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*"ARID LANDSCAPE"* by Prof Bruce Cairncross (Science as Art 2011)



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## **"ARID LANDSCAPE"**

by Prof Bruce Cairncross  
(Science as Art 2011)

It looks like a desert landscape, but this photo is actually a slab of sandstone from Namibia. The lines and patterns are due to Leisegang staining, formed by red-brown iron oxides that precipitate from solution in the rock. The exact mechanism, particularly why the staining produces such abstract patterns that cross-cut the bedding of the rock, is not well understood.



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*"AURORA AUSTRALIS"* by Chris Oosthuizen (Science in Action 2011)



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## **"AURORA AUSTRALIS"**

by Chris Oosthuizen  
(Science in Action 2011)

Aurora Australis is also called the Southern Lights. This spectacular and awe-inspiring phenomenon appears in the Antarctic sky in winter. Energetic particles from Space bump with atoms in the Earth's upper atmosphere. The collisions excite the atoms, giving them extra energy, which they then release as light and give us the beautiful Aurora in the sky. This photo was taken on an expedition to sub-Antarctic Macquarie Island. South Africa has a strong research presence in the Antarctic and sub-Antarctic islands.



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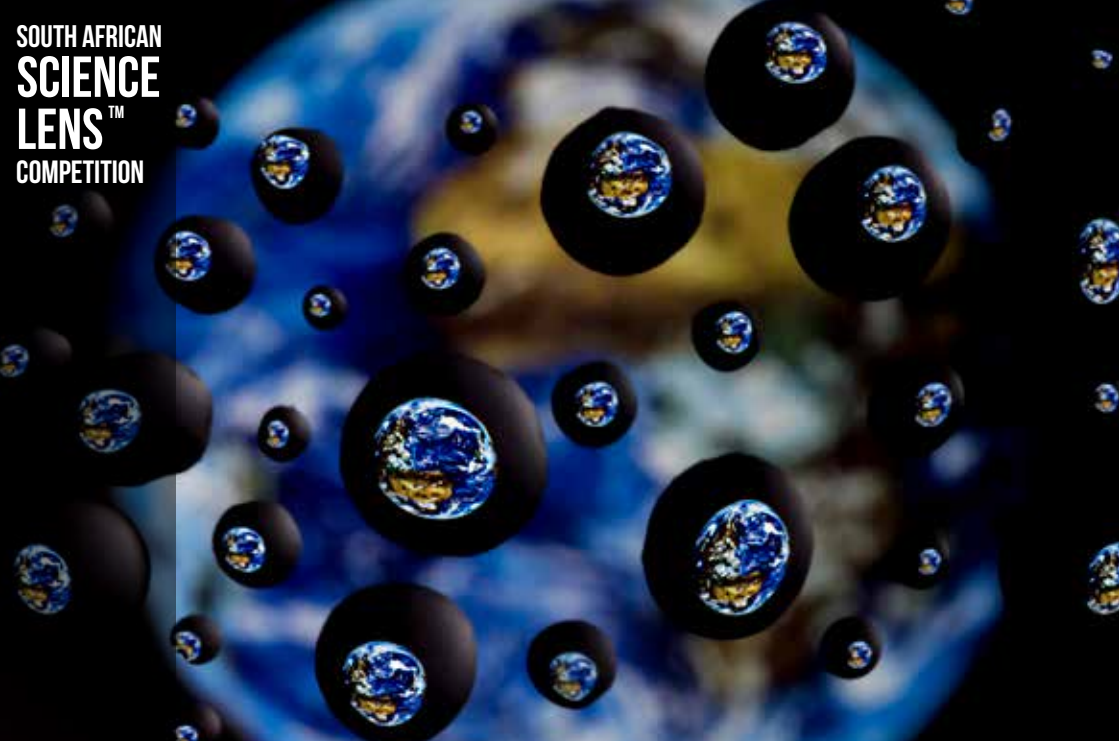
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*"EVERY PRECIOUS DROP"* by Kim Van Zyl (International Year of Water Cooperation 2013)



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## **“EVERY PRECIOUS DROP”**

by Kim Van Zyl

(International Year of Water Cooperation 2013)

Earth in a water drop. This photo shows an image of the Earth refracted in drops of water. Refraction is the bending of the path of a lightwave as it passes from one material to another. The water drops are convex and so they act as a lens, focusing the image of the Earth below them.



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*"CORAL POLYP MOUTH"* by Camilla Floros (Science Close-up 2009)



## "CORAL POLYP MOUTH"

by Camilla Floros

(Science Close-up 2009)

Did you know corals are actually animals and not plants? They are made of colonies of hundreds to hundreds of thousands of individual animals called polyps. This photo shows the mouth of a coral polyp surrounded by tentacles. The polyp uses these tentacles for defence, to capture food, and to clear away debris. Corals are under threat due to global climate change.



