Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

AP Biology Mr. Collea

**Nature: What Plants Talk About**

 When we think about plants, we don’t often associate a term like “behavior” with them, but experimental plant ecologist JC Cahill wants to change that. The University of Alberta professor maintains that plants do behave and lead anything but solitary and sedentary lives. What Plants Talk About teaches us all that plants are smarter and much more interactive than we thought!

**Video Questions**

**1.** Out in the field, observing pant behavior is like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,

 Unless of course, you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. *(3:00)*

**2.** One of the ways plants behave is through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. *(3:15)*

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| **TROPISMS** |
| **Stimulus** | **Direction** | **Response** |
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|   |   |   |
|   |   |   |
|   |   |   |
|   |   |   |
|   |   |   |
|   |   |   |
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**3.** Which nutrient (*organic compound*) do you think the bug provides for the Venus Fly Trap? *(4:19)*

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**4.** As much as \_\_\_\_\_% of a plants total mass lives below the ground. *(5:46)*

**5.** What purpose do root hairs serve for the root? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6.** The major function of roots is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7.** How do plants find the food they are foraging for both above and below the ground when they have no eyes, no ears and no brain? *(8:30)*

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**8.** Briefly describe the experiment designed to see if the Daughter Vine can actually choose between 2 different host plants. *(11:00)*

 *Independent Variable*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 *Dependent Variable*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 *Controlled Variables*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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 What can be done to make this experiment better…more valid *(11:50)*

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**9.** What are green leaf volatiles? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**10.** What did the 2nd Daughter Vine experiment reveal about how this plant detects its host? *(12:45)*

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**11.** How does the tomato plant respond to being attacked by a daughter vine? *(13:30)*

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**11**. List 2 ways in which the Wild Tobacco Plant responds to threats in its environment. *(16:31)*

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| --- |
| **Wild Tobacco Plant Defense Mechanisms**  |
| Threat | Response |
|   |   |
|   |   |

**12.** How does the Wild Tobacco Plant know who is attacking it? *(20:40)*

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**13.** What is a tricone and how do Tobacco Plants use them to protect themselves? (22:00)

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**14.** Who is the Wild Tobaccos Plant best friend? *(22:30)* ­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**15.** When does the Wild Tobacco Plant bloom and why is this a good thing? *(23:00)*

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**16.** How does the Wild Tobacco Plant prevent itself from being pollenated by the Hawk Moth? (24:18)

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**18.** In the table below, list the biochemical, physiological and behavioral changes that take place in the Wild Tobacco Plant that allow it to communicate with and be pollenated by the Humming Bird. *(25:00)*



**19.** Why is being fertilized by a Humming Bird better for the Wild Tobacco Plant? *(25:45)*

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**20.** Why is continuously yelling for pollinators an evolutionary advantage (*adaptation*) for the Wild Tobacco Plant? *(27:00)*

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**21.** Spotted Knap Weed is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ species from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. *(28:20)*

**22.** What ***biological control*** has the rancher utilized to combat the spread of Spotted Knap Weed? *(29:55)*

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**23.** How does the Spotted Knap Weed capture and hold huge pieces of territory? *(32:49)*

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**24.** Spotted Knap Weed is waging \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ warfare with its neighbors. *(34:15)*

**25.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plants are immune to the chemical warfare of the Spotted Knap Weed and, in

 fact, release their own chemical called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that not only protects itself, but also

 protects the plants around it from the Spotted Knap Weed. *(35:00)*

**26.** What is the dominant form of social interacting between plants?

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**27.** What 2 things do animals use **Kin-Recognition** for? *(37:30)*

 **a)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **b)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**28.** Why is mating with a relative a bad thing (*genetically speaking*)?

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**29.** What is **altruistic behavior** (***altruism***)?

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**30.** How did the Sea Rocket siblings exhibit altruistic behavior? *(40:00)*

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**31.** Douglas Fir trees can live up to \_\_\_\_\_\_\_\_\_\_ years.

**32.** The \_\_\_\_\_\_\_\_\_\_ of fungi contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_ used in reproduction.

**33.** The tree provide the fungi with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the fungi provide the trees with

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(47:17).* This is symbiotic relationship is an example of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**34.** Why was C14 used in the tree communication experiment?

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**35.** What did the C14 experiment reveal about who benefits the most from this carbon (*food*) sharing network? *(50:00)*

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**36.** Describe 6 different examples (from the film) of how different species in an ecosystem interact with one another.

 (**1)**

 **(2)**

 **(3)**

 **(4)**

 **(5)**

 **(6)**

**37.** List 2 behaviors that some plants exhibit, which are what we perceive as very animal like behaviors.

 (**1)**

 **(2)**