

The Pop Ups. Stay seated. Three, two, one, ignition. Get ready for an adventure of magnificent proportion.

The Pop Ups. (Singing.) I don't know what you've been told, but we're in a golden age - so many discoveries that are jumping off the page. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world. Wow in the world.

The Pop Ups. With Guy and Mindy. We're on our way, Houston.

(Soundbite of car radio playing rock music.)

Reggie. Coo coo!

Guy. Thanks for giving me a ride to the dentist, Reggie. I couldn't find Mindy anywhere!

Reggie. Coo coo coo!

Guy. I wouldn't usually make such a big deal about it, but my back left molar is throbbing in pain!

Reggie. Coo! Coo coo coo?

Guy. It all started yesterday.

Reggie. Coo!

(Soundbite of harp to cue flashback.)

Guy. (Singing.) Ice cream, ice cream..I'm making some ice cream...

Guy. (In the present.) I was at home making my world famous, raw milk, lactose free, all-natural, mint infused, Guy's cream.

Reggie. Coo!

Guy. Get it, Reggie? Guy's cream! Like ice cream?

Reggie. Coo!

Guy. Anyway...

(Soundbite of whistling.)

Guy. (In the present.) I was at home making my ice cream when all of a sudden...

Guy. (In the past.) And now for the most important part of all...the taste test! Here we go! Mmm...delicious-ahh!

Guy. (In the present.) I was struck by a sudden case...of tooth freeze!

Guy. (In the past.) Agh! My toof-

(Soundbite of harp to cue flashback end.)

Reggie. Coool!

Guy. So I thought I'd move my weekly dentist appointment forward to today and see what's going on!

Reggie. Coool!

(Soundbite of car screeching.)

Guy. Oh, we're here!

Reggie. Coool coool!

Guy. Well, thanks again for the ride, Reggie! I owe you one!

Reggie. Coool coool.

(Soundbite of car door opening.)

Guy. I'll see you later.

Reggie. Coool!

(Soundbite of car door closing and car driving away.)

Guy. Alright, here we are.

(Soundbite of piped music.)

Receptionist. Hello and welcome to 'You Can't Handle the Tooth' dentistry. Do you have an appointment with us today?

Guy. Uh, yes.

Receptionist. Excellent! And what time is your appointment?

Guy. Two thirty.

Receptionist. Oh, I know your tooth hurty, but I need to know what time your appointment is set for.

Guy. No, my appointment is at two thirty!

Receptionist. You know what, let's just look you up by name.

Guy. Uh, it should be under Raz. Guy Raz.

(Soundbite of keys clacking.)

Receptionist. Guy Raz. Ah here you are. Two thirty.

Guy. Ugh.

Receptionist. Ok, Mr. Raz, please take a seat over there, and the doctor will be with you shortly.

Guy. Ugh. Thank you!

(Soundbite of footsteps and chair squeaking.)

Guy. Ooh, new chairs.

Thomas Fingerling. Huh? New hairs? No, this is the same hair-cut i've had for thirty years.

Guy. Mr. Fingerling, what are you doing here at the dentist?

Thomas Fingerling. Well, my jaw stopped clicking yesterday.

Guy. Wait a minute. You came to the dentist because your jaw *stopped* clicking?

Thomas Fingerling. Well, yeah! My jaw clicks are an integral part of my knuckle cracking performance! Ha-chaw! See? It just ain't the same.

Receptionist. Mr. Raz? Mr. Raz? The dentist will see you now.

Guy. Oh, thank you. Uh, see you later, Mr. Fingerling!

Thomas Fingerling. Okay, bye bye.

(Soundbite of footsteps.)

Receptionist. Just right through there.

Guy. Sure, thanks.

(Soundbite of door opening.)

Guy. Hey doctor, thanks for seeing me on such short notice.

(Soundbite of swivel chair spinning.)

Mindy. Guy Razzy!

Guy. Mindy!?

Mindy. Fancy seeing you here!

Guy. Mindy! What are you doing in here? Where's the dentist?

Mindy. Well, I think the question you *should* be asking is why I am holding these tooth pliers!

(Soundbite of pliers clacking.)

Guy. *You're* the dentist?

Mindy. I mean, do you see me wearing this lab coat?

Guy. I guess.

Mindy. Guy Raz, I finally decided to finally pursue my dream of going to dentistry school!

Guy. Uhh.

Mindy. I had to find *some* way to keep all these teeth from falling out of my head!

Guy. Uh huh.

Mindy. So, *patient*, why don't you tell me what brings you into the dentist's office today?

Guy. Okay well, I was at home this weekend making some of my homemade, lactose free, all natural, mint infused ice cream–

Mindy. Oh yeah! Your Guy's cream. Love that stuff.

Guy. Yeah, anyway, I was making my ice cream and then, as I went to do my taste test, bam!

(Soundbite of intense ringing.)

Mindy. What?

Guy. Tooth freeze!

Mindy. Tooth freeze, huh?

Guy. That's right, Mindy. I felt like me whole jaw was going to explode!

Mindy. Well, I'm afraid there's only one solution, Guy Raz. And you're not going to like it.

