

What is the brain if not exploration persevering?

Charles H Turner



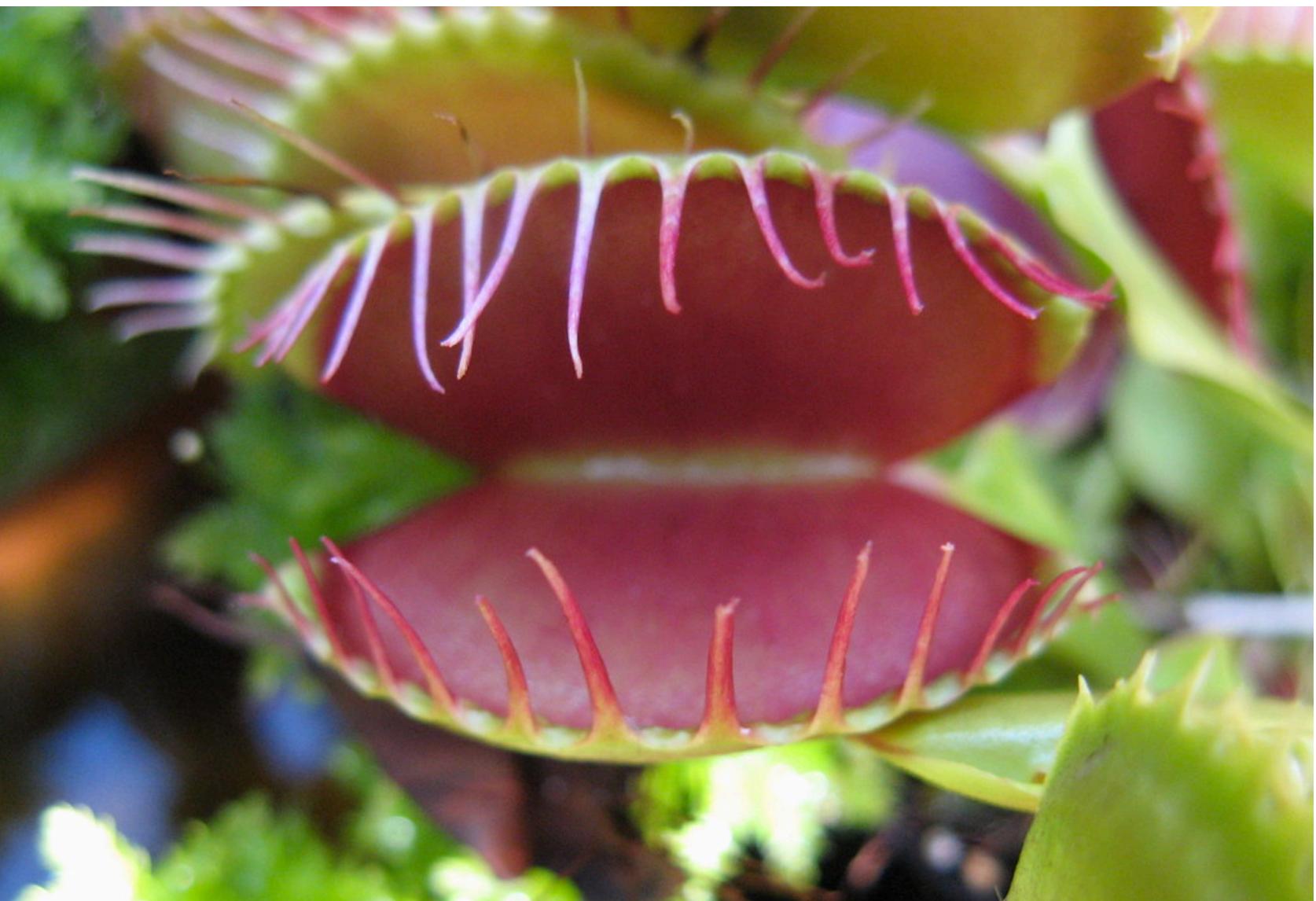
[https://en.wikipedia.org/wiki/Charles_Henry_Turner_\(zoologist\)](https://en.wikipedia.org/wiki/Charles_Henry_Turner_(zoologist))



This behavior puzzled me for a number of years. I was reluctant to call it an exhibition of logical judgment; yet it seemed entirely too complex to be regarded as reflex action and too individualistic to be considered instinctive, in the ordinary sense. From the nature of the case, tropisms, as defined by Loeb, are out of the question. Nor could it be considered a "trial and error" response; for there is no series of errors followed by a blundering into a solution and a gradual "stamping in" of the appropriate response.

