

What does '**diatom**' mean?

Etymological Definition:

1835-45 Neo-Latin '**Diatoma**' originally a genus name, feminine noun based on Greek diátomos from 'cut in two'.

Chris Adams name and definition:

'**Amoskuti**' from the greek άμμος κουτί 'box made from sand'

What does diatom mean?

Botanical Definition:

Microscopic eukaryote, single cell algae, mainly solitary, occasionally in colonies. They belong to the Bacillariophyceae class.

Used to be included with Chrysophyta (golden algae) but now lumped into a phylum Stramenopile with other odd classes such as Phytothora

How can you see them?

First discovered

in 1703 by an unnamed 'country gentleman' (Mr C.) who, with his simple microscope, looked at some pondweed and saw adhering to them

'many pretty branches'

which he described as a plant

He's thought to have described a colony of

Tabellaria floiculosa

(Compound microscope with oil emersion lens.
Ideally with phase contrast. SEM)

Plant or animal?

1703 Mr C. _____ 1753 Baker _____ 1783 Muller _____
Plant Animal Animal

_____ 1822-1838 Bory and Ehrenberg _____
Plant or animal

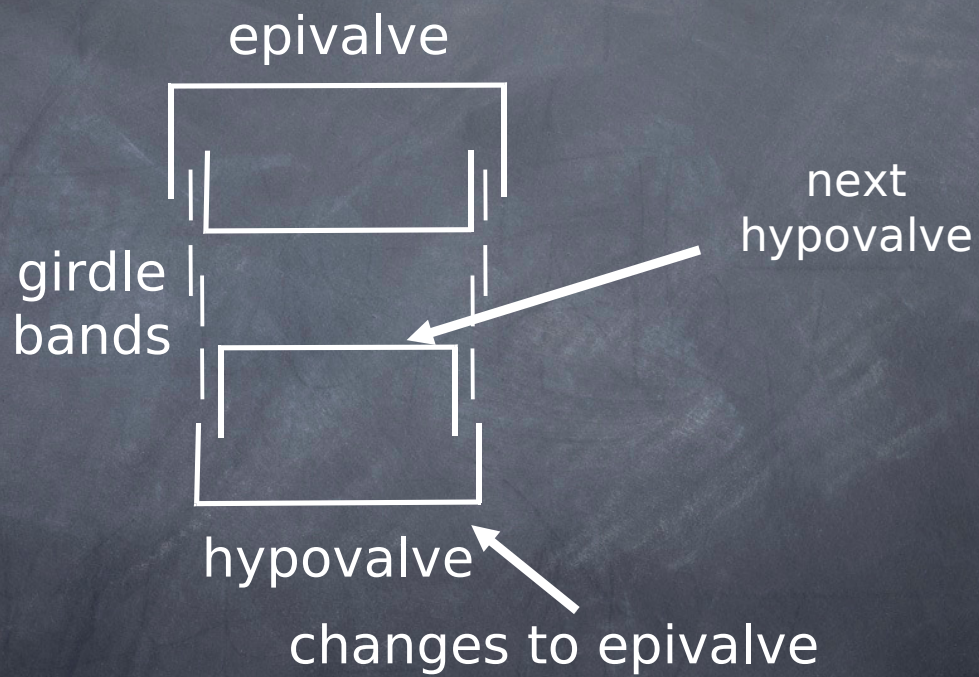
_____ 1844 Kutzing
Definitely plant. In fact
algae.



