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# **The Life and Adventures of Brandon B. and Bea P.**



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# 1. Here I Am!

Hi, kids!

My name is Brandon.

While you study my picture you certainly think: but who on earth is that?

A boy?

Yes, I am, but not just any boy.

Some kind of an animal?

No, not really.

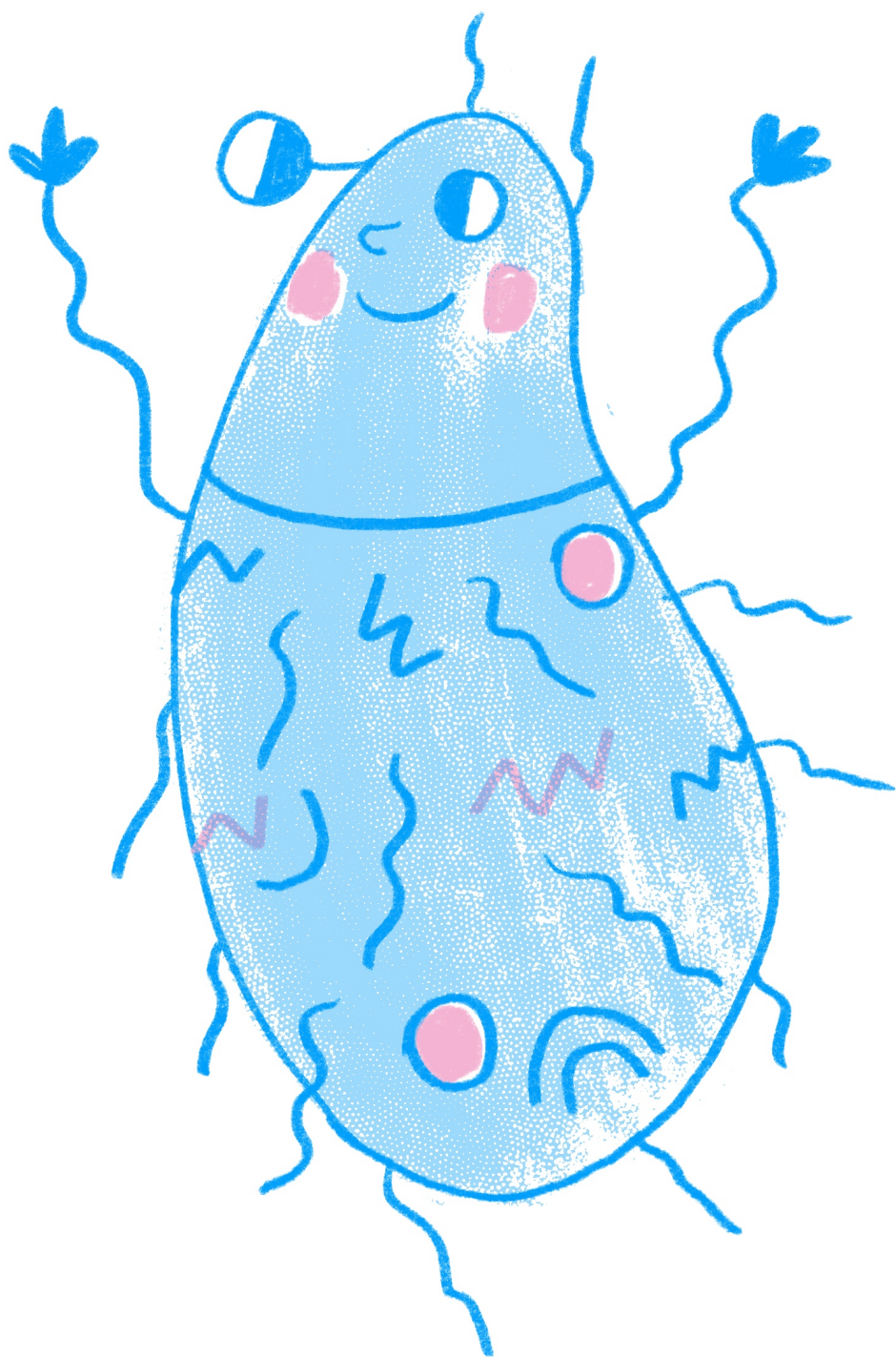
A wild guess?

