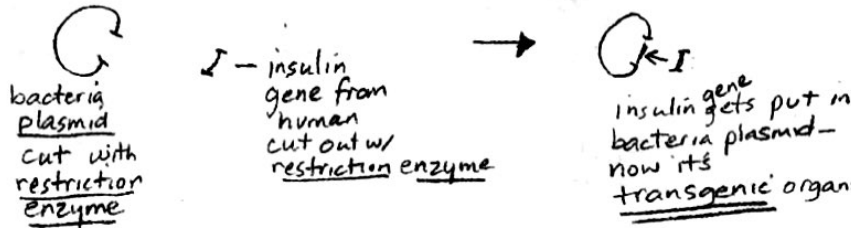


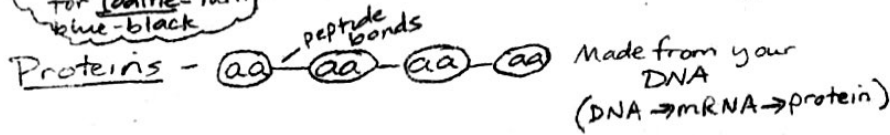
Extra Bio Review Stuff

① Example of transgenic Organism

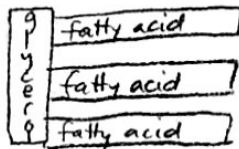


- ② Carbohydrates - monosaccharide - glucose, fructose
 dissacharide - sucrose
 polysaccharide starch, glycogen

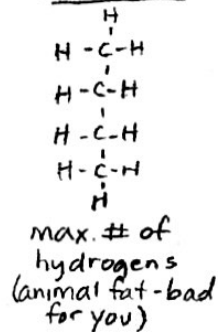
* These show positive test for Iodine - turn blue-black



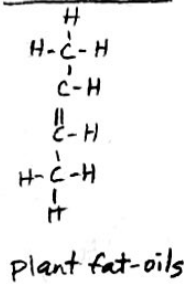
Lipids (Fats) - don't dissolve in water



Saturated



Unsaturated



* These make brown paper bag shiny (greasy spot)

charring	
	x

Nucleic Acids - DNA + RNA

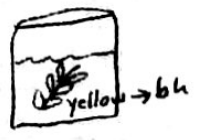
Deoxyribonucleic acid * has the sugar deoxyribose * (A, T, C, G)
 Ribonucleic Acid * has the sugar ribose * (A, U, C, G)
 double strand single strand

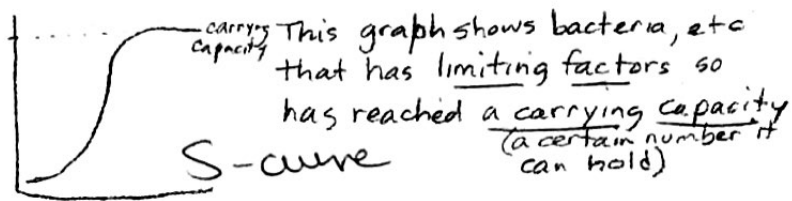
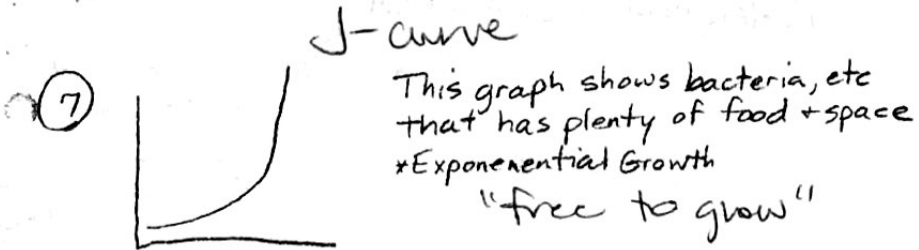
★★ Both DNA + RNA are same in that they both have nucleotides.

