Why is it a carbon-based world?

LIVING THINGS HAVE STABLE MOL.

CARBON MAKE 4 COVALENT BONDS.

PROVIDES GREAT STABILITY

& ALSO VERSATILITY.

MOST ELECTRONEGATIVE ATOM TO DO THAT.

SUGAR.

MONOMER/POLYMER

-OSE

ISOMER → MOL. WT SAME, SAME CHEM FORM. DIFF. STRUCTURE.

CHEMICAL STRUCTURE

Carbohydrates ⇒ "SUGARS"

↳ POLYSACCHARIDE ⇒ STARCH, GLYCOGEN CELLULOSE, CHITIN

DISACCHARIDES ⇒ SUCROSE, LACTOSE

MONOSACCHARIDES ⇒ GLUCOSE, DEXTROSE, GALACTOSE, FRUCTOSE

FUNCTIONAL GROUPS.

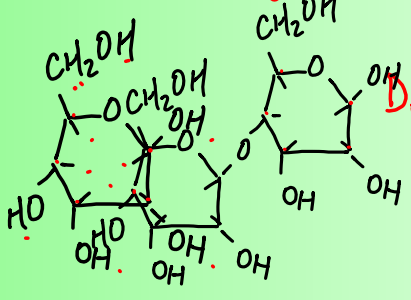
-OH HYDROXYL

POLAR

OFTEN RINGS

1:2:1
C:H:O

$C_6H_{12}O_6 + C_6H_{12}O_6 \rightarrow C_{12}H_{22}O_{11} + H_2O$



DEHYDRATION SYNTHESIS

FUNCTION

E SOURCE ⇒ GLUCOSE

E STORAGE ⇒ STARCH & GLYCOGEN
(PLANTS) (ANIMALS)

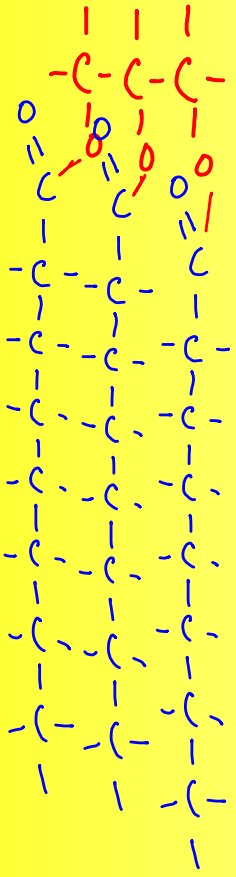
STRUCTURE ⇒ CELLULOSE & CHITIN

LIPIDS "FATS"

MONOMER/POLYMER

CHEMICAL STRUCTURE

GLYCEROL



FATTY ACIDS

SAT.
NO DOUBLE BOND
CHAINS STRAIGHT
PACK TIGHTLY
SOLID @ ROOM TEMP.

UNSAT.
DOUBLE BOND IN HC CHAIN
PLANTS.
KINK
LESS DENSE PACKING
LIQUID @ ROOM TEMP.