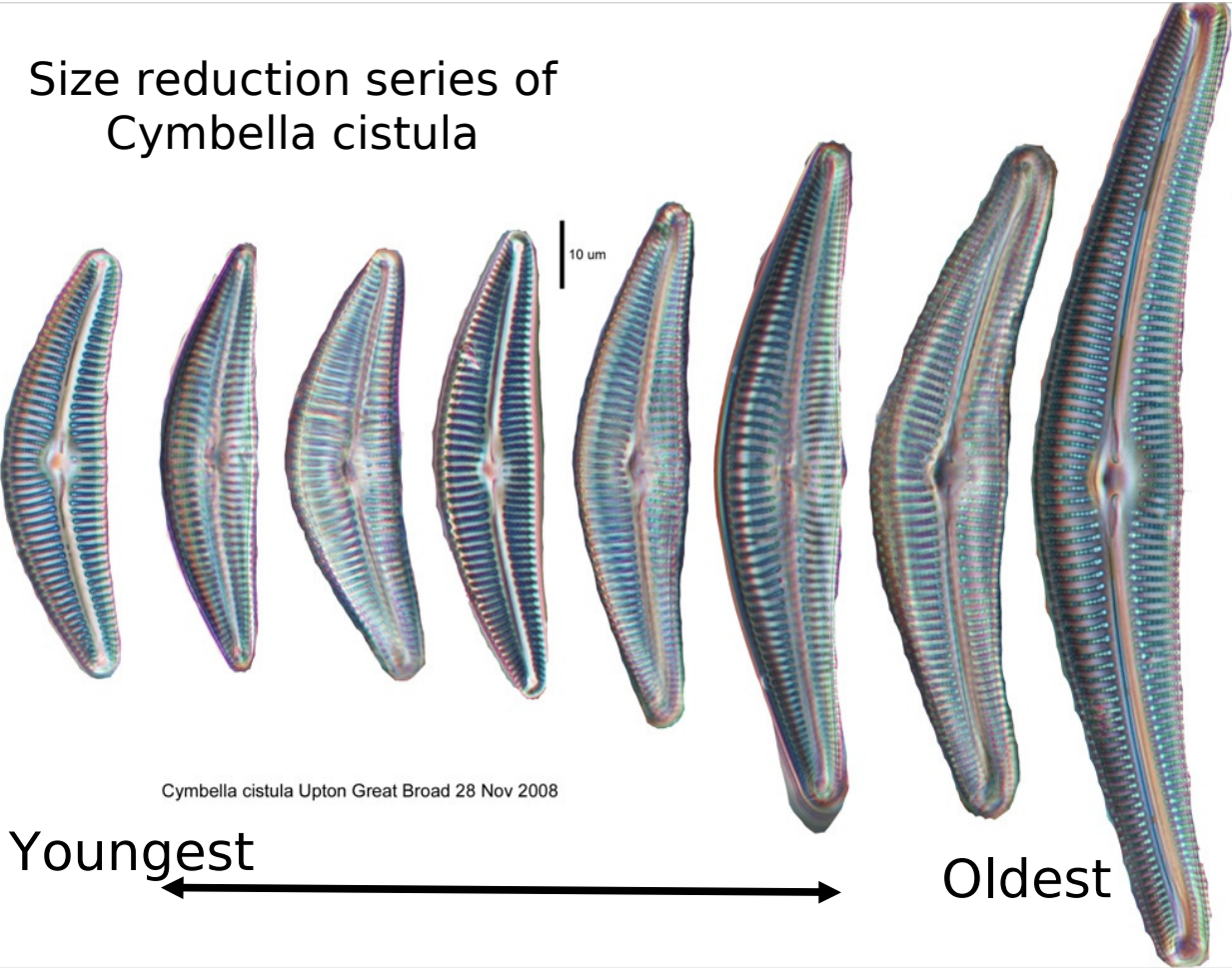
How do they grow and reproduce?

By internal constrained cell division.

Diagrammatic section of a diatom frustule.



Size reduction series of
Cymbella cistula



Cymbella cistula Upton Great Broad 28 Nov 2008

Youngest

Oldest

How many types are there?