- ③ What kind of cells have mitochondria??
 * Both plant and animal
- ④ Viruses - Made of genetic material + Protein shell.
 Not living
- ⑤ Crossing Over - happens only in meiosis
- | | | | | |
|----|----|---|----|--|
| AA | aa | → | Aa | - Causes genetic variation |
| BB | bb | | Bb | - happens when tetrads form during Pro I |
| CC | cc | | Cc | |
| DD | dd | | Dd | |
- ⑥ Bromothymal Blue turns from blue to yellow if CO₂ is present (you blowing into it)



then if you put a plant in it, the plant takes in the CO₂ (photosyn) + produces O₂ so it turns back blue!!





⑧ **Imprinting** - innate - keeps newborn close to mother - baby follows first moving object

Conditioning - learned - animal learns to make connection b/w certain beh. & given reward or punishment

Habituation - learned - org learns to ignore stimulus b/c its repetitive & neither helpful nor harmful

Innate/Instinct - behaviours org is born with - ex. suckling, phototaxis, migration, hibernation, estivation, imprinting, pheromone chem, courtship dances, terr.

⑨ **Nucleus** - Imp. in Protein Synthesis (Transcription) contains DNA

Ribosome - Sites of protein synthesis - read mRNA to assemble amino acids

Cell Membrane - Semi-Permeable - phospholipid bilayer regulate in/out

Mitochondria - energy production - cristae provide surface area for aerobic

Chloroplast - plant cells - contain resp chlorophyll to capture sunlight convert to glucose for energy

Vacuole - lg and empty? Storage compartment - much lg in plants hold water, food, etc -- can be used for maint (contractile vacuole) in unicellular orgs

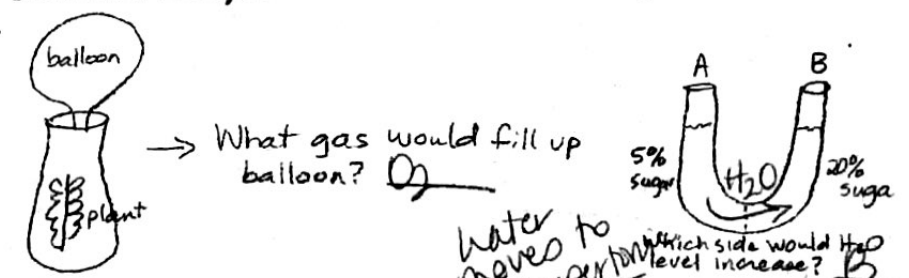
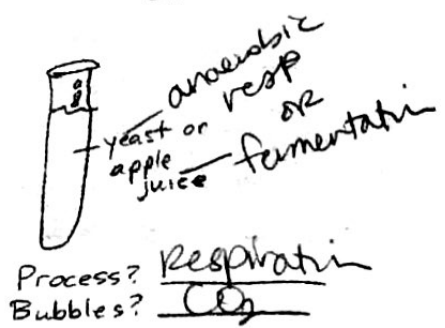
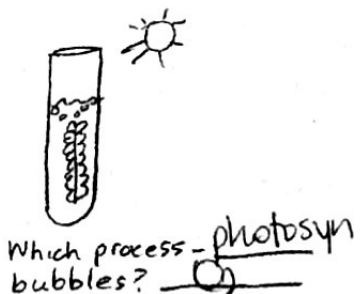
⑩ Cell resulting after Meiosis: eggs & sperm
 4 genetically different haploid cells

⑪ **Mutualism** - both species benefit (+/+)

Commensalism - one species benefits, other not harmed or helped (+/0)

Parasitism (tapeworm) - one species benefits, other harmed (+/-)

ex. of symbiotic rel's



⑭ Anything highly folded → increase surface area.
 *(Also root hairs increase surface area to absorb more water!!)
 Cristae in mitochondria inc. surface area for resp.
 mitten vs glove solvation - sugar/tea

karyotype - picture of person's chromosomes

XX XX XX ... XXX XX if Xx
1 2 3 23 xx female xy male

pair 21
has an
extra chromosome
⇒ Down's

↑ triple X
this is
caused by
nondisjunction
(the chromosomes
didn't separate when
making egg or sperm)
(gamete production = meiosis)

