

SKIN BLEACHING:
What you need
to know **PAGE 5**

Life-saving sweat! Staying cool
when things get hot **PAGE 6**

The **SKIN** Edition

Pimples, spots and zits:
Let's learn all about acne **PAGE 8**

**Tight
hairstyles:**

The root of hair loss
problems **PAGE 7**



Speak to a scientist:
Meet Prof. Ncoza Dlova

**PAGE
4**

It's 2023, and there are many adventures in store for you and your science club.

Skin is more than just a cover for your body; it's constantly working to keep you healthy. In this issue, discover why skin matters, and learn about things you might be doing to your skin that could harm your health.

Read what Prof. Dlova, a dermatologist who is passionate about taking care of skin, has to say in our **Speak to a Scientist** feature on page 4. Let's face it, nobody likes acne. So, let's find out what causes it and how to deal with it on page 8. Meet Durban University of Technology student Sumisha Jankeepsad, who is turning her passion for skincare into cash, on page 9.

Get hands-on with a skin experiment on page 6. Remember to share your photos with us, we love to see what you get up to. WhatsApp us on 076 173 7130.

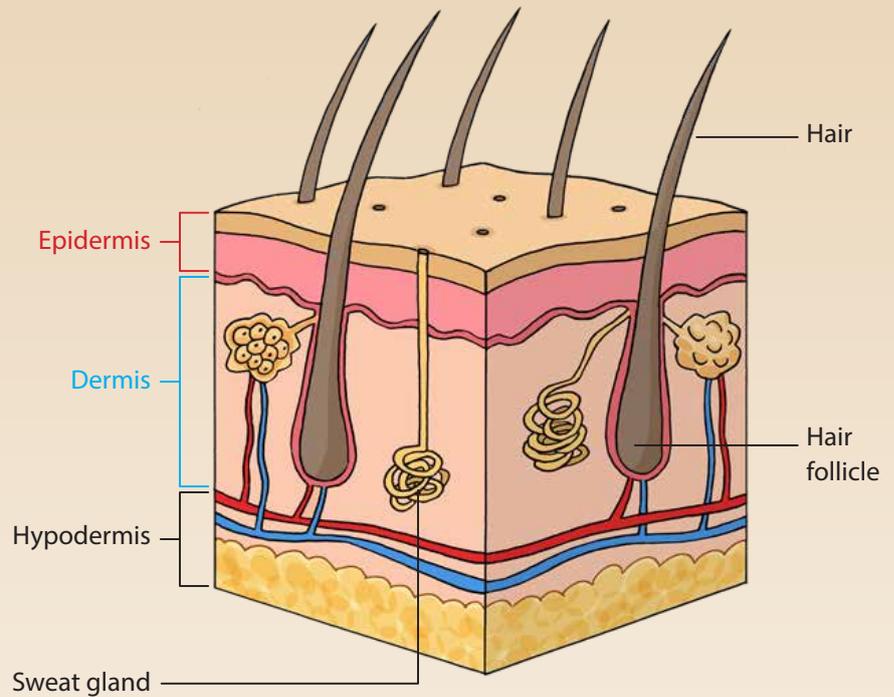
This year is also the **International Year of Millets**, and you can learn about the health benefits of these ancient grains on page 10. Talking about foods, make sure not to miss the **worksheet** about healthy eating included in this issue.

Remember, knowledge is power! Let's jump in and learn all about the skin that you are in, to be the best you that you can be, in 2023.

The Science Spaza Team



Why skin matters



If you have ever burned your hand or scraped your knee, you know how painful it is to scorch or lose a bit of skin. Skin plays such an important role in keeping us alive and healthy that if even a small part of skin is damaged, the entire body is in danger.

The skin is one of the most important organs in the human body. It's part of the **integumentary system**, which includes body coverings like skin, hair and nails in humans, and hooves, scales and feathers in animals.

But your skin is much more than a covering for your body. It protects us, regulates our temperature and allows us to experience the environment by feeling pain, pressure, temperature and touch.

Skin has three layers. The outer layer is called the **epidermis**. In this layer, you will find cells that are part of your immune system, sensory cells that help you to experience the world around you, pigment cells that give you your skin colour, and keratin – a type of protein that makes the skin strong and prevents water loss.

Beneath the epidermis is the **dermis**, with the nerves and blood vessels in a type of

flesh called connective tissue. The connective tissue is made of collagen and elastin, which make skin bendable and tough.

