

Survey of Biology

Wed 8-9:20am wk. 5

Thripp
Survey
Pg. 1

2009-09-30: Dehydration Syn. DOES make covalent

test score of these bond! off this

Ave[^] who did review in ~~the~~ secs: 81% AVE = Average

Ave_v who did review in ~~off~~ secs: ~~40%~~ 60%

test score of those NOT DO this

MARKER: 8:25AM: Test Scores passed out.

Spt. bonus science seminar today: Wed, Sept 30, 2-3pm Rm. 131

- * Animals eat (ingest) organic material
- * Herbivore animals eat plants
- * Carnivore animals eat other animals
- * Omnivore animals eat both.

Digestion break food into smaller molecules.

Absorption = uptake of digested molecules by our cells.

Now we're tearing down covalent bonds by hydrolysis
in our mouths, stomachs etc

Elimination = crop

corn & peas come out

in our feces if not chewed enough

Machines that break down food: blender, juicer, grinder,
chicken separator

Ingest w/out chewing: grits, yogurt, I.V., peanut butter,
a pill, jelly, water

Enzymes are proteins → most important protein

Mechanical Digestion: chewing, churning

Chemical " : breakdown of food by digestive enzymes

Digestion breaks down protein into amino acids.

Digestion = hydrolysis = breaking polymers up into
monomers with water

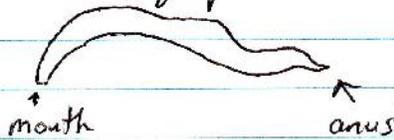
Wed 8-9:20 → enzyme
Hydrolase = catalyze digestive
2009-09-30: hydrolysis
Protista's "mouth" is a food vacuole
Protista's "anus" = waste ↓

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Digestive system = compartment to digest food
Clip of HYDRA eating DAPHNEA (spelling?)

Tue Sept
29 SI:
60 min,
S attending

jelly fish, sea anemone, hydras, corals =
ONE hole body plan
food in → food (waste) out
ONE hole body plan = mouth & anus combined
eww...



EARTHWORM has a 2-hole body plan
→ whole body is digestive tube a.k.a. tract

We have a complex digestive system.
Salivary glands: adults produce about 33.8 oz
(1 liter) of saliva daily

The mouth: chewing is mechanical digestion
putting food in mouth is ingestion
starch / glycogen + salivary amylase → maltose =
chemical digestion ↓ disaccharide
enzyme

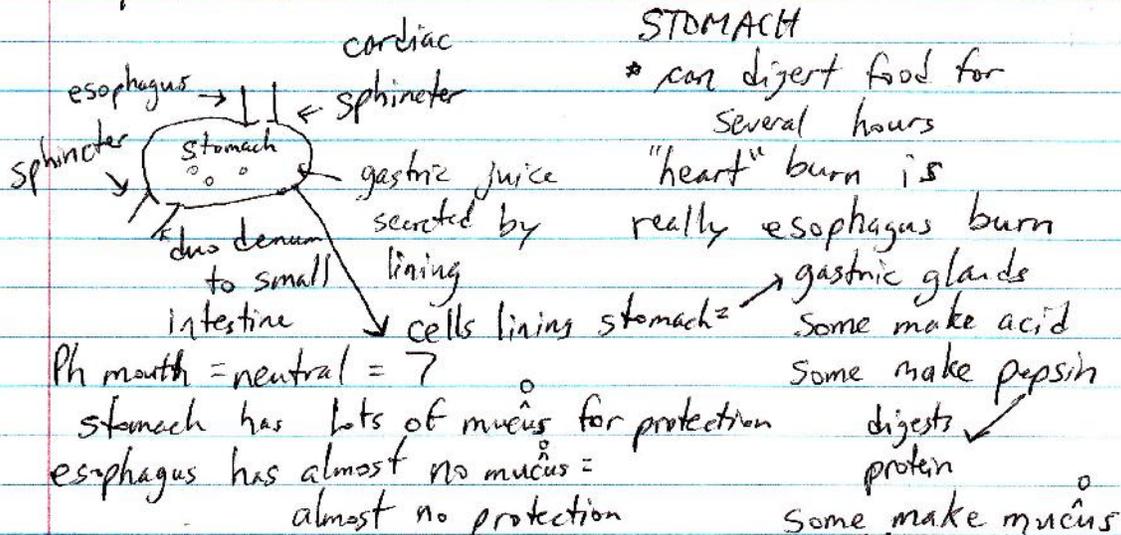
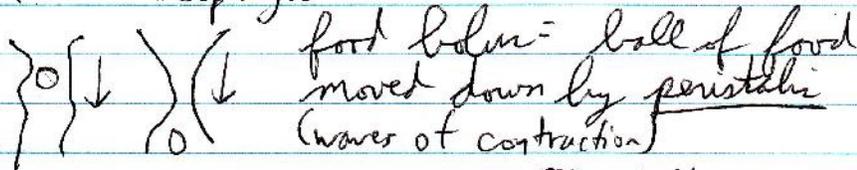
Keep a Ritz cracker in your mouth & your ~~body~~ saliva
will break down into sugar ⇒ becomes sweets
mouth → pharynx → esophagus → stomach

