



ARJUNA NEET BATCH



Biological classification

LECTURE - 3

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Some imp. examples of Photosynthetic bacteria

(A) Photolithoautotroph
 ① purple S bac. → Thiospirillum

② green S bac. → Chlorobium

(B) Photoorganoheterotroph ^{→ auto}
 purple nonS bac. → Rhodospirillum, Rhodopseudomonas
 green nonS bac. → Chloronema, Chloroflexus

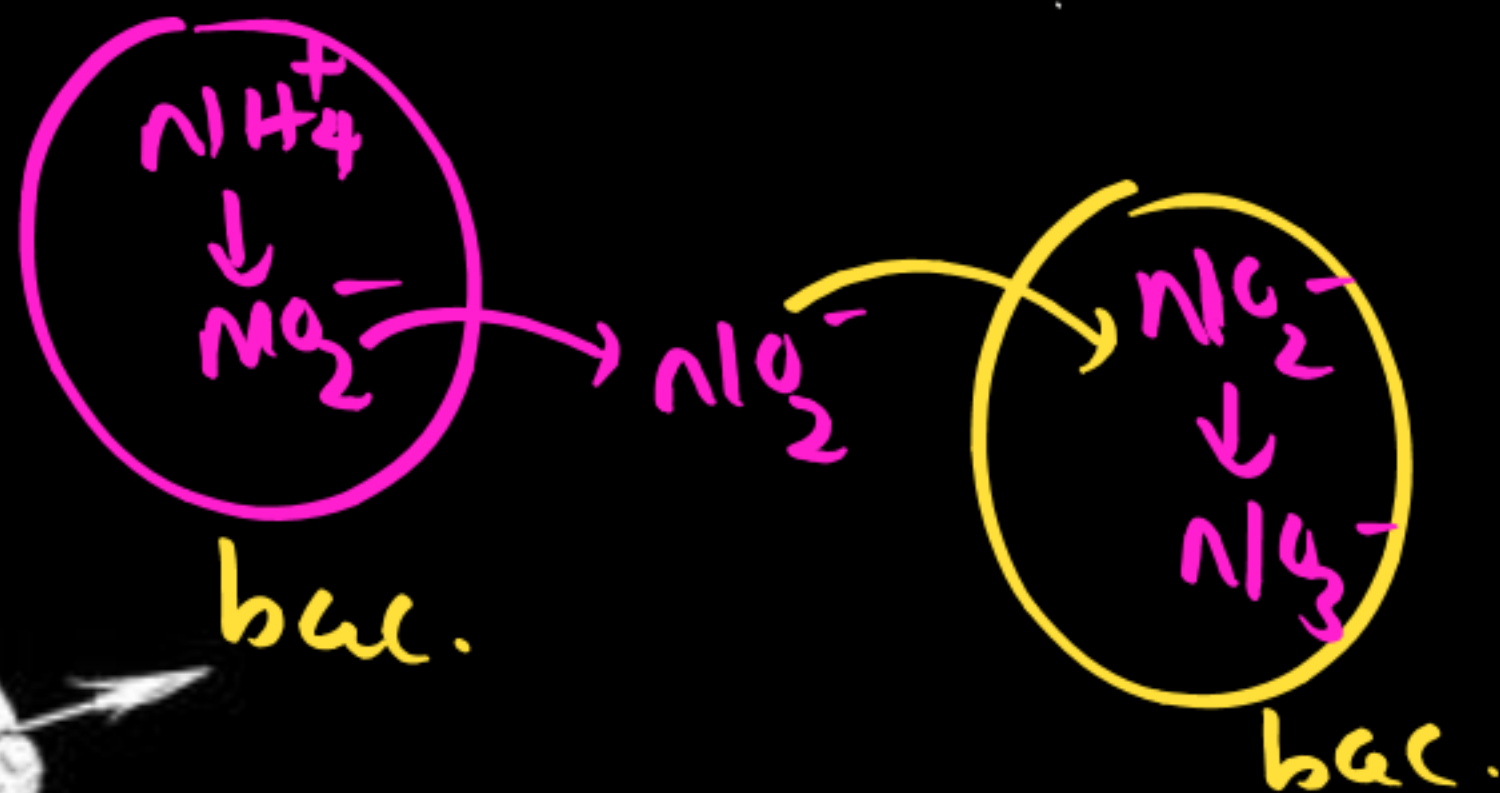
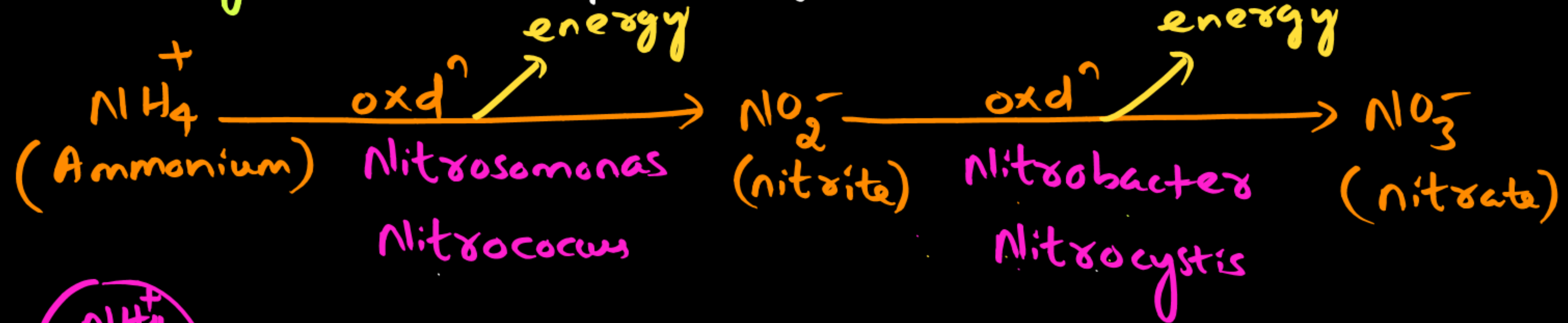