Three main types make up 100s of genus
and 10,000s of species

Centric

Pennate

Araphid

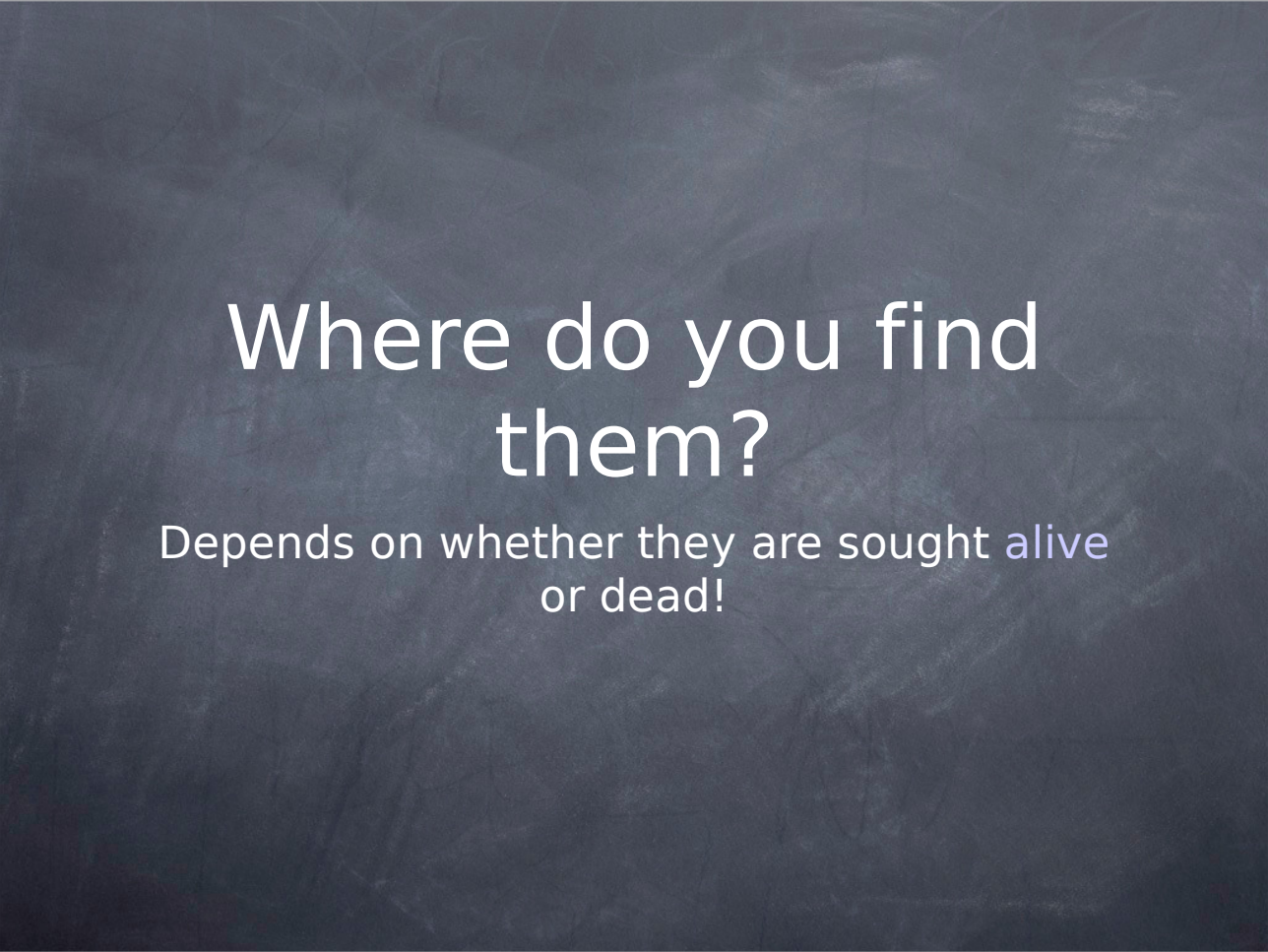
Raphid



Araphid diatom



Fragilaria sp



Where do you find them?

Depends on whether they are sought **alive**
or dead!

Living diatoms

Can be found in water wherever light can penetrate

From damp moss to 200 metres below the ocean surface.

They are limited by light level, silica and nutrients.

What is their function in the natural environment?

