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| **Unit** | COVID-19 Unit: Lesson 2 | | | **Driving Question** | | “How do I become ‘immune’ to a virus?” | |
| **Date** |  | | **Time** |  | **Class** |  | | |
| **Real life scenario (context)** | | | | | | | |
| Winter is approaching and Tiffany and her mom are with her grandma. Tiffany’s mom is worried about getting the flu and suggests that grandma gets the flu vaccine. She explains to Tiffany that this will help prevent grandma getting seriously ill from the flu. Tiffany then asks whether she needs to take this vaccine too…. | | | | | | | |
| **Learning Outcomes** | | | | | | | |
| 1. Understand the defences the body has against pathogens  2. Describe the different roles that phagocytes and lymphocytes and play in our immunity system | | | | | | | |
| **NGSS links / NYAS STEM Education Framework (key skills and competencies developed)** | | | | | | | |
| B.2 STEM Content Integration | | | | | | | |
| **Plan of activities** | | | | | | | |
| Time | | Teacher Activity | | Learner activity | | | Resources / other info |
| *Prior to session: -* | | *Are there spare activities for those who finish early?* | | *Can this be done remotely and in person? Are there alternative approaches?*  *Differentiation?* | | | *What resources are needed to be inclusive to all students?* |
| **5 mins**  Welcome and introduction | | Introduce the COVID-19 unit and this lesson’s LOs. Establish norms for discussing COVID-19. | | Read the real-life scenario to ‘set the scene’. | | | PPT Slide deck.  Teacher can replace the names of the mock ‘students’ in the scenario. |
| **10 mins**  Quick fire questions on pathogens. | | Introduce what pathogens are using examples of flu and COVID-19 as viruses. | | Students complete the quick-fire questions on paper or (if virtual) in breakout groups with pupils peer marking. | | |  |
| **10 mins**  Annotate diagram of body | | Describe the physical and chemical barriers against pathogens. | | Students guess and annotate (either on their own print out slide deck or onto the shared screen) OR volunteer answers which the teacher will then annotate onto the diagram. | | | Printouts of slide 5 may be needed (if doing it in person). |
| **25 mins**  Role of phagocytes and lymphocytes and then a fill in the gap exercise to test understanding. | | Describe the difference between non-specific (or innate) immune response involving phagocytes and specific (or adaptative) immune response involving lymphocytes.  NOTE: This is a big simplification of the immune response and does not introduce to the student the difference between the humoral and cell-mediated response (and the various and specific types of lymphocytes). For more advanced classes, teachers may wish to substitute this whole section for the booklet and drama activity (see resources column to the right). | | Students read the passages/diagram and watch the videos before doing a key word check (students can peer-check understanding of key words in pairs or in breakout rooms). Students then complete the ‘fill in the gaps’ exercise and use their own words to complete definitions for all the key words. | | | For a simplified overview of the immune system (enough to understand vaccines later on), use the PPT and the ‘fill in the gaps’ exercise as AFL.  For more advanced classes, students may wish to use this booklet instead: <https://www.aai.org/AAISite/media/Education/HST/Archive/2003_Porter_Final.pdf> |
| **10 mins**  Plenary activity | | Ask students to use their knowledge gained today to return to the scenario and:   1. Think about what might be in a vaccine for Tiffany’s grandma to teach her body how to fight off a pathogen like the flu 2. Think about why Tiffany’s grandma might need the flu vaccine but Tiffany may not | | Students are encouraged to guess the answers to those questions posed by the teacher (in groups or the whole class) and encouraged to use keywords in their explanations. | | | This can be done as an exit ticket (each individual student submitting an answer on paper or via email) if time is short or the teacher wishes to check for understanding and mis-understandings of each student. |
| **Total time = 60 mins** | |  | |  | | |  |
| **Preparation for next lesson (teacher self-reflection) Gather student feedback to**  **incorporate into your next session** | | | | | | | |
| Which aspects of the lesson went well?  Which aspects could be improved upon?  What misunderstandings still need to be cleared up?  Actions for the future: | | | | | | | |