A layer of fat found under the dermis is called the **hypodermis**. This layer stores nutrients, cushions your insides and helps to keep you warm.

Apart from keeping our physical bodies healthy, skin plays a huge role in how we feel about ourselves. Learning how to take good care of your skin, and also to accept and celebrate it, is an important part of taking care of your mental health.

Like many things in life, we only realise how valuable something is once it is gone or is under threat.

Look after your skin because a healthy skin makes for a healthy body and mind.

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Advertising opportunities

For any editorial enquiries, for more information about Science Spaza strategic projects or to advertise on any of the Science Spaza channels including print (Spaza Space) online and social media, please get in touch with the Science Spaza team at 076 173 7130 or info@sciencespaza.org.

Club management:

To sign up a new club, please visit www.sciencespaza.org. For any enquiries related to club membership, please get in touch with Lungile Ikaneng on 076 173 7130 for calls and WhatsApp or email admin@sciencespaza.org

We are talking to our future leaders. Are you?

Where does skin colour come from?

Skin gets its colour from two sources. Firstly, the blood vessels near the surface of the skin give you a reddish or pinkish glow. That is why people get flushed when they exercise or feel shy. The skin will look redder due to more blood flowing through the vessels in the skin. Secondly, colour pigments in the outer layer of your skin give you your skin tone. These pigments are called melanin and is made by a type of cell called a melanocyte. There are between 1 000 and 2 000 of them in every square millimetre of your skin. People from all races have the same number of melanocytes, but

skin colour depends on the amount of melanin that these cells make. The more melanin, the darker the skin tone. Melanocytes make more melanin when they are exposed to sunlight. That's why the sun makes skin darker.

Melanin pigments are little grains that move to the top of cells, where they line up, forming a sun shield. Albinism is a condition where cells make very little or no melanin. People or animals with albinism have fair skin, hair and eyes. It's a genetic condition, meaning it is caused by a person's DNA.

Vitiligo is a skin condition where parts of the skin stop making melanin. The skin loses colour, usually in patches that sometimes get bigger over time. In some cases, vitiligo can be treated to help the skin to make melanin again, but often the symptoms return when treatment is stopped. Neither albinism nor vitiligo is harmful or contagious. Today, body-positive activists like Chad Esau are encouraging people with all skin tones and skin conditions to be proud of their appearance.



Don't allow people's opinions to define you. You are not what they say you are.



Chad Esau is a model from Cape Town and competed in the Mr South Africa pageant in 2020. He also has vitiligo, and although it was not always the case, today he embraces his unique skin. In a special message to all *Spaza Space* readers, he says: "Don't allow people's opinions to define you. You are not what they say you are. You are whoever God says you are. He calls you loved. He calls you His own."

DID YOU KNOW?
SKIN COLOUR EVOLVED TO PROTECT OUR BODIES FROM HARMFUL SUN RAYS.



Chad Esau, Cape Town model, encourages young people to embrace their unique looks. Pic: MMM Agency

Prof. Dlova at the University of KwaZulu-Natal is one of only three full professors of dermatology in South Africa and is an internationally acclaimed researcher with more than 130 research papers. She is passionate about ethnic hair and skin. *Credit: UKZN*

Speak to a scientist:

Meet Prof. Ncoza Dlova



Dermatology is a branch of medicine that deals with treating skin, hair and nail issues. The Science Spaza gang caught up with Prof. Dlova, a full professor in dermatology at the University of KwaZulu-Natal (UKZN).

Spaza: Thanks, Prof. Dlova, for chatting with us! Can you tell us a bit more about what you do?

Prof. Dlova: Nice to meet you. I work here at UKZN, where I am the Dean of the School of Clinical Medicine as well as the Head of Dermatology. A dean is like the principal of the medical school at a university, and the Head of Dermatology is in charge of the Dermatology Department, teaching and running the skin clinics of the department. I research skin- and hair-related issues and teach dermatology to medical students and doctors who would like to become dermatology specialists. I also oversee a couple of dermatological clinics in the province.

Spaza: Can you tell us about how you became a dermatologist?

Prof. Dlova: I grew up in the Eastern Cape in the countryside. We had cattle, sheep and chickens. We once had an orphan calf, and I cared for it, feeding it twice a day with a bottle. My mother saw how I enjoyed taking care of the calf and encouraged me to become a doctor. I was just 10 years old, but the seed was planted. After completing school, I studied medicine and then decided to specialise in dermatology, because there were no African dermatologists in the country.