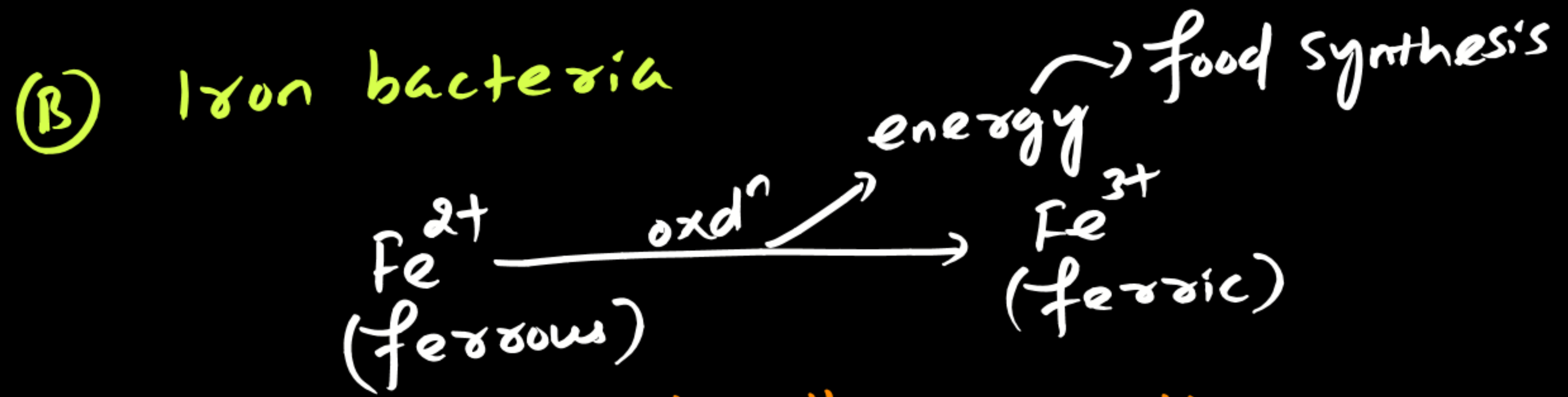
chemoautotrophic bacteria



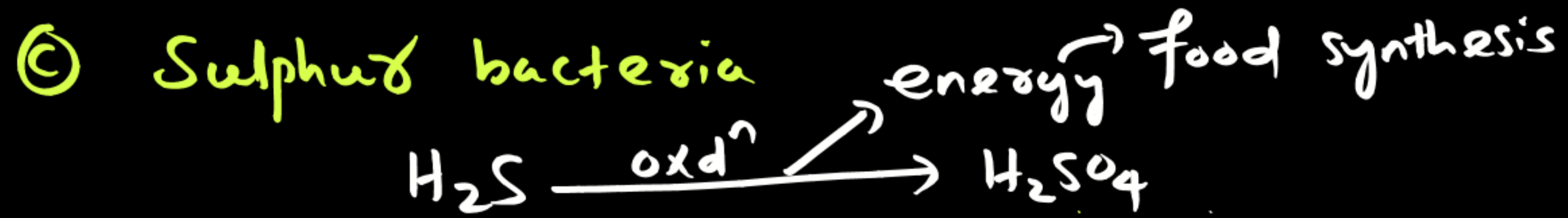
→ they use the energy released during oxidation of inorganic compounds to synthesize food

(A) Nitrifying bacteria → nitrification → $\text{NH}_4^+ \rightarrow \text{NO}_2^- \rightarrow \text{NO}_3^-$
 ↗ food synthesis ↗ food synthesis

