

(Title + Author/Illustration Credit + Dedication)

Asha, Riley, and Mateo love to experiment. They call themselves the BRILLIANT BIOLOGISTS.

Biology is the study of all living things, from the very very big to the very very small. They've been shown the magic of biology by Asha's mum, Zora. She's a synthetic biologist!

Synthetic biologists look at tiny parts of living beings, to see how they work. They use microscopes to zoom in further than the eye can see, to see things smaller than the smallest ant.

They especially love to look at many different types of cells, which are like tiny building blocks. Your body has trillions of them! If you imagined yourself as a house, your cells would be the bricks. All living things are made of cells, including plants, animals, and the vegetables that you eat. They come in all different shapes and sizes, just like people do.

But how do cells know what to do? They don't have eyes, so how can they see? They don't have mouths, so how do they speak? Inside every cell you'll find DNA, which gives the cell instructions. It looks like super long, wiggly spaghetti.

DNA is what makes you, YOU. One of the reasons that you're different to other people is because you have different DNA. It decides how to make your body, from the colour of your hair to the shape of your toes. You can change how living things like plants grow, by changing parts of its DNA. This is called genetic engineering. It's a powerful tool, so synthetic biologists must think carefully about how they use it.

Every Monday the kids go to Asha's house after school. Today is the most scorching hot Monday of the year, so Zora finishes up in her lab quickly to take them to the park.

"Don't forget your sunscreen!"

The Brilliant Biologists say hello to all their friends. Asha greets the slimy worms partying in the shade. Riley hugs their favourite tree.

Mateo zooms over to the flower patch, to check on the sunflower family. NOOO! What's happened? They're wilting in the heat...

The kids try everything they can to save the beautiful flower patch. Firstly, they offer a share of their ice cream. Then they try huffing and puffing to blow a cool wind.

They even make tiny little hats out of leaves. Whatever they try doesn't work, and the sunflowers droop further in their sadness.

There's nothing they can do. It's too hot for the flowers because of global warming, explains Zora. The planet is getting hotter because of fumes that humans create from things like factories. It's sad; some living things are suffering now because they aren't used to this heat.

A new idea pops into Zora's head. "Let's use synthetic biology!"

What if we change the DNA of the plants so they like hotter temperatures? We'll genetically engineer their seeds, so the sunflowers that grow next Summer will be able to handle global warming.

They whizz straight to Zora's lab in a furious hurry. Time to get to work.

Days and weeks of mixing and pipetting and shaking go by.

The Brilliant Biologists shout words of encouragement and help complete the most important experiment they have ever witnessed.

"Yes!" Cried Asha "The seeds are ready!". But on lifting the seeds out of their case, the team realised they turned BLUE.

Time for take two. A few weeks later when they check again, they find the seeds have grown fabulous moustaches! But they know they must try again.

On the third attempt the seeds give off a very nasty smell like rotten eggs.

Zora couldn't get it to work, which makes her want to scream! "I give up!" Asha, Riley, and Mateo beg her to carry on, refusing to let her give up on such an important cause.

Then, one average Monday afternoon... "WE DID IT!" The seeds seem just right.

They wolf down their snacks and run straight to the park. Gardening gloves at the ready, they find the old sunflower patch and start digging.

After gently patting the final seed into the soil, the group go home, tired, and anxious to know if their seeds will grow. All they can do now is wait patiently.

First, tiny shoots start to push out of the ground. Then the seedlings start growing delicate leaves. These leaves get bigger and stronger as the stems reach towards the sky. Sunflower heads start growing, and the golden petals open up to say hello to the world.

Finally, a year has passed. Zora and the kids wake up to another scorching hot Monday. They head to the park after school and HOORAY, they find that it's worked! The bees are buzzing, and, despite the heat, the flowers are radiant in the Sun.

They announce their news to everyone in the park at once. Zora and the Brilliant Biologists have saved the day, using the power of synthetic biology!

The End.

(Glossary of scientific terms)

(Synthetic biology info and other resources.)