Spaza: What made you choose dermatology as a career?

Prof. Dlova: When I did my practical work as a young doctor at the then Livingstone Hospital in Port Elizabeth, I saw that most dermatologists were white or Indian. I realised there was a shortage of African dermatologists at that time. The only one at the hospital where I worked was a very senior white male dermatologist. He would only come in once a week. Patients would wait for hours to see him, and he had to

rush through consultations without proper privacy or explanation of the diagnosis and treatment, because he had too many patients to see and had to go to his private practice. He also could not speak isiXhosa and so could not talk to patients to explain their diagnosis or treatment. Patients left with no knowledge of their diagnosis or treatment. When I saw this, my heart would break and I decided to become a dermatologist.

Spaza: What kind of research do you do?

Prof. Dlova: My area of interest is in ethnic hair and skin. I look at pigmentation disorders like melasma and hair loss, caused by various conditions. I am also interested in the effects of HIV on skin. Apart from that, I have also used my research knowledge to develop a haircare range called Nwelle for African hair.

Spaza: Do you have any advice for young people interested in the science of skin?

Prof. Dlova: Dermatology is not just about cosmetics.

It is an opportunity to help disadvantaged communities. It is also a chance to educate people about skincare, skin infections and the dangers associated with certain practices like skin lightening and tight hair braiding. It will take hard work, determination and a good mentor to help! For starters, you need to get good grades in your matric exams so that you can be accepted at medical schools.

Spaza: Thank you, Prof. Dlova, it was great to talk to you! All the best with your research.

Learn more about your skin with Prof. Dlova in a brand new worksheet. Scan the QR code below.



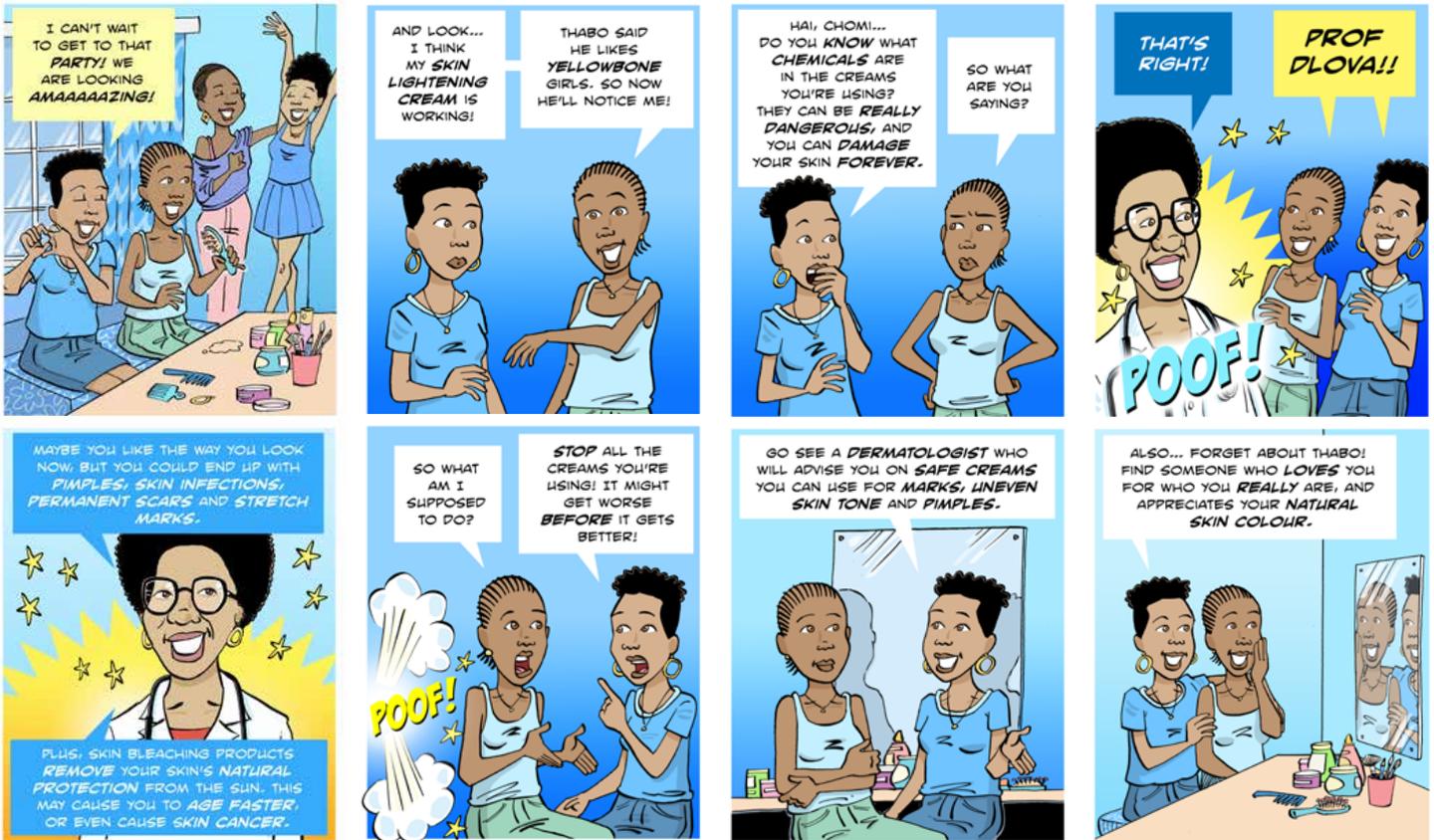
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SKIN-WISE: PART 1

