

### Kingdom Fungi in Review

- Evolutionary history via the Big Tree of Life
- Ecology
  - Energy
    - Saprobies, Cellulose and Lignin
    - Symbionts
    - Parasites
    - Mutualists, lichens and mycorrhizae.
- Common features
  - Form
    - Hypha, yeast, zoospore
  - Wall
    - chitin
  - Apical growth
    - digestive/absorptive
    - Symbionts with haustoria
  - lysine synthesis
    - alpha amino adipic acid pathway in fungi
    - diamino pimelic acid pathway in oomycota, plants, bacteria
  - Mitochondrial membranes
    - Tubular in Oomycota
    - Plate-like in Fungi
  - Life cycle
    - Haploid, Selfing or Outbreeding
    - Genetic control of mating, loci and alleles (new:Oomycota)
      - 2 loci, many alleles - Basidiomycota (N+N) (homeodomain, pheromone-pheromone receptor)
      - 1 locus, 2 alleles - Ascomycota (N) (homeodomain, alpha box)
      - 1 locus, 2 alleles - Mucoromycotina (N) (hmg domain)
      - Unknown – Chytridiomycota, Blastocladiomycota (N or 2N?)
      - 1 locus, 2 alleles, Peronosporales in Oomycota (2N)
      - 1 locus, many alleles, Myxomycota (N)
      - 1 locus, 2 alleles, Dictyosteliomycota (N)
  - Communication bychemicals, pheromones
    - a and alpha factors, Oligopeptides – Basidiomycota, Ascomycota
    - Trisporic Acid precursors from the beta-carotene pathway - Mucoromycotina
    - Sirenin, Sesquiterpenes - Blastocladiomycota
    - Antheridiol, Oogoniol, Sterols - Oomycota, Ascomycota, *Tuber*
    - Acrasin, cAMP - Dictyo
  - Perception
    - Heat, Gravity, Light, Time
- Diversity
  - Spores of every kind

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Mendocino Field Trip, November 21-22

PMB 102/IB101 Website: <http://plantbio.berkeley.edu/~taylor/pmb102/>