

Thurs: Nucleic Acids: hold biological info. Sequence of nitrogen bases

→ Sequence of mRNA → Different types of proteins.

DNA vs RNA structure (Replication, transcription, translation)

Proteins: KI

Lipids: Nonpolar tails, polar heads = phospholipid makes Membrane

lets nonpolar substances through

↳ Saturated Fats: have multiple hydrogen bonds, solid @ room temp, No double bond, from animal sources, increase LDL

ONLY SINGLE BONDS

↳ Unsaturated: Mono = one double bond, Poly = more than one, liquid @ room temp, From plant sources, reduces LDL + triglycerides

Carbs: Bond in dehydration (uses water)

↳ Branched: Glycogen / starch - more bonds = more energy

2 glycosidic linkages, spiral shaped,

↳ Stacked: hydrogen bonds between hydroxyl groups, bond in straight line for structure (cellulose / chitin) builds up cell walls, less bonds

Nucleic Acids: Antiparallel in replication (read 3' → 5', copied 5' → 3')

AA's requires free 3' hydroxyl group

Proteins: Bond between NH_2 + carboxyl (COOH) to form in dehydration ~~to make~~ to make peptide

Protein Activity

Organelle Review WS (Bozeman Video)

4th block 45 min for AP registration

Fri: External + internal cues trigger gene expression

↳ Croc + gator ^{& some turtles} sex determination due to temp.

- Thermosensor protein present, can activate cell signaling inhibits protein in egg that helps mde development.

Gene expression in cells help in determining function of cell

↳ Temperature for himalayan rabbits - Max pigment production

@ 15-25°C: Colder spots (ears/nose brown to keep warm)

Warmer spots white fur to stay cool

Cells → Tissue

↓
organs

↓
systems

↓
Cardio/Respirator

↓
Muscle/Nervous

↓
Endocrine/integument

Plant organs: (Functions on slides)

↳ Vascular: Xylem (water + dissolved minerals)

Phloem (food sources/hormones for growth)

↳ Cardio + Resp system: Arteries = away from heart

Veins = towards heart

trace blood through body (emphasize oxygenation)

→ Bozeman?

Communities:

↳ Predator/Prey relations (More prey = less predator & vice versa)

↳ Symbiotic relations (mutualism, commensalism, parasitism)

↳ Intro. of species (rabbits, Australia's war on feral cats)

↳ Keystone species

Predator prey lab activity

Bonus: Circ System Like vascular plant syst. Essay

Mon

KI: 54-59 exponential growth

Primary productivity: taking inorganic + making it organic

↳ largest source of energy in a system (from sun to producers)

↳ Gross vs. net - Before any is used / after some used → passed on
↳ 10% law

Competition

↳ Resources: food, water, shelter

↳ territoriality: between the same / different species (nonverbal pheromones)

↳ health:

↳ Predation:

↳ Density-dependent: the more dense, the ~~more~~ greater mortality

- Bioaccumulation: Build up of waste

- Carrying capacity:

Human impact

↳ overpopulation: deforestation, carrying capacity

↳ pollution

↳ Global warming: CO₂ increase

- Climate change

↳ Acid Rain: Burn coal = Sulphur dioxide + nitrogen oxides released + turn to rain

↳ Ozone Depletion: made of O₃ absorbs UV, chlorine/bromine strip O₃ → O₂

Adaptations related to obtaining / using energy

↳ Predator - prey

Exponential growth practice

Climate Change in Yellowstone Biointeractive

4th block honors day practice

Food webs

ask about a...

Tues Change in structure = Change in function

Enzymes

Cofactors: "helper molecules" attached to enzymes to increase biological activity, make new active site

Coenzyme: loosely bound to enzyme, intermediate carriers of electrons, atoms, functional groups, transferred in reaction (carrier)

↳ Both specific for certain molecules, enzyme only works to break down w/ cof/coe

Allosteric inhibitors: Change active site can't happen

Allosteric Activator: Opens AS, rxn can happen

↳ Lac Operon

Change in function

↳ Temp: Denatured

↳ pH: optimum pH changes for different enzymes

↳ Conc: More enzymes, ~~catches up~~ catches up w/ substrates, levels off

ALSO ← Digestion

↳ Bc. of gases

Circ of fluids

↳ Mouth: Saliva begins carb break down

↳ Esop: Peristalsis:

↳ Stomach:

↳ SI: Villi inc. SA to take in more nutrients

↳ LI: Compacts waste to poop

Look up More

Rumen: First stomach, partly digests, sent to 2nd (reticulum)

↳ Bacteria break down cell wall, throws up chews

Lab-81

Cont breakdown
Cellulose (lute enzyme) → First Stomach (Rumen)
↳ Processed mechanically, exposed to bacteria that breaks down cellulose
↳ Reticulum allows for regurgitation, "chew cud" finely divide food
↳ Passed to Omasum for more mechanical processing
↳ Passed to true stomach, abomasum, enzyme lysozyme breaks down bacteria to release nutrients

Rumen:

Wld: Competition: For resources, mates, territory

Parasitism: Me in Ecuador

Predation:

Mutualism: Both +

Commensalism: One + one ~~do~~ affect

Epidemiological Model:

Symbiotic relationships + Feedback:

Feedback: Positive - Part of system ↑, another part ↑, makes first part ↑ more
↳ Exp Growth: more resources or lack of predators = more births = ↑ pop.

Negative

↳ Inc. pop. = - food supply = + Deaths = - population

Ind. vs Pop. Characteristics

↳ The more advantageous the individual characteristic, the better chance for survival

↳ Ind. Char. advantages:

4.B.3.C

↳ The less the organism have to live off of, the less there will be.

↳ The less area they have, the more competition, less distribution

Keystone species

↳ Helps regulate other species

↳ ~~less~~ ^{more} Fish = less minnows = ~~less~~ ^{more} plankton = less microorganisms

* Math Models WS?

Continent
Demographics
Activity
And demographics
for each cont.

Beavers +
Keystone, hence
west
Article?

- Thur: Geological/Meteorological
- ↳ El Niño: causes warm sea temp, low sea levels, high sea levels, flooding, drought, warmer/wetter weather (inc. mosquito pop.)
kill fish & plankton, expose coral reef, erosion
 - ↳ Cont. Drift: As cont. Drift, bigger cont. less diversity, vice versa (similar pressures)

Molecular classes

↳ Phospholipids

↳ Hemoglobin:

↳ MHC:

↳ Chlorophylls: a absorbs from blue-violet/orange-red, b absorbs from green (accessory) passes energy to a

↳ antibodies

antibodies are specific to different antigens, so they can bind to the antigen

4.C.1.b

↳ Heterozygote advantage: sickle cell (AA = Not immune to malaria, Aa = Immune, aa = sickle)

Gene Duplication

↳ Antifreeze: Antifreeze protein depress blood/body fluid freezing point below that of sea water. Proteins bind/inhibit growth of ice crystals. Proteins attach to ice crystals and prevent the attachment of more ice crystals.

Environmental factors

↳ seasonal fur color

↳ sex determination reptiles