

INTERACTION AMONG LIVING THING

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Who is this?

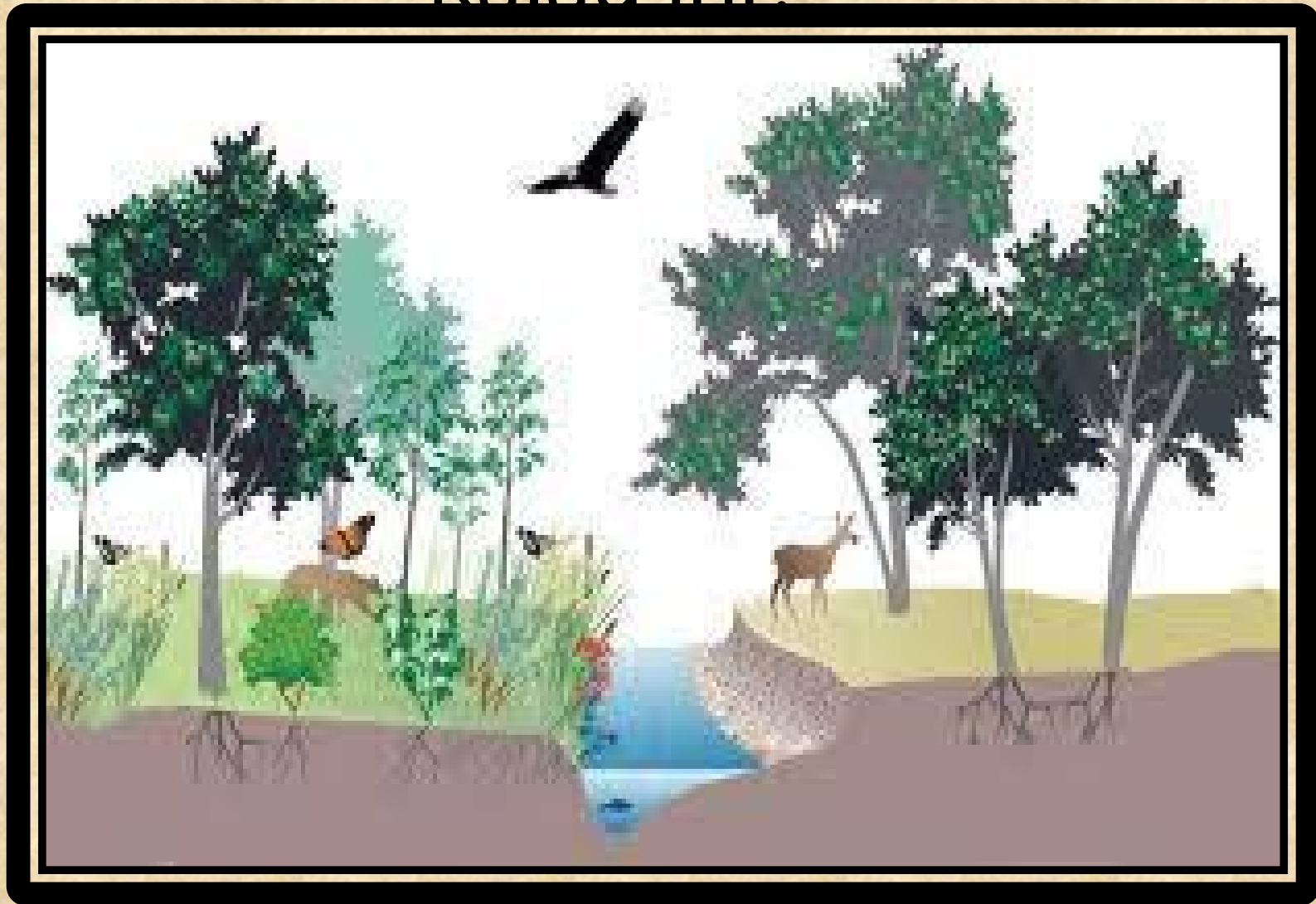
- Can you live alone?
- Can you live without another human?
- Is there human live without another human?
- Can human live without another organisms?
Why?

Apa saja komponen penyusun ekosistem ini?



Botanical Society of America
Photo by Marshall Sundberg

Kalau ini?



- All of organisms need material and energy for life.
- They get material and energy from other organisms.
- Organisms interact with others
 - With same species or another species
 - Special interaction or general interaction.

- Learning about ecosystem
 - Component
 - Interaction
 - Food Chain
 - Food web
 - Web of life
 - Material cycle and energy flow
 - CO₂, O₂, H₂O, N. and P cyclic
 - Trofi, amount and biomass pyramid

Componen ecosystem

- Biotic
- Abiotic

- Biotic-biotic
- Biotic-abiotic

- All of ecosystem have spesific biotic and a biotic characteristic
 - Rain forest:
 - Humid, afew of sun light, Land have afew of nutrition,
 - Tree, liana, arboreal
 - Give another example?

- Sun is source of primary energy
- Plant, ganggang, cyanobacter can change sun energy to chemical energy
- Animals transfer energy from one organisms to others.

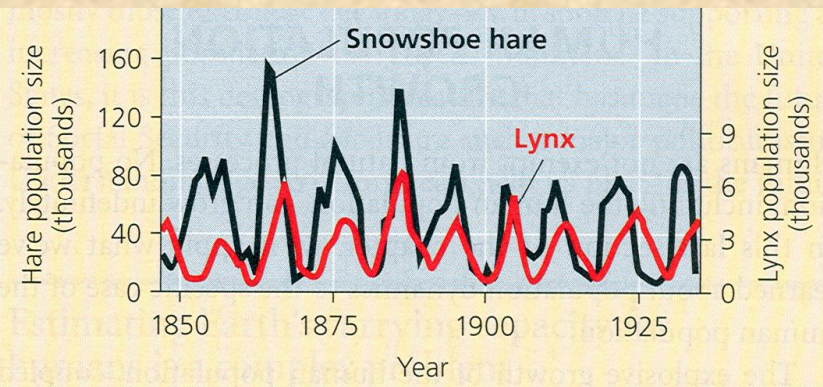
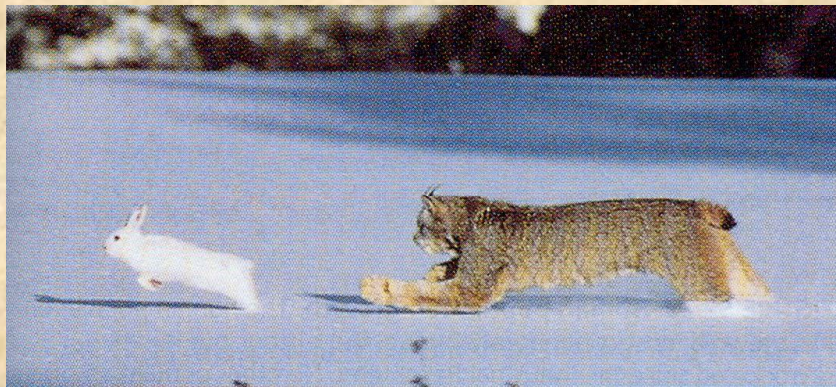
Predation

- Occurs when one organism hunts and kills another organism for food
 - Predator: the hunter
 - Prey: the hunted, killed, and eaten organism
- Predators have adaptations to help them hunt prey
- Prey have adaptations that help them avoid predators



Predator-Prey Relationships

- Some predators rely on one particular prey. When the population of that prey declines, so does the predator population.