FUNCTION

E STORAGE
E SOURCE
INSULATION

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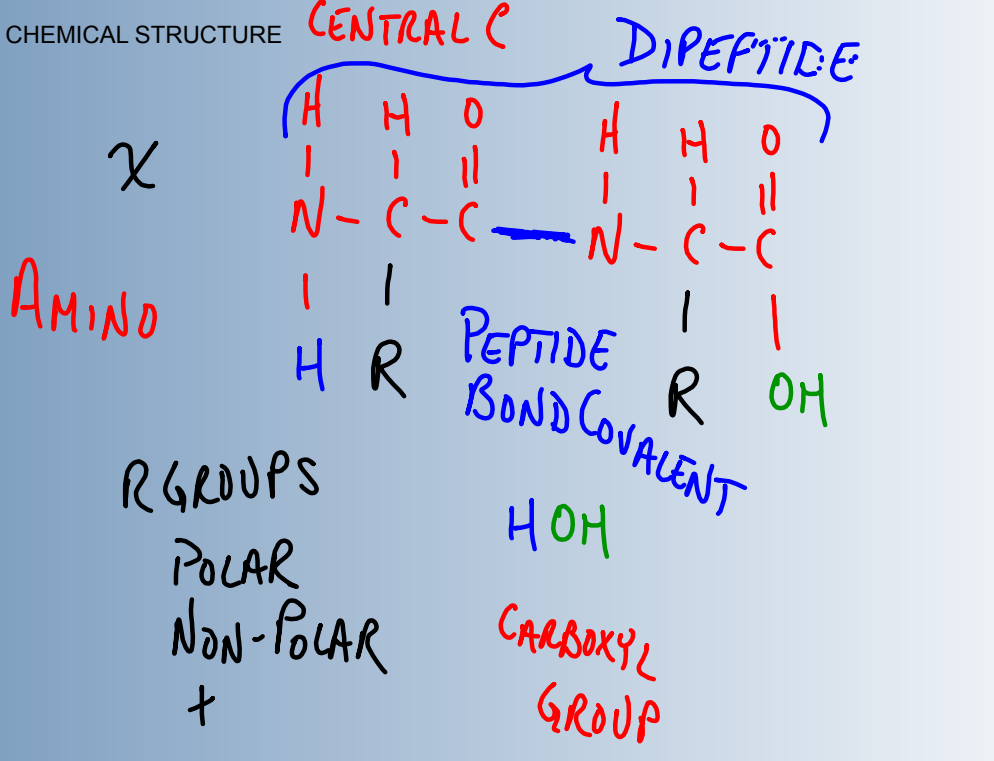
PROTEINS

MONOMER/POLYMER

↳ AMINO ACIDS 20 DIFFERENT

CHEMICAL STRUCTURE



Function

MUSCLES

SKIN/HAIR

ENZYMES

1° PRIMARY STRUCTURE ⇒ LONG CHAIN OF A.A. PEPTIDE BONDED TOGETHER.

2° SECONDARY STRUCTURE ⇒ FORCES EXERTED BY NEIGHBORING A.A. RESULTS IN AN α HELIX OR β PLEATED SHEET

3° TERTIARY ⇒ FORCES EXERTED BY DISTANT A.A. CAUSE THE CHAIN TO FOLD, BEND, TWISTER INTO 3-D FCNAL SHAPE.

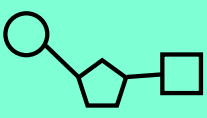
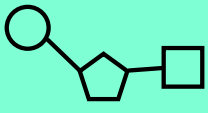
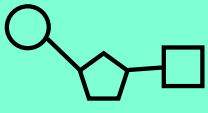
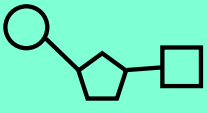
4° QUARTERNARY, GLOBULAR ⇒ A COUPLE OR FEW 3° STRUCTURES COME TOGETHER.

Nucleic Acids

Monomer/Polymer

Chemical Structure

	S		
			
			

