[00:00:00]

Transition: Gentle, trilling music with a steady drumbeat plays under the dialogue.

Promo: *Bullseye with Jesse Thorn* is a production of MaximumFun.org and is distributed by NPR.

Music: "Huddle Formation" from the album *Thunder Lightning Strike* by The Go! Team—a fast, upbeat, peppy song. Music plays as Jesse speaks then fades out.

Jesse Thorn: It's *Bullseye.* I'm Jesse Thorn. Mary Roach is the kind of science writer who gets interested in very specific things. Here are some examples: cadavers, dead bodies in general, animals/what happens when they break the law? Space travel and accommodating for human necessities such as romantic and bathroom activities. And in her newest book, replaceable body parts. All of the body parts. Ears, hair, noses, legs, organs.

Replaceable You: Adventures in Human Anatomy is a history and a snapshot of how humankind has gotten better at recreating parts of our own bodies. She talks with patients, historians, and—in one chapter—the keeper of a special, super-clean breed of pigs. We'll get into all of it.

A quick warning before we kick off our conversation though: we are going to be talking about body parts, including genitalia. So, if that is a sensitive topic for you or for someone with whom you might be listening, we wanted to let you know. Okay, let's do it! Mary Roach.

Transition: Thumpy synth with light vocalizations.

Jesse Thorn: Mary Roach, welcome back to *Bullseye.* It's nice to see you again, as always.

Mary Roach: Awww, Jesse Thorn. Thank you. Lovely to be here.

Jesse Thorn: Were you just like staring at Elon Musk's hair one day and decided to write this book?

(Mary laughs.)

I've wiled away many an hour gazing upon that marvel of modern science.

Mary Roach: It's a very uniform and impressive hairline, if not entirely natural looking.

Jesse Thorn: Was there an inciting incident?

Mary Roach: Yeah. Well, there were kind of two. 'Cause I had some stuff in a folder about religious relics—*(chuckles)* you know, fingers and toes and stuff. Because apparently there's some forensic relicologist who, when there's five big toes or something, has to come in and like try to verify which ones are real.

(Jesse laughs.)

And I really wanted to write about that.

Jesse Thorn: When you say which is real, you mean like which belongs to St. Peter? Which actually belongs to St. Peter?

Mary Roach: Yeah. Yeah! Which is a counterfeit toe, and which is the real deal. And you know, they do this work. There's a lab in Oxford, and this guy is a basically a forensic relicologist. And I got in touch with him, and he said, "Buzz off, I'm writing my own book."

(Jesse chuckles.)

So, I stuck it in a folder entitled "Bits and Pieces." And I don't remember what else was in it, but I was toying with that idea. And then I thought, "Well, if I do something on bits and pieces, I'm gonna have to deal with stem cells. Which I don't really want to, but I'm gonna have to." And I know this woman who works in—like, she's a fat specialist. And I thought, "Oh! Fat! Fat, like as a substance, that could be interesting." So, we got to talking.

And over the course of the conversation, she said, "I saw a paper by the surgeon who used a guy's middle finger to rebuild his penis after he had cancer." And I, of course, pictured kind of—you know, the middle finger—which it was—the middle finger kind of taken as is, with the nail and everything just kinda sewed in place and operational. So, you could beckon. You could go like, "Hey! Come here.

(They chuckle.)

So, that kind of— Is it clinched it or cinched it for me? One of those two.

Jesse Thorn: I don't know. I guess it depends how functional this finger penis is.

Mary Roach: *(Laughs.)* Well, I found out, in fact, that— Because the guy is in Tbilisi, Georgia—the country of Georgia. And he didn't write— I wrote to him in English and Georgian using Google Translate. So, god knows what I said! And in Russian. And no reply. And so, I called up this friend of mine who— I do this to her all the time. Like, "Hey, let's go to Tbilisi." And so, we did.

(Jesse chuckles.)

We went, and we showed up. 'Cause that's sometimes what I do is just show up. And the lovely lady in the office said, "Oh, Dr. Kuzanov's on vacation."

And I'm like, *(pleadingly)* "But we've come all the way from America!"

She is like, "You're a couple of idiots." But no, she didn't say that. She was actually very nice, and she said, "Well, we can go into his office, and I can turn on his computer, and there are photographs of the whole process—which I could tell you about if you want me to, or we can talk about something else." *(Laughs.)*

Jesse Thorn: No. Let's get into this. What you saw in the photograph was not a finger like my finger that I'm holding up to you but attached to the mid-region.