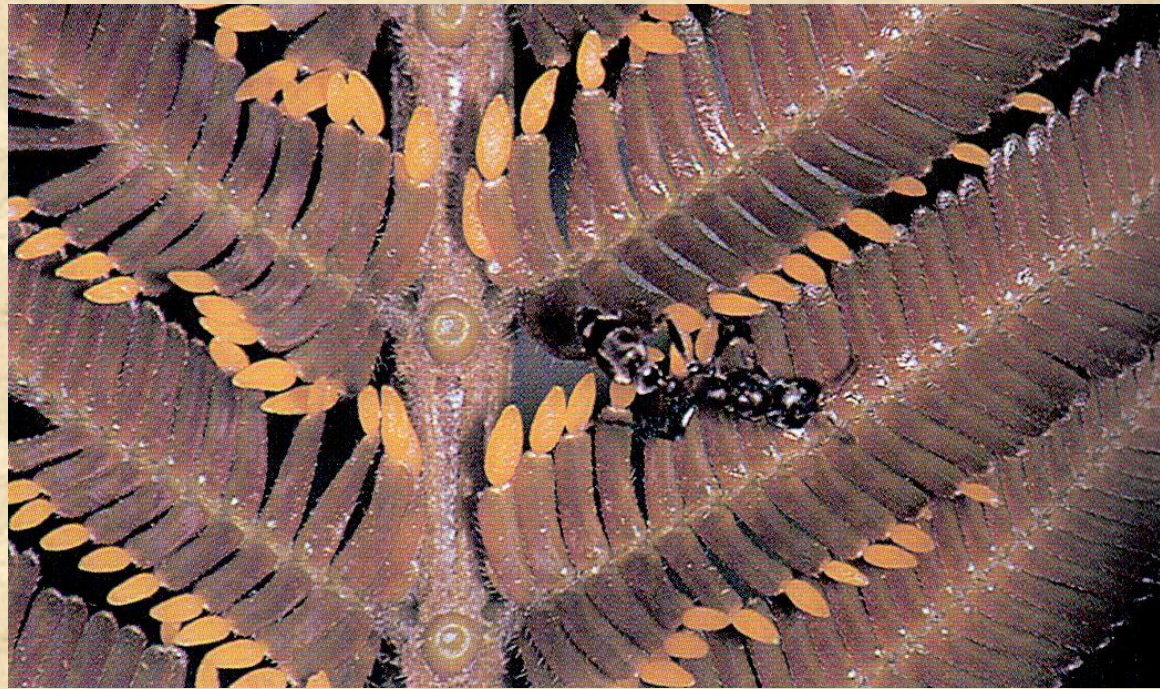
Symbiosis

- The relationship between two organisms in which at least one is benefited; the other organism may benefit, be hurt, or neither



Mutualism

- a relationship in which both organisms benefit.



Commensalism

- A relationship in which one organism receives benefits while not hurting or helping the other.



Parasitism

- a relationship in which one organism benefits at the expense of the other.



Mutualism



Commensalism



A type of symbiosis in which one organism is helped and the other organism is not harmed or helped in the relationship

Parasitism



A type of symbiosis where one organism is hurt while the other organism is helped by the relationship

ENERGY FLOW

"All of organisms need energy"

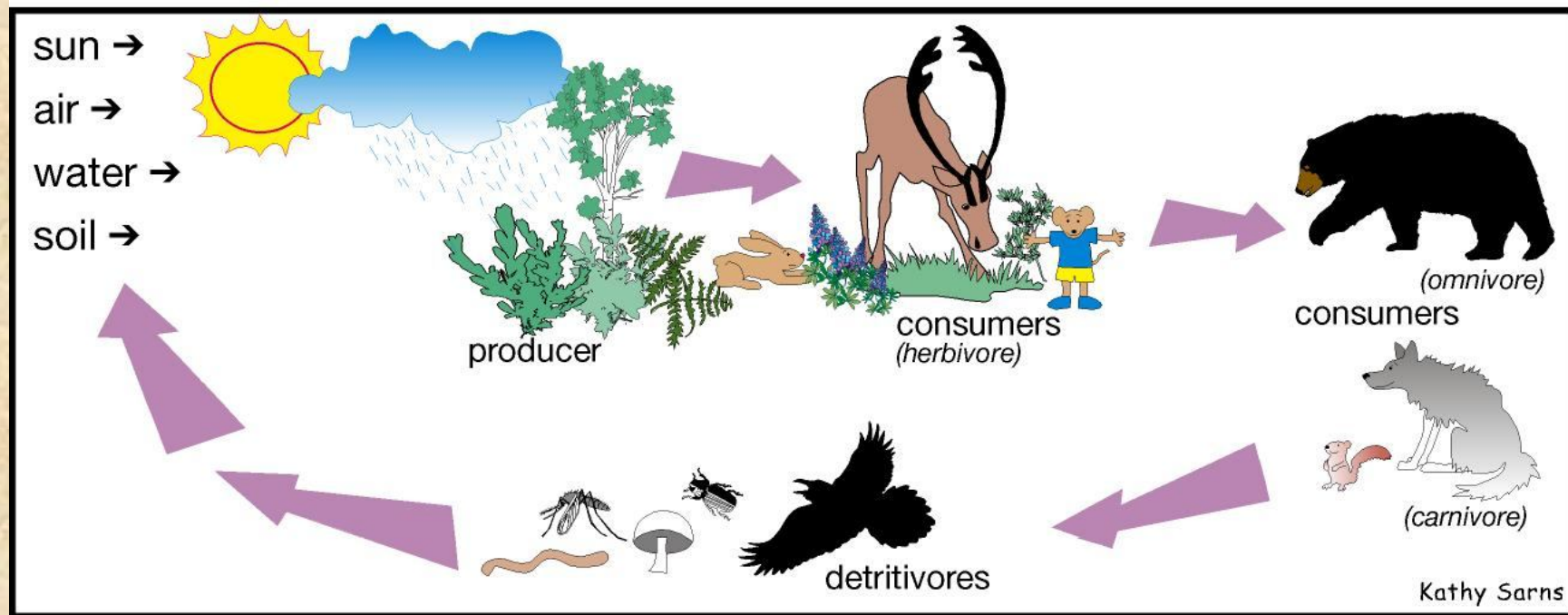
What is the source of energy?

What is the primery of energy?