Function

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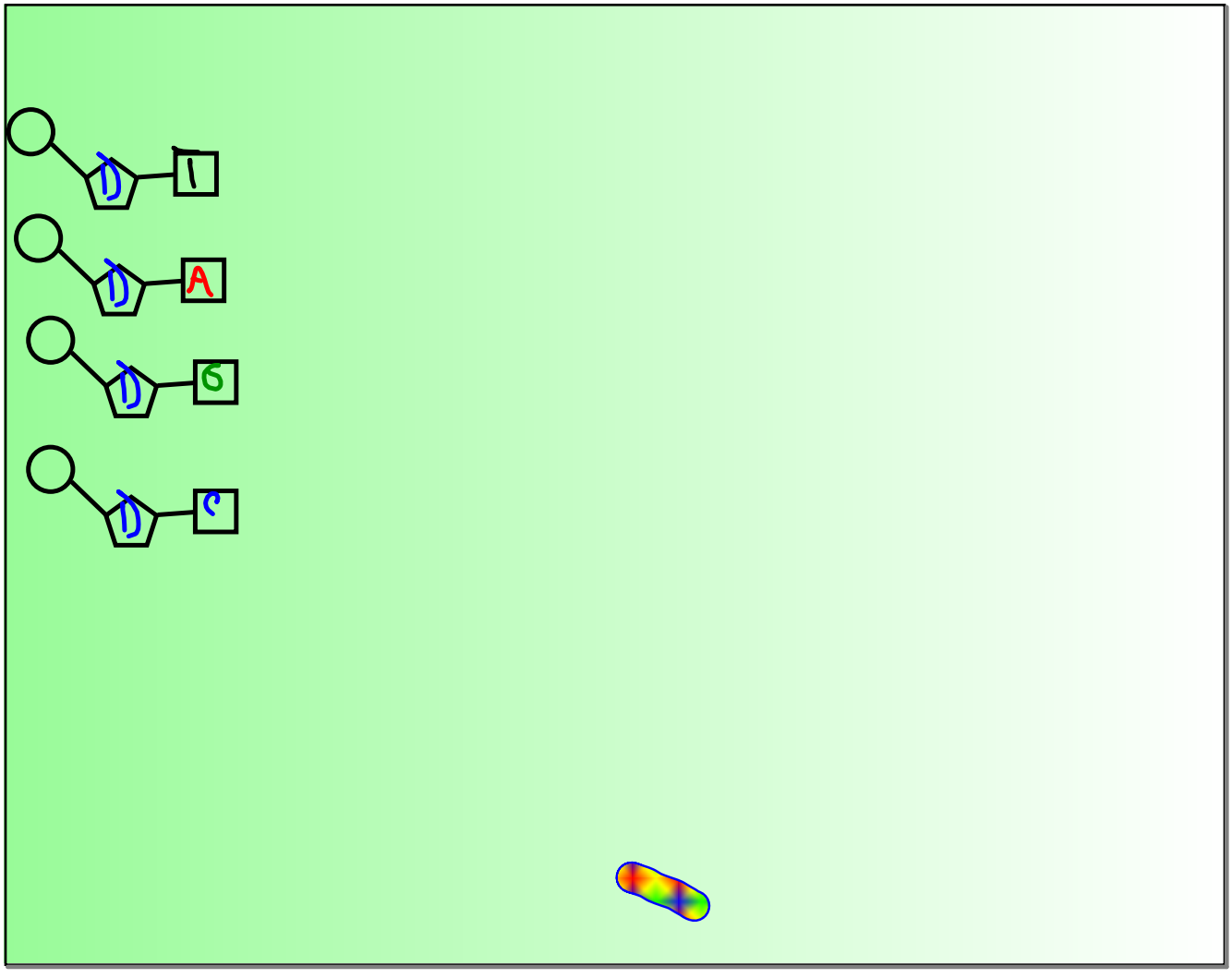
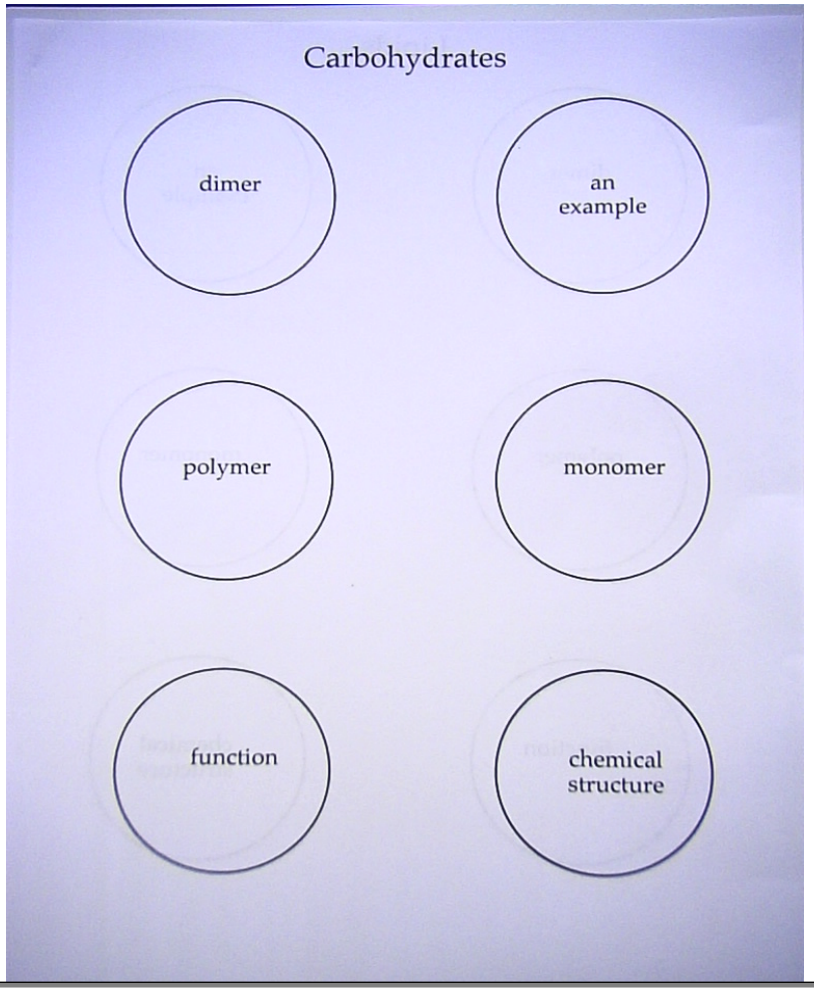
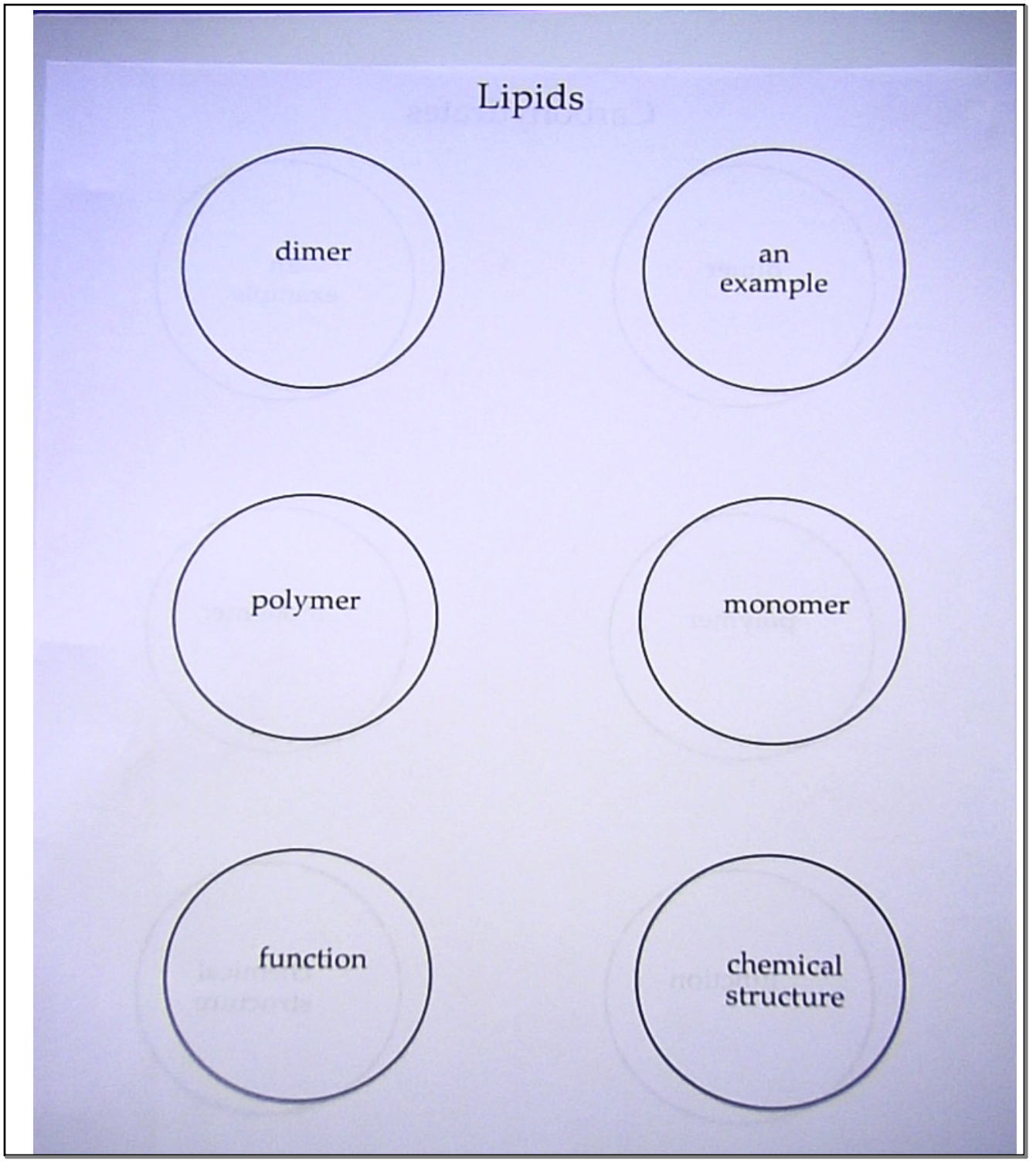