Skin bleaching: What you need to know



Skin bleaching, lightening or whitening is the use of chemicals to change the colour of a person's skin to a lighter shade by removing the natural pigment called melanin. Skin lightening has been done all over the world, from ancient Rome and Japan to modern America, India and South Africa today.

Throughout history, a darker complexion was associated with people who spend more time outside, such as labour-

ers, while a lighter complexion was associated with the noble class, spending their time indoors. This supposed link between lighter skin and the upper class still drives many people to even out or lighten their skin tones.

Skin lightening has become popular with some celebrities. Unfortunately, some of the products marketed to lighten the skin contain lead, arsenic, mercury, phenol, hydroquinone, resorcinol and other dangerous chemicals.

Using creams with these ingredients has dangerous skin effects. In some cases, the result is immediate, and in other cases, you will only see the side effects after using the product for a long time. Mercury-containing skin-

lightening products can create permanent dark patches on the skin and are harmful to unborn babies when used by pregnant women. Some lightening chemicals could make the skin red, inflamed or thinner, and could even cause cancer when used for a long time.

Mercury-containing bleaching creams are regulated by law, but many dangerous products make it onto the shelves of supermarkets, spice shops and street vendors, where these illegal products are sold cheaply. Once skin lightening is stopped, the skin might first look worse as the repair process begins, before it returns to your natural healthy skin tone. There are safe products that can be used to treat marks, but even these

need to be used as prescribed and directed by a dermatologist to make sure they do not cause harm.

The time has come to celebrate and embrace all natural skin tones and stop listening to media, peer pressure and social media that set unhealthy complexion ideals.



Skin-lightening products can cause irreversible dark marks and permanent skin damage (ochronosis), as seen.

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Life-saving sweat!

Staying cool when things get hot

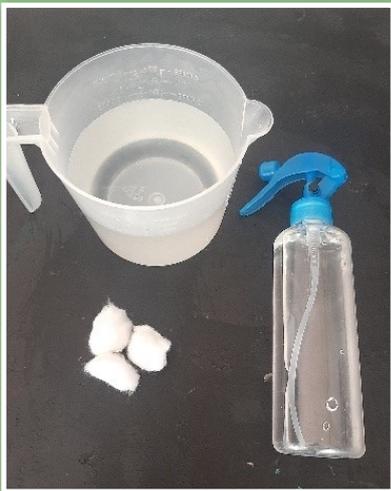
ACTIVITY
PAGE

Wow! What a summer it's been. Long, sunny days with high temperatures. And sweat! People, like all mammals, are warm-blooded, meaning we keep our body temperature the same despite the weather around us. If we get a few degrees warmer or colder than 37 degrees Celsius, our lives could be in danger. The fatty hypoderm layer of your skin helps to keep heat inside to stay warm, almost like a thick jacket does. Animals like whales and seals that live in cold places will have an extra layer of fat called blubber under their skin to help keep them warm. Sweating, on the other hand, is a way to keep cool when your body's temperature rises due to exercise or a hot summer's day.