Important primary producers at the base of
the food chain:

Filtered by zooplankton and bivalves

Grazed by snails

Browsed by worms

What is their function in the natural environment?

Habitat stabiliser:

Estuary mud flats are held together by secretions from diatoms.

What use are they to us?

Industrial

Dynamite - Nobel

Filtration - Cider

Abrasives - Cleaning agent (NHM)

Diatomaceous earth -

Thermal protection - Fire safes, cryogenics, vacuum flasks

DNA purification - Stripping from RNA

Agriculture - Caking agent, dewormer

Horticulture - Hydroponic medium

What use are they to us?

Scientific

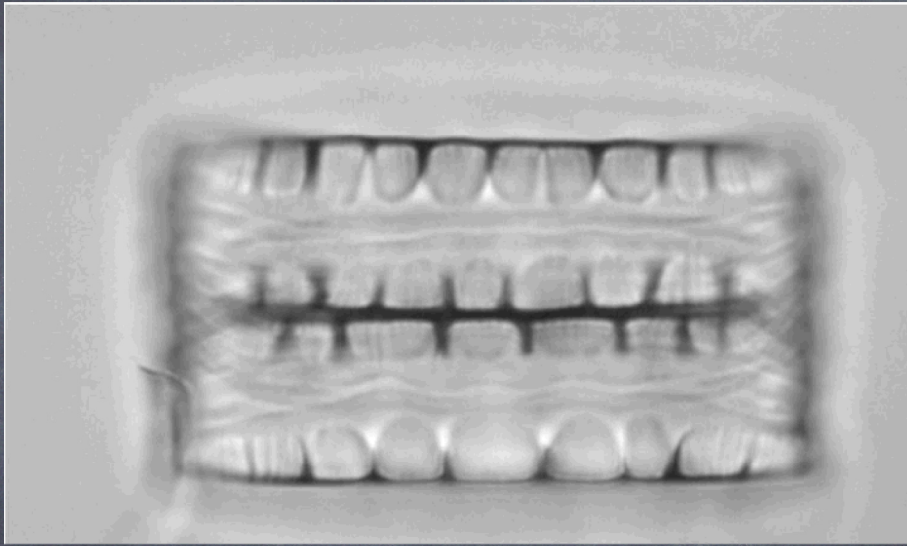
Forensics - Drowning

Paeleolithic studies - Reconstructing the past

State of the Environment - Pollution, WFD

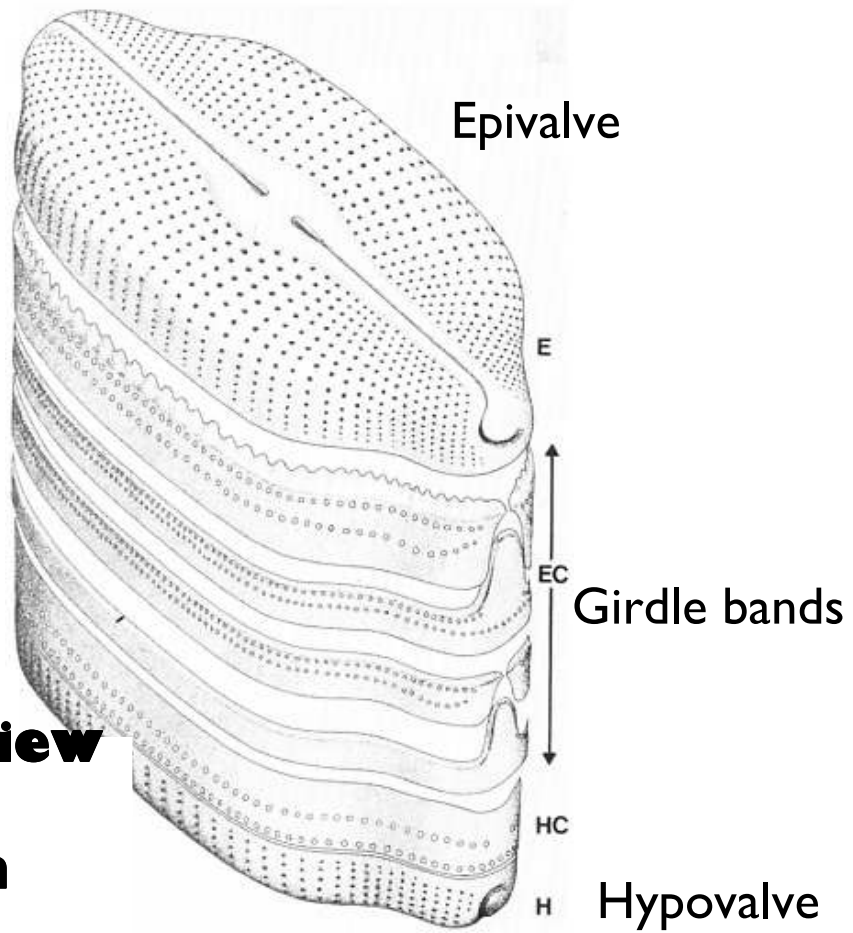
Research and Development

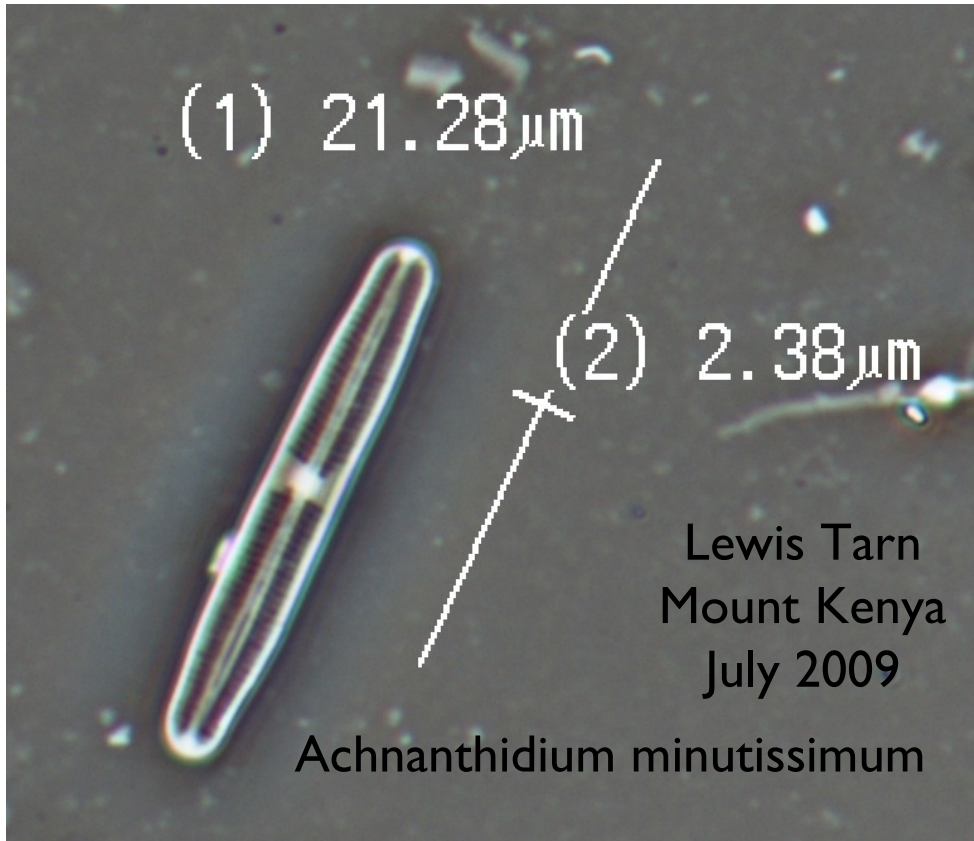
Nanotechnology - semi conductors, drug
administering, mass production nanocomponents
Solar cells

