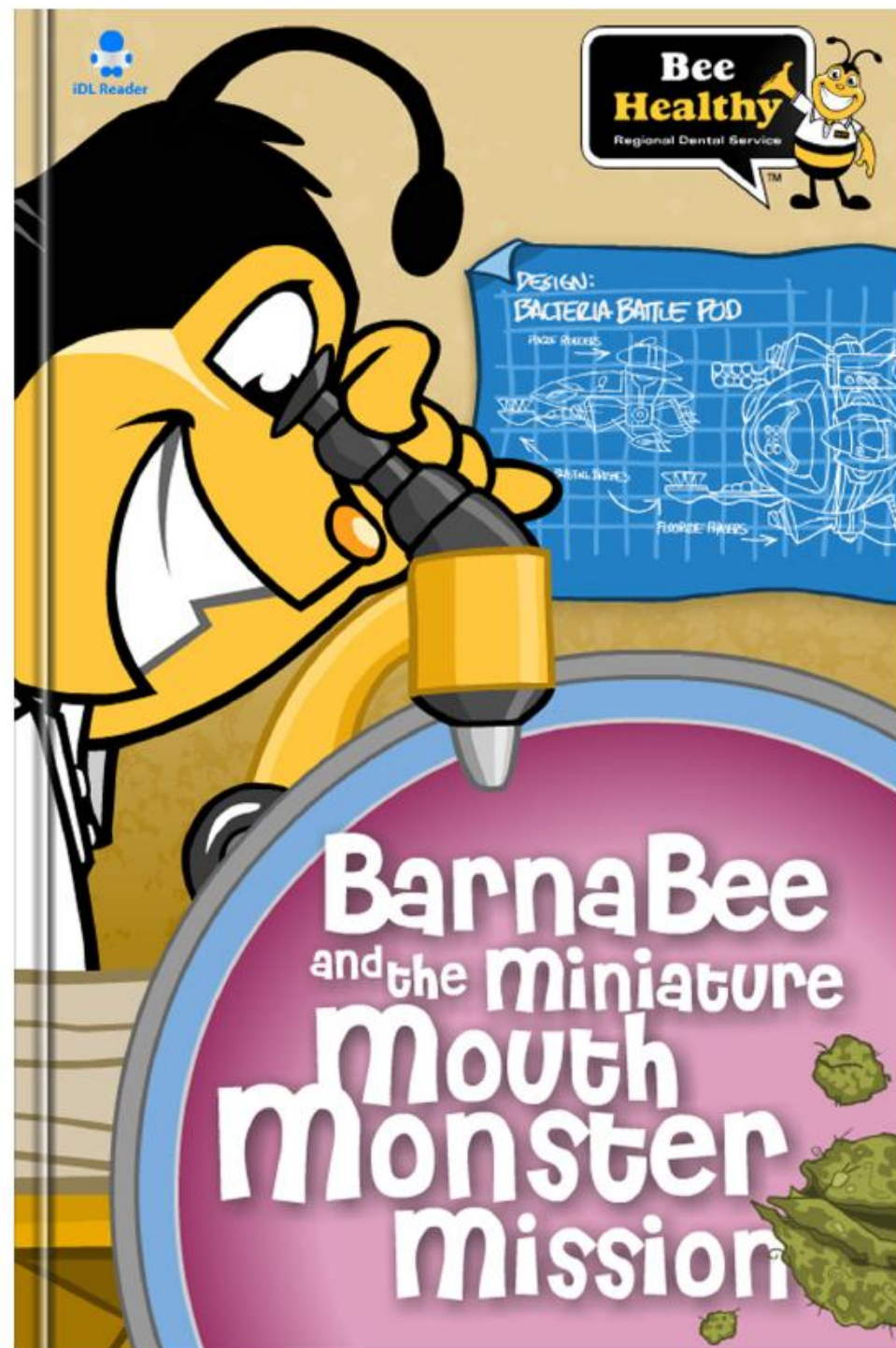




Content © 2003-2012 Inkspot Digital Ltd/HVDHB,
All rights reserved.



