

A Halloween Story

The autumn colours were vivid in the town of Oakstone. Carrie, George and their little brother Michael rushed home as soon as school ended. It was a rainy day, and Carrie was glad she had worn her rain boots that day. They rang the doorbell and left their muddy shoes out on the front porch of the house, and placed their heavy backpacks at the bottom of the staircase.

It was a Thursday afternoon, but they didn't have school the next day, so it felt like a Friday, or a Thursday-Friday as George liked to call it. However, it wasn't just any Thursday. It was Halloween. That's right, the awaited October date at the end of the month had arrived, where the children had celebrated it all-day at school, and Carrie had enjoyed every last minute of art class with her favourite teacher Miss Walters, where she got to paint pumpkins and make ghost garlands with her friends.

Carrie turned to her brothers, and they all run up the stairs to change into their costumes, carefully prepared from the weekend before, after a long process of browsing endless costume ideas and getting creative with anything they found lying around the house. George went as Harry Potter, Michael dressed up as a knight; and Carrie decided to go as a fairy, and soon transformed into her character, wearing pink sparkly wings and carrying a magic wand, made out of old pencils glued together with sequins and glitter.

It was time for baking and preparing candy bowls for trick-or-treaters, where the siblings made chocolate cupcakes and decorated them with all types of sprinkles and icing colours, drawing what were supposed to be spiders and pumpkins. After baking, they planned to sit down with their parents for the traditional slightly-scary family movie night, where they would pretend to be tough but inadvertently cover up with blankets when scary scenes would come up.

"Alright now"- said Mary, the childrens' mother. "I think you three should go get cleaned up. Hang up your aprons behind the kitchen door and go wash up". While the cupcakes where cooling off, the kids went to wipe the flour and sprinkles from their cheeks and hands.

Mary was a Biologist. All that Carrie really knew about what her mom did was that she got to wear a shiny white lab coat and special glasses and gloves every day. And that she studied tiny creatures called microbes, which Carrie imagined to be like tiny little fairies, of different colours and with magical powers.

After the cupcake-eating feast had come to an end, Carrie and her brothers run up the stairs to brush their teeth. "Mommy would you come with me?" Carrie said. "Of course sweetie, let's go brush those teeth". On the way up, Carrie complained to her mom about her teeth feeling really sticky. "That's because of all the sugar darling, and that is why it's very important to brush your teeth well".

"But my teeth are also sticky in the mornings, until I brush them. And I always brush my teeth at night too! So how can this happen?"- asked Carrie.

Mary paused for a second, and then turned to Carrie. "That is a great observation. Well, that is because we have bacteria in our teeth. These are tiny microbes that even though we sometimes cannot see them, we can find them in many places in our bodies and also in our environment."

Carrie listened with wonder, and her two brothers had now turned around to hear what her mother was saying.

“Sometimes a lot of bacteria get together and can form something called a biofilm. Think of it as a cape of protection, but only made of squishy and slimy materials”. It was actually a great microbiologist called Anton Van Leeuwenhoek that first discovered these so-called biofilms by scraping some plaque off his own teeth! And then he looked at this slimy material under a microscope, the instrument that can help us see small things bigger.”

“A cape of protection?”- Asked Michael. “Like a fort that knights use to protect their castle and kingdom?”

“Definitely!- Mary replied. “Think of the bacteria as the knights. One knight, although valiant and fast with a sword, can only offer so much protection to his castle. However, many knights coming together, with all of their swords and strength combined, and having a fort as protection- now that will make their castle almost invincible!”.

“Or many fairies and wizards combining their powers, and casting a protective spell!”- Carrie commented. Both her and George looked at each other and smiled.

“Precisely!” - responded Mary, overwhelmed with joy at her kids’ inspiring imaginations.

“So what happens if we don’t brush our teeth and fight the bacteria, will the fort or the wizards become invincible?”- asked George.

“What you have just described George, when bacteria become invincible is called antibacterial resistance. This happens when bacteria adapt to be stronger than what we use to fight them. If they become resistant, it is hard for us to combat bacteria in biofilms, as we only have a limited number of ways to destroy them.

And this is not only important to have clean teeth, but to overcome bacterial infections, that can make us sick, like when Michael had an ear infection last month or when dad had an eye infection and had to apply those special eye drops for two weeks.”

And can’t we design new weapons, like when knights combine wooden arrows with fire or cannonballs?- asked Michael. Or discover a new magic spell?- added George.

“Many scientists are working very hard to find and study new antibacterial treatments, and some of them are still being tested, but no new ones are available yet for us to use.”

“Alright, I think we should get you three to bed, it’s getting late”.

“But mom, we don’t have school tomorrow!”- Carrie insisted.

Mary accompanied them to their bedrooms. “I know, but you did a lot of things today, and I know you’re really tired as you kept yawning during the movie, don’t think I didn’t see you. So you should all get to bed and recharge your batteries. And don’t worry, we can talk more about this tomorrow.”

After they were tucked into bed, their eyelids softly closed and they were asleep within minutes. They dreamed about magical kingdoms with wizards, fairies and knights. The next morning, while they finished off for breakfast the leftover Halloween cupcakes, they discussed all that they had learned about biofilms. Together, they brainstormed ways to make them invincible, and George even took out his encyclopedia in search for answers.

Words by Conchita Fraguas Bringas

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