Let's do a cool experiment to see how sweat can cool us down

You will need:

- WATER
- COTTON WOOL
- A SPRAY BOTTLE OR WASHCLOTH
- YOUR SKIN



What to do:

WET ONE ARM WITH A BIT OF WATER. LEAVE THE OTHER ARM DRY. NOW, GENTLY BLOW OVER THE TWO ARMS. NOTICE IF YOU FEEL A DIFFERENCE BETWEEN THE WET ARM AND THE DRY ARM.



What happened here?

EVAPORATION IS THE PROCESS WHERE A LIQUID TURNS INTO A GAS. TO DO THIS, THE LIQUID WILL NEED TO BREAK THE BONDS THAT KEEP THE MOLECULES OF THE LIQUID CLOSE TOGETHER.

THIS REQUIRES SOME ENERGY, WHICH THE LIQUID WILL TAKE FROM THE ENVIRONMENT, LEAVING THE PLACE WHERE EVAPORATION HAS TAKEN PLACE COOLER THAN BEFORE. THIS IS CALLED EVAPORATIVE COOLING, AND IT'S THE REASON WHY SWEAT COOLS US DOWN.

SWEAT GLANDS IN THE SKIN WILL RELEASE SWEAT (A LIQUID) WHEN THE BODY'S TEMPERATURE RISES. WHEN THE LIQUID EVAPORATES, IT TAKES SOME ENERGY IN THE FORM OF HEAT FROM YOUR SKIN, AND HENCE YOUR BODY COOLS DOWN. THE SAME PRINCIPLE OF EVAPORATIVE COOLING IS USED TO MAKE FRIDGES AND AIR CONDITIONERS.

INTERESTING FACT:

Did you know that sweat is mostly odourless? The smell sometimes associated with sweating comes from bacteria that live on your skin. Bacteria grow faster in sweaty places like the armpits. Regular bathing and breathable clothing will keep these smelly microbes in check.



SKIN-WISE: PART 2

Tight hairstyles: The root of hair loss problems



Nothing beats the feeling of a brand new hairstyle. But did you know that tight hairstyling could result in permanent hair loss?

Hair grows from tiny holes in the skin called **follicles**. Humans have hair on most parts of their skin, some places more than others. Hair is made of a kind of protein called **keratin**. The hair root forms the start of each hair inside the follicle. Living cells inside the follicle divide to form new cells, making hair grow longer.

Under normal circumstances, one loses between 50 and 100 hairs each day. Normally, hair just grows back, unless the hair follicle suffers trauma. Pulling hair into tight ponytails or braids, or wearing weaves or wigs that pull on hair, could damage the hair follicles.

A condition called traction alopecia (*injibhabha*) is permanent hair loss caused by tight hairstyles, occurring commonly on the hairline. Ballet dancers and people who wear tight-fitting head-gear could also suffer from traction alopecia.

The condition also occurs in people where religious beliefs prevent hair cutting, and heavy hair constantly pulls at the roots. Hair loss is irreversible if traumatic hairstyling goes on for a long time.

In its early stages, hair is lost in patches, but it will get worse if tight styling continues. Research shows that relaxed or chemically treated hair is more prone to traction alopecia, and it is even

worse if there is severe pulling of chemically processed hair (double blow).

To avoid traction alopecia, one should wear natural hair instead of extensions and embrace natural afro-styling. Regularly change the way you part your hair when braiding to avoid putting too much strain in one place. Choose protective hairstyles like twisting or braiding.

Remember, you should never feel pain, have a headache or see pimples on the scalp edge after braiding. Use your fingers or a wide-tooth comb to disentangle your hair, and avoid combing hair too frequently to reduce breakage.

So, next time you go to the salon, think natural and think

protective hairstyles, and remember to take care of your hair by conditioning and moisturising it, or soon you will lose your hairline!

Learn how to keep your hair and skin healthy in a new worksheet with Prof. Dlova. Scan the QR code below.



Eleven-year-old with traction alopecia (*injibhabha*). Tight weaves, braids and extensions can cause permanent hair loss.

