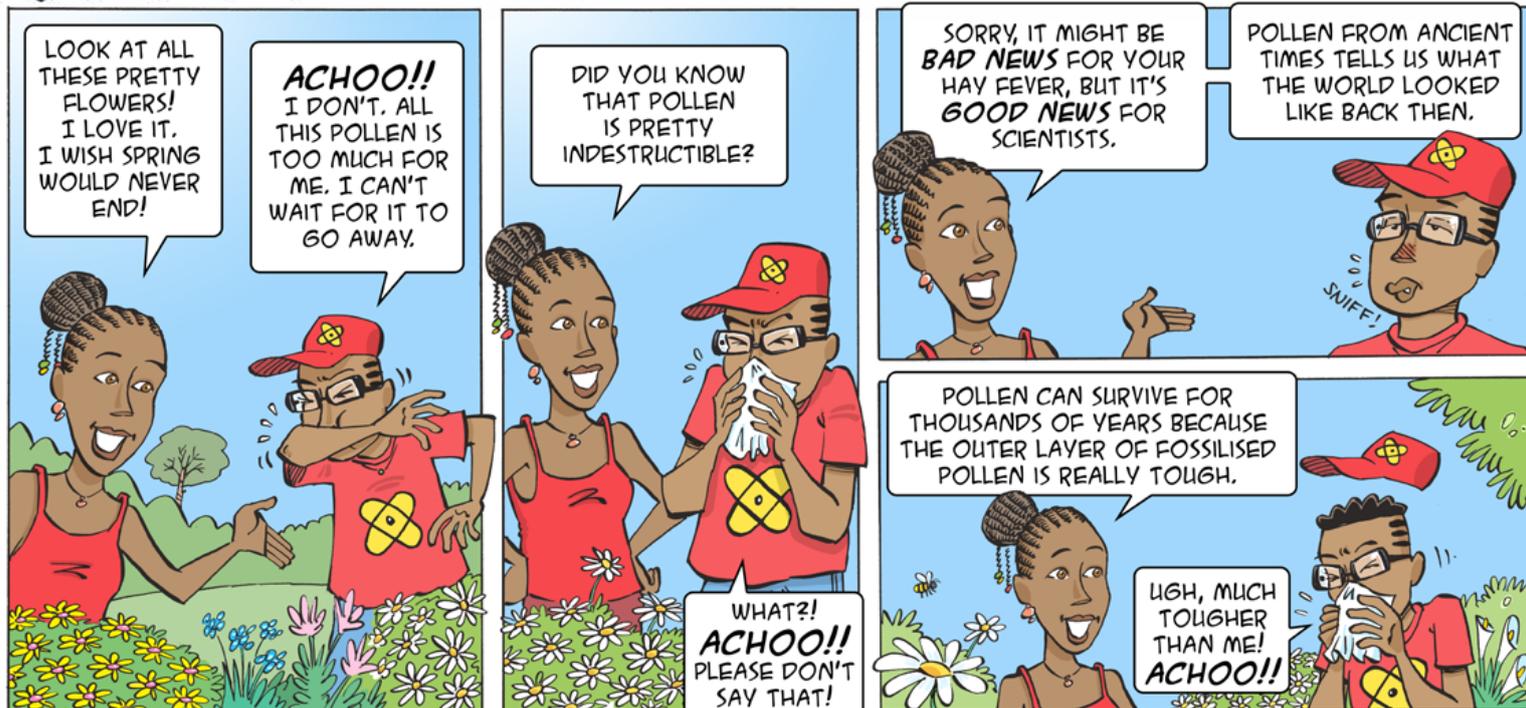


# SCIENCE SPAZA

www.sciencespaza.org



## TOUGH, TOUGHER, POLLEN!

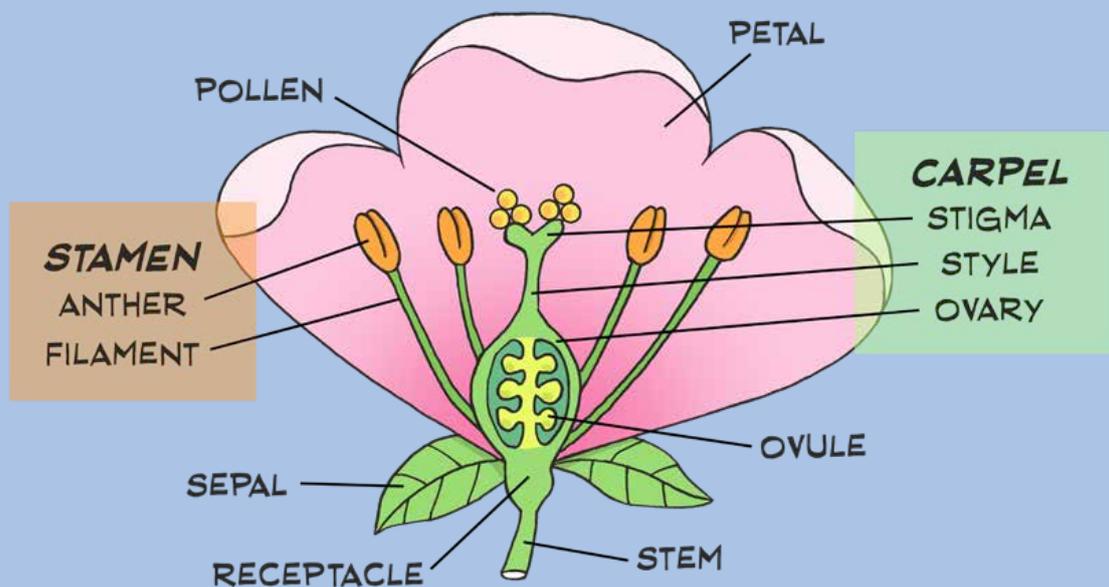


### POLLEN FROM THE PAST

Pollen is the fine powder that some plants make when they reproduce.

Palynology is the science of pollen, especially pollen that ended up in the soil or water a long, long time ago.

Scientists use pollen to learn about how the environment looked like in the past.



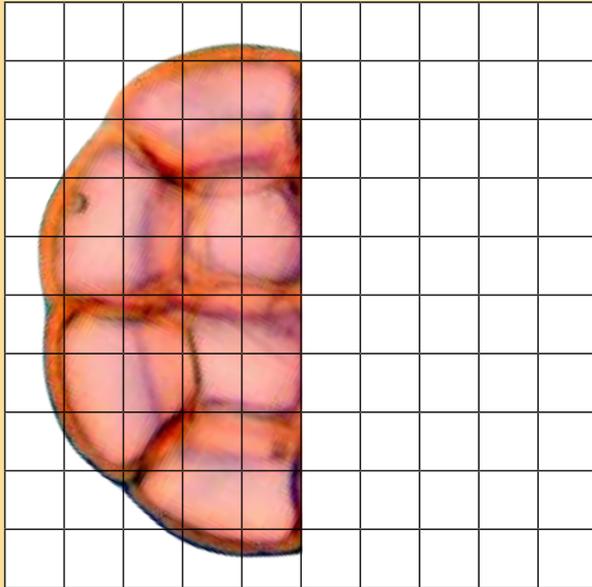
Knowledge is NCAW!



## PICTURE PERFECT POLLEN

Some kinds of pollen grains are symmetrical. This means one side of a grain is a mirror image of the other side along a line through the middle. This line is called the axis of symmetry.