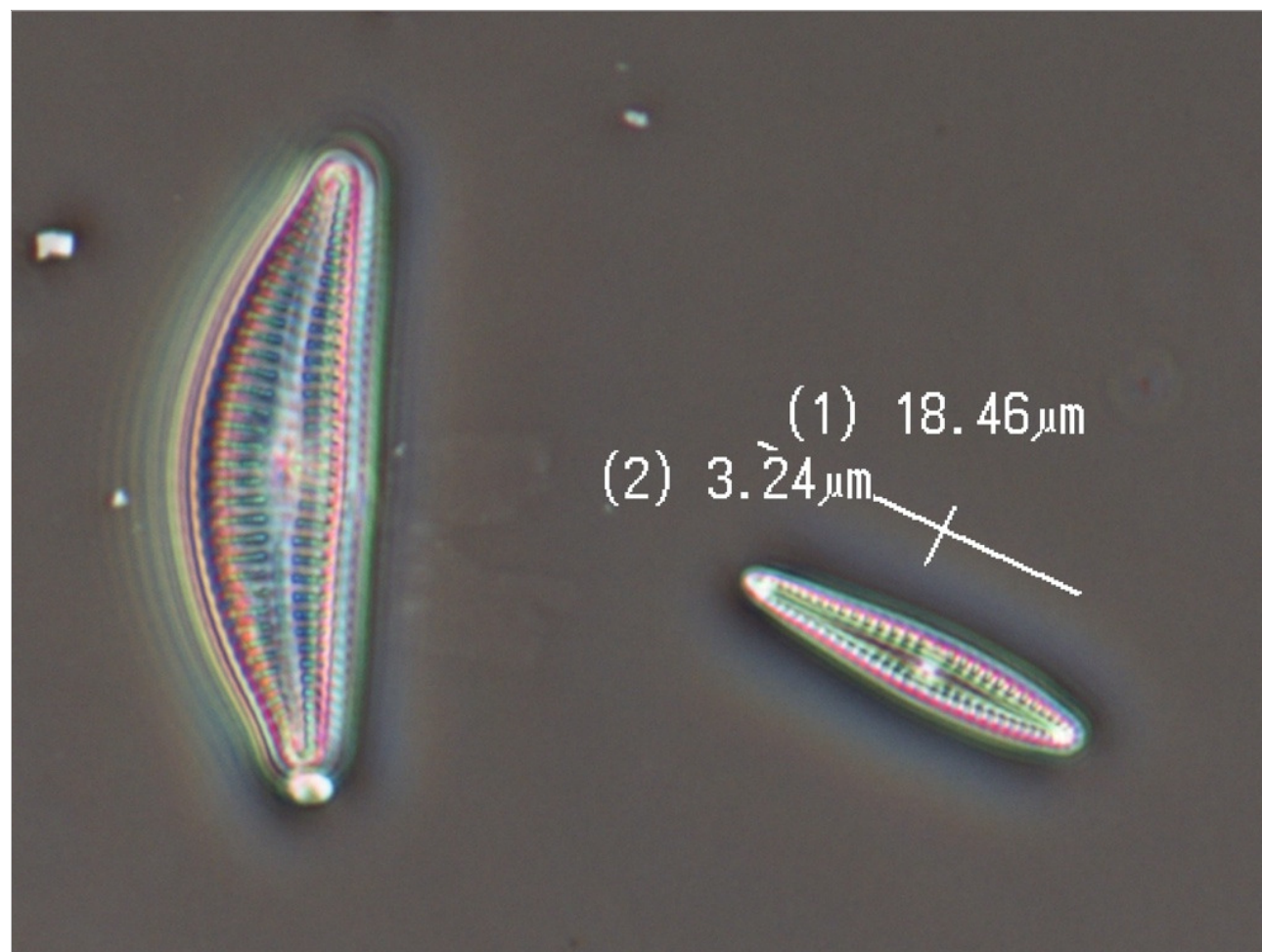


Diatoma (Girdle view)