I am ... a bacterium!

Let me tell you stuff about myself – and you will see how cool I am!

But first - what's your name? Nice to meet you!

I am Brandon Bacterium.





## 2. Small is Beautiful

Well, if you want to meet me in person, I must admit, there is a tiny problem.

The tinyness, exactly, that IS the problem.

If you want to see me in real life, you need a microscope, quite a good microscope.

I have to ask ten thousand friends of mine to come and make them stand in one straight line, next to each other – and then we would form a line that is one centimeter long.

Then you would actually see us with your eye, if you have your eyes in good shape.

But hey, this nice artist called Tiiu made me a little bit bigger for the picture, so – here I am!

### **3. We Are Many**

So, what's your family like?

You, Mommy, Daddy and a cat? Or a few  
brothers and sisters around too?

Hah, that is nothing! I always get confused  
when I try to count my family members. I know  
I have more than ten thousand brothers, but I  
don't know bigger numbers well enough and so  
I always mess up while counting.

My Granny tells me that we are not a family, we are a P-O-P-U-L-A-T-I-O-N. That is a very big family who lives very close together.

Bacteria can live nearly everywhere, but me and my population – we like to live inside the soil, on a field. If there is enough air, water and food, then we love it, we feel well and we will be many.

## 4. Family Secrets

OK now, as we are quite good friends already ...

Do You want to know a secret? My Great Family Secret, or well, the secret of my population.

It is about my Great Grandma.

When she was young, that is, about 24 hours ago, something quite crazy happened to her.

She split into two!

Yes, you got it: she used to be one beautiful round-shaped bacteria, just like me. But then, on a nice sunny day she simply broke into two pieces! It even did not hurt at all, she told me. It just felt right, then it started happening and suddenly there were two bacteria instead of one!

Then those two new bacteria did the same, they split too – and now there were four! This splitting thing happened again and again and well, this is how we ended up with all those fellows, a whole population. And all this happened within one day and night. From one happy and well-fed bacterium into a whole population.

But don't tell anyone, its a big secret! I know that people get children in a quite different way, so it feels a bit strange that for us it is so easy. If your Mom and Dad would start their own population as quickly as my fellows, we would very quickly run out of room on this planet Earth. So, hush-hush.



## 5. Bea the Pea

Alrighty, I would now like to introduce you to my best friend.

There she is: Bea the Pea!

Do you like to eat peas? They taste so fresh and tasty and are good for you. Well, I am very proud to present: they are produced by my friend Bea!

My friend Bea the Pea was not born like me, by her mother splitting into two. She is a plant, so she grows from the soil, and it takes more time than splitting. Some good soul, probably a human being like you, managed to not eat all his peas, but spare one and put it inside the earth.

It started growing into a beautiful green plant, established some pretty white flowers, those grew into a pod full of new baby peas.

You can try giving life to a whole new pea plant too. It's like a miracle! You can bring a new plant to this world and feel proud about it. And she can become the best friend for some little bacterium girl or boy like me!



## 6. How We Met

Let me tell You how I met Bea.

One day while I was at home, just hanging around, I heard a weak voice. It sounded a bit like crying, someone was clearly in trouble. Of course I went closer, my parents have always told me that you have to help whenever someone needs it. And what do I see: a pretty little plant standing there, quite flabby, her head down towards the ground, sobbing:

„I’m hungry!“

„Hello, this is Brandon Bacterium here. I live around here too, I guess we are neighbours. Can I help you somehow?“, I asked politely.

She looked around, but could not see me at first. As I mentioned before, I am not a very sporty guy, and Bea the Pea did not have a microscope at hand. Finally she noticed me.

„Oh here you are, a happy little chap! I am Bea, Bea the Pea. Nice of you to ask, I have been looking for help so long, but up to now nobody has responded. Not all bacteria know how to help me, so the others will be deaf to my shouting. I have been taught to send out signals which reach only your kind, who actually know what to do.“

„Well, but what do you need me to do?“

It had been raining earlier this morning and the soil was nice and humid.

I suddenly realized that I had no idea that plants need anything else for life than water from the soil. Do they really need their Mommy to fix a porridge for them in the morning?