Can only show
chromosomal abnormalities -
nondisjunction
disorders

16

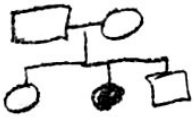


Which gets least
available energy
from sun? Snake - highest level
consumer
10% available energy
passed up to next trophic level

17 Red x white flower = Pink flowers - Blended appearance - primes
is example of Incomplete dominance used in format

* Compare with
Co-dominance - where
both traits are
expressed

18



What kind of trait is this pedigree showing? Autosomal
recessive -
skips generation - not

♀ → ♂

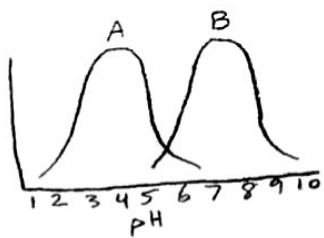
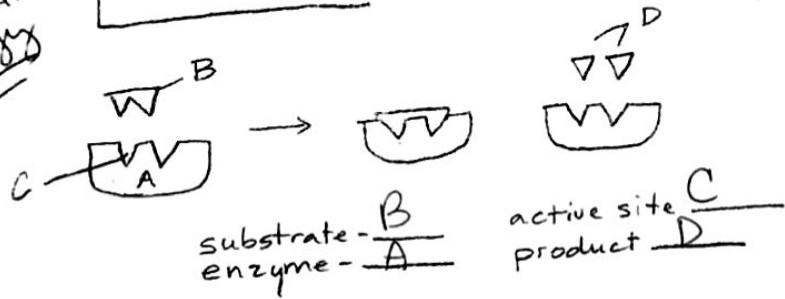
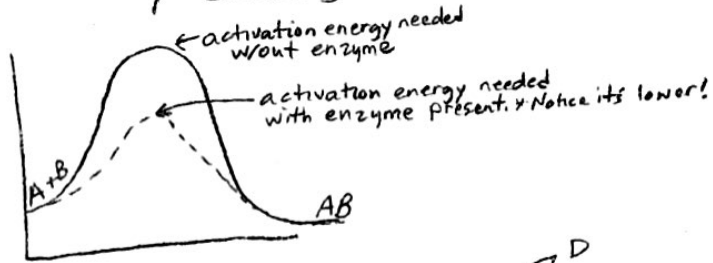
19 Loss of wetlands... loss of
biodiversity - ~~loss of~~

20 Which plant has most complex reproductive
system? moss, ferns, gymnosperms, angiosperms Sexual reproduction
Seeds enclosed in
fruit

21 Antibodies - attach pathogens; made by
B-cells in response to recognition
of a pathogen

Enzymes are catalysts that speed up the rate of a reaction. They make the reactions go fast enough to keep you alive. They do this by lowering the activation energy.

Speed up reactions by lowering activation energy



- Which enzyme would be found in your stomach? A (pepsin)
 - In your mouth? B (amylase)
 - In your intestine?
 - which in bact. that live in hot springs? B

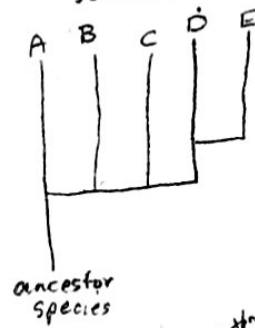
When enzymes are heated, they denature (lose their bonding and come un-folded).

Remember the solo cup
 extreme to 3 ph cause enzymes to denature & lose function

(25) Evolution - theory that species change over time

Father of Evolution = Darwin

They evolve by Natural Selection which says Nature will select the best suited to pass on genes to offspring
 Which are most related?



