

Do Not Lick This Book*

By Idan Ben-Barak,
Illustrated by Julian Frost



June 2017 ISBN 9781760293055 Small hardback
Recommended for 4-8 year olds.

Summary

Min is a germ. She lives in a book. In fact, this book. Min wants to go an adventure, but she needs your help. Join Min as she explores common household surfaces from your tooth to your shirt and meets a whole lot of interesting germs along the way! A microscopic journey that shows just what kind of bugs live in the world around us.

Vibrant colour combines with magnified photographs and cartoon style illustration to create a visually exciting design that will thoroughly engage young readers. Added to this is a hands-on component – think Hervé Tullet's *Press Here* – plus funny but informative text that never talks down to the reader: and result is a highly entertaining and educational picture book.

Use in the curriculum

Science

*Do Not Lick This Book** fits perfectly into the Science classroom, complementing the study of living things. We discover that microbes need food to live; they inhabit different habitats; they differ from each other in appearance and move differently.

Simple tables of 'which microbe lives where' can be made and a report can be built up from the table. The use of a microscope can be investigated and practised. Students can draw what they see under the microscope and label their drawings. The value of science in our daily lives is evident in our use of soap and toothpaste. But the value of the many 'good' microbes, without which we couldn't survive, should also be noted.

Older students could begin to investigate different mechanisms for movement in microbes.

Health

The book also relates to Health lessons in cleanliness, safe behaviour and first aid. As well as picking them up by touch, what other ways can we 'catch' germs? What are 'probiotics'?

Maths

Mathematical concepts of size, proportion and enlargement can be addressed, as can really really big numbers (describing really really small things!). The language of maths can be seen in: **Give or take a few million* on the first double page spread.

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Themes

- microscopic world
- humour
- bacteria
- natural science

Suggestions for classroom discussion and application

- 1) Before opening *Do Not Lick This Book** look at the title and cover design. Discuss what students think the book might be about and the clues in the cover that make them think that. Ask questions such as:
 - Why do you think it is called *Do Not Lick This Book*?
 - Why might there be a star at the end of the word 'book'?
 - What is a germ?
 - Why might germs be bad?
 - Brushing our teeth is one way to protect ourselves from germs. What other things can we do?
- 2) Turn to the book's front endpapers (the double-page leaves on the inside of the front cover) and ask students if they can tell what this image is. If they don't guess that it shows fabric under a microscope (which they probably won't) ask your class to listen and watch very carefully while you read out loud from the book to find the answer. When you get to the end of the book turn to the back endpapers and ask students if they can remember what this is a picture of.
- 3) Read through the book once (making sure to 'act out' all the interactive aspects). On the second reading stop at the point in the story where the text reads, 'Min lives in this book. And if you could look really, really closely...' and ask students to guess if the circles are all the same or different. Now ask them what clues in the image and font size tell us that we are looking at the same thing but that each image is a magnification of the one before. Stop also at the double page spread featuring the photo of a tooth. Ask students what clues on the page tell us that it is a good idea to brush teeth. Try the same thing with the photo of the skin and ask students why we need to have a bath or shower regularly.
- 4) Ask students if they think Min *really* looks like the character drawn in the book. Compare the drawn characters to the more scientifically accurate images of microbes on the final page.
- 5) Organise a microscope for your classroom and encourage students to look and describe some simple but fascinating objects. Great ideas for slides are onion skin, cheek swabs, discovering the difference between sugar and salt. For full instructions on how to get the most out of this activity go to <http://www.microscope-detective.com/microscope-experiments-for-kids.html#sthash.tSGxvIWJ.dpbs>



In the classroom...