Contents

Copyright © 2011 Hutt Valley District Health Board
Private Bag 31-907
Lower Hutt
Wellington, New Zealand

www.barnabee.co.nz www.beehealthy.org.nz www.huttvalleydhb.org.nz

This book & its accompanying resources have been created & produced
by Inkspot Digital Limited (iDL) for HVDHB.

The iDL Reader © & technology are wholly owned by Inkspot Digital Limited
www.inkspotdigital.com

All Rights Reserved. No part of this book may be used or reproduced in any manner
whatsoever without prior written permission from HVDHB except in the case of brief
quotations embodied in critical articles, reviews and as educational resource.

The Resource material within the book may be copied for use at home and in
Schools. It may not be reproduced for Sale by other parties.
Credit to 'BarnaBee and the Miniature Mouth Monster Mission' must be made
when quotations are used. For clarification of use please use
contact information below.

For information on Educational Use or for purchase please contact:

eBook@beehealthy.org.nz



Written by
Frederic Stone



Hi there. I'm BarnaBee and I love teeth. That might sound a little weird but it's true. And I want everyone I care about to love them too. So instead of being outside in the apple orchard one particularly beautiful spring day, I sat at my lab bench thinking about how to make oral health more interesting.

I thought and I thought until my brain started to hurt, when suddenly a glint from my microscope sparked an idea...

Kia ora rā! Ko BarnaBee tōku ingoa karanga. Nā, ko tēnei mea te niho he papai ki āu. Tēra pea kāore koutou e rata ki ngā niho, engari ahau! Otira, ko te whakapae kia rite ō koutou whakaaro ki ōku e hoa mā! I tētahi rā paki o te Hōtoke i waho katoa aku hoa e mahi ana i te uru huarākau. Arā ahau e noho puku ana i roto i taku taiwhanga pūtaiao e wānanga ana, me pēhea te whakamīharo i te oranga o te hāuora-āwaha. I te wā i āu e whakāaro ana me te aniroa ō tōku roro, ka kōira whakataha au, e pīata mai ana te karu whakarahi. Tērā tōnu ka tau mai te whakaro nui!

