

Euglena

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1. Introduction

This exercise was adapted from:

Jonathan Osborne, Sibel Erduran, Shirley Simon, *Ideas, Evidence & Argument in Science (IDEAS)*, King's College London, 2004, pp. 26-30, <https://www.stem.org.uk/elibrary/collection/3308>
<https://www.stem.org.uk/resources/elibrary/resource/28125/ideas-resources>

The aim of this exercise is to determine whether the single cell organism euglena is a plant, is an animal, or is another type of organism, by developing an evidence-based argumentation.

Section 2 presents the inquiry and Section 3 presents the corresponding argumentation developed with the sInvestigator system.

sInvestigator may be downloaded from <http://lac.gmu.edu/sInvestigator/>

The knowledge base containing the argumentation may be downloaded from <http://lac.gmu.edu/sInvestigator/CaseStudies.html>

2. Inquiry: What type of organism is Euglena?

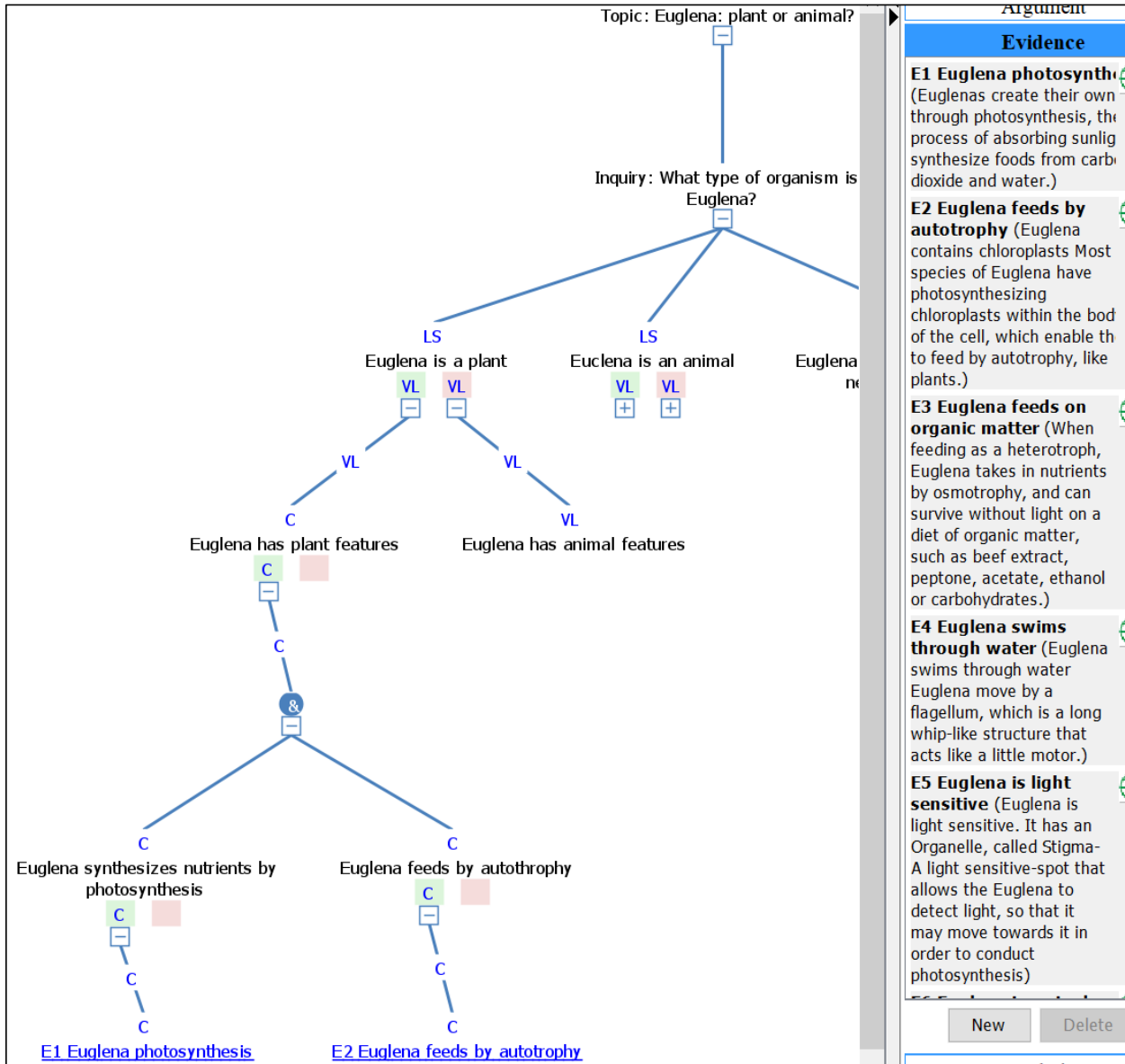
Euglena is an organism that has both plant and animal characteristics, including the following ones:

