

Volvox

## IV Eukaryote Microbes 1–7

- [1 Algae, 2 Lichens, 3 Fungi,](#)
- [4 Fleshy Fungi, 5 Protozoa,](#)
- [6 Slime Molds, 7 Water Molds](#)

### Eukaryotes 1 Algae

- Objectives/Key Words
- Algal Thallus
- **Algal Wet Mount** (Biosafety Level 1)\*\*✓
- **Algal Wet Mount** (Biosafety Level 2)\*\*✓
- **Algal Wet Mount** (disposable loop) \*\*\*✓
- Microscopic Algae✓
  - Green Algae (Chlorophyta)\*
    - *Chlamydomonas*†
  - Euglenoids (Euglenophyta)\*
  - Diatoms (Chrysophyta)
    - 1 frustules & motility\*\*
    - 2 cell division
    - 3 sexual reproduction
    - 4 striae
  - Dinoflagellates (Pyrrophyta)†‡
    - Red Tide 1–2

- **Eukaryotes Quick Quiz 1A: Algae**
- **Eukaryotes Quick Quiz 1B: Best Practice**
- **Eukaryotes Question Bank 1.1'–1.16'**◆◆◆◆◆◆◆◆◆◆

- 35 interactive pdf pages
- 112 illustrations, 80 images of algae

- \* 3 techniques animation
- \* 4 techniques video
- ✓ 5 best practice animations

- † 9 motility & structure videos
  - † Carpenter's diatom motility
  - † *Chlamydomonas* motility
  - † Diatom gliding movement
  - † *Euglena* motility
  - † *Gyrosigma* motility
  - † *Noctiluca scintillans* motility
  - † *Peridinium* dinoflagellate motility
  - † *Synura* cells & colony
  - † Volvox flagellate cells

- ◆ 14 scenic microbiology, 60 images, 9 videos◆
  - ◆ Biofouling 1, 2
  - ◆ Coral Bleaching: Hawaii
  - ◆ Coral Reefs: Pacific Ocean◆
  - ◆ Coral Reefs 2: Andaman Sea, Indian Ocean◆
  - ◆ "Doing the Laundry", India◆◆
  - ◆ Green Lake, Lanzarote◆
  - ◆ Garden Pond, British Columbia Canada, 1\*, 2
  - ◆ Marine Luminescence, Socia Island, WA, US◆
  - ◆ Red Tide, Vancouver & Comox, Canada
  - ◆ Sea Turtle Tracks, Galápagos Islands◆
  - ◆ Sea Turtles & Sea Turtles Diet, Sri Lanka◆
  - ◆ Toxic Shellfish, Washington State, US

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Cladonia cristatella

### Eukaryotes 2 Lichens

- Objectives/Key Words
- Lichen Morphology
- Lichen Ecology 1\*–2◆◆
- Lichen Structure
- Lichen Applications

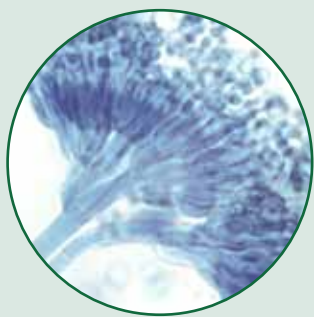
- **Eukaryotes Quick Quiz 2**
- **Eukaryotes Question Bank 2.1–2.13'**◆◆◆◆◆

- 21 interactive pdf pages
- 88 illustrations, 57 images of lichens

- ◆ 15 scenic microbiology, 84 images, 8 videos◆
  - ◆ Antarctic & Arctic Glaciers◆◆
  - ◆ British Soldier Lichen

- ◆ Christmas Tree Lichens, New Zealand
- ◆ Cobh City Wall Lichens, Ireland◆
- ◆ Dry Stone Fence Lichens, England◆
- ◆ Giant's Causeway, Northern Island◆
- ◆ Gravestone Lichens
- ◆ Isle of Pines Lichen, South Pacific
- ◆ Maunaloa Volcano Lichen, Hawaii◆
- ◆ Neglected Yacht Lichens, Blaine, WA
- ◆ St. Mary Virgin Church Lichen, Rye, UK
- ◆ Sainte-Mère Église Lichen, Normandy
- ◆ Seawall Lichens, Argentina◆
- ◆ Timanfaya Park Lichens, Lanzarote◆
- ◆ Tropical Pine Lichens, Azores.