Guy. Well, what is it, Mindy?

Mindy. They're all going to have to come out.

Guy. What?!

Mindy. Your teeth! All of 'em. Come on, open up.

(Soundbite of power drill.)

Guy. No! Mindy! Wait!

Mindy. Haha! I'm just kiddin'.

Guy. Ugh!

Mindy. Okay, but for realsies, I think I have just the thing. Wait right here.
Run run run.

(Soundbite of footsteps.)

Guy. Mindy, where are you going?

(Soundbite of refrigerator door opening.)

Mindy. (Fading out.) The fridge!

Guy. (To self.) The fridge? What could she be getting from the fridge?

(Soundbite of footsteps.)

Mindy. Run run run run. Ah, alright, here we go!

(Soundbite of something heavy on a table.)

Guy. Mindy, what in the wow is this?

Mindy. What? It's a giant cake...what does it look like?

Guy. It *looks* like a giant tooth!

Mindy. Yeah, tastes like it too!

Guy. Huh?

Mindy. Nothing. He he he!

Guy. Mindy, how is this giant tooth-shaped cake supposed to help me with my tooth ache?

Mindy. Alright, allow me to explain. Guy Raz, hand me that scalpel.

Guy. Okay.

(Soundbite of swivel chair rolling.)

Mindy. Thank you. Now let's go ahead and make our first incision here.

(Soundbite of squelching.)

Mindy. Careful. Careful. There we go. And, tada! Take a look at the inside of this cake, Guy Raz.

Guy. Ooh, it's so multi-layered.

Mindy. Yup! It's a one hundred percent, deliciously accurate, 'cake based' representation of what the inside of your tooth actually looks like!

Guy. Really?

Mindy. Yeah! You see, a tooth, much like this cake, is made up of many layers.

Guy. Okay.

Mindy. First you've got this hard outer shell here, called enamel.

Guy. Right! And enamel acts like a protective coating for the tooth.

Mindy. Exactoritos! It's also what gives a tooth its white glow. Now on the cake here, it's made out of a candy shell coating.

(Soundbite of candy cracking.)

Mindy. But on your *actual* tooth, it's made out of a bunch of super strong molecules.

Guy. Huh!

Mindy. Then, *underneath* this layer of enamel, you have a layer of dentin.

Guy. Dentin, huh?

Mindy. Yeah. Dentin is the hard stuff that makes up most of the tooth.

Guy. Right.

Mindy. And then, if you dig down a *little* deeper, past the enamel and the dentin, you'll find the soft marshmallowy center!

Guy. (Gasp.) Mindy, are you telling me that deep in middle of each of my teeth is a tiny marshmallow?

Mindy. Yes, of course I'm not saying that Guy Raz! What I'm saying is that deep inside this cake, there's a tiny marshmallow.

(Soundbite of squelching.)

Guy. Oh, right.

Mindy. But your *tooth* has a soft center, too. And *it's* made up out of the same stuff that your gums are made of!

Guy. Oh, right. That makes a lot of sense!

Mindy. And this soft, squishy, pulpy center is home to two very important kinds of cells.

Guy. Which are?

Mindy. Well, the first kind are the cells that produce the dentin.

Guy. Huh. And what's the second type of cell found in this pulpy center?

Mindy. The second kind of cells are *nerve* cells.

Guy. Nerve cells? Like the kind of cells you find in your hands, and legs, and pretty much everywhere else in your body?

Mindy. Yeah! Nerve cells are those special cells in your body that allow it to, you know, *feel* things.

Guy. And so these nerve cells allow your *teeth* to feel things?

Mindy. You know it! Including heat, and–

(Soundbite of fire whoosh.)

Guy. Cold!

(Soundbite of blizzard blowing and ice cracking.)

Mindy. Bingo, Guy Raz!

Guy. Okay, Mindy. I think I see where you're going with this.

Mindy. Right. But here's the thing. Until recently, scientists weren't really sure how something touching this crispy outer part of the tooth–

(Soundbite of chomp.)

Mindy. (Mouthful.) Was making the nerve cells in this delicious marshmallowy part of the tooth. Mmm, mm, mm. Feel so cold!

Guy. Uh huh.

Mindy. (Mouthful.) But now...thanks to new research from scientists at Friedrich-Alexander University in Germany, we do!

(Soundbite of gulp.)

Mindy. Mmm, mm, mm! You want a slice of this cake, Guy Raz? It's really good!

Guy. No, Mindy! I just want you to help fix my tooth freeze!

Mindy. Okay, okay fine. Lemme just get one more bite.

(Soundbite of chomp.)

Mindy. (Mouthful.) Okay. Open up!

Guy. Uhh, why?

Mindy. (Mouthful.) Do you trust me?

Guy. No!

Mindy. Yeah, you do! C'mon Guy Razzy! All I wanna do is take a look at the insides of all of your teeth!

Guy. Huh?

Mindy. With this!

(Soundbite of picking up dentist tool.)

Guy. Uh Mindy, what is that?

Mindy. It's a dentist invention of my own creation. It's half microscope, half x-ray and hundred percent awesome. Pretty bonkerballs, huh?