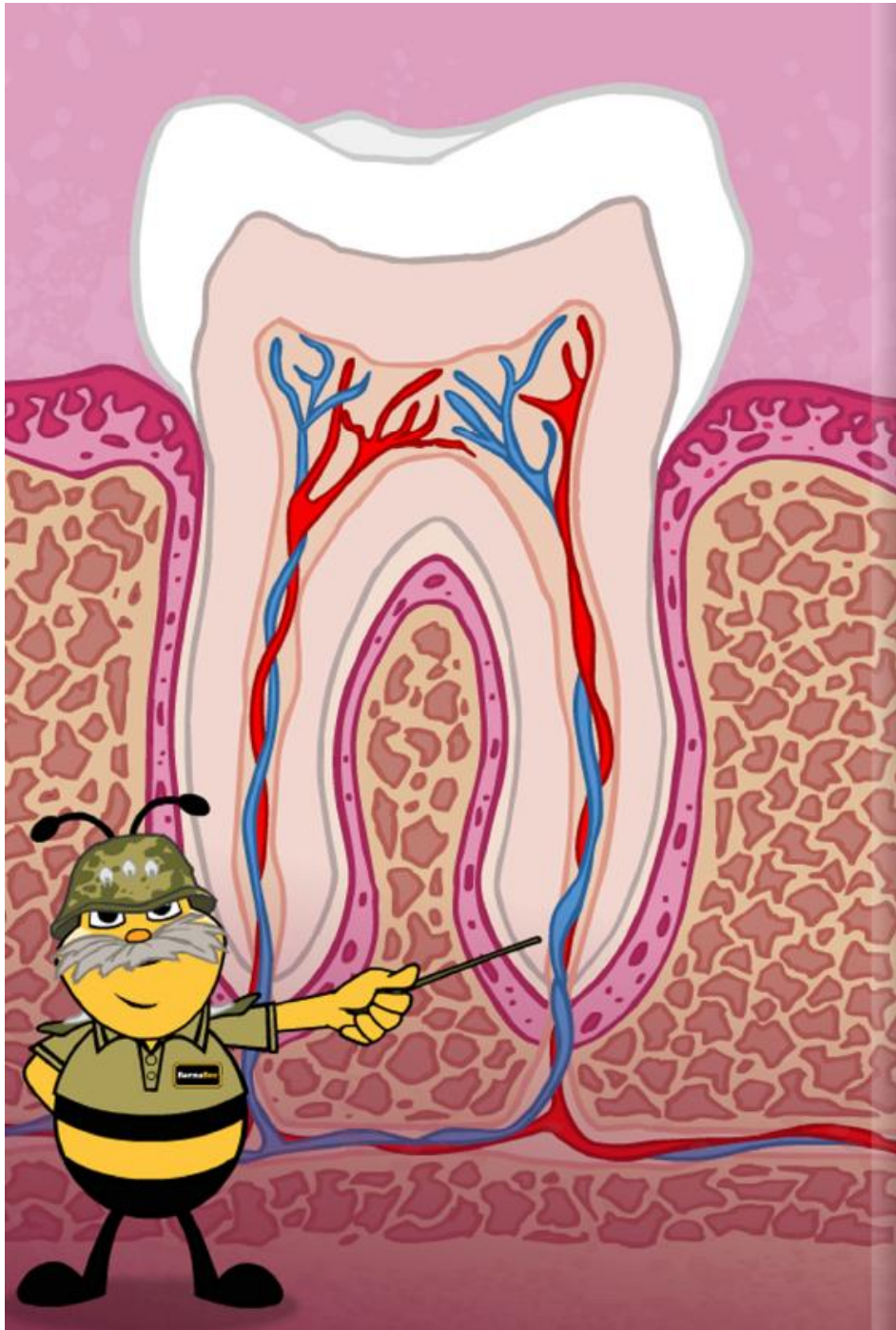


I wondered what the was against plaque would look like through the microscope. That certainly sounded exciting. I let my imagination wander...

What if I built a high tech battle pod that could be shrunk down to microscopic size? As the pilot I'd have the latest state of the art weaponry at my fingertips. Bacteria blasting brushes, fluoride phasers and plaque pounders. I could even command an entire squadron of battle pods!

Ko te whakaaro, ka pehea rā te āhua o te pakanga hei aukati i te niho manehiko i raro i te karu whakarahi. Ātiu ake te whakaaro. Tēra pea ka hangaia e au he mīhini whawhai, kātahi ka tingongo kia

kitakita? Ina ko au te kaiurungi o te mīhini, kei āu ngā momo rākau o te riri e mau ai ki aku matimati. Ko ngā parāehe patu kera, ko nga pū aho, ko ngā pao manehiko. Ka tāea tonu e au te whakahāere i te ope taua me ngā mīhini whahai.