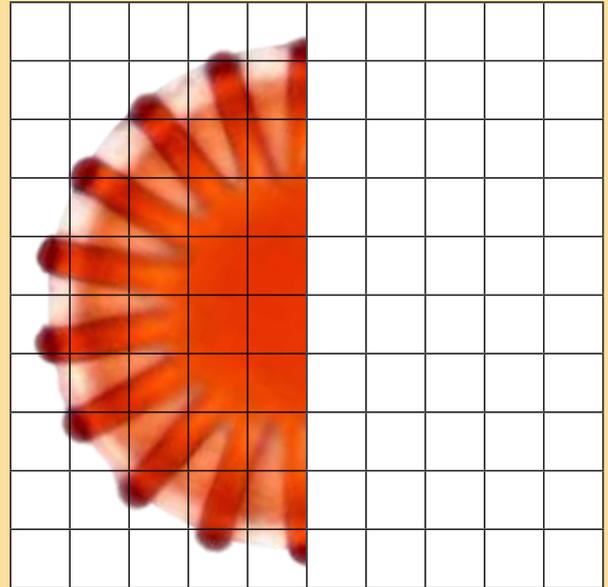
### ACACIA (THORN TREE)



### WHAT TO DO?

Draw the right side of the pollen grains in the diagram. Use the grid to guide you so that the right and left sides of the pollen grains are symmetrical.

### POLYGALA (SEPTEMBER BUSH)



## WHY DO POLLEN SHAPES MATTER?

Pollen morphology is the study of pollen grain shapes. Pollen can be spherical, triangular, oval or many other shapes.

Each plant has uniquely shaped pollen grains. By looking at the shape of pollen researchers can tell what plant it comes from.