„Ah, its complicated,“ the sad little plant answered in a shaky voice. „Some elements I need for growing are starting to run out from the soil and I am getting weaker and weaker. Some of the necessary foods are called nitrogen, phosphorus and potassium.“

“But this field, our home, is not well care for by people, so we often can not find the good food from the soil. My Dad once said we mostly miss a thing that is called NITROGEN. If I do not get it soon, I might die – just like my little sisters did!“

## 7. The Wisdom of the Ancestors

I promised Bea the Pea that I will help her. I will find her some Nitrogen, whatever it takes. I can not let my new friend die, we only just met!

I turned away and started to think. Yes, scientists tell you that we, the bacteria, can not think. My whole body consists of only one cell – as compared to around 30 trillion cells that you have in your body, if you, my dear reader, happen to be human. By the way: did you even know that besides all those human cells, you have another 30 trillion or even a bit more bacteria in your body?

So – we, bacteria and humans, might bemuch closer related to each other than you expected, my friend. Do not start boasting here, even if You are the one with the brain here.

And I am the one without one, how could I even think then? Despite that, some ancient wisdom suddenly doomed on me. It felt like the shoutout of Bea opened up something inside me. I felt like she had chosen me to save her. She said other bacteria can not help her, but those of my kind can. That means, if I try enough, I can do it!

I suddenly felt like a robot, being programmed by Bea the Pea. But it was a nice feeling. I somehow knew that I am not the first one, that there have been millions of my ancestors who have done the same thing: helped the peas and beans and other similar plants to get nitrogen out of the air.

„Come to me, come close and concentrate. Forget any other wishes you had in your life before, feel the will to help. Just do it!“

The voice had become deep and low, as if not from Bea, but from all the plants of this world who need our help.

## 8. The Rescue Mission

„Hey, Bea, here I am! I know how to save you now,“ I said with sudden certainty.

„Thank you, Brandon.“

I could recognize Bea’s voice again, but I nearly did not hear what she said, the voice was so weak.

„I think you came a little bit late, nobody can save me now. Good-bye! I will die, and the nitrogen I still have in my body, will go into the soil. Other plants can use it and become stronger. Just like I used the nitrogen left here by my parents, when they died ...“

Oh no! What a hero she was! She feels she is close to death but is still thinking about the others coming after her ... I cannot allow this to happen.

„No, Bea! Please don't leave me! Come here, let me hug you!“

I crawled very close to her root. I pressed my tiny body next to her, closed my eyes and told myself:

„I can do it! I have to transform some nitrogen.

Yay, I can become a transformer! Bea needs nitrogen. Please, dear nature, oh please!“



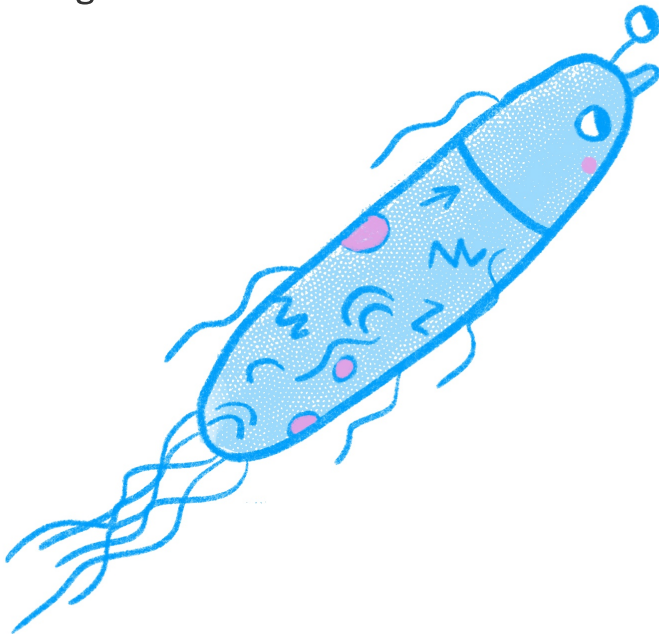
## 9. Is it Love?

„Dear Brandon,“ Bea suddenly said, with a new tone in her voice. „Would you like to move in with me? You can transform nitrogen for me from the air only if we live together, I must feed You well so that You could do it for me. I can also offer you some things you might need and like.“

Vow. I sure blushed. It was not only my cheeks that took a new tone, my whole body changed colour. And I think even my shape changed, because that is what we, bacteria, do, when the situation around us changes so radically.

