

PLANT SCIENCE WITH PROFESSOR MARGARET BARBOUR AND RICHARD HARWOOD

TALKING POINTS:

1. Name two things that plant life enables. (See Introduction to article)
2. What were early botanists focused on in their studies? (See Introduction to article)
3. What is a field emission scanning electron microscope and what is it used for? (See *Did the 3D imaging technology already exist?*)
4. What is “plant blindness”? (See *What are the benefits of being able to look at leaves in this way?*).
5. How much rainfall returns to the atmosphere via leaves? (See *What questions will these new imaging techniques enable us to answer?*)
6. Describe the interior of a leaf. (See *How does the 3D imaging of leaves work?*)
7. When did the first land plants appear? (See *Imagine this*)

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

- To understand more about the project that Margaret and Richard are involved with, watch this video on the EurekAlert website that captures a 3D rendering of the inside of a wheat mesophyll cell:
<https://tinyurl.com/y2kwzpem>
- Take a look at the Garden and Botanical Museum’s website. It is in Pisa, Italy, and is the first university botanical garden in the world.
- Buy – or grow – some houseplants and study them as they develop. There is often no better way of getting to know a plant than by simply looking at it. Jot down notes on what you see with each passing week!

TAKE A LOOK INSIDE A CHICKPEA PLANT LEAF!

Stomata are tiny openings or pores in the plant tissue that allow plants to “breathe”, i.e. carbon dioxide enters, and water and oxygen exit, through a leaf’s stomata. You can take a look inside – and even print – a chickpea stomata in four easy steps.

- 1) Go to [www.futurumcareers.co/link to online article] to download four chickpea stomata .stl files.
- 2) Drag and drop any one of these files into this free STL viewer: <https://www.viewstl.com>.
- 3) This STL viewer will allow you to zoom in and out, and spin the part of the stomata you have chosen around.
- 4) If your school or college has access to a 3D printer, you can have a go at printing a 3D image of a chickpea stomata. In Windows 10, double click on one of the files you have downloaded and it will open in Print 3D.

This is what your stomata will look like when it is printed!