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Penicillium

### Eukaryotes 3 Fungi

- Objectives/Key Words
- Activities of Fungi 1'–5
- Yeast Streak Plate\*\*✓
- Yeast Wet Mount\*\*✓
- Staining Molds\*\*\*\*✓
- Yeasts & Molds 1\*\*–3
- Fungi Divisions
  - Zygomycetes 1–3
  - Ascomycetes 1–4
  - Basidiomycetes 1–5
  - Imperfect Fungi 1–2

- **Eukaryotes Quick Quiz 3A: Fungi 1**
- **Eukaryotes Quick Quiz 3B: Fungi 2**
- **Eukaryotes Quick Quiz 3C: Best Practice**
- **Eukaryotes Question Bank 3.1'–3.10'**◆◆

- 41 interactive pdf pages
- 110 illustrations, 79 images of fungi

- \* 3 techniques animations
- \* 6 techniques videos
- ✓ 5 best practice animations

- † 1 motility video
  - † Yeast Brownian Movement

- † 1 cell division video
  - † Budding Yeasts

- ◆ 7 scenic microbiology, 31 images, 2 videos◆
  - ◆ Australian Frogs & Chytridiomycosis
  - ◆ Cordyceps: Chinese caterpillar fungus
  - ◆ Ecuadorian Frogs & Captive Breeding
  - ◆ Last Supper, Sagrada Família, Barcelona
  - ◆ McDonald's Blue Cheese◆, Montevideo
  - ◆ Straw Hats & Halloween Pumpkins
  - ◆ Unleavened Bread in the Venice Ghetto◆

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Amanita muscaria

### Eukaryotes 4 Fleshy Fungi

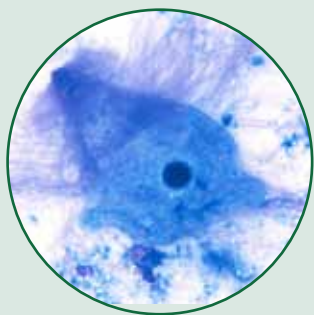
- Objectives/Key Words
- Fleshy Fungi
- Basidiomycetes 1–2
  - Agarics 1–2
  - Boletes
  - Cauliflower Fungi
  - Chanterelles
  - Earthstars
  - Jelly Fungi
  - Puffballs
  - Bird's Nest Fungi
  - Bracket Fungi
  - Club & Coral Fungi
  - Inky Caps
  - Polyspores 1–2
  - Tooth Fungi
- Ascomycetes
  - Cup Fungi
  - Elfín Saddles/False Morels
  - Morels
  - Truffles

- **Eukaryotes Quick Quiz 4: Fleshy Fungi**
- **Eukaryotes Question Bank 4.1–4.10**

- 39 interactive pdf pages
- 112 illustrations, 109 images of fleshy fungi

- ◆ 3 scenic microbiology, 28 images
  - ◆ Mushroom Graffiti, Buenos Aires, Argentina
  - ◆ National Museum of Modern Art, Paris
  - ◆ Tartufo Bianco Festival, Tuscany, Italy