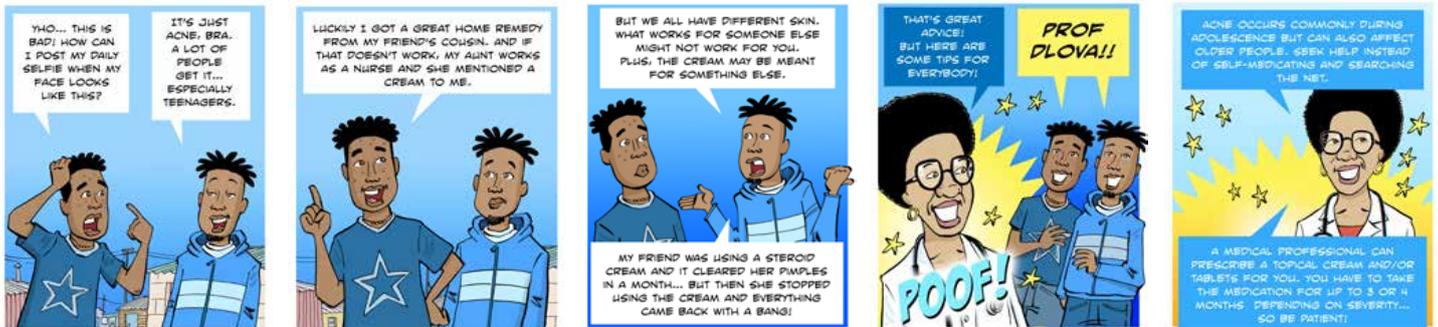
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SKIN-WISE: PART 3

Pimples, spots and zits: Let's learn all about acne



The skin condition acne vulgaris, better known simply as acne, is characterised by red bumps on the skin, especially on parts of the body that have more oil glands, like the face, chest and back. Dead skin cells, skin bacteria and oils that clog hair follicles can cause acne.

Acne runs in the family and affects mostly young people, but adults and children can get it, too. While a person is growing up, hormones can cause the skin to make more oils, or sebum.

This causes some of the bacteria found on the skin to grow faster, causing pimples, inflammation infection associated with acne.

Acne is treatable, but it's a slow process. Dermatologists suggest that you consult a doctor for acne. For moderate to severe acne, a medical professional might prescribe antibiotics or vitamin A tablets to keep acne in check.

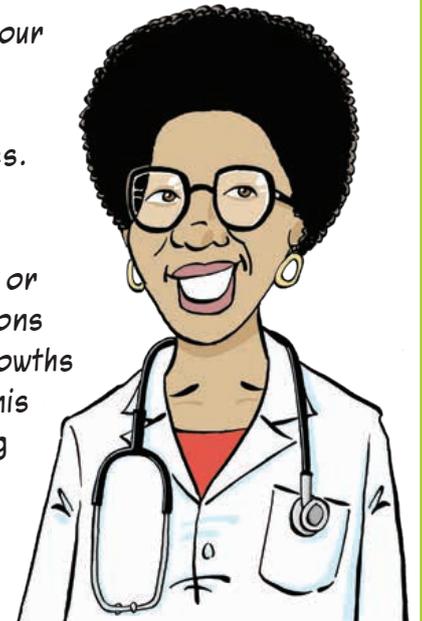
Treating acne takes time and requires patience. Acne tablets take up to three to four months to work. Pimple creams that contain a chemical called corticosteroid could even make the acne worse and damage the skin.

It is important to seek help in treating acne and not to try home remedies, self-medication or Dr Google. Don't pick or squeeze your acne, because you can cause permanent scars or marks which cause uneven spots.

Some research suggests that an unhealthy diet or certain foods could worsen acne breakouts. Eating a healthy diet is important to keep your body, including your skin, in good shape.

DID YOU KNOW?

All the blood in your body will pass through the skin every few minutes. This helps you to react quickly to threats like viral or bacterial infections or cancerous growths when the epidermis signals a warning for the rest of the immune system.



To read more about acne, join Prof. Dlova to unlock the secrets to healthy skin. Scan the QR code to see the worksheet.



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Millet: Goodness in a grain

The United Nations declared 2023 the International Year of Millets to make people aware of this important grain crop. Millet is a grass-like cereal. There are different kinds of millet. The one you are most likely to know is sorghum, widely used in South Africa to make mabele porridge and African beer. Other African countries and India grow pearl millet, finger millet and foxtail millet.