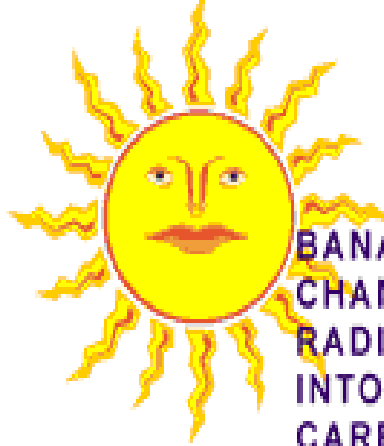


ENERGY FLOW

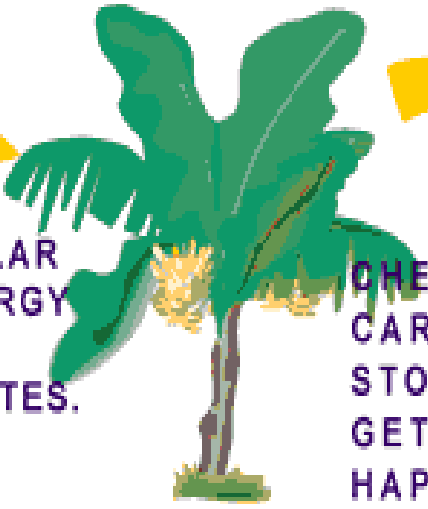
Food chain



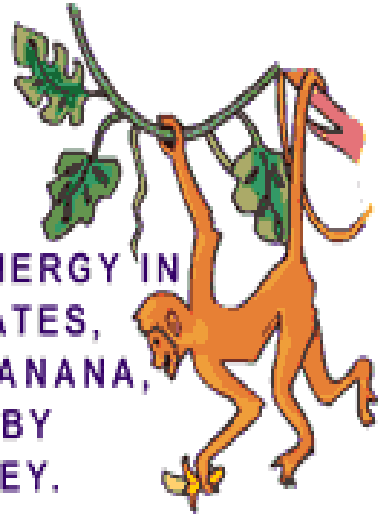
HOW A MONKEY USES ENERGY CONVERSION TO LEAP FROM TREE TO TREE



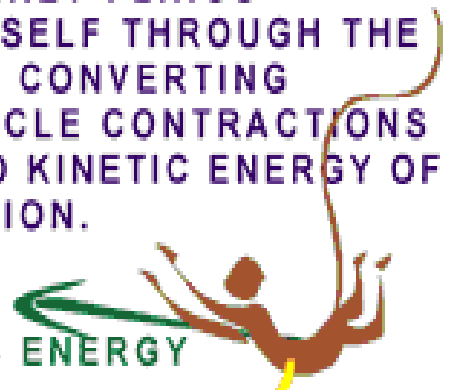
BANANA TREE CHANGES SOLAR RADIANT ENERGY INTO CARBOHYDRATES.



CHEMICAL ENERGY IN CARBOHYDRATES, STORED IN BANANA, GETS EATEN BY HAPPY MONKEY.



MONKEY FLINGS HERSELF THROUGH THE AIR, CONVERTING MUSCLE CONTRACTIONS INTO KINETIC ENERGY OF MOTION.



KINETIC ENERGY

HEAT FLOW

MUSCLE FIBERS, FULL OF MUSCLE CELLS, CONTRACT, CONVERTING CHEMICAL INTO MECHANICAL ENERGY AND HEAT FLOW.

