

Themes 4

- send answer to iClicker Question 10A now.

Reproduction

- Asexual
- Sexual
 - bacterial
 - life cycles of animals, plants, and fungi

iClicker Question 10B

Due in lab **NEXT** week:

- ⇒ pre-lab for Eukaryotic Cells (lab manual p 75 and on-line)
- ⇒ Aipotu IV lab report

Exam 1: Monday (info in Themes 2 handout)

- Last names A - G in McCormack Cafe (3rd floor above stairwell)
- Last names H - Z here (1 bonus point for going to correct place!)
BRING a scientific Calculator to the exam!

Reproduction - all living things reproduce

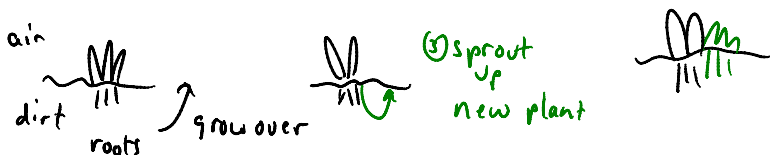
2 major types:

- ① asexual (ancestral type) "reproduce by yourself"
"don't need a partner"
- produces a clone

ex. bacteria



grass



hydra (2mm tall animal)





advantages - don't need a partner
 ∴ good at low population density
 - maintain "best genotype" (more later)

disadvantage - all kids look like parents
 ∴ little variation (barring mutation)
 ∴ vulnerable to environmental changes, disease, predators, etc.

② sexual reproduction (evolved ~1000 mya)

- need 2 individuals ("parents"; not always ♂ & ♀)

each contributes some genetic material which is combined in the offspring

advantage can mix traits ⇒ more variation

(but risk losing good genotype ∴ trade off)

good reading: "Dr Tatiana's sex advice for all creation"
 Olivia Judson

simplest form: bacterial "sex"

- pick up DNA fragments from (even dead) bacteria
 eg. transmission of antibiotic resistance
 via plasmids - small bacterial chromosomes

in eukaryotes it involves meiosis & alternating between:

haploid (N) - one copy of each gene: A or a

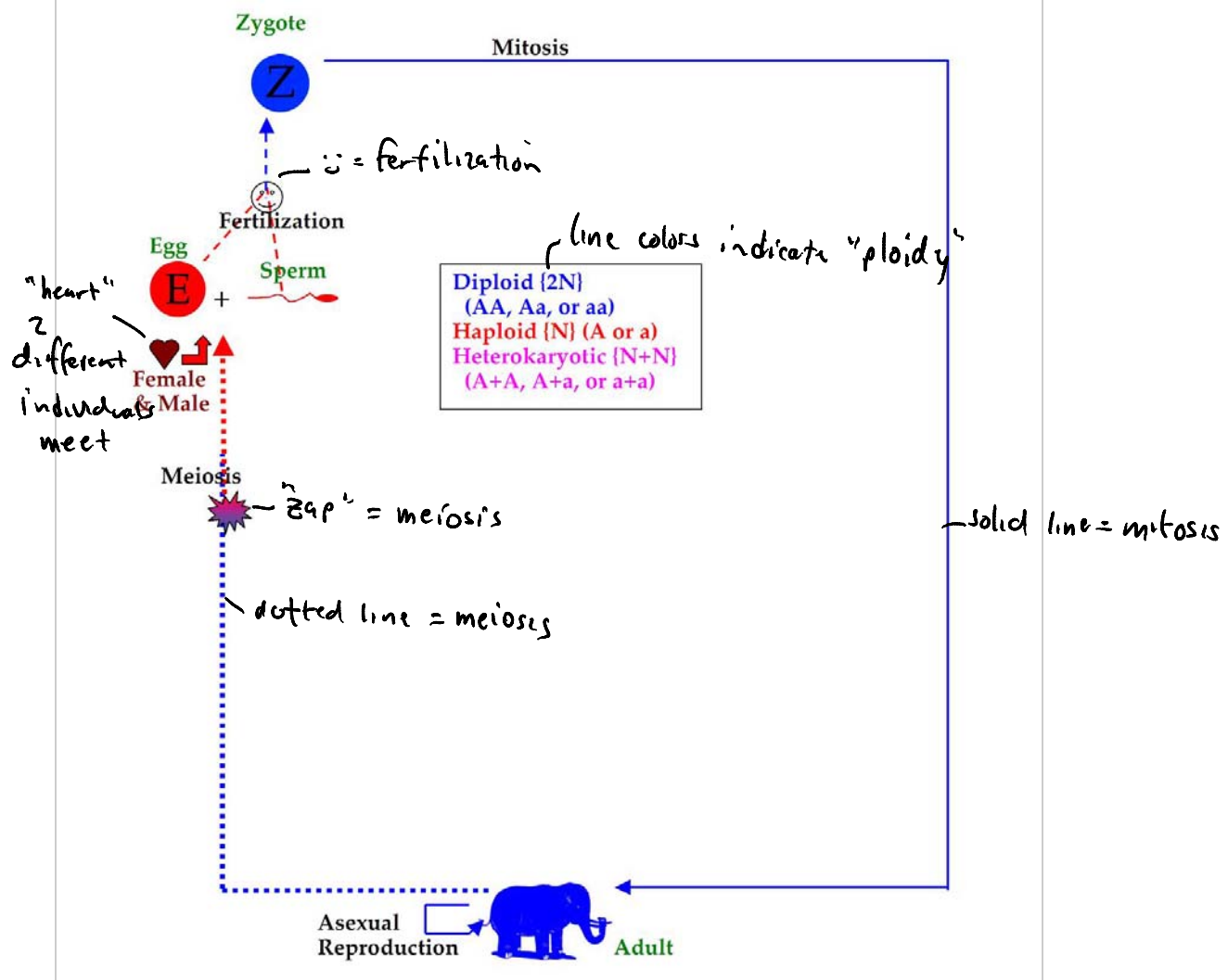
diploid (2N) - 2 copies of each gene: AA, Aa, aa