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*"INSIDE OUT"* by Dorit Hockman (Science Close-Up 2015)



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## “INSIDE OUT”

by Dorit Hockman  
(Science Close-Up 2015)

This photo shows a late stage embryo of the veiled chameleon (*Chamaeleo calyptratus*). The cartilage and bones have been dyed orange and blue, respectively. As the skeleton forms in a developing embryo, cartilage is gradually replaced by bone. At this stage of development, most bones have formed (blue), while the front of the ribs is still cartilage (orange). Comparing rates of skeletal growth is one way scientists gain insight into how evolution acts to allow diversity of form in the animal kingdom.

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*"SPORE PRINT"* by Morgan Trimble (Science as Art 2015)



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## “SPORE PRINT”

by Morgan Trimble  
(Science as Art 2015)

Mushrooms have a type of finger print too. Spore prints, like this one in the photo, are a deposit of spores left on paper or other substrates. They are an important tool to identify different mushroom species. South Africa has an estimated 172000 fungal species. This spore print belongs to the blusher mushroom, *Amanita rubescens*. A spore print is created by leaving a mushroom cap for a few hours up to a few days on paper. The cap slowly releases mushroom spores onto the paper, mimicking what would happen in nature, and a pattern is produced mirroring the mushroom's spore producing surface.



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*"LUCKY VELVET ANT"* by Morgan Trimble (Science Close-Up 2015)



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## “LUCKY VELVET ANT”

by Morgan Trimble  
(Science Close-Up 2015)

This female velvet ant is not actually an ant, but is a type of flightless wasp (in the *Mutillidae* family). The females look a lot like ants, but the males have wings. The dense pile of hair on their bodies looks like velvet. Don't try to stroke it, though, because, like wasps, these velvet ants can deliver a powerful sting. This photo was taken in the Majete Wildlife Reserve in Malawi. The velvet ant is considered a good luck charm in Malawi. Unluckily for the ant, they are sometimes used in traditional medicine.



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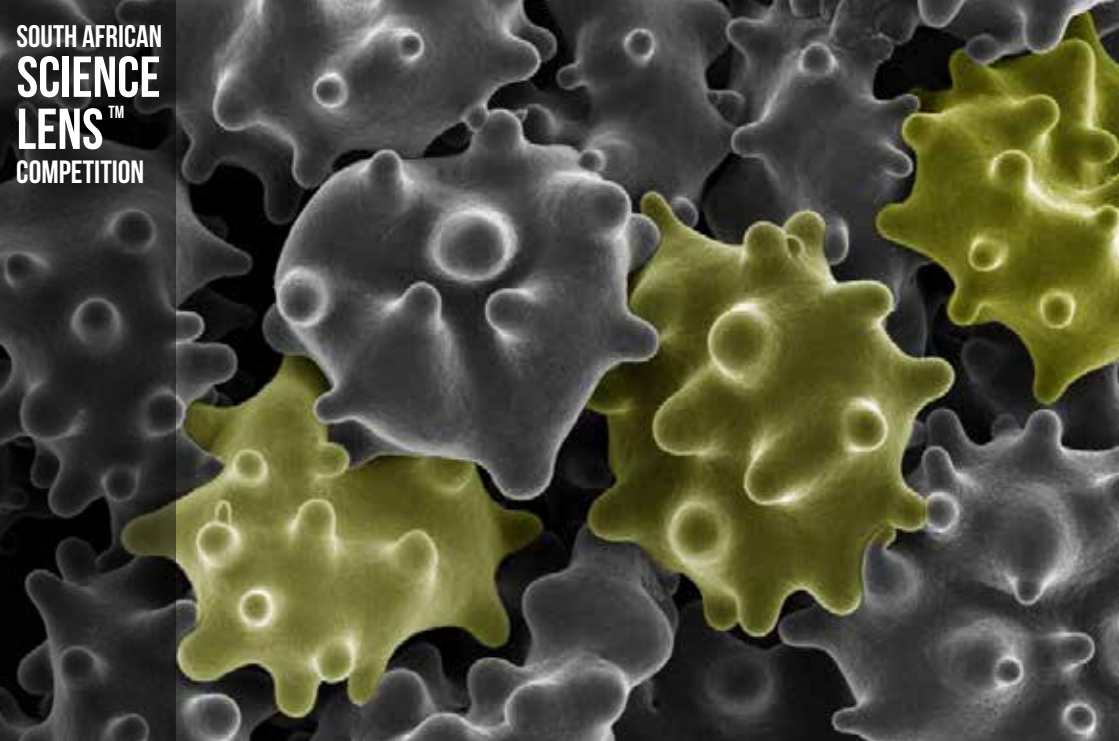
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*"STARRY STARRY NIGHT"* by Albe Carina Swanepoel (Science Close-up 2013)



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## ***"STARRY STARRY NIGHT"***

by Albe Carina Swanepoel  
(Science Close-up 2013)

These starry objects are human red blood cells, or erythrocytes. Red blood cells are usually biconcave with a smooth surface, but when these blood cells undergo stress their shape changes. Numerous spiky projections are formed when the cell membrane expands. Then they are referred to as echinocytes, which comes from the Greek word "echinos", literally meaning hedgehog.



