ 7 best practice animations

- **Staining Quick Quiz 8A: Capsules, Slime Layers**
- **Staining Quick Quiz 8B: Best Practice**
- **Staining Question Bank 8.1**

- ❖ 4 scenic microbiology, 6 images
- ❖ Bacterial Capsules in Medicine
- ❖ *Prevnar 13 Vaccine*
- ❖ Bacterial Capsules in the Environment
- ❖ *Zoogloea, "Living Glue" & Sewage*

### Staining 9 Endospores

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- Objectives/Key Words
- Endospores\*
- Sporulation 1\*, 2\*, 3\*
- Endospore Wet Mount & Gram Stain
- **Schaeffer-Fulton Endospore Staining\*\***
- **Endospore Germination (Biosafety Level 1)\*\***
- **Endospore Germination (Biosafety Level 2)\*\***
- Endospore Germination 3
- *Bacillus*
- **Antibiotic-Producing Bacillus (BSL1)\*\***
- **Antibiotic-Producing Bacillus (BSL2)\*\*\***
- *Antibiotic-Producing Bacillus 3*
- *Bacillus thuringiensis* Insecticide 1-2\*
- *Clostridium*

- **Staining Quick Quiz 9A: Endospores**
- **Staining Quick Quiz 9B: Best Practice**
- **Staining Question Bank 9.1**

- 25 interactive pdf pages
- 45 illustrations, 32 images of microbes

- \* 5 techniques animations
- \* 5 techniques videos
- ✓ 7 best practice animations

- ◆ 1 endospore-formation animation

- ❖ 3 scenic microbiology, 12 images
- ❖ *Asian Gypsy Moth/ Bacillus thuringiensis* Insecticide
- ❖ *BOTOX & Facial Wrinkles*
- ❖ *Honey & Infant Botulism*

### Staining 10 Metachromatic Granules

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- Objectives/Key Words
- Metachromatic Granules
- Metachromasy
- **Loeffler's Staining Procedure\***
- **Albert's Staining Procedure\***
- Simple & Differential Stains
- *Corynebacterium diphtheriae*

- 11 interactive pdf pages
- 10 illustrations, 7 images of microbes

- \* 2 techniques animations
- ✓ 4 best practice animations

- **Staining Quick Quiz 10A: Metachromatic Granules**
- **Staining Quick Quiz 10B: Best Practice**
- **Staining Question Bank 10.1**

### Staining 11 Conidia/Cysts/Heterocysts/Akinetes

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- Objectives/Key Words
- Conidia, Cysts, Heterocysts & Akinetes
- **Streptomyces Conidia Smear (BSL1)\*\***
- **Streptomyces Gram Stain\*\***
- *Streptomyces* Conidia
- **Azotobacter Wet Mount (BSL1)\*\***
- **Azotobacter Cyst Smear\***
- *Azotobacter* Cells, Capsules & Cysts\*
- **Cyanobacteria Wet Mount (DL, BSL1)\*\*\***
- *Cyanobacteria* Heterocysts & Akinetes
- **Staining Quick Quiz 11A: Conidia, Cysts, Heterocysts & Akinetes**
- **Staining Quick Quiz 11B: Best Practice**
- **Staining Question Bank 11.1**

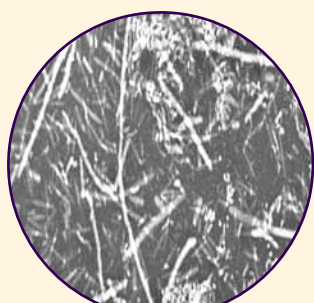
- 15 interactive pdf pages
- 23 illustrations, 18 images of microbes

- \* 5 techniques animations
- \* 5 techniques videos
- ✓ 7 best practice animations

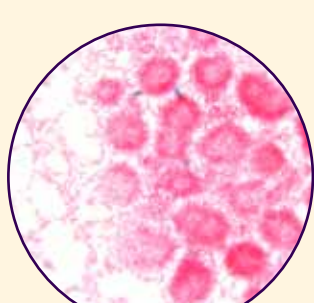
- † 1 motility video



medium density smear



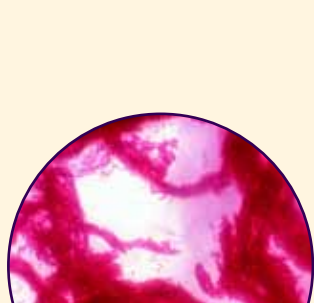
gingivitis



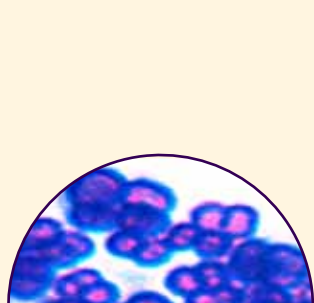
Caulobacter



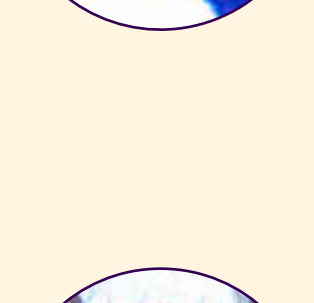
Bacillus mycooides



Mycobacterium tuberculosis



Micrococcus luteus



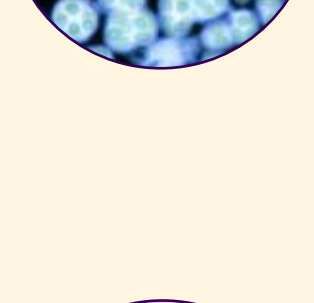
Peritrichous Escherichia coli



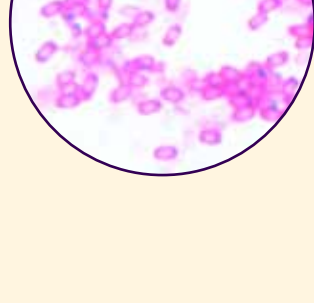
Gloeocapsa



Bacillus subtilis



Corynebacterium diphtheriae



Cylindrospermum