Phylogenetic tree - shows evolutionary relationships
 A+C
 B+D
 A+D
D+E

	Moist skin for resp	exoskeleton made of chitin	O ₂ diffuses in vessels	has hair/fur feeds young with milk/gland
A	X			
B		X		
C			X	
D				X

Amphibian = C
 Annelida = A
 Arthropod = B
 Mammal = D

(26) Plants

Reproductive structure of gymnosperm - ovule
 Reproductive structure of angiosperm - seed
 Plants have sexual reproduction (sexual, asexual)

A fruit is a ripened ovary.
 Male part of flower - anther produce pollen
 Female part of flower - stigma receives pollen

Function of leaves - photo Function of stomata
 Xylem - transport water let CO₂ in, O₂ out
 Phloem - transport food to roots & other parts of plant
 guard cells

Animals - Mammals

Diaphragm -

Uterus -

Placenta -

(28) Causes ozone depletion - CFCs
Causes Global Warming/Greenhouse-effect - CO₂

grass → insect → frog → bird

1. Which one is producer? grass

2. Which one is primary consumer? insect

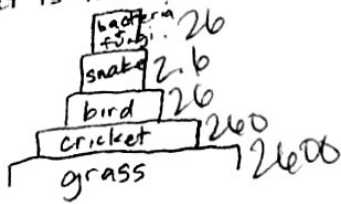
3. Secondary consumer frog

4. If DDT was sprayed on the grass:
a. Which organism would it affect most? insect (1st then frog then bird)

b. What is this process called? bioaccumulation

5. What do the arrows represent? energy flow

b. What is the ultimate source of energy? SUN



a. Which has most available energy? grass

b. If grass has 2600 calories, how much does the bird have? 26

c. What percent energy gets passed from one level to next? 10%

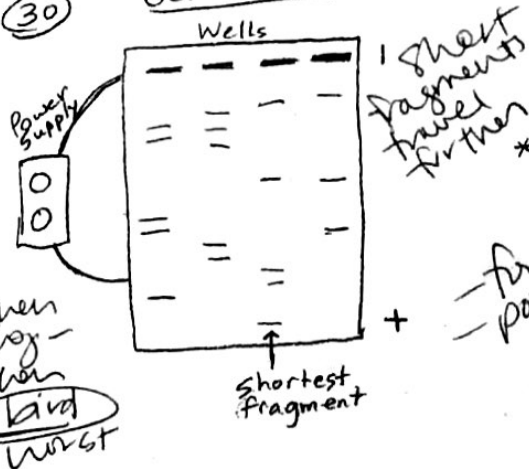
d. What is each level called? trophic level

e. Decomposers -

breakdown organic compounds
return nutrients to soil

(29) Remember: If you're heterozygous for sickle cell anemia (Ss), then you are resistant to malaria, ... this is real benefit in places that have malaria.

(30) Gel Electrophoresis



* Separates DNA fragments according to size.

* It makes a DNA fingerprint which is best way to tell if 2 things are related.

Forensics
paternity

- * DNA comparison
- * Biochemical analysis
- * Biochemistry

(31) Study of Human Populations is Population Ecology



a) Which country has fast popul. growth - A
b. Slow growth? B
c. No growth - C

Protozoan Parasite - Youtube

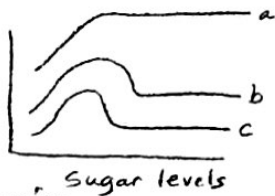
32) Plasmodium causes Malaria. Its 2 hosts are the mosquito + human.

33) Human Genome Project - 13 year project to map every nucleotide base pair on the human chromosomes. * To find where the genes are that cause diseases (cancer, Alzheimers, etc)

34) Homeostasis -

Ex. We keep our body temp at homeostasis by Sweating + Shivering.

Ex. We keep our pH level at homeostasis by having buffers that prevent rapid changes in pH.



Which person would be diabetic? A
 Person A's sugar levels stay elevated b/c body doesn't produce insulin.