Define the difference in behavior

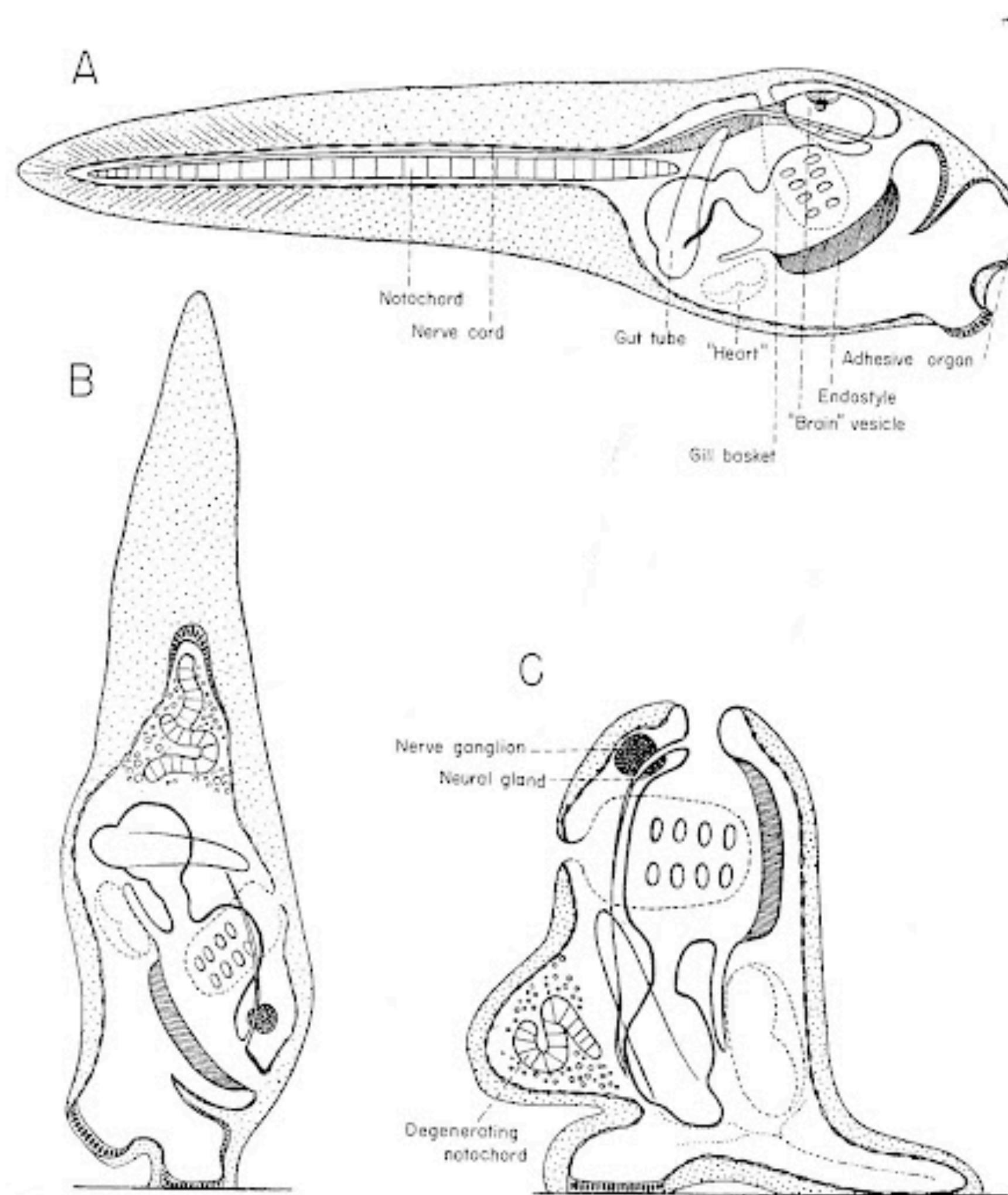
Venus Flytrap



Horsewhip Snake



Use it or lose it: the sea squirt story

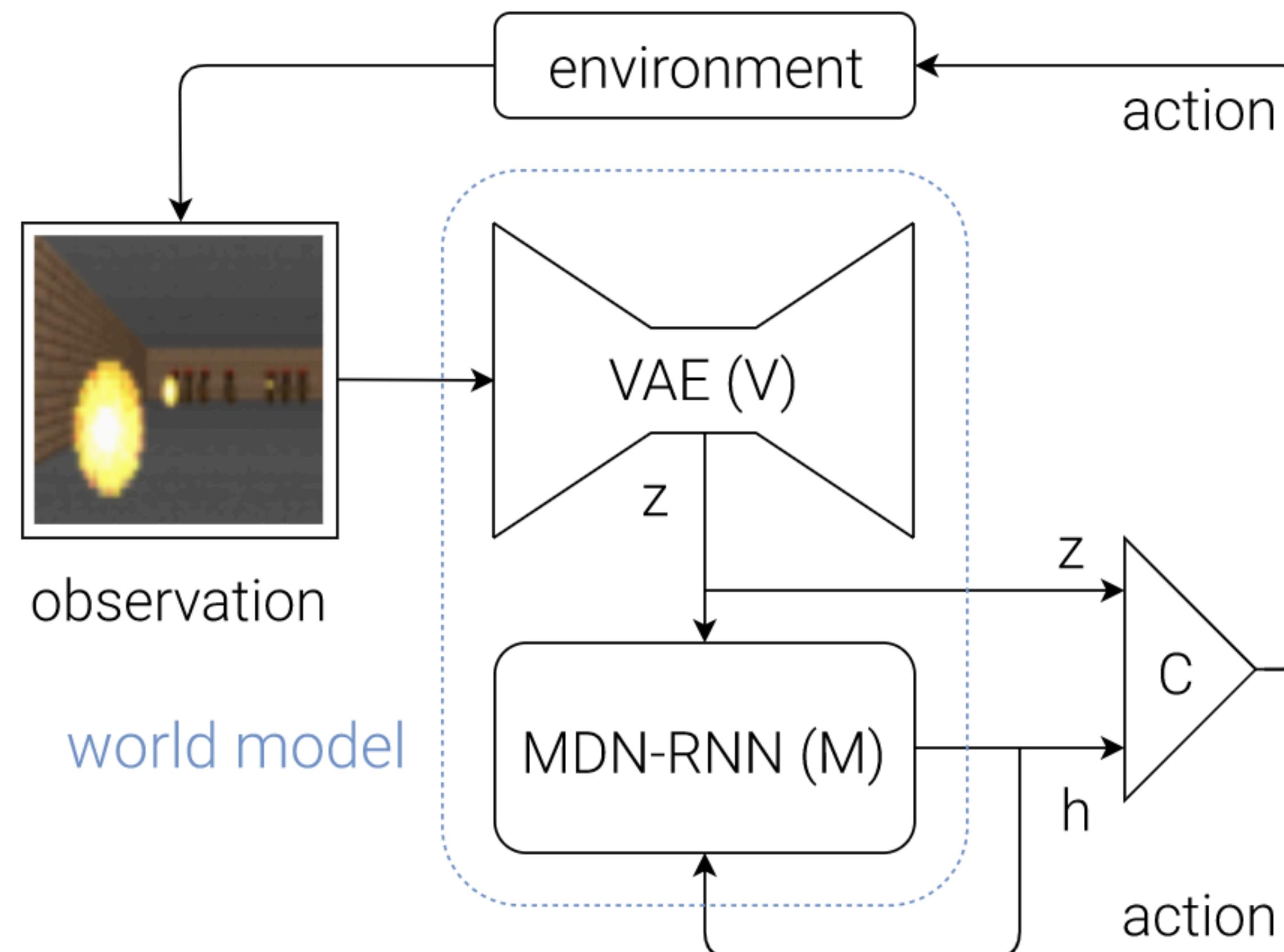


- As a juvenile the sea squirt has a brain.
- Once attached to a surface, it digests the brain as it matures into the adult phase (passive feeding)

Food for thought

- What is the purpose of a brain?

World models



Flow diagram of our Agent model. The raw observation is first processed by V at each time step t to produce z_t . The input into C is this latent vector z_t concatenated with M's hidden state h_t at each time step. C will then output an action vector a_t for motor control. M will then take the current z_t and action a_t as an input to update its own hidden state to produce h_{t+1} to be used at time $t + 1$.