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*"THE HUNGRY MOUTH"* by Prof Bruce Cairncross (Science Close-up 2011)



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## **"THE HUNGRY MOUTH"**

by Prof Bruce Cairncross  
(Science Close-up 2011)

The very thin slice of this Brazilian agate stone lets light shine through the rock. With the light behind it, you can see delicate red and yellow layers of chalcedony (amorphous quartz) that surround a small hole lined with tiny sharp-pointed quartz crystals that resemble teeth. The circular layers in the rock are like tree rings that show growth of trees. These layers show the growth stages in the crystallisation of the agate.



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*"PILL MILLIPEDE"* by Prof Rudi Van Aarde (Science as Art 2005/2006)



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## **“PILL MILLIPEDE”**

by Prof Rudi Van Aarde  
(Science as Art 2005/2006)

Pill Millipedes live in coastal dune forests along the south and east coasts of South Africa. Very Little information is available on the life history of these millipedes that range from one to six centimetres in length. Millipedes are usually active at night and are responsible for the mechanical breakdown of forest litter, and so are an important part of the ecosystem.



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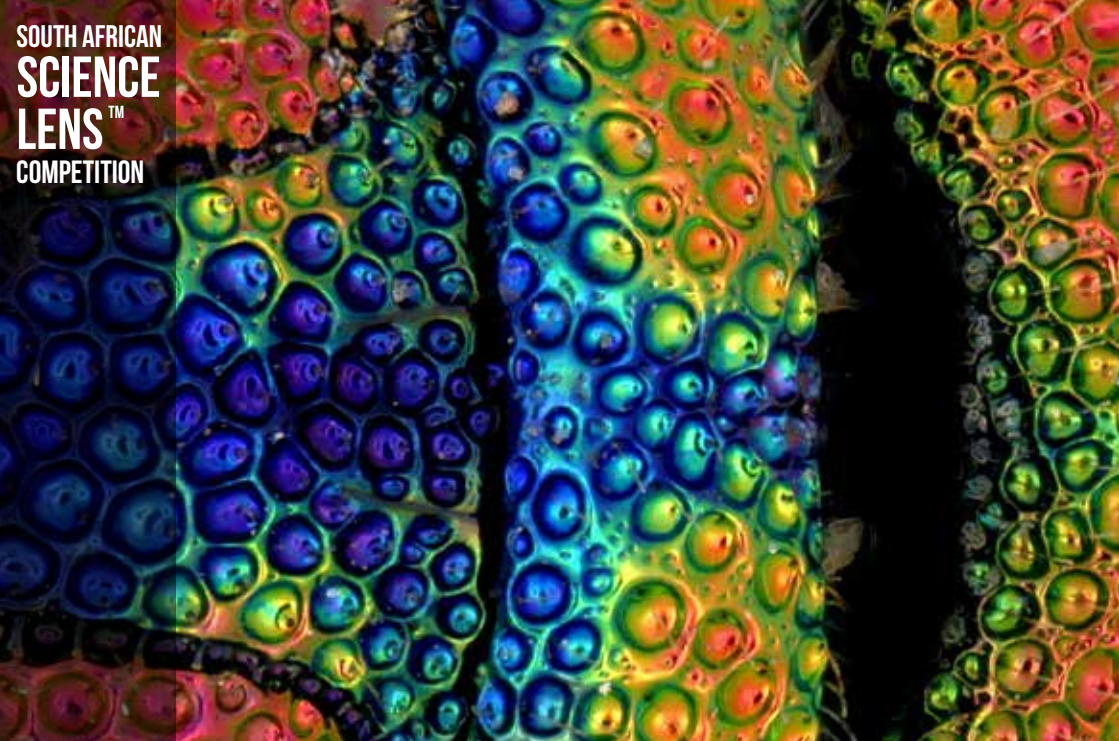
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*"SPLENDID CUCKOO WASP"* by Simon Van Noort (Science Close-up 2007)



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## “SPLENDID CUCKOO WASP”

by Simon Van Noort  
(Science Close-up 2007)

A close-up shot of the thorax of a Splendid Cuckoo wasp (*Chrysis splendens*). The thorax has an extremely hard cuticle. The striking colouring is caused by light refraction, the wavelengths of which (and therefore the colours we see) are determined by the structure of the cuticle. This is made of layers of chitin that create different refractive indices. The female Splendid Cuckoo wasp sneaks into other solitary bee and wasp nests to lay her own egg. On hatching the Cuckoo wasp larva devours both the host larva and the host's food provisions. The hard cuticle is a useful defence against an angry host.