[00:05:00]

Mary Roach: Sadly, no. No, it was— That is what I had in my head; it was an aspirational vision. But in fact, he used the guy's middle finger for the rigidity, and then he wrapped it in skin from a graft elsewhere on the guy's body. So, I think maybe underneath of the forearm, 'cause it's not hairy—although there was hair! It had hair. She was like, "Yeah, he'll need to make lasers like ladies."

(They laugh.)

And so, it had some hair. It did have some hair. But it was very penis-like. And here's the amazing thing! We, you know, went through these images. The whole thing looked pretty realistic. But then there was this slide—and I think it was to demonstrate the strength of this penis—where they kind of crooked the finger inside! It was bent up. It's a penis that bends halfway. And! In order to show how strong it was, it had a ceramic water pitcher hanging from it. Like it was a hook on the wall where you'd put a hat or something.

(Jesse laughs.)

It was a ceramic pitcher. It was white with like green and red flowers. Not full of water, they pointed out. Not that strong. Anyway.

Jesse Thorn: *(Tittering.)* It's good! It's good that they gave you that context.

Mary Roach: I know they did. No, not full. I have that in the recording. It's not full. But he couldn't bend it at will. They had to kind of— Like a Gumby limb. Bend it up, bend it back down. Because that was a feature. So, she said, "So he can, you know, wear pants and not appear to constantly have an erection." It kinda like bends out of the way. Like a Murphy bed a little bit.

Jesse Thorn: *(Laughing.)* Yeah, that makes sense.

Mary Roach: You know, when I stumble onto something like that, I'm like, "Okay, this is where we're going, because this has to be in a book. So, I'm gonna have to build a book around this penis."

Jesse Thorn: Let's talk about a different protrusion for a moment.

(Mary laughs.)

Which is let's talk about noses.

Mary Roach: Okay!

Jesse Thorn: Noses have been getting chopped off for a variety of reasons for many, many years.

Mary Roach: Lo, these many years. Yeah.

Jesse Thorn: You're talking about duels. You're talking about syphilis. You're talking about simple—

Mary Roach: Punishments!

Jesse Thorn: —walking into windows accidents. *(Laughs.)* Punishments!

Mary Roach: Nasal mutilation. Yeah. It was a thing.

Jesse Thorn: There are many reasons why someone would have not-all-of-a-nose where their nose otherwise would be. What historically are some of the ways that noses have been replaced?

Mary Roach: I'm glad you asked that. *(Genuinely excited.)* Oh, I'm gonna start with my favorite. It's not the oldest. We can go back in time to the older models, the older techniques. But my favorite is by this army surgeon, Frank Tetamore, in the early 1900s. It's celluloid. So, it's—you know—an early plastic. Okay? Early plastic is the nose. The nose is suspended from a pair of glasses. And! To hide the borderline of the bottom of the nose where it's hitting the upper lip, there's a mustache. So, it's a medical Groucho Marx glasses.

(They laugh.)

Jesse Thorn: Yeah. Does it have big, black eyebrows as well?

Mary Roach: It doesn't! It doesn't. It's also not very useful for the— You know, the female nasal mutilation patient, the mustache part is a little visually arresting, I would say.

Jesse Thorn: But many false noses were created before modern plastics were available.

Mary Roach: Yeah! There were— Tycho Brahe the astronomer lost a chunk of his nose in a duel. He had a metal nose that stuck on with some sort of gum adhesive, and it was painted.

Jesse Thorn: That he carried with him. He carried a little box of adhesive.

Mary Roach: He did! That's a detail I really enjoyed. That he had a little—you know, kinda like a snuff box but it was adhesive for the nose. Some biographer claimed that it would drop off occasionally, and he would just pick it up and stick it back on. *(Laughs softly.)* Which you would do.

Jesse Thorn: I like the idea of him carrying this around like a pitcher with a rosin bag. Just like *(slaps his hands together.)*

Mary Roach: Yeah, exactly! Just—pop! Yeah. The metal ones often—you had different shades of paint depending on the light. Daylight versus cocktail bar light versus—whatever. You could adjust the color of your nose to fit whatever the lighting situation. But weirdly, the earliest solution for missing a chunk of your nose was a plastic surgery technique. They would take a flap of skin from the forehead or the cheek, disconnect it on three sides, leave it attached in one part, and then like flop it over onto the nose, let it grow in. You know, you'd have to kind of like freshen the wound so that the body grows a blood supply in its new nose and then eventually cut it free from where it used to be. And that is still occasionally done.