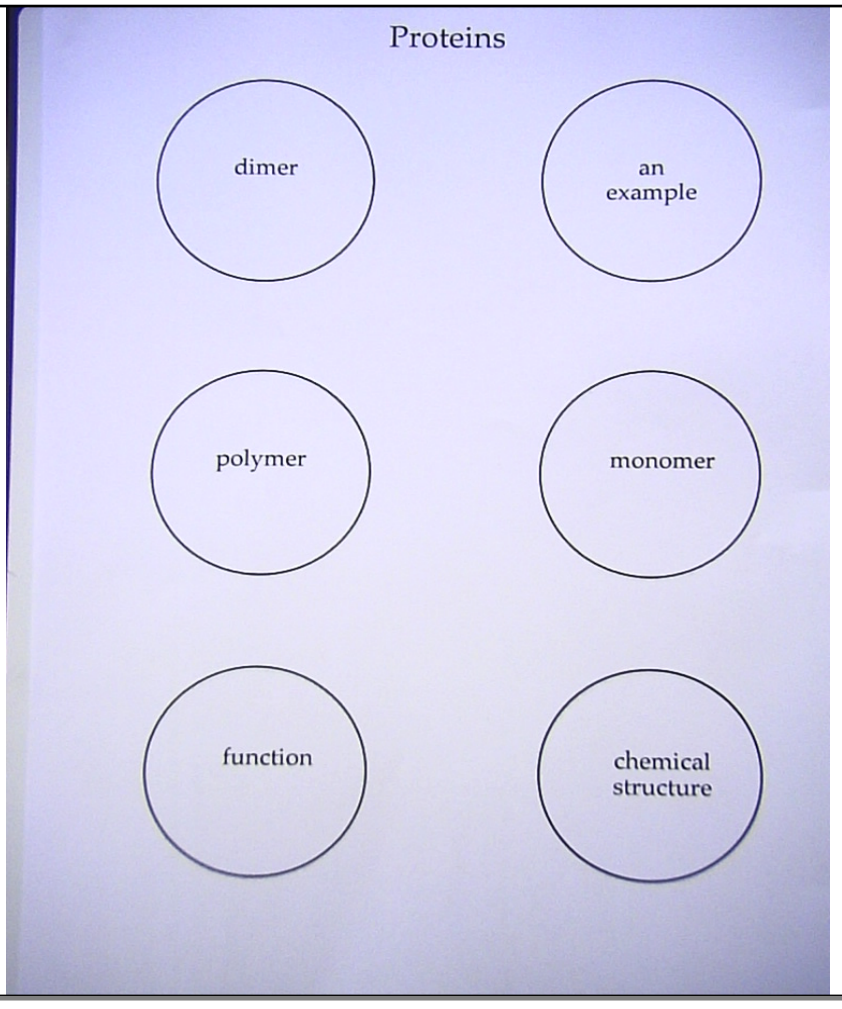


Describe the relationship between genes, nucleic acids, amino acids, and proteins


Carbohydrates
dimer
an example
polymer
monomer
function
chemical structure


Lipids
dimer
an example
polymer
monomer
function
chemical structure


Proteins
dimer
an example
polymer
monomer
function
chemical structure

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