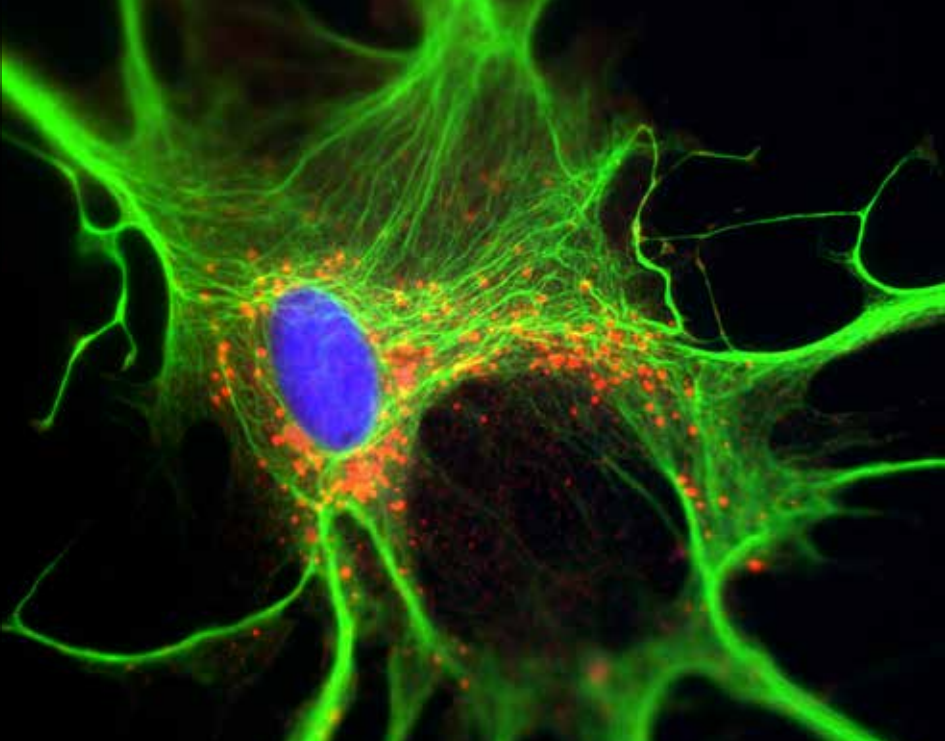
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## **“MAMMALIAN ASTROCYTE CELL”**

by Dr Edward Nyatia & Dr Dirk Lang  
(Biotechnology 2003)

Astrocytes get their name from their star-shape (the Greek word “astron” means star). They are important cells of the mammalian brain and spinal cord. This green astrocyte cell is expressing flotillin protein (red grains) in cell culture. The nucleus is shown in blue. Flotillin proteins are membrane proteins that play an important role in various processes in the cell.



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## **“ISOTOPE PRODUCTION”**

by Hermanus Du Plessis  
(Science in Action 2011)

This photo was taken at iThemba Labs in the Western Cape, where radio-active isotopes are manufactured for use in nuclear medicine and research. To make the radio-isotopes, targets are bombarded with high energy particle beams. Because they are highly radio-active, scientists need to be protected, so targets are shielded with lead frames and handled with specialised tongs, and viewed through lead glass windows.



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**“CELESTIAL SCIENCE”** by Chris Oosthuizen (Science in Action 2011)



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## **“CELESTIAL SCIENCE”**

by Chris Oosthuizen

(Science in Action 2011)

The movement of stars in the night sky is due to the rotation of the Earth on its axis. From the Southern Hemisphere, all stars appear to rotate clockwise around an imaginary point, the South Celestial Pole. The 36 minute exposure used in this photo shows the effect of the rotation. This photo was taken on an expedition to sub-Antarctic Macquarie Island. South Africa has a strong research presence in the Antarctic and sub-Antarctic islands.

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**"WEIGHING A SEAL WITH ONE FINGER"** by Ryan Reisinger (Science in Action 2013)



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## ***"WEIGHING A SEAL WITH ONE FINGER"***

by Ryan Reisinger (Science in Action 2013)

Mass matters. In animal ecology, body mass (or weight) is an important piece of information for researchers. Among other things, it is a very good indicator of how much food is available in an ecosystem. However, weighing animals in the field can be extremely difficult. Researchers have developed a simple method to accurately estimate the weight of wild seals from photographs. A series of photographs, taken around a resting or sleeping seal, is used to build a digital 3D model from which the volume, and thus the weight, can be estimated. This photograph shows a researcher taking a photograph of a resting leopard seal at Marion Island.