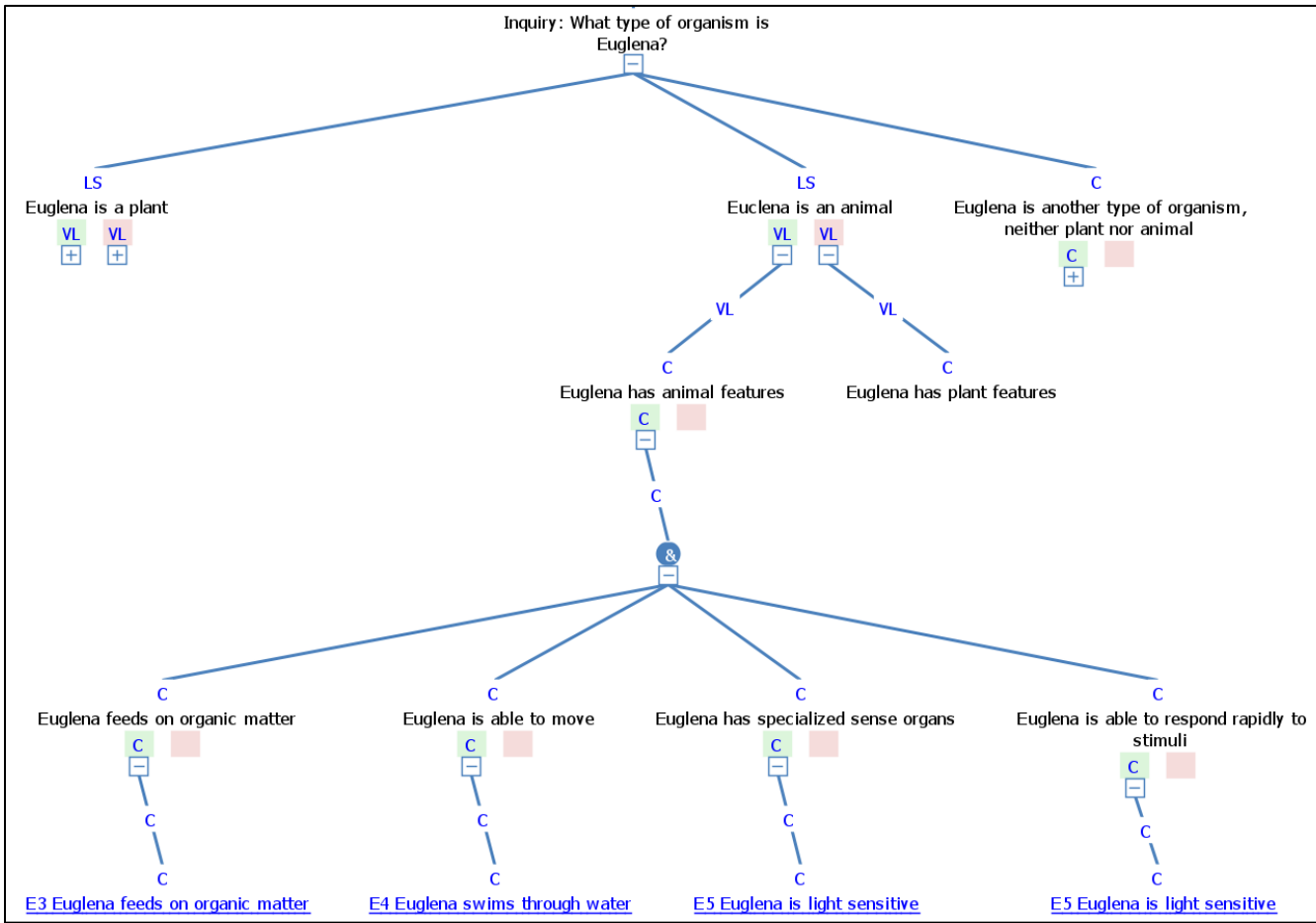
- Euglena has two outer layers.
- Euglena contains chloroplasts.
- Euglena has a nucleus.
- Euglena is a single cell.
- Euglena can absorb food from its surrounding.
- Euglena confused early scientists.
- Euglena is normally green.
- The nucleus contains DNA and controls the cell activities.
- Chloroplasts enable a cell to photosynthesize
- A vacuole controls the amount of liquid in a cell
- Euglena swims through water
- Euglena can make its own food

Develop an argumentation to determine which of the following hypothesis is true:

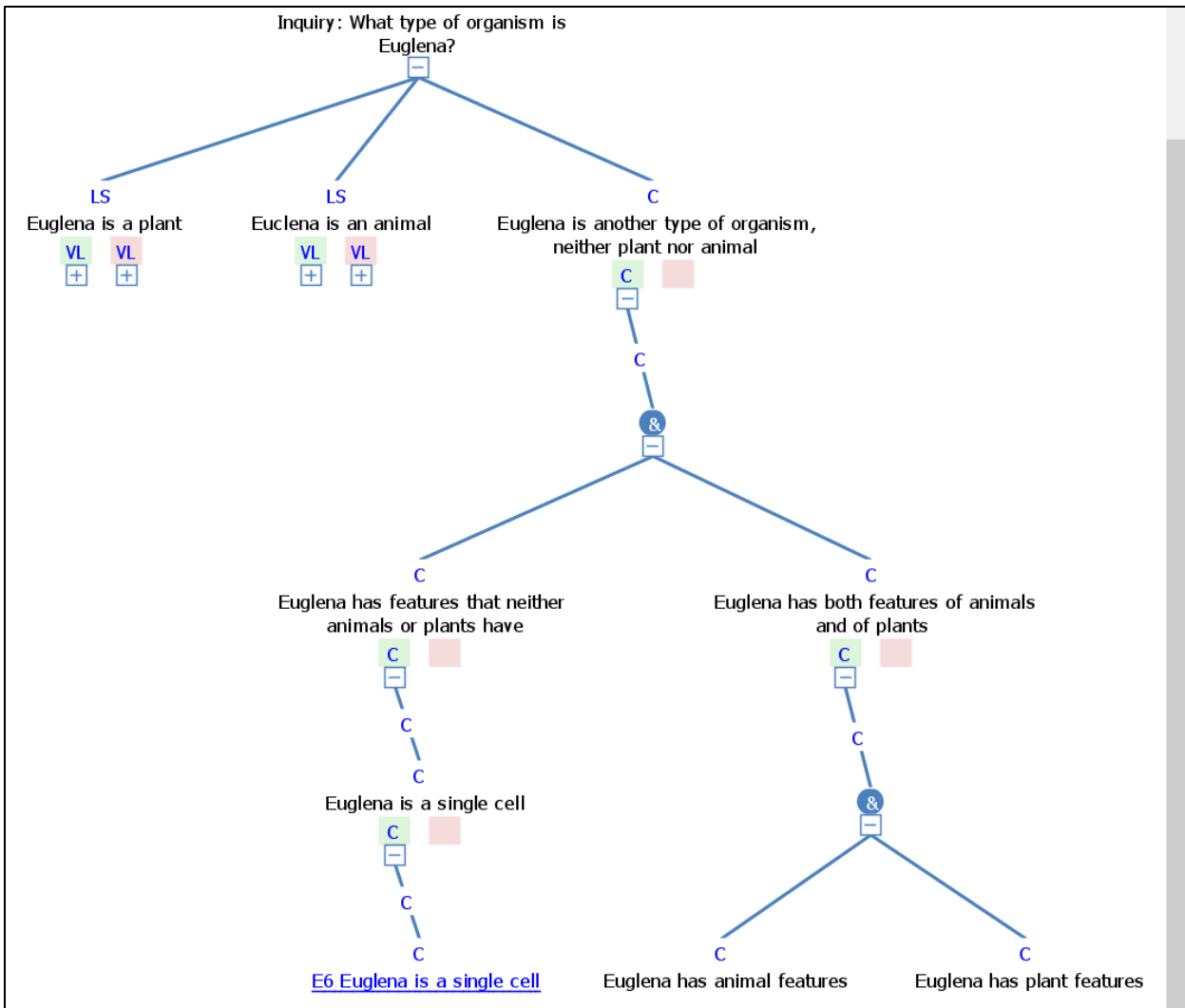
- Euglena is a plant
- Euglena is an animal
- Euglena is another type of organism, neither plant nor animal

3. Analysis





Evidence
<p>E1 Euglena photosynthesis (Euglenas create their own food through photosynthesis, the process of absorbing sunlight to synthesize foods from carbon dioxide and water.)</p>
<p>E2 Euglena feeds by autotrophy (Euglena contains chloroplasts Most species of Euglena have photosynthesizing chloroplasts within the body of the cell, which enable them to feed by autotrophy, like plants.)</p>
<p>E3 Euglena feeds on organic matter (When feeding as a heterotroph, Euglena takes in nutrients by osmotrophy, and can survive without light on a diet of organic matter, such as beef extract, peptone, acetate, ethanol or carbohydrates.)</p>
<p>E4 Euglena swims through water (Euglena swims through water Euglena move by a flagellum, which is a long whip-like structure that acts like a little motor.)</p>
<p>E5 Euglena is light sensitive (Euglena is light sensitive. It has an Organelle, called Stigma- A light sensitive-spot that allows the Euglena to detect light, so that it may move towards it in order to conduct photosynthesis)</p>
<p>E6 Euglena is a single cell (Euglena is a single cell Euglena are single celled organisms that belong to the genus protist. As such, they are not plants, animal or fungi. In particular, they share some characteristics of both plants and animals.)</p>
<input type="button" value="New"/> <input type="button" value="Delete"/> <input type="button" value="Reorganize"/>
Analytics



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Analytics