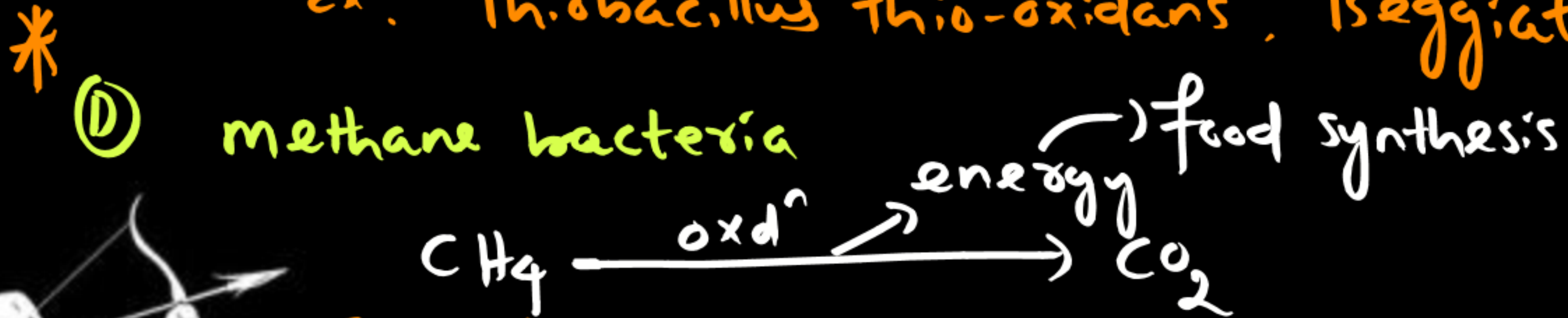




Ex: *Ferrobacillus*, *Leptothrix*



Ex: *Thiobacillus thio-oxidans*, *Beeggiatoa*



Ex: *Methanomonas*



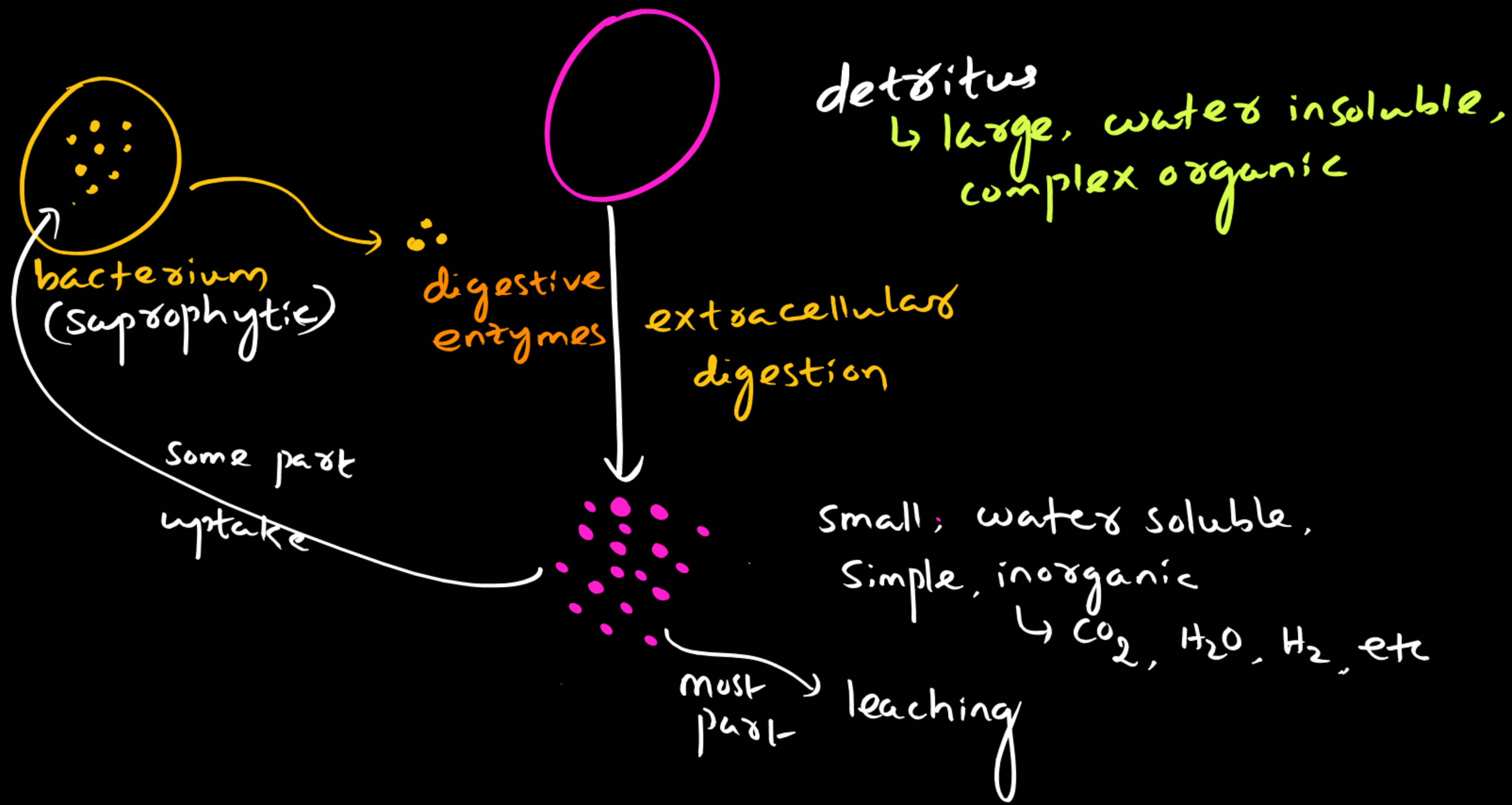


heterotrophic bacteria
↙ ↘
saprophytic symbiotic parasitic

saprophytic bacteria

- obtain nourishment from detritus
 - ↳ dead organic matter
 - ↳ dead body, fallen leaves, animal excreta, etc.
- always free living
- called decomposers / nature's scavengers





Types of saprophytic bacteria

① Obligate saprophyte

+ detritus → survive

- detritus → death

Ex: *Bacillus vulgaris*

② Facultative parasite

+ detritus → survive

- detritus → survive, saprophytic

becomes parasitic

Ex: *Pseudomonas*

Parasitic bacteria

→ uptake their nourishment from host.