Least Specific
 35) Kingdom
 Phylum
 Class
 Order
 Family
 Genus
 Species
 Most Specific

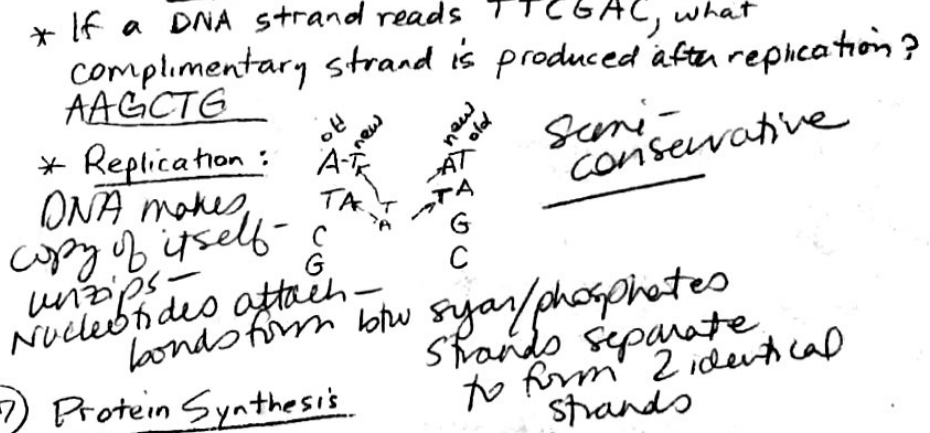
King
 Phillip
 Came
 Over
 For
 Good
 Spaghetti

Linnaeus - Father of Taxonomy
 Scientific Name = Genus species

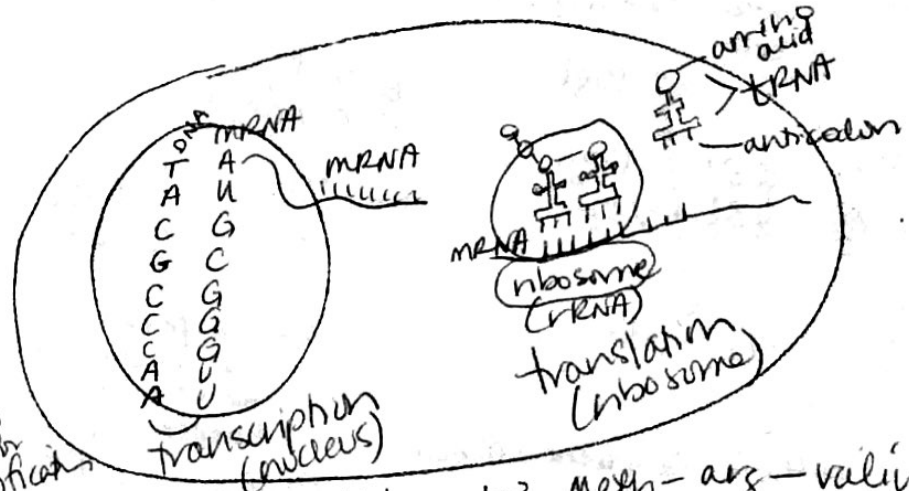
Biomimetic
 Dichotomous / Classification Key
 Phylogenetic Tree
 Cladogram
 Angiosperm
 Moss
 Gymnosperm
 Has seeds
 Has flowers

evolutionary relationships - shows connection to common ancestor

36) * If a strand of DNA reads ATTCG, what is the complementary strand? TAA GC.
 * If a DNA strand reads TTCGAC, what complementary strand is produced after replication? AAGCTG



37) Protein Synthesis



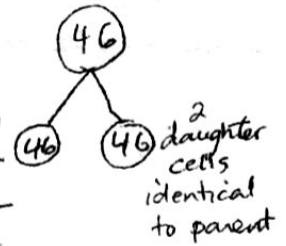
38) What protein would be made? Meth-arg-valine
 39) Given DNA CCGCGA, what protein would be made?