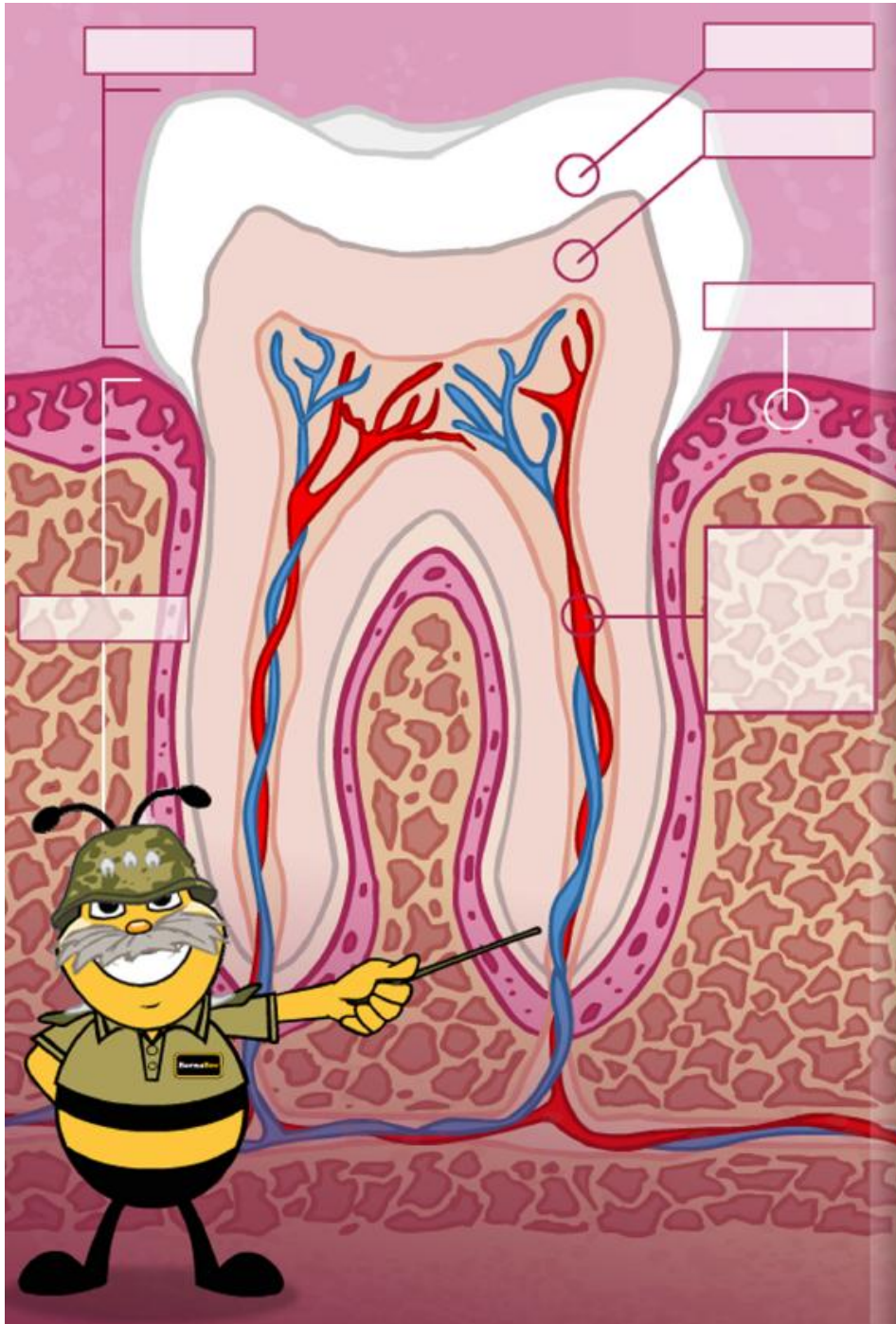


As Squadron Commander Barnabee I'd address my troops...

"We, the valiant bees of squadron 2B have been entrusted with a very important mission. This is a tooth. As we'll be defending it with our lives, it's worth knowing a little about it.

A tooth can be divided into two parts; the crown- above the gum, and the root- below the gum. Sensitive nerves and blood vessels run up through the roots and are protected by a hard but porous wall of dentin. Dentine is harder than bone. This is capped by a hard white armour called enamel. Study it well."

Hei kaitātaki mo tēnei ope taua, ka kauhau ahau ki aku hoa. E aku hoa no te ope taua 2B. Nga Pii toa! Ka riro mā tātou tēnei whakatakanga hei kawe. Koinei te niho! Mā tātou e tiaki mo te hemo tonu atu. Tāria ake ngā kōrero mōna. E rua ngā wāhanga o te niho. Ko te karauna kei runga i te tako, ā, ko te aka kei raro i te tako. Ka rere akonga tārua ki te aka ngā tūtohu io me ngā ia toto. I reira te kaitiaki Dentine. He māro ake te Dentine i te kōiwi, ka ūhia tēnei i te pakiri ma. Akohia kia mau!