meiosis: turns diploid → haploid

(mitosis makes exact copies)

Life cycles - once around = 1 generation

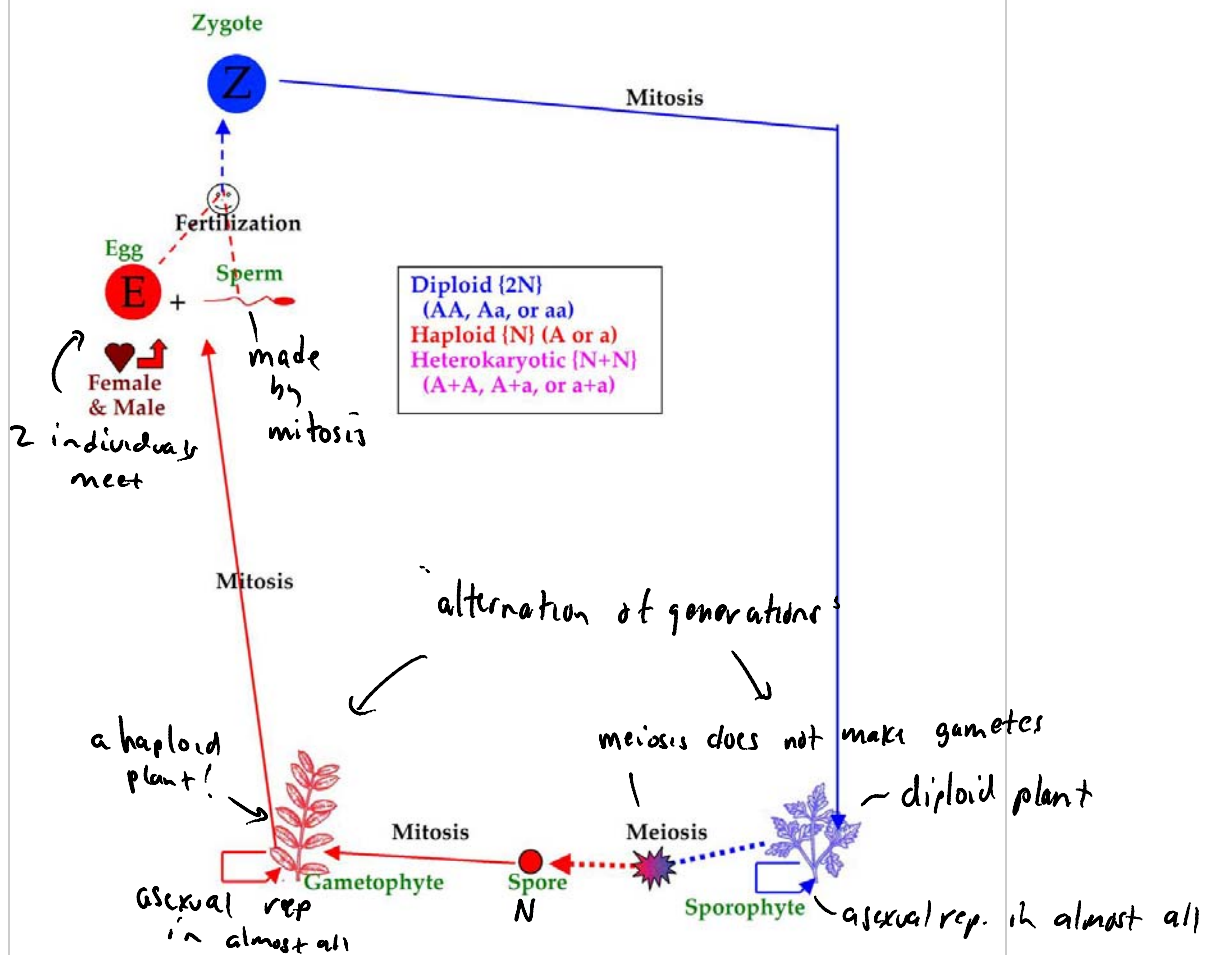
Animal Life Cycle



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Plant Life Cycle

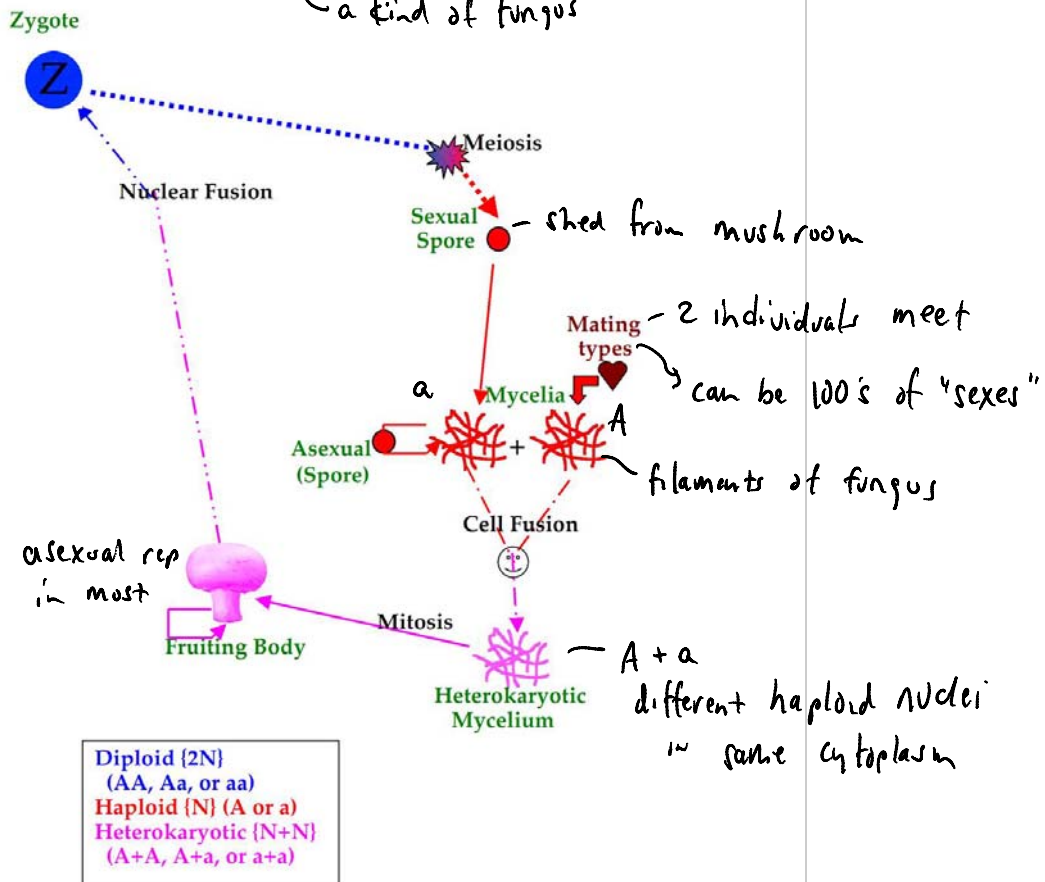


Diploid (2N)
(AA, Aa, or aa)
Haploid (N) (A or a)
Heterokaryotic (N+N)
(A+A, A+a, or a+a)

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Fungal Life Cycle (basidiomycetes only)