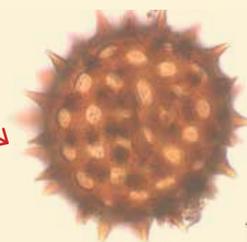
Ancient pollen gives researchers clues about the environment where the pollen was found. We call these clues indicators. For example, maize pollen could be an indicator of farming in an area.



A TRILETE SHAPED FERN SPORE WITH THREE SCAR LINES

REMEMBER, 1  $\mu\text{m}$  IS A THOUSANDTH OF A MILLIMETRE

A SPIKY OR ECHINATE POLLEN GRAIN FROM AN IPOMOEA FLOWER



A TETRAD SHAPED POLLEN GRAIN FROM A FLOWER IN THE ERICA FAMILY

Different types of plants have differently shaped pollen grains. Photos: Professor T. Hill



## POLLEN DETECTIVES

Researchers From the University of KwaZulu-Natal teamed up with the University of Greifswald in Germany For the "Tracing Human and Climate impacts in South Africa" (TRACES) project.



As detectives search for clues, these researchers collect mud from lakes and wetlands to look for clues about the past. One of the clues they look for is pollen.

Pollen is so tough it can stay recognisable for thousands of years.

This allows the TRACES team to discover what plants grew when the pollen ended up in the mud and explore how environments change over time.

TRACES researchers taking a mud sample from a lake in KZN.

Pic credit: Professor T. Haberzettl

## CAREERS: MEET AN ECOLOGIST



Salona Reddy

Swamps, mangroves and wetlands, **Salona Reddy** is always up for an adventure! Her studies in environmental science and research in palaeoecology allow her to know what plants and animals are under threat and spot invasive species.

If Salona's job sounds interesting consider a career in:

- Geography
- Geology
- Botany
- Melissopalynology (the study of pollen in honey)
- Aerobiology (the study of microscopic things in the air)
- Forensics
- Palynostratigraphy (petroleum exploration)

Palaeoecology is the study of past ecosystems.

## CURRICULUM LINKS

*Life Sciences FET Gr 10-12*

- History of Life on Earth: Understanding Fossils
- Biodiversity of Plants: Flowers as reproductive structures

*Natural Sciences SP Gr 7-9*

- Sexual Reproduction in Angiosperms: Pollen

*Mathematics IP Gr 4-6*

- Symmetry

Knowledge is NCAW!



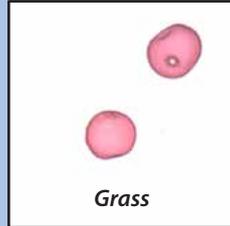
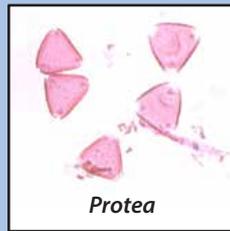
# PLAY POLLEN DETECTIVE

MATCH EACH **POLLEN GRAIN** WITH THE **PLANT** WHERE IT COMES FROM AND FOLLOW THE LINE TO LEARN WHAT THIS PLANT IS AN INDICATOR OF.

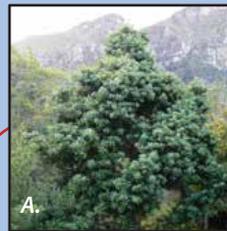


Answers:  
 Protea - B - 1  
 Grass - D - 3  
 Yellowwood - A - 2  
 Maize - C - 4

## POLLEN



## PLANT



## VEGETATION TYPE



## START YOUR OWN SCIENCE SPAZA

Do you want to start a science club at your school? Scan the QR code to register your **FREE Science Spaza Club** online.

Visit [www.sciencespaza.org](http://www.sciencespaza.org), email [info@sciencespaza.org](mailto:info@sciencespaza.org), SMS or WhatsApp us on 076 173 7130 or write to us at PO Box 22106, Mayor's Walk, 3208.



## WE WANT YOUR FEEDBACK!

WE WOULD LOVE TO SEE PHOTOS OF YOUR PICTURE-PERFECT POLLEN. WHATSAPP YOUR PHOTOS TO **076 173 7130**



This worksheet represents a collective effort put together by the participants of the Train-ME 2023 summerschool. Train-ME is a training initiative born out of the German-South African project "Tracing Human and Climate impacts in South Africa" (TRACES), an international and interdisciplinary collaboration of researchers funded under the "Science Partnerships for the Adaptation to Complex Earth System Processes" (SPACES II) program of the German Federal Ministry of Education and Research (BMBF).



Science Spaza is an initiative of research communication specialists Jive Media Africa in partnership with the Yazi Centre for Science and Society in Africa, a registered Non-Profit Company and Public Benefit Organisation. This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