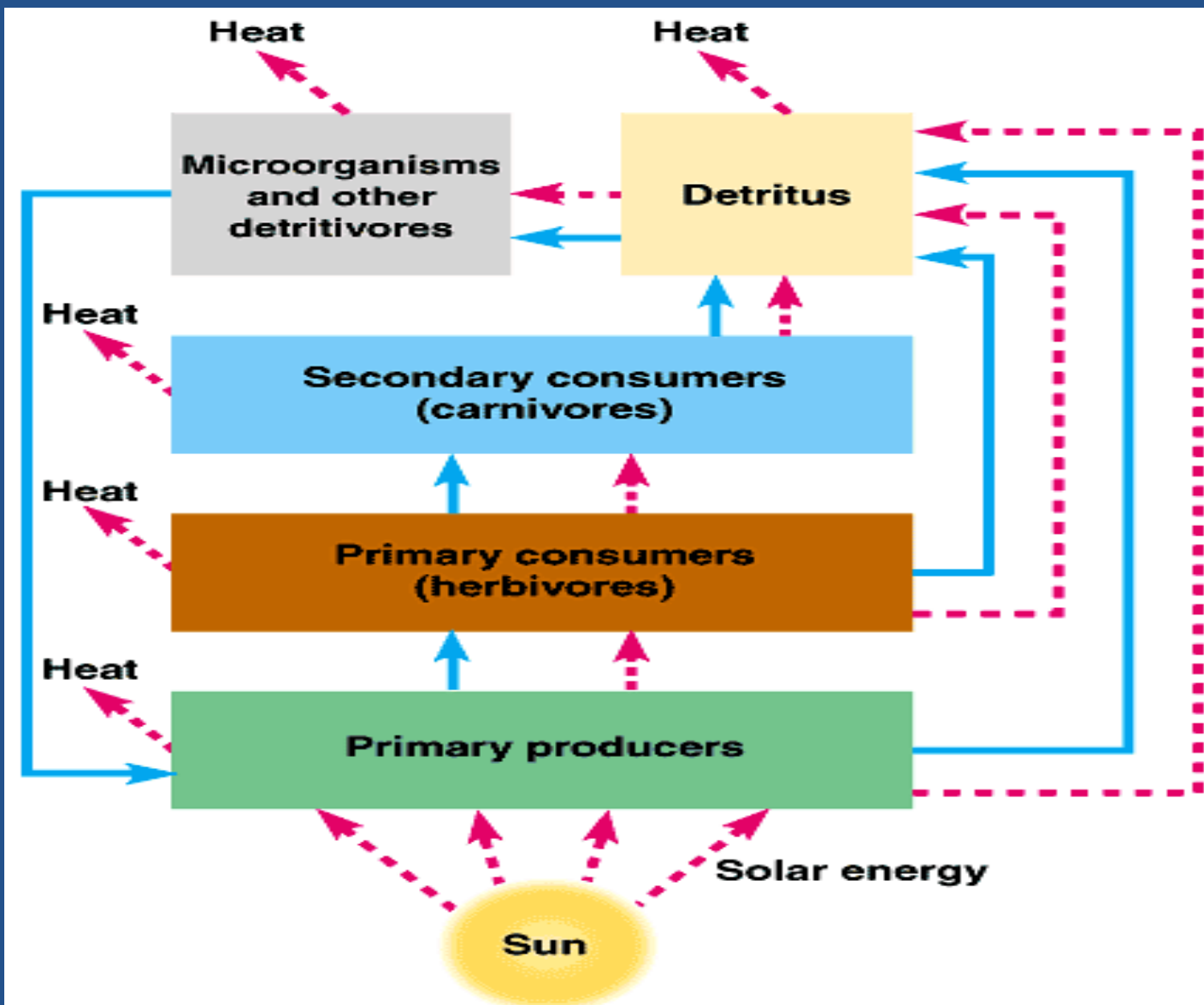


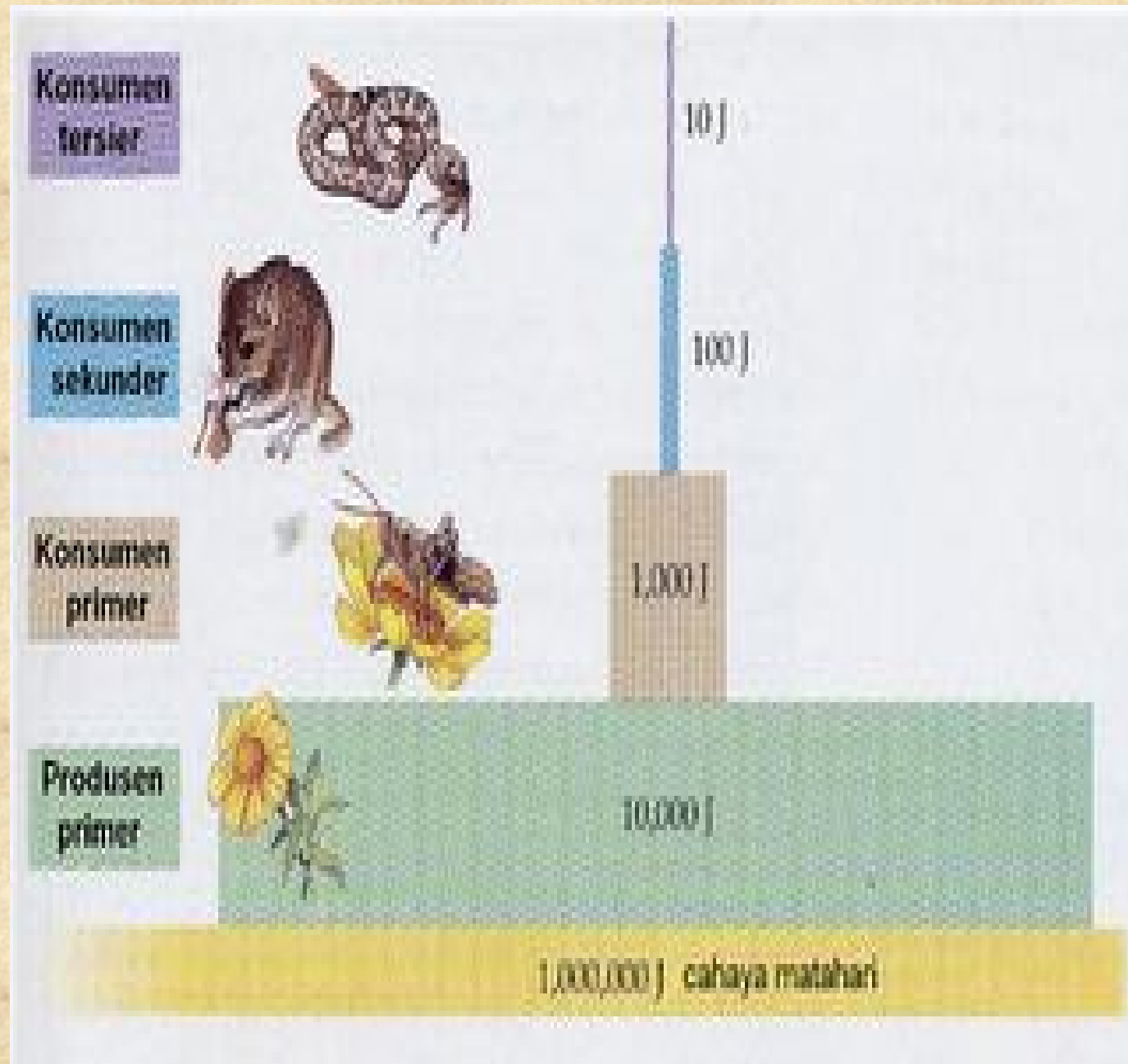
CHEMICAL ENERGY STORED IN GLUCOSE IS TAKEN TO MUSCLE CELLS IN MONKEY.



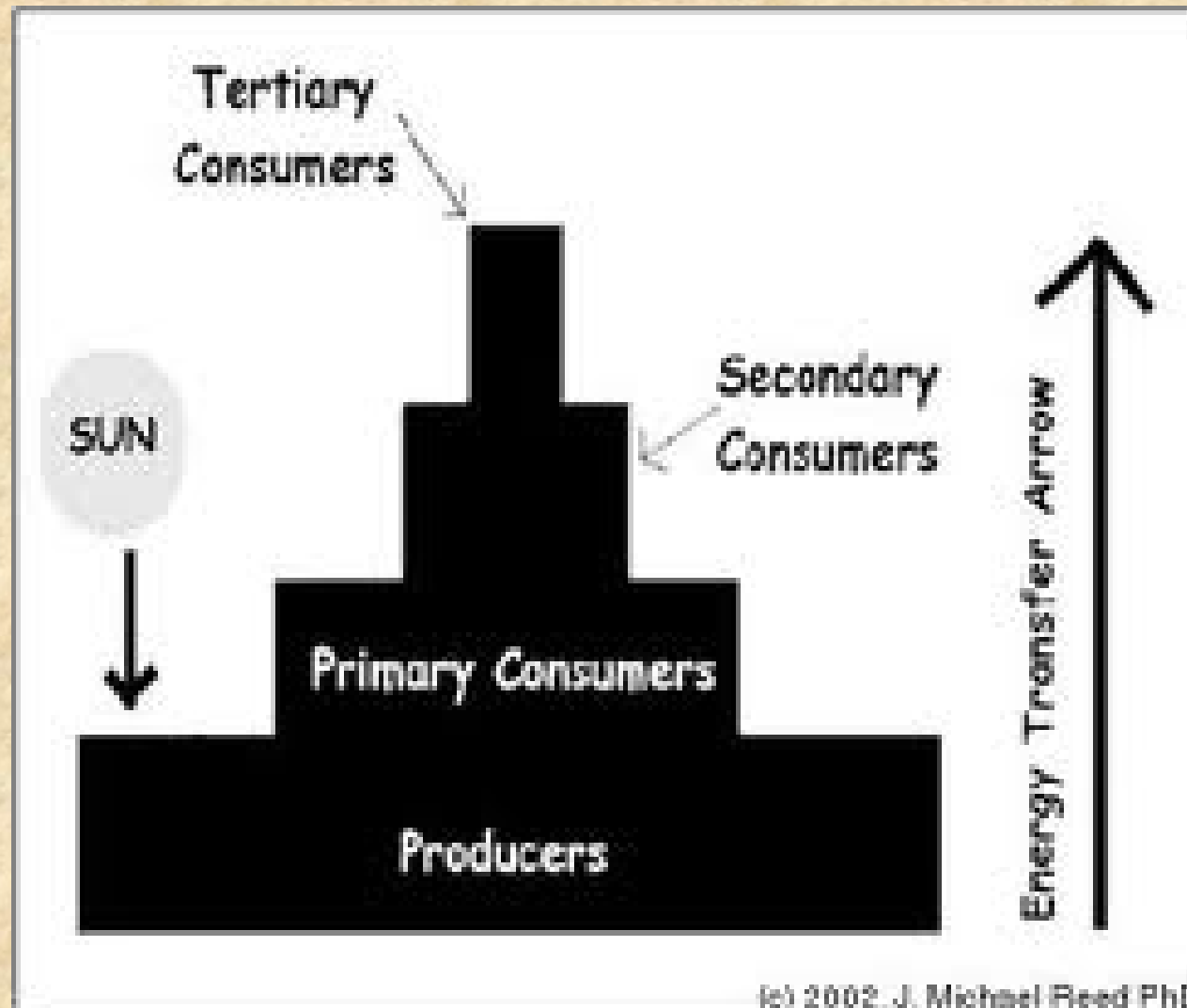
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ENERGY AS HEAT FLOWS FROM MONKEY'S BODY TO SURROUNDING AIR.