→ trachea (windpipe) ← choking on food
to get tubes
to return to trachea
and go down esophagus
Epiglottis goes down in swallowing =
closes windpipe

Wed 8-9:20

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2009-09-30: Esophagus



STARCH & GLYCOGEN = digested in mouth
Gastric glands secrete:
pepsin = enzyme → breaks peptide bonds of polypeptides (protein)
acid
mucous: protect lining from acid

EVERYTHING gets digested in the small intestine

☺ Stomach ulcer is from bacteria NOT stress

MARKER: 9:10 AM

SMALL INTESTINE: longest part of alimentary canal
→ Chemical digestion of
→ Nutrient absorption (monomers)
gained or lost electron = ion
* email Mary C
explain protons, neutrons, etc

Sucrose + water = glucose and fructose hydrolysis
 $C_n H_{2n} O_n = \text{Carbohydrate}$ coffee film = hydrophobic
monosac + monosac = disac + water Sulfur NOT in nucleic acid
↓ dehyd. syn. = covalent bond

Thu. 9:30-10:50

SUPPLEMENTAL: Post-Test Review

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2009-10-01:

Avg.

85.7% for those who
did review sheet in this sec.

Avg 71.4% for those who didn't do review
in this sec.

50% missed "enzymes are proteins" on test!

TRACE elements DO NOT include sulfur and phosphorus.

50% missed ISOTOPES as having a different #
of neutrons

pH of 5 has 100 times more hydrogen ions than pH of 7

50% missed: enzymes ~~are~~ are PROTEINS

$C_nH_{2n}O_n = \text{CARB}$ $C_6H_{12}O_6 = \text{glucose} = \text{carb.}$

Adding water to sucrose yielding glucose & fructose
is HYDROLYSIS

44% missed: animals have GLYCOGEN not starch

39% missed that unsat. fats have less than max
of hydrogen atoms

NOT in nucleic acids: SULFUR

39% missed: DNA stores INFORMATION

49% missed: steroids are LIPIDS

MARKER: 10:10 AM

Ingestion = eating

Digestion = break food down into smaller mers

Absorption = your cells take
nutrients

polymer → monomer

Elimination — disposal of undigested food out the
anus — shit, crap, feces, waste
process: elimination, defecation

SUPPLEMENTAL

Thu 9:30-10:50

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2009-10-01: You must chew corn, peas, and all food! Corn & pea shells will come out in feces.

Mechanical Digestion: chewing, churning of stomach

Chemical Digestion: Enzymes break food down: mouth, stomach, small intestine

Hydrolysis: water breaking: digestion: breaking down covalently bonded di- and polysaccharides into monosaccharides (simple sugars)

Hydrolases: the enzymes that catalyze (help) digestive hydrolysis reaction

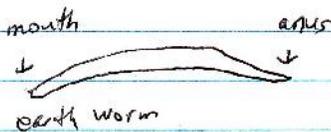
* Proteases: break proteins

* Lipases: break lipids

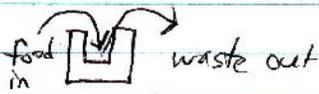
* Hydrolases for carbs

Later: Lysosomes: One cell: no real mouth or anus — cell wall just opens

ONE hole body plan: jelly fish, hydrz



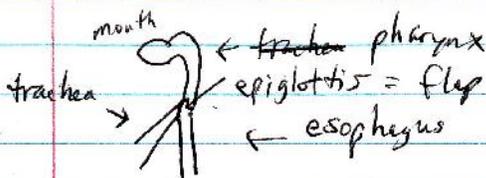
TWO HOLE BODY PLAN



SAME hole

food ball = food bolus
moved down by peristalsis =
tube contracting rhythmically

* Salivary amylase in mouth breaks starch and glycogen down into maltose (disaccharide)