“So let’s see how clever you soldiers really are. Label the tooth correctly. Good luck.”

Tēna, kia kitea pēhea te koi o ēnei hoia.? Kia tika te whakaingoa i te niho. E rua ngā meneti kei a koutou... Kia rite... Timata!

Toia, ā, ka tukua ngā whakautu ki te pouaka tika i mua i te rua meneti. Ki tō mōhio kua tutuki pai te whakaingoa o te niho, tāpuhia te pātene i runga i tō karaka mai tō kiore. Kou Angitu!



I was really onto something here. Oral health was looking more exciting by the second. Now that we'd had a good look at teeth, I figured it was time to begin studying bacteria. It's always important to understand your enemy before going into battle.

I reira tonu aku whakaaro. I te whakaongaonga te kaupapa hauora-ā-waha i tēnei wā. Tēna kua tutuki te titiro ki ngā niho, me tahuri aku whakaaro ki te ako mo te kera. Otira he tikanga tonu me mōhio koe ki ō hoariri i mua mai o te pakanga.

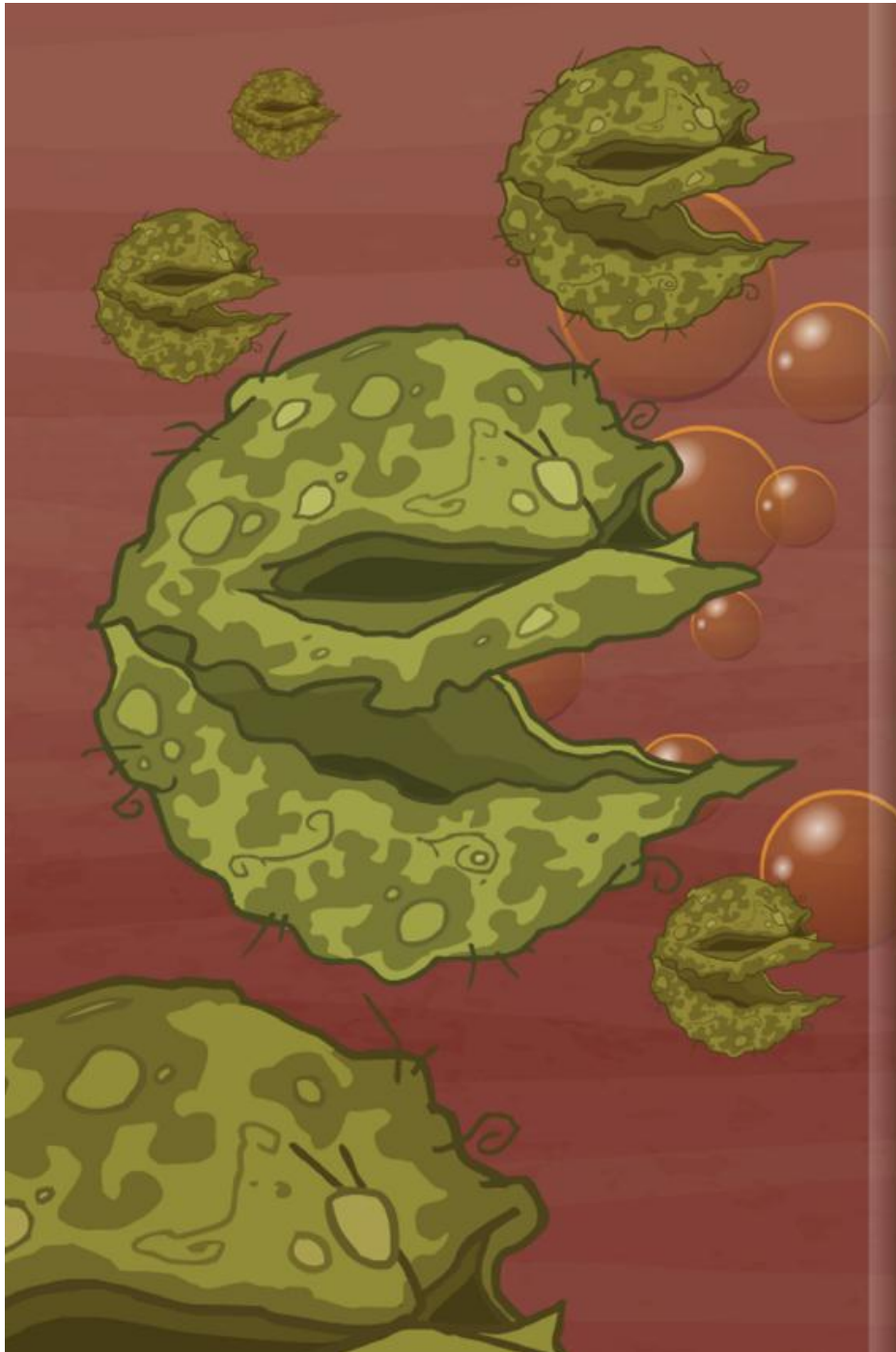


“A profile of the enemy has been uploaded to your on board computers. Our intelligence suggests that there are over one hundred million microbes of at least six hundred different species living in every millimetre of saliva (that’s spit) inside every human mouth. Fortunately for us, most of them are friendlies.

Today we are concerned with this nasty piece of work: Streptococcus mutans, or S. Mutans for short.

It is an acid spitting, enamel dissolving monster that has the ability to self-replicate at an astounding rate.”

*Kua tauherehia he kōrero whakamārama mo te hoariri ki roto ki tō
rorōhiko. E ai ki ngā kōrero, Neke atu ki te ono rau o ngā tūmomo rerekē e
kawe ana i te kotahi miriona o ngā mea moroiti i roto katoa i ia
ritamanomano o te hūare (te tuha) o te waha. Ko te maringanui he hoahoa
te nuinga o rātou. I tēnei rangi ka hangai te titiro ki ēnei ngārara.
‘Streptococcus mutants’ arā ‘S.Mutants’ te ingoa poto. Ko rātou ngā
ngārara ka tuha i te waikawa e waimeha nei i te pakiri. Ka noho ka
whakakapi ia rātou ano.*