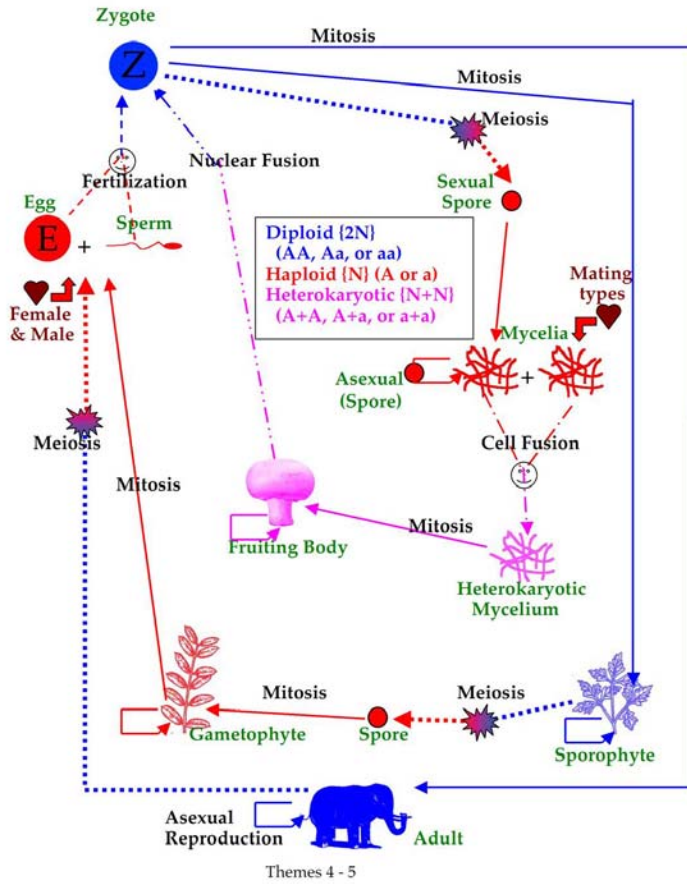


Diploid {2N}
 (AA, Aa, or aa)
 Haploid {N} (A or a)
 Heterokaryotic {N+N}
 (A+A, A+a, or a+a)

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Life Cycles Combined



What's the same
in all?
- all have zygote
- all have meiosis
allows separation
& mixing of
genetic material

comparison

| | does <u>meiosis</u> | does <u>mitosis</u> | does <u>fertiliz</u> | grows as <u>haploid</u> | gametes made by | matings by | possible <u>genotypes</u> |
|--------|------------------------|------------------------|-------------------------|----------------------------|-----------------------|----------------------------|------------------------------|
| Animal | Y | Y | Y | N | meiosis | sexes M, F | 2N AA, Aa etc. |
| Plant | Y | Y | Y | Y gametophyte | mitosis | " | 2N, N |
| Fungi | Y | Y | N | Y mycelium | N/A no gametes | matings types (many) | N, 2N N+N |