→ can be pathogenic
↳ disease causing

① Obligate parasite

+ host → survive

- host → death

Ex: *Mycobacterium leprae*

② Facultative saprophyte

+ host → survive, parasitic

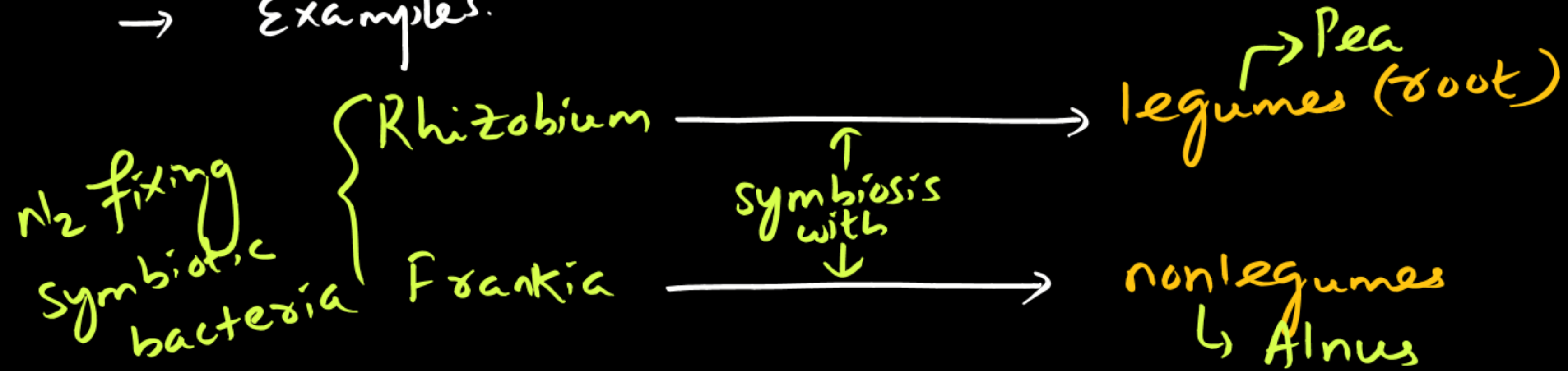
- host → survive, becomes saprophytic

Ex: *Mycobacterium tuberculosis*

Symbiotic bacteria

→ uptake nourishment from its partner.

→ Examples:



