**Make a Paper Model: HIV Capsid**

**Overview:**

In this activity you will make a paper model of the HIV Capsid.

**Learning Goals:**

1. Make a 3D model of HIV capsid using the template(s) provided.
2. Study the 3D model of the HIV capsid to understand its structure and functions.

**Educational Standards**

1. Common Core
	1. Key Ideas and Details
		1. RST.11-12.3
	2. Integration of Knowledge and Ideas
		1. RI.11-12.7
2. Next Generation Science Standards
	1. Practices
		1. 2. Developing and using models
	2. Crosscutting Concepts
		1. 3. Scale, proportion and quantity
		2. 4. Systems and system models
		3. 6. Structure and function
	3. Disciplinary Core Ideas
		1. LS1.A: Structure and Function
		2. LS1.D: Information Processing
		3. PS1.A: Structure and Properties of Matter
		4. PS2.B: Types of Interactions
3. Advanced Placement Biology - Essential Knowledge (EK), Learning Objectives (LO), Science Practices (SP)
	1. EK 1.B.1
		1. LO 1.16, SP 6.1
	2. EK 4.A.1
		1. LO 4.2, SP 1.3
		2. LO 4.3, SP 6.1, 6.4
	3. EK 4.A.2
		1. LO 4.4, SP 6.4
		2. LO 4.6, SP 1.4

**Teaching Notes**

1. It is recommended that you read the Molecule of the Month article on HIV Capsid before attempting to make the paper model.
2. Follow the instructions for making the HIV capsid. Once it is made, explore its shape and structure in the context of its functions.
3. Once the model is made, explore its shape and structure in the context of its functions.
4. Use the interactive JSmol views in the Molecule of the Month to explore the relationships and interactions of hexamers and pentamers of the P24 protein in forming the capsid.
5. Note that this capsid is different from the icosahedral capsids seen in rhino, polio, or dengue viruses.
6. The HIV capsid is composed of the P24 protein, a target for HIV testing using antibodies.
7. Note that the HIV capsid encases the RNA genome, but a membrane further encapsulates the capsid. This membrane includes specific structural proteins (gp41 and gp120) that plays key role in viral attachment on host cells.