

Why Do Vines Twine?

A research paper by John A for the World's Largest Ball Of Twine Tour (WLBOTT)



Background:

This important question was raised by John Z in June of 2023. He included a link to a performance by The Ambassador Choir in which they raise a number of existential questions, for example, “Why do stars shine?” and “Why do vines twine?” https://www.youtube.com/watch?v=LEDo0gj1f_Q

This paper deals with the second question as the first is adequately covered by primary school science classes and textbooks (in states where textbooks are not banned).

The simple answer:

Isaac Asimov was one of the first to provide a science-based answer to all of the questions raised in the aforementioned song:

Tell me why the stars do shine,
Tell me why the ivy twines,
Tell me what makes skies so blue,
And I'll tell you why I love you.

Nuclear fusion makes stars to shine,
Tropisms make the ivy twine,
Raleigh scattering make skies so blue,
Testicular hormones are why I love you.

The more detailed answer:

Vines twine because of Trophism, the mechanism that causes plants to change their direction of growth. There are 8 different types of Trophism:

Phototropism (response to light)

Gravitropism or Geotropism (response to gravity)

Chemotropism (response to particular substances)

Thigmotropism (response to mechanical stimulation)

Hydrotropism (response to water)

Thermotropism (response to temperature)

Galvanotropism, or Electrotropism (response to electric current).

Traumatotropism (response to wound lesion)

The primary influence for vine twining is Thigmotropism. When the growing vine encounters an obstacle, the cells closest to the obstacle stop reproducing while the cells opposite continue to grow. The result is that the stem curves around the obstacle.

Other interesting facts:



Some vines, like the Chinese wisteria, grow in a clockwise direction (to the right).

The Japanese wisteria grows in a counter-clockwise direction (to the left).



This is an interesting reflection on the traditional Chinese-Japanese cultural friction but it is not clear if this is coincidental or an example of Geopoliticalropism.

It is believed, but factual support is not offered herein, that most vines grow to the right and as a result, vine-twining is expected to be well supported by the Republican Party.

Vines may produce perfect male and female flowers on the same plant. Vine-twinning is prohibited in Florida.

Hummingbirds are always attracted to the trumpet vine. It is the state flower of Kentucky.

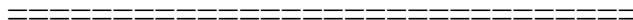


Bittersweet twists its stems together -- often into a rope of great strength. It has the constricting power of the python. Warning: do not sleep for extended periods (1 month or longer in cooler climates) in the presence of Bittersweet.

The most popular varieties for general culture are the Japanese with its large flowers and the Scarlet Clematis. The clematis dislikes limited root space but likes lime.



By way of general interest, one of the more popular drinks in Canada is the “Bloody Caesar” made from Clematis Juice (fact check required) and vodka with a wedge of lime on top.



Links to material (in no particular order and not annotated):

[https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_Biology_\(Kimball\)/16%3A_The_Anatomy_and_Physiology_of_Plants/16.02%3A_Plant_Physiology/16.2F%3A_Tropisms](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_Biology_(Kimball)/16%3A_The_Anatomy_and_Physiology_of_Plants/16.02%3A_Plant_Physiology/16.2F%3A_Tropisms)

<https://byjus.com/biology/tropic-movements-in-plants/>

<https://www.csmonitor.com/1981/0109/010951.html>

Further information on the song background can be found here:

<https://secondhandsongs.com/work/224467/all>

Isaac Asimov quote:

<https://www.goodreads.com/quotes/54414-tell-me-why-the-stars-do-shine-tell-me-why>

<https://byjus.com/biology/tropic-movements-in-plants/>

<https://www.britannica.com/science/tropism>