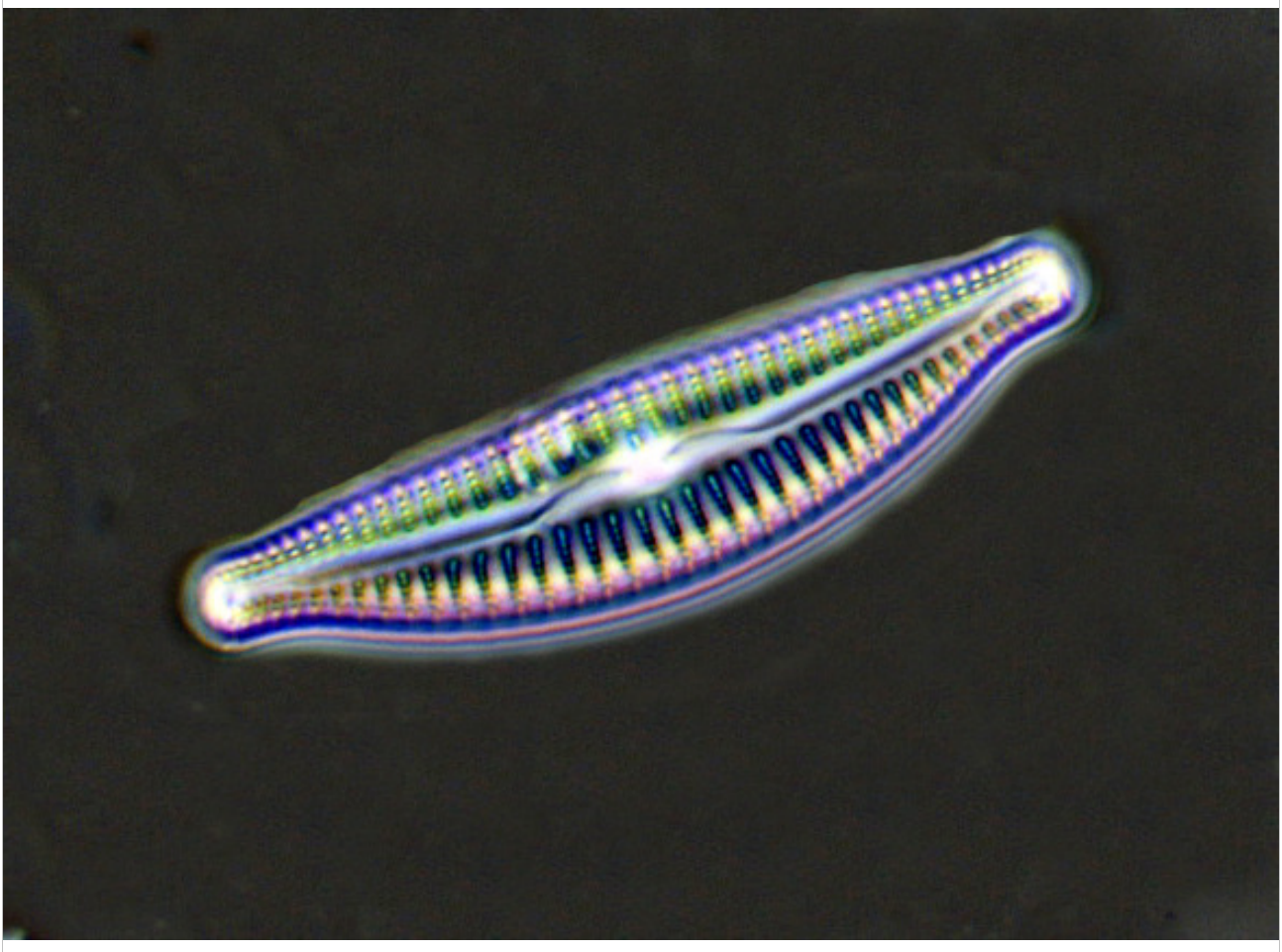
**Exploded view
of
a diatom
frustule**















(1) 12.59 μ m