(Soundbite of machine whirring and beeping.)

Guy. And you want to put that in my *mouth*?

Mindy. Don't worry, Guy Raz. It's probably not going to explode like it did the last time.

Guy. The last time?

Mindy. Yeah, I'm like ninety percent sure that's not going to happen again. Anywho. Say aah!

Guy. Aah.

Mindy. Alright, now let me just fire this bad boy up.

(Soundbite of machine whirring and beeping.)

Guy. (Mouthful.) Ugh, Mindy!

Mindy. Alright, so with this, we can see exactly what's going on inside that tooth of yours.

Guy. (Mumbles.)

(Soundbite of typing on keyboard and machine whirring faster.)

Mindy. Now, if you'll just look over on the monitor over here—

Guy. (Mumbles.)

Mindy. Okay, look right there. (Gasp.) Ooh! It's your beautiful, pulpy, marshmallowy center, with all those lovely little nerve cells in it, see those? All those branches that are coming out of it?

Guy. (Mumbles.)

Mindy. Those are the branches that the dentin grows out of, that forms the rest of the tooth!

Guy. (Mumbles.)

Mindy. You know it!

Guy. (Mumbles.)

Mindy. Exactoritos, Guy Raz! And those researchers in Germany found out that those branches are chock-full of this protein called TRPC5.

Guy. (Mumbles.)

Mindy. Does it come in green? Does *what* come in green?

Guy. (Mumbles.)

Mindy. Ooh, 'what does that mean'! Guy Raz, you need to *enunciate* a little bit more. I can't understand a word you're saying.

Guy. Ugh.

Mindy. What this *means* is that these little proteins—

Guy. (Mumbles.)

Mindy. That's right, TRPC5, are just great at sending cold feelings throughout your body.

Guy. (Mouthful.) Oohh...

Mindy. And, there we go. I think my job here is done.

(Soundbite of machine powering down.)

Mindy. There.

Guy. (Gasps.)

Mindy. Okay Guy Raz, now you're just going to rinse and spit.

(Soundbite of gargling and spitting.)

Mindy. Thank you!

Guy. So, these proteins, TRPC5, they're found all over our bodies?

Mindy. You know it! You know how on a really cold day, your eyes start to feel a little chilly and dry?

Guy. Uh-huh.

Mindy. Well, that's because the cold air is making the TRPC5 proteins in your front of your eye go bonkerballs!

(Soundbite of wind blowing and electrical sparking.)

Guy. Huh. And so that same thing is happening in those little branches inside my teeth?

Mindy. Uh huh! That's right!

Guy. And when I bite into a spoonful of my homemade Guy's cream, these proteins activate and then send that cold sensation from the outside of my tooth, all the way down to the pulpy center where my nerve cells tell my brain that I'm chomping into something very cold!

Guy. My tooth!

Mindy. Exactoritos!

Guy. Wow! So, that's what's causing my tooth freeze?

Mindy. Yup. In fact, those scientists from Germany were even able to *deactivate* these proteins in some test mice in their lab.

Guy. And?

Mindy. And once these proteins were turned off, these mice had no problem whatsoever eating cold foods. In fact, they showed no signs of pain or distress at all!

Guy. Wow! Do you think *you* could do that with *my* teeth, Mindy? You know, deactivate my TRPC5 proteins so maybe I could guzzle down my Guy's-cream without having to worry about getting a tooth ache?

Mindy. Nah, bad news, Guy Raz. We are still a long way away from doing anything like that with humans.

Guy. So what am I supposed to with my tooth freeze in the meantime, Mindy?

Mindy. Well, the researchers did find that there was common household ingredient that temporarily stops these proteins from activating.

Guy. Really? What is it?

Mindy. It's a little something called oil of cloves!

Guy. Oil of cloves, huh? You know, I think I picked up some clove oil just last week from the local health food store.

Mindy. Yeah, so it turns out oil of cloves, or clove oil, has an ingredient in it called eugenol. And this ingredient, for some reason, stops these cold carrying proteins from activating.

Guy. And, as a result, can help with tooth freeze.

Mindy. You know it! In fact, oil of cloves has been offered as a household remedy for tooth aches for hundreds of years! And now we think we know why.

Guy. Huh, well if that's what the dentist prescribes–

Mindy. Uhh, say what?

Guy. If that's what *you* prescribe?

Mindy. Oh, psht, I'm not a dentist!

Guy. What? I thought you said you went to dentistry school?

Mindy. Oh, well, I mean, I *did* for a couple of hours. But I was ready to, you know, get the hands-on experience, so I just came here instead.

Guy. Wait a minute. If you're not a dentist, then whose office is this?

Mindy. (Shrugging.) I dunno.

(Soundbite of door opening.)

Doctor. Ok, Mister Raz, according to your chart here it says your tooth is hurty and– Hey! What are *you* doing in here?

Mindy. Uh–

Doctor. And why are you wearing my lab coat?

Mindy. I was cold!

Doctor. Oh! And my cake! What have you done to my birthday cake?

Mindy. I was hungry!

Doctor. Oh, why did I bring that cake into work?

Guy. Mindy!