[00:10:00]

Jesse Thorn: I mean, the material in the artisan class I was most surprised to read about with, re: noses, was potters.

Mary Roach: Yeah!

Jesse Thorn: Potters who created noses.

Mary Roach: Yeah. In India, this cast of potters. I guess if you're good at forming shapes out of malleable material that go—clay, skin, what have you—it's like that's their thing.

Jesse Thorn: Even more still to come with Mary Roach. Stay with us. It's *Bullseye* from MaximumFun.org and NPR.

Transition: Thumpy synth with light vocalizations.

Jesse Thorn: Welcome back to *Bullseye*. I'm Jesse Thorn. I'm joined right now by Mary Roach. She's the author of the books *Stiff, Fuzz, Gulp,* and a bunch of other all-timer titles. She specializes in science writing—the kind of science writing that might gross you out a little bit, but you can't wait to tell everyone you meet about. Her newest book, which is typically fascinating and hilarious, is *Replaceable You Adventures in Human Anatomy*. It's about the history and science of replacing human body parts. Let's get back into our conversation.

Skin is a very tricky business and remains a very tricky business even in 2025. When people have skin injuries—like serious burns, for example—what are the kind of patients for what can be used to replace what has been damaged?

Mary Roach: You can use someone else's skin. You can use pig skin, dog skin, frog skin, chicken skin. These have aaall been used. You can use whatever you want. Unless it comes from the person's own body—you know, a patch of skin taken from elsewhere—it's just essentially a bio dressing. It's not a transplant. When you have a really bad burn, your immune system is outta whack. So, it kind of allows you to have, say, frog skin for a while. A couple weeks. And then it wakes up and goes, "You know what? There's something weird about that skin, and we don't want it." And it kind of sloughs off. But by that point, hopefully there's some healing that's gone on elsewhere in the body; you can take some a patch of skin from the patient's own body. Because ultimately, that's what you want. Because that's gonna take, and the body's not gonna reject it.

But there was a lot of— In the 1800s/early 1900s, a whole menagerie of animals were used. And ultimately, you didn't need to do that. Cadaver skin. Good, old cadaver skin, that is what is used most of the time still.

Jesse Thorn: When you say a bio dressing, what does that mean?

Mary Roach: Like any other material you would use to put on a bad wound, it's a temporary cover that keeps moisture in. It keeps bacteria out. It's a dressing. It's a protective layer. And you could use— There's manmade stuff. Mepilex is like a foam, and it's sterile, and it's got multiple layers. And that works well, and it's cheap. Or you can pay for Icelandic cod skin, which gets touted as like the next greatest thing. But in fact, *("I don't know" sound)* it's not—depending on who you ask, not really any better than cadaver skin. So, it just— All of that works as a protective covering. It doesn't grow in and become new skin.

Jesse Thorn: When you have a skin injury, the only skin that is going to—let's say—stick for more than a couple weeks while your immune system is suppressed by the burn damage is your own skin. But that skin has to come from somewhere else on your body.

Mary Roach: Yes, it does. And that's why so often there is skin from someone else. Because if you have, say, an 80-or-90% burn, there's no skin to take. In cases like that it's horrible, 'cause there's like a little bit of real estate left, and they'll take that. But then they have to then they wait for that skin to grow back, and then they harvest it again. So, over and over they're like— This one poor woman, I think it was like this one site: they'd taken skin from there five times over a course of the years. You can take a biopsy of someone's skin and send it off-site, and they'll grow a really thin layer of your own skin. It's pretty cool. There's also—and this is TM—spray-on skin! There's spray-on skin. Which is— Again, it's taking some of the patient's cells and growing it out and then making little aerosol thing to kind of get—you know get it going.

They'll use a cadaver—a piece of cadaver skin that's been meshed so they can cover more terrain, and they kind of use the spray-on skin to fill the holes in the mesh.

[00:15:00]

So, that's kind of cool! And there's some company in Switzerland that's trying to grow full-thickness skin, which would be even better. So. But the cadavers are not gonna be outta work anytime soon.

Jesse Thorn: I mean, just the thought that you're using a cod skin or whatever it may be—cadaverous skin—to buy your own skin time to grow back in where it was removed to cover some part of the injury is a set of things I had never considered. And I don't know whether to find it inspiring or terrifying. Although, I could say that about much of the book.

