Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

NDHS Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Diversity of Life: Prokaryotes and Viruses

**Pro. vs. Eu.**

**Prokaryotic**:

- “no” nucleus = nucleoid – simple, circular genome + plasmids

- unicellular

**Eukaryotic**:

- “true” nucleus

- unicellular and multicellular

Structure

*Shape*:

 - round

 - rod

 – helix

*Colony Types:
 = chains*

 *= cluster*

Cell Wall Composition

*Bacterial Wall Structure*: *Archae Wall Structure:*

**Gram Negative Wall**

Trouble for the Infected

1. Outer Membrane Contains

 - Can be

2. Outer Membrane “ ” bacteria from

3. Outer Membrane gives

 – impedes transport of antibiotic into the cell

RESULT: Identify Bacteria to determine treatment

**Classification of Prokaryotes:
Based on Signature Sequences of rRNA and Nucleic Acids**

**Archaea**: the

Types:

 **Methanogens**

*
* live in
* use
* **Location**:
*
* ( –  – help digest large quantities of )

 **Extreme Halophiles**

* salt lovers
* Live in very – up to more than sea water
* Form a

– due to  ( )

 **Extreme Thermophiles**

*
* Live in very warm environments ( )
* Ex.

**Bacteria**: most common type of prokaryote

Types:

 Oodles – classification based on structure and metabolism

Ecological Roles of Prokaryotes

 = decomposers

 = absorb nutrients from body fluids of living hosts

 =

 - key to

 - fix atmospheric nitrogen (N2) into ammonia (NH3) for uptake by plants

 converting NH3, NO2- or NO3‑ to

: photosynthetic bacteria –

: Methanogens: guts of termites and cows

 Root nodules of Legumes fornitrogen fixation

**Prokaryotes in Research and Technology**

 : cheese and yogurt

 : using a living organism to clean the environment

Ex: decompose sewage, breakdown radioactive waste and oil spills

 : ore refining

Ex: remove copper from copper sulfides, extract gold from ore

 :

Ex: produce vitamins, antibiotics, hormones, gene cloning

**VIRUSES**:

Common Characteristics:

-

-

-

Optional Upgrades:

Results due to mode of

**Viral Infection Patterns:**

1.

2.

3.

**Lytic Cyle:**

1. **Virus attaches to \_\_\_\_\_\_\_\_\_.**
2. **Virus injects \_\_\_\_\_ into host.**
3. **Viral DNA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and make components for protein shell.**
4. **Viral parts assemble until the host cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_new viruses.**

**Lysogenic Cycle:**

1. **Virus attaches to host and injects DNA.**
2. **Viral DNA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into the host DNA.**
3. **Host reproduces normally while replicating the viral DNA at the same time.**
4. **Something triggers the viral DNA to leave the host DNA triggering the lytic cycle.**

**Enveloped Viruses**

**Envelope is a with surface that**

**If the binding proteins are then the virus**

 **. Thus, since different species have different surface proteins, unless two species share common surface proteins.**

**Enveloped Virus Cycle:**

1. **Virus envelope binds to surface of host cell’s membrane.**
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the host’s membrane and dumps \_\_\_\_\_\_\_
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **Host cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the viral genome, capsid proteins and glycoproteins.**
4. **Viral components assemble \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exocytosis \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**EXAMPLE: Influenza**



**VIRAL CLASSIFICATION:**

Based on type of nucleic acids

 : double or single stranded

 : double or single stranded

* Further classification is based on what the
* May act as mRNA, a template for mRNA or a

 Last type manufactures an enzyme called

and is called a

 Ex:

ANTIBIOTICS treat \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

They DO NOT treat \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.