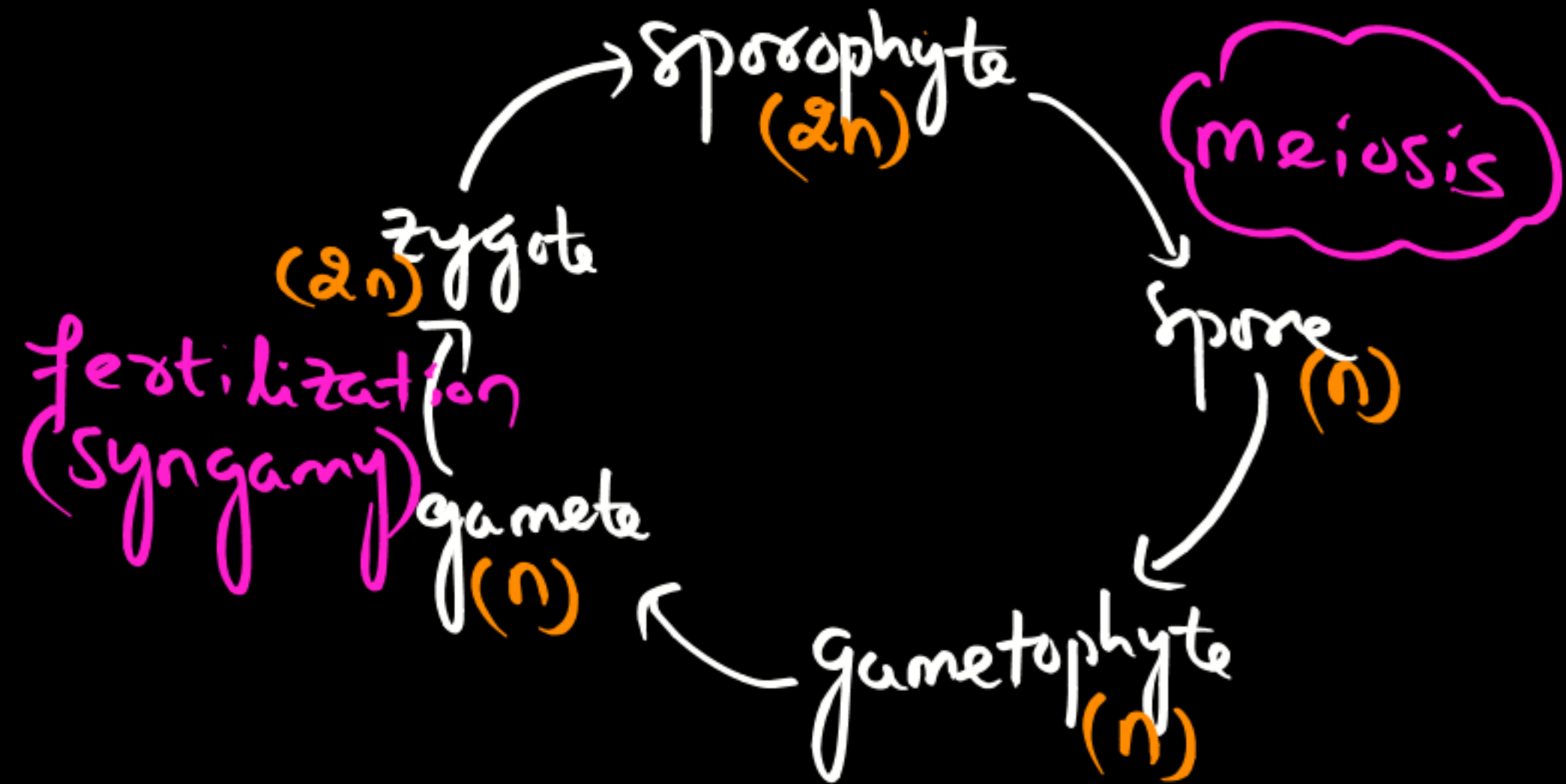
Reproduction in bacteria

monoxa
 ↓
 sexual rep.
 -ve
 ↓
 = meiosis -ve
 gamete -ve
 = fertilization -ve
 (syngamy)

Asexual reproduction
 ↳ Binary fission
 ↳ cyst formation
 ↳ endospore formation

↳ genetic recombination
 parasexual reproduction
 ↳ Transformation
 ↳ conjugation
 ↳ Transduction

monoxa (bacteria)
 ↓
 no alternation of generation
 ↓ Reason
 lack of meiosis, syngamy