Mary Roach: *(Laughs.)* Yeah. I try. I do try. But here's the thing with third-degree burns that I should say is— The third-degree burn— The body normally like grows skin up from below, right? The regenerative cells are down below, and it you know comes in little bits here and there and fills in. But with the third-degree burn, those are wiped out—those regenerative cells. So, the body is like, "What do we do!?" And it starts— It tries to close the wound by drawing together like drawstring pants kind of, like pulling together. And that's why burn survivors have these

kind of disfiguring— Because when the skin is pulling tight like that, it pulls. So, you might have an eye that's pulled open and can't close or, you know, the chin is pulled down to the collarbone. That kind of thing.

And then so, those have to be released. They cut. They stick a scalpel and cut down the middle and pull it apart. And then you gotta take skin somewhere else and fill in the hole that you just created by releasing that pulling together. So, it's this years-long process. Don't get burned. Just don't do it.

Jesse Thorn: I'll do my best, Mary.

Mary Roach: Don't. Don't. Yeah.

Jesse Thorn: Have you ever heard the expression "going to Turkey"?

Mary Roach: I have not.

Jesse Thorn: This is an expression that I wasn't familiar with until we posted a video clip on our Instagram of me talking to Jude Law. Jude Law is a man who is famously attractive and has a famous hairline.

Mary Roach: I can't picture his hairline. Is it like back in the temples, but—

Jesse Thorn: Back in the temples, but he has a sort of island front and center that connects via a sort of archipelago or isthmus to the back hair.

Mary Roach: You know what that's called? I'm sorry to cut you off, but I feel the need to interject this term that I know and I'm very proud of. Ready?

(Jesse confirms.)

Persistent mid-frontal forelock.

(They laugh delightedly.)

I'm so excited right now! David Letterman had that. So, anyway, get back to Jude. Yeah.

Jesse Thorn: I asked him on the show, you know, how he feels about it. And you know, he talked relatively frankly about it with me. And it was really interesting. We posted a video of it on our Instagram, and it went as viral as any clip we've ever posted it on our Instagram. Because it turns out people are obsessed with this idea. And one of the things that they are obsessed with is posting the comment, "Go to Turkey."

Mary Roach: Yeah. I get it. Yeah. 'Cause that's where they do a lot of—mm-hmm. *(Unclear.)*

Jesse Thorn: Yes. So, these are people who are rudely suggesting that Jude law should travel to Turkey, where all the expertise in hair transplantation and so forth happens.

Mary Roach: Affordable hair transplantation.

Jesse Thorn: Indeed. I've chosen the most affordable hair transplantation technology of them all.

(Mary laughs.)

Which is to just cut your hair short and accept that sometimes someone will post a comment on one of your videos that you look like Wallace from *Wallace and Grommet*.

But anyway, all these people were talking about going to Turkey. And I realized that when I was 16 years old and reading the *San Francisco Chronicle* sports section, hair transplant technology was this weird thing that lived in these like borderline classified ads and looked genuinely terrifying, even in those hats. *(Chuckles.)*

Mary Roach: The plug era or the flap era?

Jesse Thorn: I think this probably would've been flaps, with plugs close at their heels. What is a plug relative to a flap? Let's get into these technologies.

Mary Roach: *(Chuckling.)* A flap is what it sounds like. It's a whole flap from— You know, the sides in the back are where hair doesn't fall out. It's not sensitive to testosterone like the top. So, you take a flap from the side and loosen it and then like rotate and flop it over and let it grow in on the top—in the front, usually. And then the plug is like a whole just— I think the early plugs might have had multiple follicles. Right? And now it's one follicular unit at a time that gets transplanted. It's a lot of work!

Jesse Thorn: Initially, the question as to both of these things was: would hair removed from the side of the head, for example, retain side-of-the-head qualities?

[00:20:00]

Or would it, upon having been placed at the top of the head, become a hair that was just gonna fall out like the other hairs already did?

Mary Roach: The term that applies here is called donor dominance. And that is the place that you took the hair from, the hair will retain that lovely attribute of its homeland. So, if you take it from the sides and the back and you put it on the top, it's like, "No, we are hairs that don't fall out." So, that works. And because of donor dominance, you can move hair around most anywhere. But there's some interesting side effects of that. Like, you can—if you have pubic alopecia, which is a thing sometimes—you could take head hair, a follicle from the head, and you can put it in the pubic area. But you will need to trim it! Because it's gonna grow like head hair. If you let it grow out, you would have—you know—long pubic tresses.

Similarly, you could take chest hair, armpit hair, pubic hair—and this has been done; you could put it on your head. The problem there— And I read a paper by a surgeon in Southern California who did a study on taking body hair and transplanting it to the head. He said the problem is that it is difficult to style.

