

TABLE 1. CHANGES IN MORNING GLORY PETAL CELLS DURING FLOWER OPENING

	BUD	OPEN FLOWER
Vacuole pH	6.6	7.7
Flower Color	Red	Blue
Cell Volume	Small	Large

8. The petal color of the Mexican morning glory (*Ipomoea tricolor*) changes from red to blue, and the petal cells swell during flower opening. The pigment heavenly blue anthocyanin is found in the vacuole of petal cells. Petal color is determined by the pH of the vacuole. A model of a morning glory petal cell before and after flower opening is shown in Table 1.
- (a) **Identify** the cellular component in the model that is responsible for the increase in the pH of the vacuole during flower opening **AND describe** the component’s role in changing the pH of the vacuole.
- (b) A researcher claims that the activation of the K^+/H^+ transport protein causes the vacuole to swell with water. **Provide reasoning** to support the researcher’s claim.

STOP

END OF EXAM