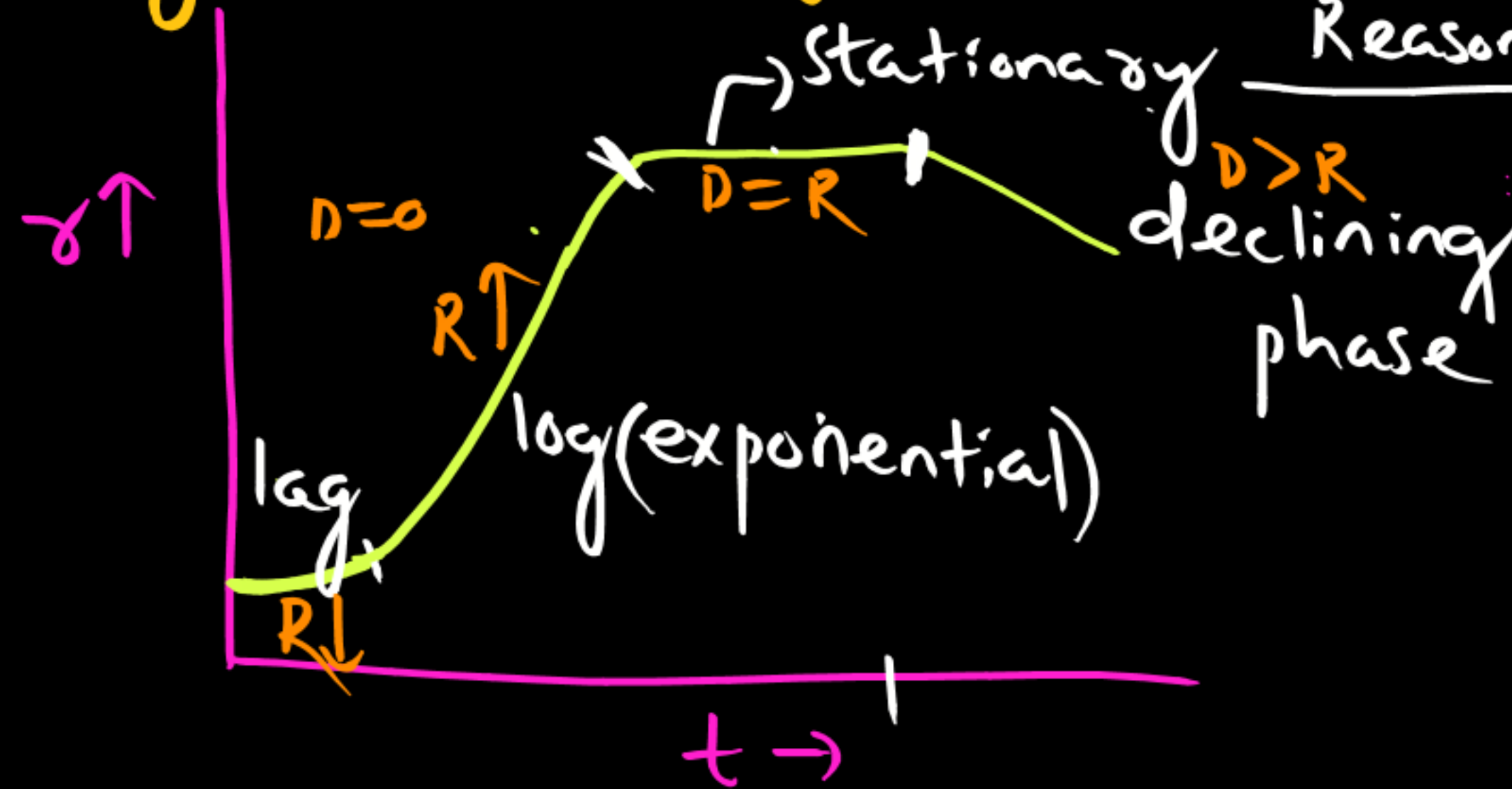
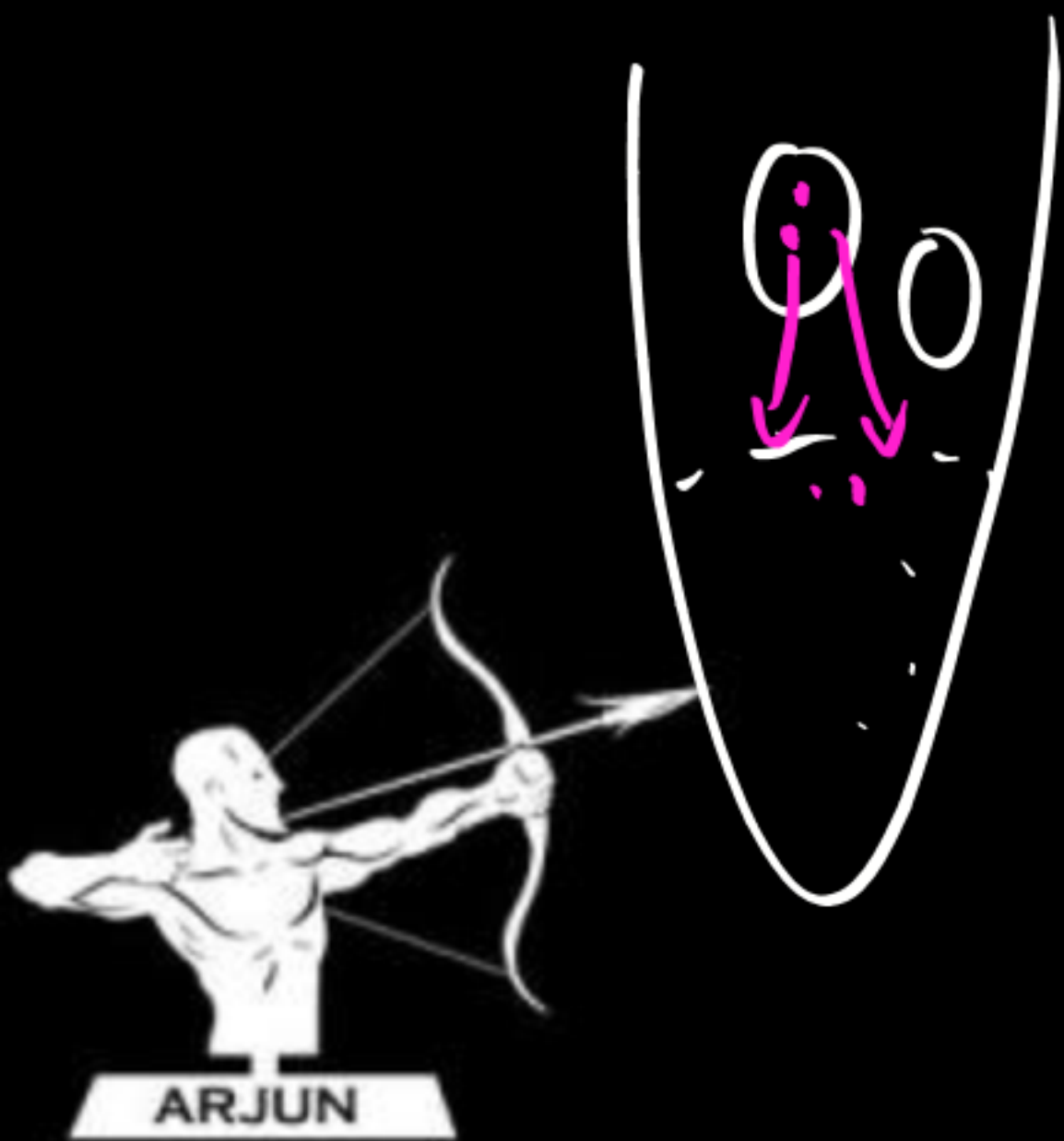
Binary fission



- most common mode of reproduction in bacteria
- cell division → amitosis
- no. of bacteria produced from x no. of bacteria after n no. of generation
 $\rightarrow x \times 2^n$
- occurs under favourable condition



Phases during bacterial growth in batch culture



Reasons

- + lack of nutrients
- + lack of space (contact inhibition)
- + accumulation of toxin or waste material
- + accidental introduction of lytic viruses



*thanks
for watching*