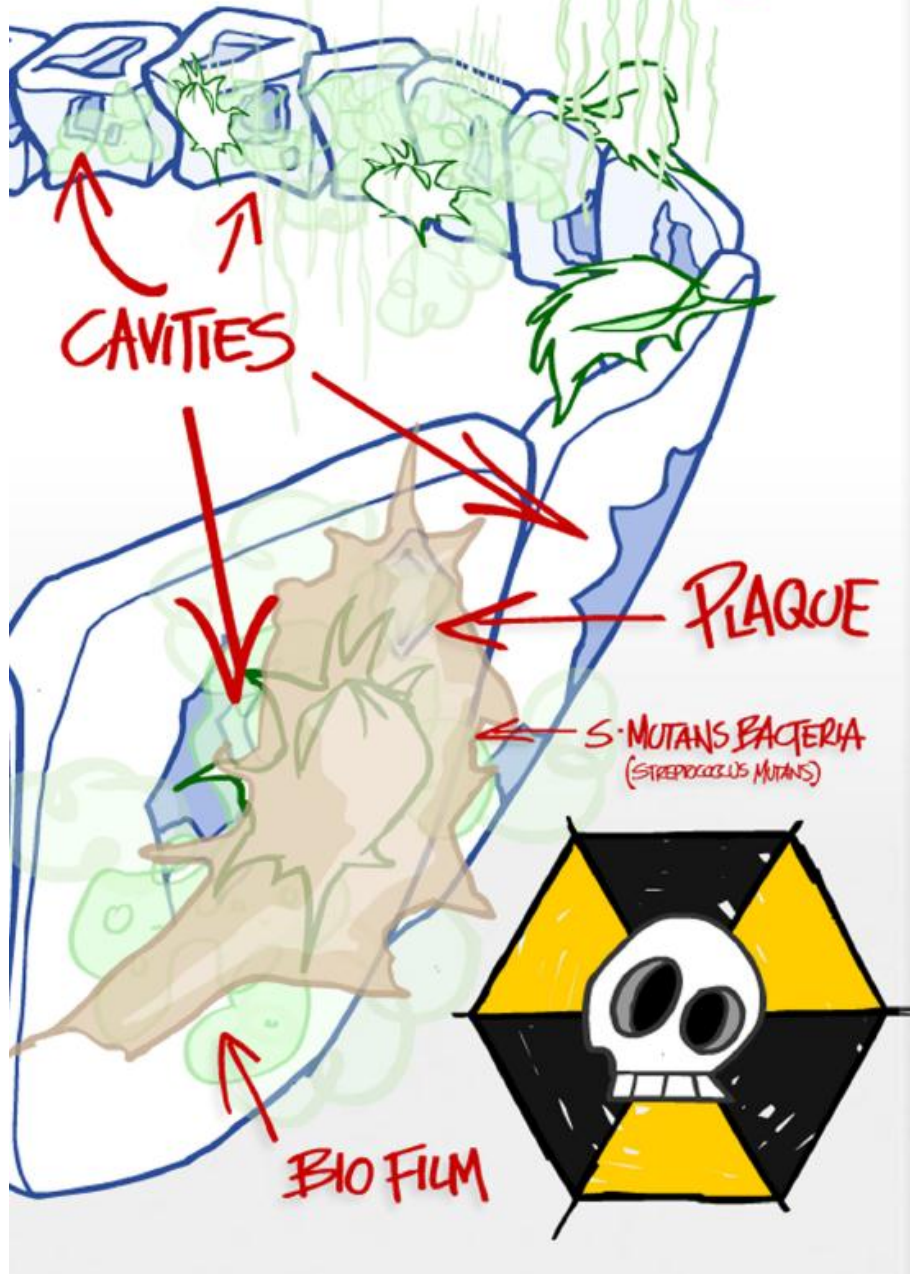
“S. Mutans feeds on the things people love to eat, namely sugars.

All kinds of treats, fizzy drinks and sports drinks are like super food to the enemy, fuelling their numbers and attack strength.

If we are to protect our precious teeth, we must reduce the enemy’s access to this fuel source.”

Ka whāngai ngā S.Mutants i ngā kai e ngākau nui ana te tangata, tēra ko te huka. Ahakoa he aha te kīnaki. He mana ano tā te waireka, te inu takaro ki a rātou ngā hoariri hei whakakī i ngā nama kia pakari hoki te tū.

S. MUTANS ATTACK STRATEGY



“Fortunately for us, the S. Mutans have a plan of attack we understand. They attach themselves to the bio film that forms on the tooth’s surface. As they feed off sugars, they ooze a powerful acid that can eat through the outer layers of enamel and dentin and into the nerve centre of the tooth. If they are not forcibly removed within a 12 hour period, the damage they cause is irreversible. Left long enough they will form their own shield. We know this as plaque and it is very strong. We must not let the S. Mutans establish a base on our teeth. Is that clear?”

“Sir, yes sir!”

“I can’t hear you!”

“SIR, YES SIR!”

“That’s better.”

Ko te maringanui, kua mohio kē tātou i tō ratou māhere whakararu. Ka whakapiri atu rātou ki te rehu ki te mata o te niho. Ā, ia rātou e kai nei i te huka, ka kūtere ake he mana waikawa. Mai tēnei ka kainga rawahia ā waho o te pakiri me te dentine, aru atu ki waenga nui i te io o te niho. I te kore rātou e kaha wehe i roto i te tekau mā rua haora, e kore e tāea te whakatika i ngā tukinokatanga o te niho.

Inā ka waiho i a rātou kia piri, ka hangāia he ārai mō rātou, e mōhio nei ko te niho manehiko (Plaque) me tōna kaha. Kia kaua tātou e tuku i ngā S. Mutants kia whakaū ki runga i te niho! Mārama?