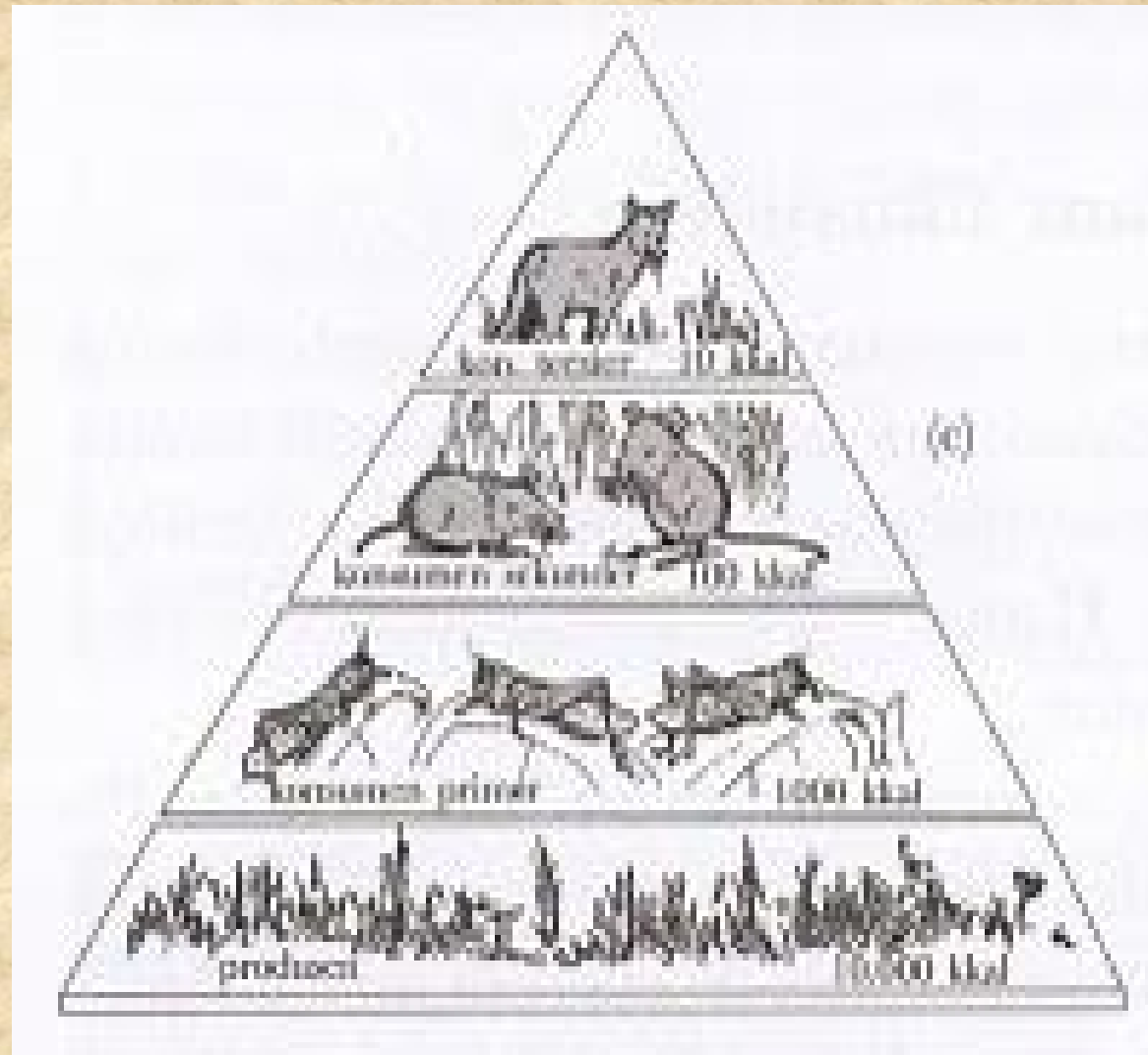




LEVEL OF TROPHIC



ECOLOGY PYRAMID



Main map



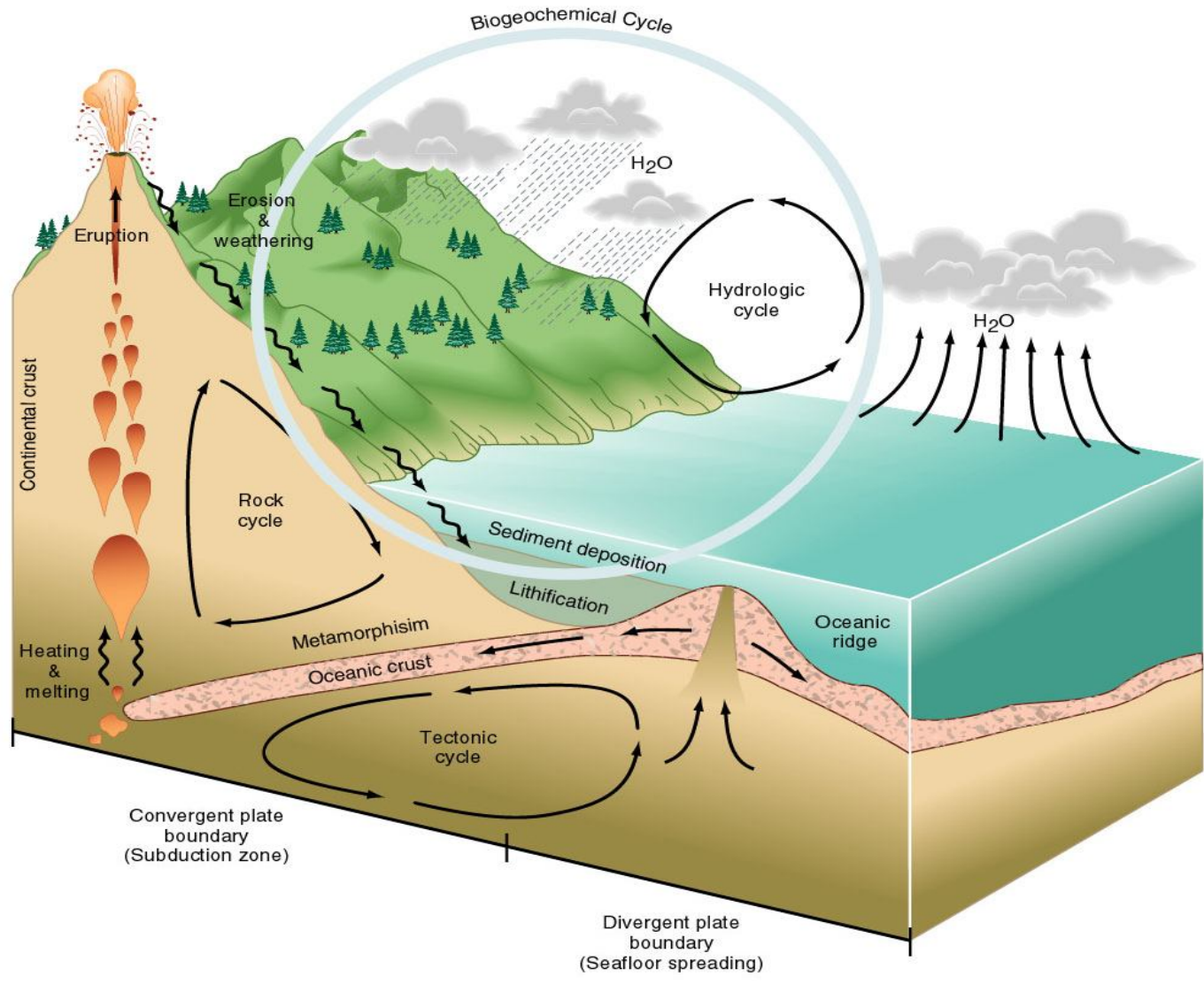