DNA CCG CGA
 mRNA GGC GCU
 amino acid glycine - alanine

38

Mitosis NO genetic variation - clones

- Asexual



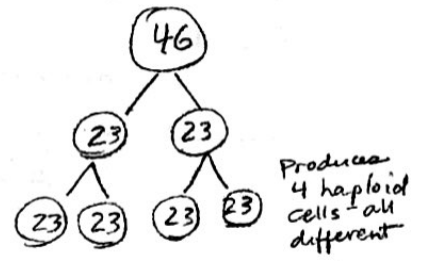
⊙ bacteria reproduce by binary fission (asexual)

- vegetative prop
- budding (hydra)
- binary fission
- spore formation
- parthenogenesis

Meiosis

Produces Genetic variation

- Sexual

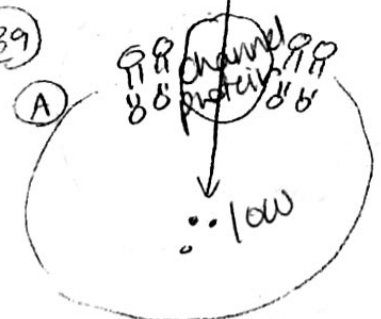


* Sexual Reproduction provides variation!!

* Skin cells divide more often than any other cell

blood cells can be replaced very quickly - no nucleus

39



All about Water!

40 If a potato is put in distilled water, what will happen? swell - water enters cells

41 If potato put in salt water, what happens? shrink - water leaves cells

diffusion, facilitated diffusion or active transport

- uses protein channel
- A. facilitated diffusion
- B. active transport

uses ATP

Which is a catalysts?

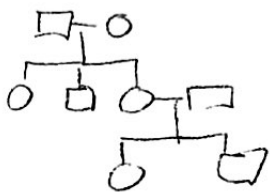
monosaccharide - carb

amino acid - protein

enzyme

nucleic acid - DNA/RNA

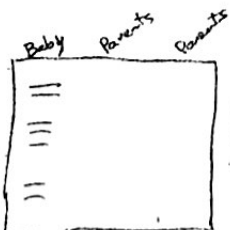
Pedigree / Punnett Sq



Draw lines across to match fragments

DNA Fingerprint

* Know how to read



Remember it goes DNA → RNA → Protein

Go from RNA to DNA (Read these carefully!)

RNA = AAGUCGAGU
DNA = ? TTCAGCTCA

Be able to read codon chart:

DNA ATCCTAGCA
RNA = ? UAG/GA/UCGU
polypeptide? STOP-ASP-Arg

Diffusion	Facilitated Diffusion	Act Tran:
high → low no energy	high → low no energy	low → high energy required
make diff. from A to B over time	uses protein channels	

5 Steps in Natural Selection Scenario

- (Pesticide Resistance ??)
1. Lots of insects on crop
 2. Farmer spray insecticide on crop
 3. Insecticide kills most insects
 4. Some insects live (ones w/ resistance)
 5. These insects start reproducing

pass on resistance to offspring

Cell Specialization

- nerve cell
- muscle cell
- sperm cell

all cells have the same DNA but different cells have different genes turned on. (Light Switch = gene expression)

PMAT - put in order



Anything put in freshwater swells. And anything p. in salt water shrinks

ATP A-P_i P_o P_o P

Biotechnology Application

Ex. Put a human gene in a bacteria plasmid. (ex. insulin)

Protein

enzymes
made of amino acids

Nucleic acid

- genetic material
- nucleotides

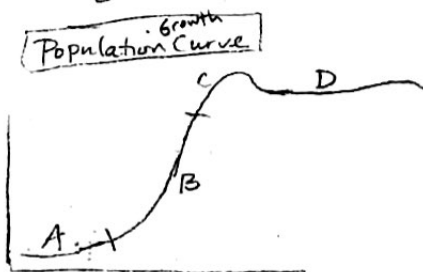
Carbs

"quick energy"
monosaccharide
starch

Lipids

"long-term" energy
insulation
insoluble in H₂O
saturated

Use to fill in boxes
[Carbohydrate, protein, lipid, nucleic acid]



- B Exponential Growth - pop growing fast.
- D carrying capacity met
- C limiting factors stop population growth
- A population just begins to divide.