- 6) After reading the page headed 'What microbes really look like' ask the following questions:
 - Are microbes visible to the human eye?
 - When did humans first understand that microbes existed?
 - Where are some places that microbes live?
 - Can you name four different types of microbes?
 - Do all microbes live inside our bodies?
- 7) If one day all microbes were gone, what would our lives look like? (Some answers to this can be found at <http://www.businessinsider.com/what-happens-if-microbes-disappear-2016-5/?r=AU&IR=T/#all-microbial-diseases-would-vanish-1>. Briefly: most white goods wouldn't be necessary, there would be no bread, cheese, wine, beer, infectious diseases or cows. Oh, and we'd all be dead in quite short order).
- 8) Turn back to the 'microbes live everywhere' page.
 - Where are some more places that microbes live?
 - Some microbes live in very strange places, such as volcanoes. What would life look like if you were a microbe living in a volcano? What would you need to be to live there?
- 9) Turn to the last page of the story: what book is Jake reading? Can you write your own version of that book?
- 10) Microbe maths: Something not mentioned in the book is that microbes can sometimes multiply very quickly. One *E. coli* microbe can grow and split into two identical microbes in 20 minutes. Ask your students to find out how long it would take for one *E. coli* to become four. How about eight? Thirty-two? A hundred? A thousand? *A million*?
 - And, of course, that's a numerical sequence: 1, 2, 4, 8, 16
- 11) The language of maths:
 - How about a sequence of words/concepts? Put these 'in order': tera, mini, mega, giga, micro. What's the difference between *milli*, *deca*, *centi*, and *kilo* prefixes?
 - And 'splitting in half' can lead to 'double' the amount. Are they always the same thing?
 - 'Microbes can multiply very quickly'. Does this mean they are very good at their times tables? Find other words or phrases that have different meanings in everyday life vs. in maths or science.
- 12) Older students could be given some really large numbers to rank from smallest to largest, insert commas where appropriate, and work out how to SAY each number

Thanks to Julian Frost, who has provided a page of illustrations from the book for classroom use. You will find this is at the end of these notes.

Author's motivation

'The title came to me as I lay in bed one night, and from that point on the book's concept took shape pretty quickly in conversations between Julian and myself.

'It was Julian's idea to have real microscope images as part of the book. It was a complicating factor in the work process, but we both thought it was well worth the hassle. We were trying to figure out how to approach university microscopy facilities, when I happened to walk past a billboard at RMIT featuring Linnea Rundgren's work. We immediately contacted her and were overjoyed when she agreed to come on board. It was a bit strange, though, because she was staying in Sweden at the time, so our conversations were by Skype and emails. And thus it came to pass that Julian sent one of his teeth by post from Melbourne to be photographed by an SEM in Sweden.

'One evening I was at my laptop reviewing Julian's initial illustrations when my young son Noam came up and wanted to see what I was doing. After I explained that it was a book, he wanted me to read it to him, and he was doing all the finger-touching stuff the book tells you to do. Then my older son Daniel joined in. Once finished, Daniel wanted me to read it again. When I asked why he replied, "I want to do the things!" and I thought to myself, "We're on the right track." The book is a regular feature in Noam's bedtime reading schedule now, and surprisingly helpful for getting him to brush his teeth.'

—Idan Ben-Barak



Author's and Illustrator's Background:

Idan Ben-Barak holds a BSc in medical science, an MSc in microbiology, and a PhD in the history and philosophy of science. His first book, *Small Wonders: How Microbes Rule Our World* has been published around the world and won the 2010 American Association for the Advancement of Science/Subaru SB&F (Science Books and Films) Prize for Excellence in Science Books, Young Adult category. An excerpt from his most recent book, *Why Aren't We Dead Yet? The Survivor's Guide to the Immune System*, was runner-up in the 2015 Bragg UNSW Press Prize for Science Writing. Idan lives in Melbourne with his wife and two children.

Julian Frost is an illustrator, designer and animator. Julian received worldwide acclaim for his animation 'Dumb Ways to Die', which has had close to 150 million views since it was uploaded on YouTube in 2012. With his illustration work for kids, Julian loves using likeable silliness in the service of communicating serious information. He lives in Melbourne.