BIOGEOCHEMICAL CYCLE

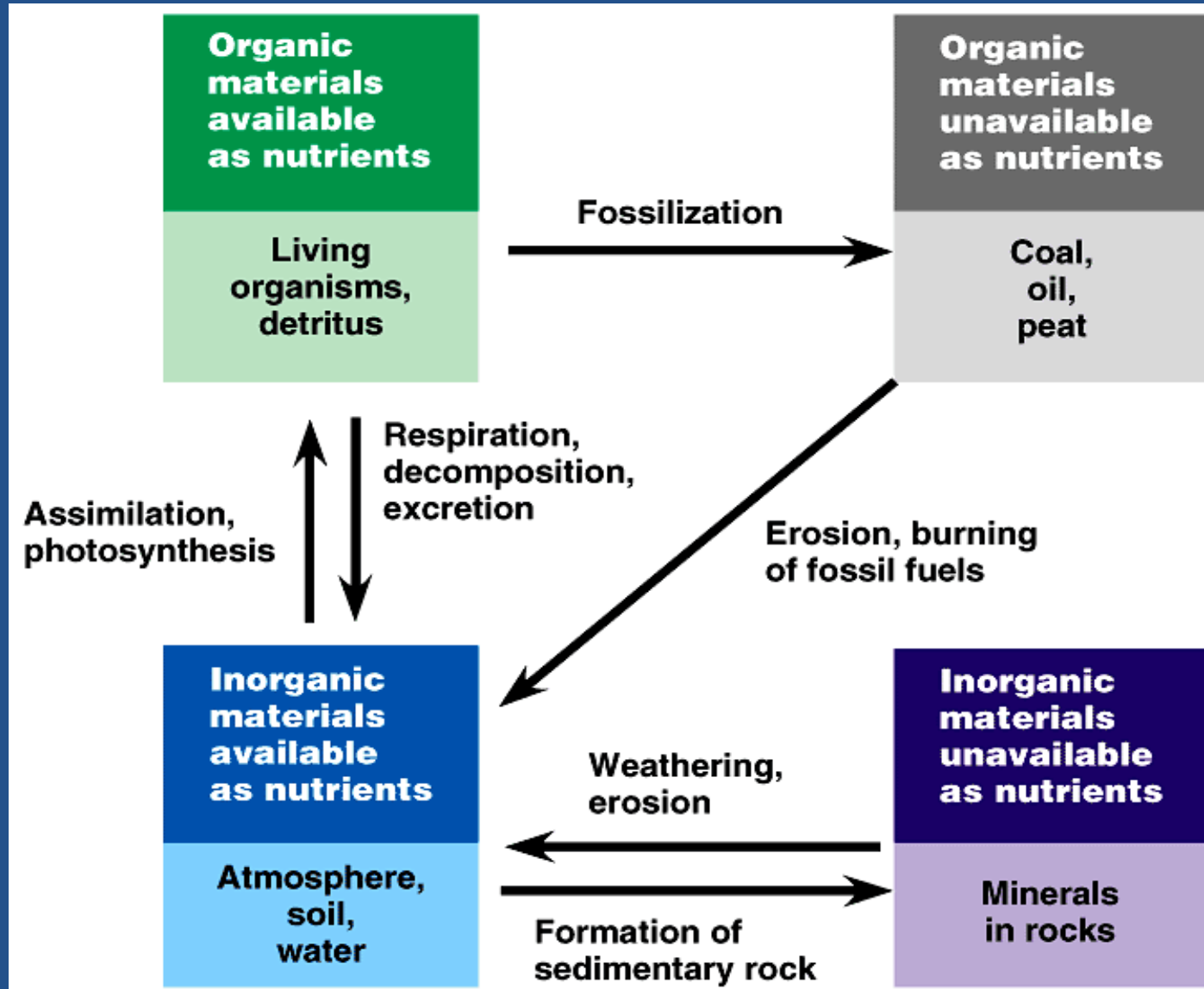
BIOTIC AND ABIOTIC COMPONENTS

ORGANISMS AND CHEMISTRY