Millet was grown by the earliest farmers in human history and is still a staple food for millions of people across the world. Millets are indeed worth celebrating because these ancient

grains are healthy to eat and can grow in places where the soil is too dry or poor for other crops to grow. Researchers predict that this hardy grain will be an important food crop as the climate continues to change.

Millets are widely used for animal fodder and pet bird food. Some millets are even used in skincare products. The vitamin E in millet can penetrate skin and help with wound healing. Some acne treatment products contain lipoic acid, an antioxidant found in millet.

Small grains with big nutritional value:

- Millets are high in protein.
- Millets are high in fibre and great for digestion.
- Millets are low-GI, meaning they can help to control blood sugar levels.
- Millets can help to lower cholesterol, which is good for heart health.

Look out for the new Healthy Eating worksheet coming your way!



Sorghum is a well-known millet used in South Africa to make Maltabella or mabele porridge. Pic: Pixabay

Things to do with your SCIENCE CLUB



As this year kicks off, take some time to plan what you and your science club want to do. Check out these important dates, and look for activities related to these themes to keep the learning going strong in 2023!

Look out for these celebrations coming up:



22 April	Earth Day
25 April	World Malaria Day
27 April	International Girls in ICT Day

Ideas for your club:

Research, experiment, discover! Find all the details to take part in the Eskom Expo for Young Scientists at exposcience.co.za

Astronomy for anybody? Get your star chart to see what is on in the night sky at planetarium.co.za

Looking for a chance to develop your **research, critical thinking and information literacy** skills? The SAASTA schools debate competition is just what you are looking for. Find more information at www.saasta.ac.za

SAASTA COMPETITION DATES FOR 2023

Olympiads: Entry fee of R35 per learner per entry

Enquiries for Life & Physical Science:

Ms Nthabiseng Ndlovu at scienceolympiad@saasta.ac.za

Life Science (Grades 10-11) – 25 July

Physics (Grades 10-11) – 27 July

Enquiries for Natural Science:

Ms Idah Mphaphuli at nsops@saasta.ac.za

Natural Science (Grades 4-6) – 25 July

Natural Science (Grades 7-9) – 26 July

AstroQuiz: Free entry

- Round 1 – 4 May 2023
- Round 2 – 3 August 2023
- Round 3 – 24 August 2023
- Round 4 – 7 September 2023

Enquiries for AstroQuiz: Ms Bonolo Lekalakala at astro@saasta.ac.za

Debates: Free entry

Entries: 6 March-7 April

Level:

District/Video submissions – 8 May
Provincial workshop online – 5 August
Provincial tournaments (online or on-site)

- 19 August (EC, NC, GP)
- 26 August (LP, FS, NW)
- 2 September (WC, KZN, MP)

National tournament – 7 October (online/on-site)

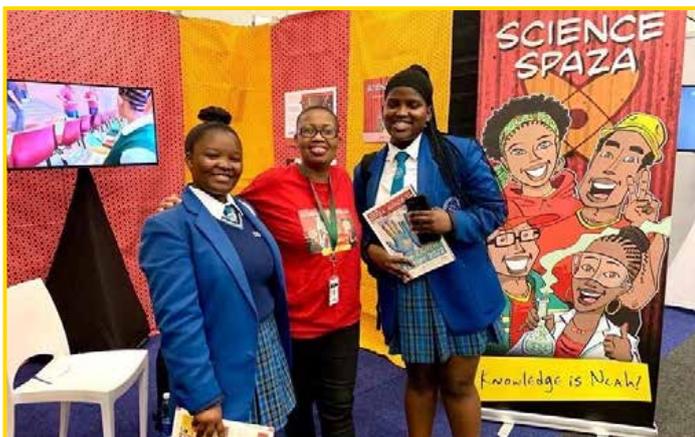
Enquiries: Ms Lithakazi Masilela at L.Masilela@saasta.nrf.ac.za



NEWS FROM THE CLUBS

Science Spaza at the World Science Forum

In December 2022, scientists from around the world visited Cape Town for the World Science Forum. The Science Spaza team was there to get inspired and learn what is happening at the forefront of research to bring you more interesting stories and scientific fun in the year that lies ahead.



Lungile Ikaneng from the Science Spaza team meets up with learners who visited the exhibition area at the World Science Forum in Cape Town 2022. Pic: Jive Media Africa



The inquisitive minds of Prism Science Club enjoy learning about new things.



These Chiefians Science Club members know that knowledge is power!