Just like before, with helping Bea, I now again simply felt that the decision is not mine. OF COURSE I will move into her place, how could I say no to that offer?

„Yes“, was the only word I could utter as a reply to the beautiful Bea. She had actually decided for both of us that we are ready to start symbiosis: a new life together which offers good things for both of us.



# 10. Building a home

Suddenly I felt Bea move. One of her roots started slowly growing. I stuck my head out of the soil and saw her head with the beautiful white flower also lifting a tiny bit higher. Out of hope perhaps.

I could clearly feel there is chemistry between me and Bea. Her root started producing something and my body responded to that. We were building our new home together. Or let me be honest: Bea was building a home for me. I was just standing around and going along with the flow.

Soon there was a little round-shaped nodule on her root, ready for me to move in.

„How does it look, nice and comfy?“, Bea asked.

„Well, before you decide to move in, I need to tell you one more thing. I really hope it does not make you change your decision.“

I was holding my breath out of anxiety. What else could go wrong now, while I was so close to saving the life of beautiful Bea and moving in with her?

„You must know there is no way back for you. If you decide to live in this nodule, you will lead a nice life. You will be fixing nitrogen for me, I will give you as much as you need and offer even some extra desert. But you will do only that and you will stay only here, till the end of your life.

There is no way back to freedom and independence, wandering around in the soil. If you answer my call, it has to be forever.“

Well, do you think I had a choice? As I told you before, I felt the decision was actually done, and not by me. What can a little bacteria with no brain do, when a beautiful pea plant is inviting him? Even if it is a sentence for life.

# 11. Good for me, good for you

I could enter the nodule with Bea's help. It felt really good to be in there, much more comfortable and safe than living in the soil full of enemies, as I had been doing before.

This feeling of comfort and safety started having an effect on me. Something very strange started happening. I could feel myself as two Brandons instead of one ... And yes, I saw another bacteria just like me standing next to me, although there was no mirror in my new home.

That must be ... yes, that must be splitting! The same thing my Great Grandma told about our family history.

I looked around and saw little bacteria, very similar to me everywhere. I have started my own new population! And that all thanks to Bea, my dear friend. We all fit in quite well in this nodule I now called home.

„Ready for dinner, darling?“ I heard Bea’s sweet voice asking.

She sounded different again, as I was actually living inside her now, along with my whole population.

„Yes, I think so.“

Bea sent us down some really good stuff, enough for all of us.

I had tried sugar products before, but never in such abundance as today.

„That tastes terrific, dear, how did you make that?“

„It's called photosynthesis, perhaps you have heard,“ my hostess Bea explained. „I am the master in that. I take energy from sunlight, water and carbon dioxide and produce oxygen and sugars from them. Everybody is very happy for the oxygen I send into the air, that is the good deed I do for the world every day! I use the sugar to grow myself and send some molecules over to you too.“



I felt getting stronger fast from the nutrients she provided to me and my close ones. I closed my eyes, breathed in and told myself quietly: it's now or never. It's my turn to prove I am worthy of her invitation. All my population followed me and did exactly the same. It worked.

## 12. Happily ever after

„Bea! Are you feeling better now?“

„Oh yes, I am. You and your relatives, you saved my life!“

What a relief. A little pause.

„But do not stop producing nitrogen now, darling, it has to be forever, remember?“

„Yes-yes, of course, my dear commander!“

Over the next days and weeks we kept on doing what Bea expected us to do: transforming nitrogen into a form that she could use it. She in her turn kept us happy with the food she prepared with photosynthesis, so both her and us could grow.

Even if at times my mind went to wander freely along the soil, and perhaps a tiny bit of my only cell missed the old freedom, I had a great idea consoling me. Bea had explained me, that one day, when me and her are both dead and forgotten, the nitrogen we produced together will stay in the soil and serve the others. Even the plants who do not know how to invite bacteria to live with them, can use it to grow. But till that time I sit back in my cosy nodule, enjoy the joy safety of living inside a great plant with my great family, by best and dearest Bea the Pea.

Oh yeah, let there be more symbiosis in this world!

Thanks:

Comlab team

Triin Reitalu

My family

All the brave bacteria in and around us



# **The End**

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