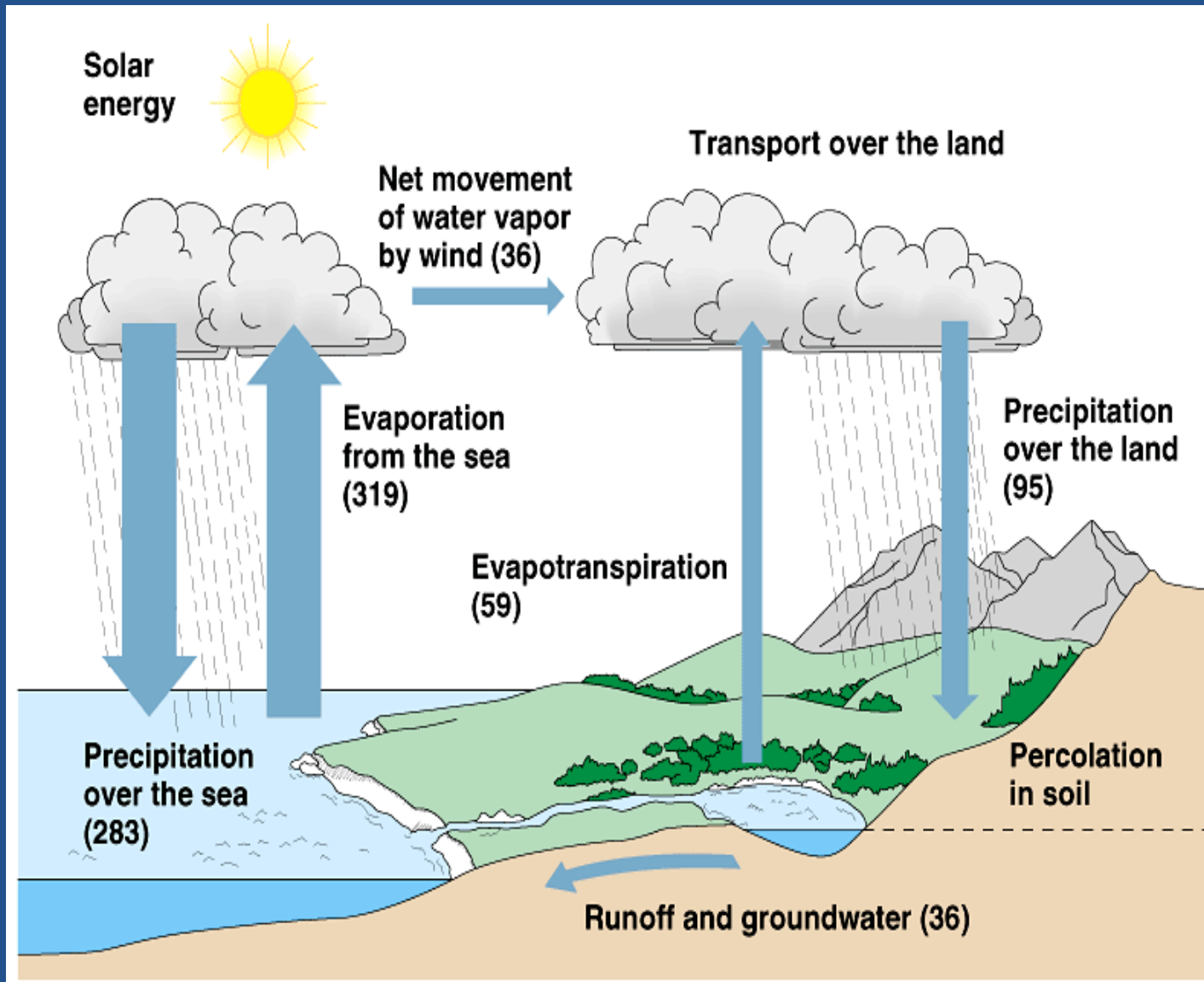
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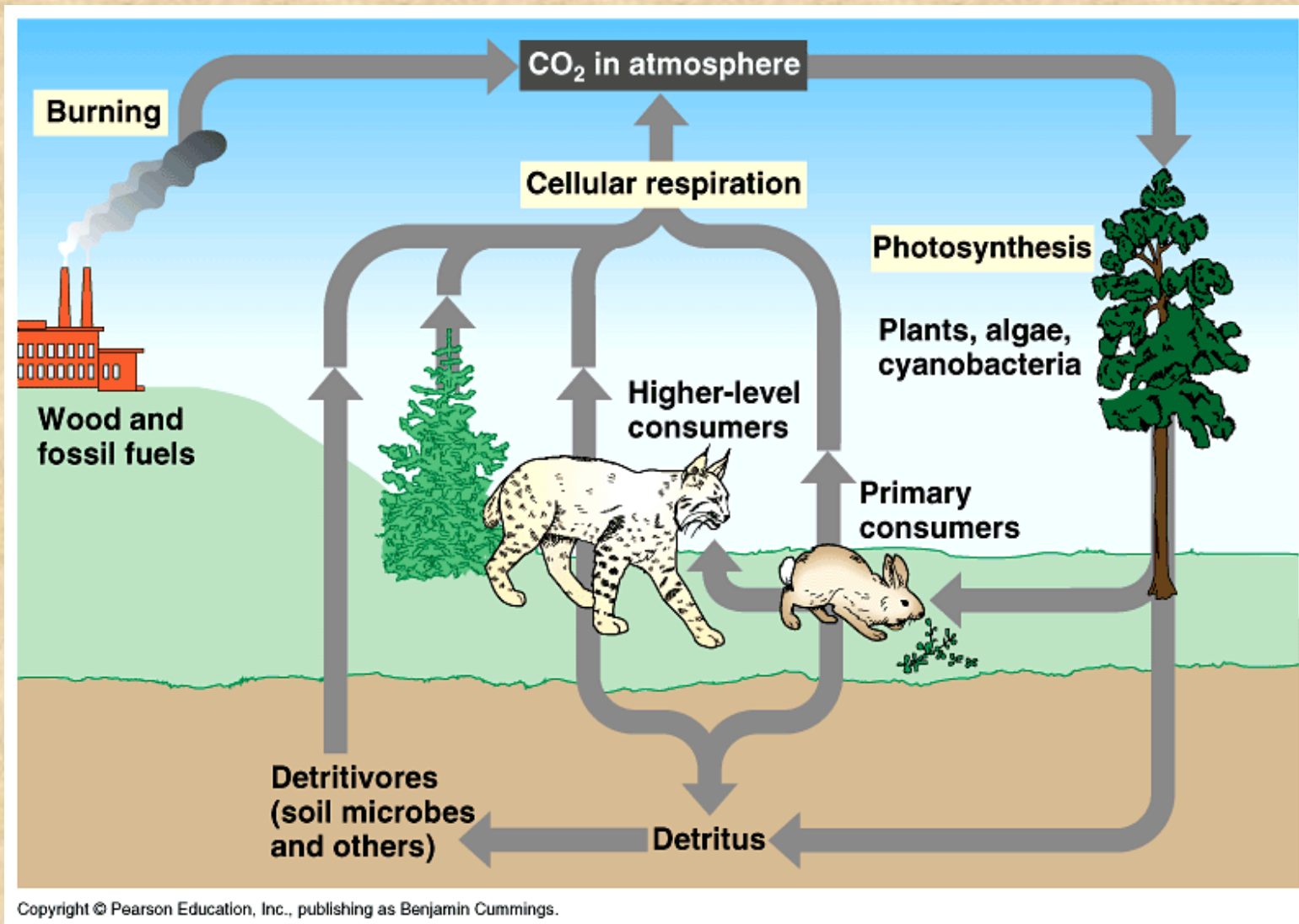