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Trichonympha collaris

### Eukaryotes 5 Protozoa

- Objectives/Key Words
- Kingdom Protozoa✓
- **Protozoa Wet Mount**\*\*\*✓
- **Giemsa Staining Procedure**\*\*✓
- Flagellates (*Mastigophora*)
  - *Peranema trichophorum*\*\*
  - **Termite Gut Flagellates** 1\*✓–2\*\*\*\*\*
- Ameba (*Sarcodina*)
  - Ameboid Movement†
  - *Arcella*
- Ciliates (Ciliophora)
  - *Stentor*†
  - *Paramecium*†
    - 1 Cell Structures
    - 2 Asexual Reproduction
    - 3, 4 Conjugation\*
- Sporozoans

- **Eukaryotes Quick Quiz 5A: Protozoa**
- **Eukaryotes Quick Quiz 5B: Best Practice**
- **Eukaryotes Question Bank 5.1'–5.6'**◆◆

- 27 interactive pdf pages
- 71 illustrations, 58 images of protozoa

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

- \*: *Paramecium* conjugation animation

- † 14 motility videos
  - † Ameboid movement—brightfield
  - † *Paramecium* motility—interference
  - † *Peranema*—darkfield
  - † *Peranema*—interference
  - † *Paramecium* Motility—interference
  - † *Stentor* motility—brightfield
  - † *Streblospio trix*—interference
  - † Termite Gut Flagellates—brightfield
  - † Termite Gut Flagellates—phase-contrast
  - † Termite Gut Flagellates—interference
  - † *Trichomonas termopsidis*—interference
  - † *Trichonympha collaris*—brightfield
  - † *Trichonympha collaris*—interference
  - † *Vorticella* motility

- ◆ 1 scenic microbiology, 6 images, 1 video◆
  - ◆ Silkworms & PÉbrine◆

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Physarum plasmodium

### Eukaryotes 6 Slime Molds

- Objectives/Key Words
- Cellular & Acellular Slime Molds
- **Culturing Dictyostelium** 1\*\*✓–2\*\*✓
  - **Dictyostelium Wet Mount**\*\*✓
  - *Dictyostelium* Life Cycle 1–2
- **Culturing Physarum** 1\*\*✓–2\*\*✓
  - *Physarum* Plasmodium†
  - *Physarum Fruiting Structures*
  - *Physarum Sclerotium*

- **Eukaryotes Quick Quiz 6A: Slime Molds**
- **Eukaryotes Quick Quiz 6B: Best Practice**
- **Eukaryotes Question Bank 6.1'–6.4'**

- 19 interactive pdf pages
- 26 illustrations, 22 images of slime molds

- \* 5 techniques animations
- \* 3 techniques videos
- ✓ 6 best practice animations

- † 1 motility video†
  - † *Physarum* cytoplasmic movement

- ◆ 1 scenic microbiology, 2 images
  - ◆ Slime mold habitat

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water mold oogonium

### Eukaryotes 7 Water Molds

- Objectives/Key Words
- "Egg Fungi"
- **Culturing Water Molds** (BSL1, BSL2)\*\*✓
- **Microscopy of Water Molds** (BSL1, BSL2)\*✓
- **Oomycete Wet Mount** (BSL2)\*\*\*✓
- Oomycete Life Cycle 1', 2, 3\*, 4
- Oomycete Characteristics
- Plant Pathogenic Oomycetes
- Oomycete Infection of Salmon◆

- **Eukaryotes Quick Quiz 7A: Water Molds**
- **Eukaryotes Quick Quiz 7B: Best Practice**
- **Eukaryotes Question Bank 7.1'–7.6'**◆◆

- 22 interactive pdf pages
- 55 illustrations, 36 images of water molds

- \* 2 techniques animation
- \* 4 techniques videos
- ✓ 5 best practice animations

- † 1 motility video†
  - † Oomycete Motile Zoospores†

- ◆ 4 scenic microbiology, 26 images, 3 videos◆
  - ◆ Returning Pacific Salmon, Canada◆
  - ◆ Famine Memorial, Dublin, Ireland◆
  - ◆ Islas Ballestas, Seabird Guano & The Irish Potato Famine◆
  - ◆ *Phytophthora* dieback, Western Australia

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