Ae e Tā!

Kāre au i te rongo i a koe!

AE E TĀ!

Kei runga noa atu!



This was all starting to seem impossible. How could we ever win a battle against such a powerful enemy?

It was just then that I remembered our number one weapon against bacteria; fluoride!

Tēra e pōhēhetia ana e kore e tāea! Me pēhea e toa ai i te taha o ēnei hoariri.

I tāua wā tonu ka maumahara ake ahau i te mihini whawhai i te kera, Koia ko te aho!.

PLAN of ATTACK:

Against plaque forming bacteria

1. Restrict the enemy's fuel (sugar) supply.
2. Drink fluoridated water to make the environment difficult for the enemy to operate in.
3. Brush at least every 12 hours with full strength fluoride tooth paste (after breakfast and before bed) to keep the enemy from establishing a base on teeth.
4. Brush for 2 minutes each time to ensure all excess fuel cells (sugar) and enemies hiding between teeth and under the gum line are removed.
5. Have routine checkups at dental headquarters to make sure everything is in order.



“Listen here. I know the enemy we’re about to face is cunning and ruthless, but take heart. We are equipped with the greatest weapon against tooth decay known to man. We know who the enemy is. We know what fuels it and we know it’s plan of attack. Well, we have a little plan of our own...”

1. Restrict the enemy’s fuel (sugar) supply.
2. Drink fluoridated water to make the environment difficult for the enemy to operate in.
3. Brush at least every 12 hours with full strength fluoride tooth paste (after breakfast and before bed) to keep the enemy from establishing a base on teeth.
4. Brush for two minutes each time to ensure all excess fuel cells (sugar) and enemies hiding between teeth and under the gum line are removed.
5. Have routine check-ups at dental headquarters to make sure everything is in order.

Whakarongo ake! Mōhio pai ahau he mūrere, he taikaha ngā hoariri nei. Heoi, kia manawanui! Kei a tātou ngā tāonga aukati i te niho kera e mōhio nei mo te tangata. Kei te mārama tātou ko wai te hoariri, te whakakora, me tōna māhere whakararu. Kātahi nei, he māhere kua whakaritea mo tātou.

1. Tikina ngā whakakora huka o te hoariri.
2. Inuhia te wai aho hei whakararu i te hoariri.
3. Me parāehe i ngā niho i a tekau mā rua hāora me te aho pēniho. Imuri mai i te kai o te ata, ā, i mua rawa i tō moe. Hei aukati i te hoariri kia kore e whakaū i runga i ngā niho.
4. Me paraehe koe i ō niho mo te rua meneti, kia mōhio ai kua whakakorehia ngā iho whakakora. Koia ko te huka. Me ngā hoariri e huna ana i wāenga niho, ā, i raro i te tako.
5. Hoki atu ki te pou niho kia tirotirohia ō niho katoa ia te wā.



“OK troops, take up your positions and ready yourselves for the most intense two minute battle of your lives. Let’s hope there’s no excess sugar floating around. Here they come! Ready weapons. Attack! Engage bacteria blasting brushes! Go Fluoride phasers! Power up plaque pounders!”

Tēna e hoa mā, kia mōhio, kia mataara. Kia rite mo te pakanga nui e rua meneti te roa. Ko te tūmanako, kāre kau he huka kei reira e rere ana. Kei te hāere mai ratou.! Kia rite ngā rākau o te riri. Kokiri! Tukua ngā paraehe patu kera, tukua nga pū aho, tukua ngā pao manehiko.



A victory! Yes!

And from that day on, everyone in the orchard came to love their teeth a little more and made looking after them an important part of their day.

And they couldn't wait for my next toothilating adventure...

Ka eke panuku, ka eke tangaroa!

Mai taua rā ki tēnei, ka ngākau nui aku hoa mai te uru huarakau i ō rātou niho. Ka whakatau he mea miharo tēnei mea te hauora-ā-waha, arā te tiaki niho.

Tāria te wā e haere ai au ki te mahinga mōrearea a te niho rei.