from plants from animals

esophagus goes to stomach

peristalsis = wave of muscle contractions

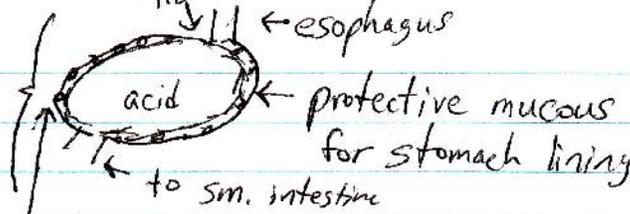
Thu 9:30-10:50

sphincter =>
failure =
"HEARTBURN"

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2009-10-01
STOMACH



gastric glands in stomach make

pepsin = enzyme = protease enzyme =
digests protein + ALSO: acid, mucous

only starch + glycogen are enzymatically digested in mouth

There is NOT much mucous in the lining of the esophagus
Pepsin doesn't break proteins into amino acids → this occurs later

Thu. 12:30-1:50 PM

81% test avg. for students who did review

73% test avg. for students who didn't review

Salad in a blender = good for you if you can't chew
Doesn't taste horrible

Complete Digestion of protein yields amino acids (monomer).
" " " starch " monosaccharides "

~~EAT~~ ENZYMES = proteins

your teeth cannot break polymers into monomers —
only big chunks into small chunks

→ Hydrolase enzymes:

ase
suffix for enzyme

Proteases = breaks proteins

Lipases = breaks lipids (fats)

Carb Hydrolase = breaks polysaccharides

Lysosome = one cell = pseudo-mouth & pseudo-anus

one-hole body plan

HUMANS have 2-hole body plan: mouth, anus

→ ears, nose etc do not count



jellyfish,
sea anemone, hydra,
coral

Protista: paramecium: 0-holes (1 cell)

Hydra: 1-hole (in & out) same hole

Earthworm: 2-hole



SUPPLEMENTAL

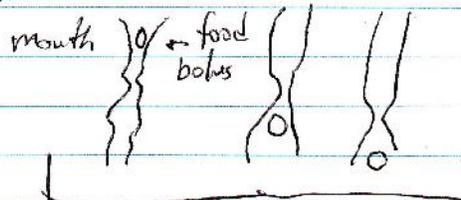
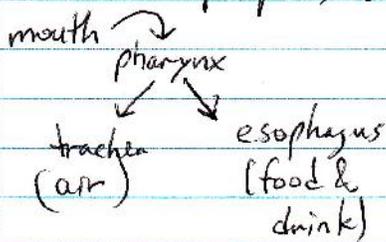
Thriff
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Thu: 12:30 - 1:50 PM

2009-10-01: Salivary amylase turns starch and glycogen to maltose (disaccharide)

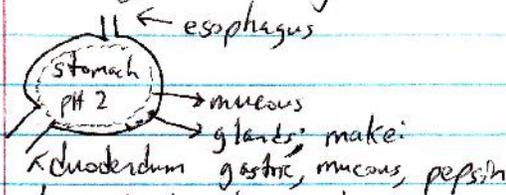
The mouth does 3 things: 1. ingestion, 2. mechanical digestion (chewing), 3. enzymatic digestion (saliva)

Proteins won't fold properly at pH 2 if they fold properly at pH 7. → stomach



epiglottis blocks windpipe during swallowing reflex

peristalsis = wave of muscle contractions



2 sphincters close stomach ~~digests~~ from esophagus & duodenum

stomach breaks proteins into polypeptide chains
small intestine breaks polypeptide chains into amino acids

☺ Helicobacter pylori cause stomach ulcers, NOT stress.
(bacteria)

Sm. intestine: Longest part of alimentary canal, major organ for chemical digestion, major organ for nutrient absorption of monomers, SMALL diameter, alkaline a.k.a. basic, a.k.a. pH 7+

"Oh my god, I'm being attacked by gluten!"

- Dr. Becker on a white blood cell in a person with a gluten allergy,

pancreas, bile, stomach