Tribute to top teacher



Mr Desmond Macauley handed over the Summit Junior Science Club after many years of learning and discovering with the Science Spaza gang.

Pic: Supplied

After many years as an educator, Mr Desmond Macauley of Pinnacle College in Kyalami has retired. Here, Mr Macauley led the Summit Junior Science Club. According to Mr Macauley, the club always enjoyed the activities in the Science Spaza worksheet. These fun, hands-on activities stimulated interest in all the interesting topics covered by the worksheets over the years. We wish Mr Macauley a wonderful retirement! Luckily, the Summit Junior Science Club will keep learning and discovering under new leadership.



Ready to make a difference! Members of the Clayville Young Scientists Science Club show off their Spaza Earth Edition newspapers.



Readers are leaders! Members of the Ozone Science Club love to read the Science Spaza newspaper.

YOUR SKIN CROSSWORD

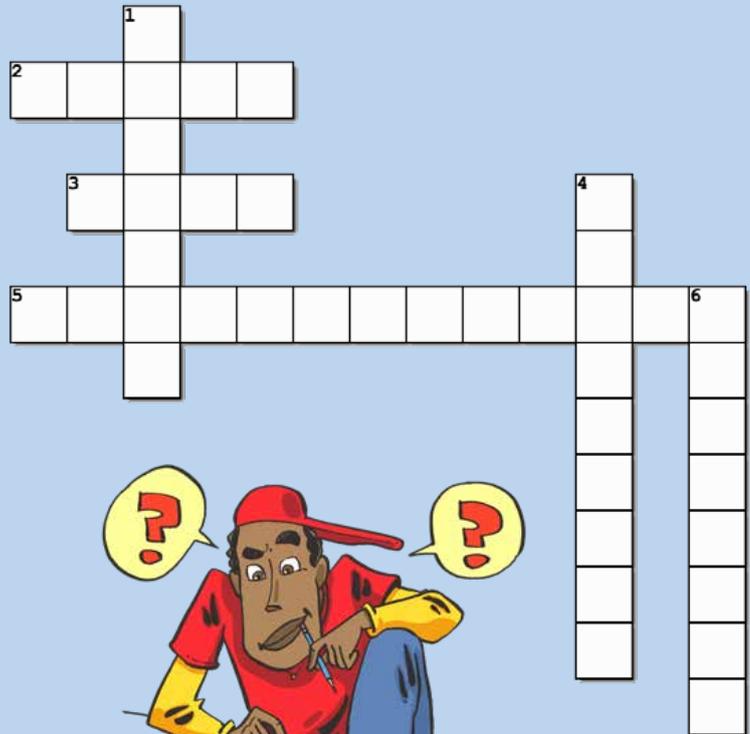
LET'S HAVE SOME FUN AND TEST YOUR KNOWLEDGE WITH THE VASELINE SKIN HEALTH CROSSWORD.

Across

- 2. A liquid produced by the skin to control body temperature
- 3. Red bumps on oily parts of the skin
- 5. A medical doctor who specialises in treating skin, hair and nail conditions

Down

- 1. A dangerous chemical found in skin-lightening products
- 4. The outermost layer of skin
- 6. _____ alopecia is permanent hair loss caused by tight hairstyling.



THE Vaseline HEALING PROJECT



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Puzzle answers: Down: 1 - Mercury; 4 - Epidermis; 6 - Traction; Across: 2 - Sweat; 3 - Acne; 5 - Dermatologist

START YOUR OWN SCIENCE SPAZA

WE'D LOVE TO HEAR WHAT YOU'D LIKE TO SEE IN THE NEXT EDITION OF THIS NEWSPAPER. SEND US YOUR IDEAS!



Send us your feedback

We would love to hear about you and your science club and see pictures of the activities that you get up to. Send us your pics on WhatsApp on 076 173 7130.



REGISTER NOW TO RECEIVE **FREE** RESOURCES AND SUPPORT. YOU WILL NEED:

- 1 A GROUP OF FRIENDS WHO ARE EXCITED ABOUT SCIENCE!
- 2 A PARENT OR TEACHER TO ASSIST YOU
- 3 A TIME AND PLACE TO MEET
- 4 SOME **CURIOSITY** AND AN INTEREST IN FINDING OUT MORE ABOUT THE WORLD!



Scan the QR code below to complete the club registration form. Once you've submitted your form, we'll be in touch!