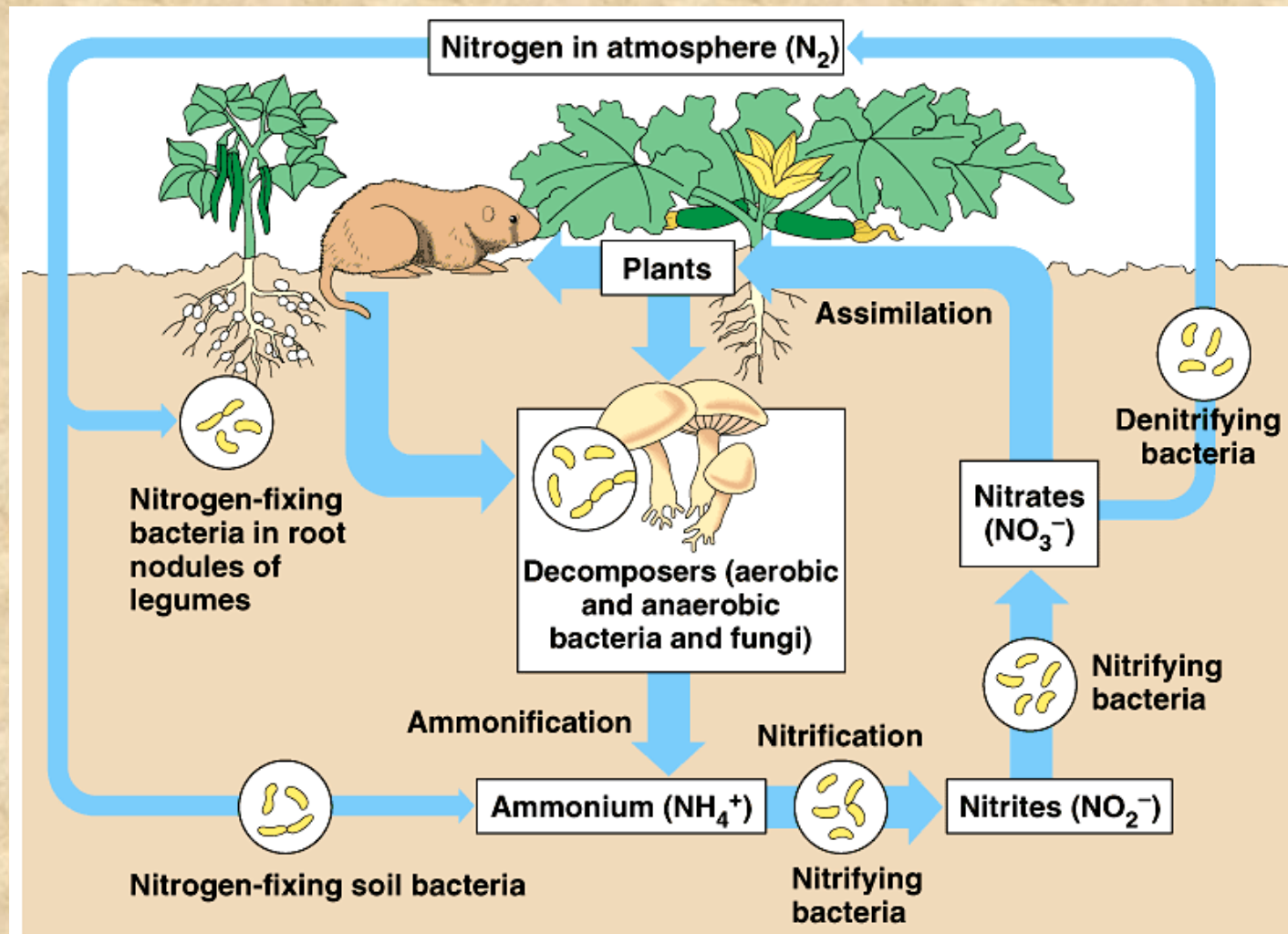
HYDROLOGIC CYCLIC



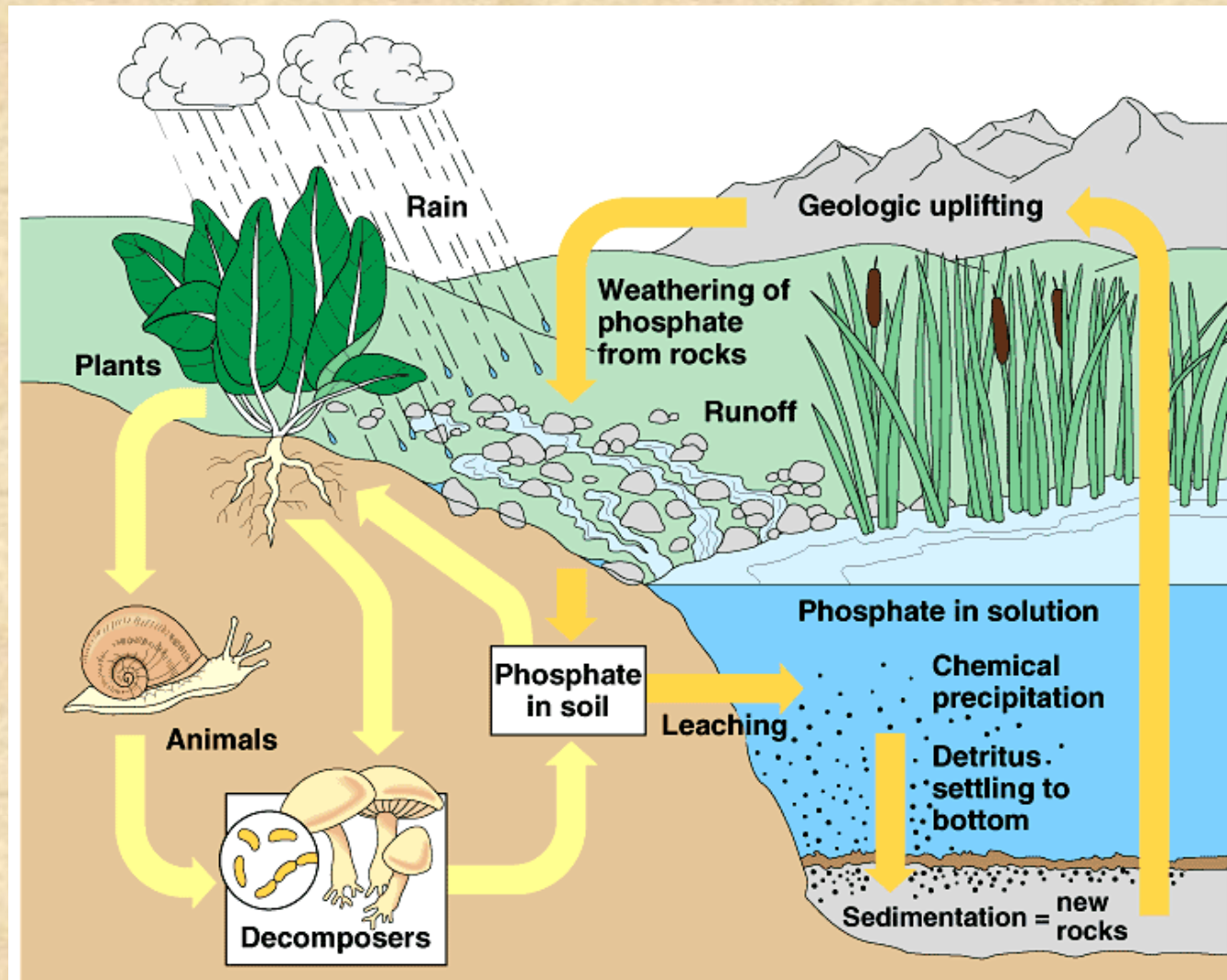
CARBON CYCLIC



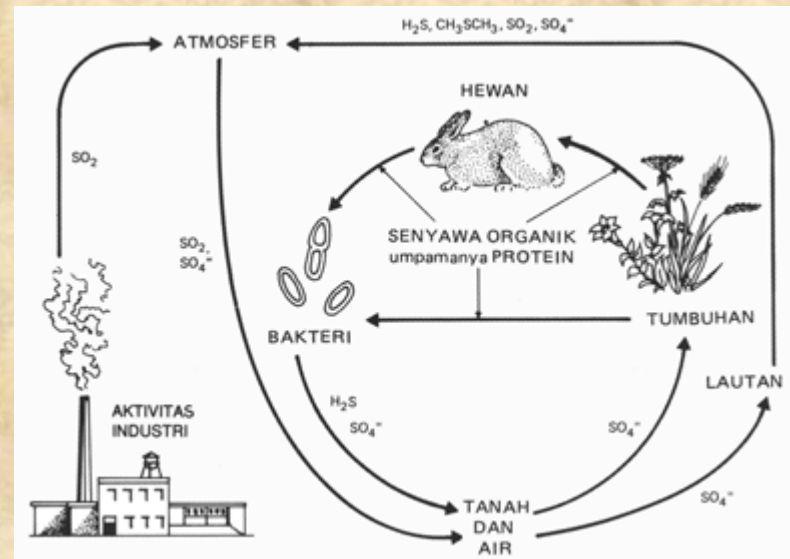
NITROGEN CYCLIC



FOSFOR CYCLIC



Sulfur Cyclic



DAUR SULFUR