Jesse Thorn: *(Chuckles.)* You decided to do some experiential journalism with regard to donor dominance. What did you do?

Mary Roach: *(Laughs.)* Well, I was at this hair transplant clinic that works with this biotech startup that was trying to figure out a way to grow follicles from stem cells. So, I agreed to donate some follicles for research basic research. They need follicles. So, I said, "Sure, you can take a dozen." I have a little, tiny bald spot now, right at the crown of the head. So, I'm there, and I said, "I wanna be able to show people—to demonstrate donor dominance. So, can you take a head hair that's follicles that are gonna grow long, and can you transplant it to my calf?" The idea being by the time I go out on book tour, I could roll up my pant leg and show people this long, flowing hair on my lower leg.

I thought that would— Don't you think that made sense as a—?

Jesse Thorn: It… would've been vivid!

Mary Roach: It would've been! Sadly, it didn't take. And the surgeon didn't think it would. He said the top of the head has a— I mean, the head in general has a really robust blood supply, and the lower leg does not. I was pretty chagrinned.

Jesse Thorn: Were you surprised at the state of going-to-Turkey technology?

Mary Roach: No. Anytime there's something being done here, you can find it cheaper somewhere else. What surprised me is that in Turkey, apparently this is still being done. This is illegal in the US, and that is synthetic hair transplants. It's basically like implanting doll hair using like this dermatological crochet hook where they're kinda looping it in. But it's doll hair. So, it's— You know, it's some manmade substance. Yeeeah, it's a little pluggy. You know, they have to do them kind of far apart. Also, they're not gonna go gray when you start to go gray, so that's weird. But the worst problem with synthetic care transplantation is infections.

Jesse Thorn: I mean, it's right next to your brain. Literally, physically.

Mary Roach: It is. It's a—yeah. So, you don't wanna get an infection up there. Anyway! It was— It just didn't seem like it was an attractive option. But this was the '70s in the US, and people were doing it!

Jesse Thorn: One of the doctors that you talked to about why they came into the field of hair transplantation—one of the primary things they cited was artistry. If you've ever met a surgeon, they're fond of their work. So, I would imagine that's the case for all types of surgeons. But why is it of particular note for a hair transplantation specialist?

Mary Roach: Yeah, I didn't expect this either. A hairline is irregular. It's not just like up-and-over, straight across. You want it to be kind of meandering and look natural. The term that this

surgeon used was called "snail trailing," and so he took great pride in that. And that caused him to diss Elon Musk's hairline a little bit.

Jesse Thorn: One of the only technologies in your book that I have personal experience with is the iron lung.

Mary Roach: Do tell!

Jesse Thorn: I haven't been in an iron lung myself, but I've spent a lot of time with an iron lung. Because my father's best friend, Ed Roberts, was almost entirely paralyzed. He was paralyzed from the neck down. He could move one of his fingers, which he used to move his wheelchair around.

Mary Roach: Oh, is he the guy at Berkeley? The guy who did the curb cuts and everything? He's amazing!

Jesse Thorn: When he was in his chair, he would have a flexible, clear plastic tube that came up from his chair that would force air into his lungs. So, he would talk a little bit, and then he'd go *(imitates a strong, forced inhale.)*

[00:25:00]

But when he was at the house, he would generally be in his iron lung. So, he'd be like holding court in his living room—he often worked from home—in this enormous machine. Like, a giant MRI tube, like an old-fashioned MRI *(unclear)*.

Mary Roach: Yeah! Yeah, yeah, it's like an MRI tube. Yeah, it's like kind of a cross between a hot water heater and an MRI tube.

Jesse Thorn: There's not a ton of folks who use that old-fashioned iron lung. But you wanted to get to know that machine.

Mary Roach: Yeah. Yeah. I did find one, and it was— The occupant had recently passed away. I heard about it through this woman, Norma Brown, who's like a historian of negative pressure breathing, which is what an iron lung is. It's the opposite of that sipping tube that you talked about Ed using, which just is like a medical leaf blower. It's just sort of blowing through your mouth into your lungs like kind of inflating a party balloon. And it's not a very pleasant thing. But the iron lung is a very natural way of— It kind of breathes the way we breathe. You know, it pulls the air outta the lung. Your ribcage expands. You draw an air. So, it's very comfortable.

So, anyway, I wanted to experience that. 'Cause you read memoirs of Polio patients; they would describe the moment where they got to the hospital, and they were put in this lung—you know, this thing, this big tube with their arms inside and just their head sticking out, which sounded to me like a living nightmare. Everyone described that moment as profound relief, almost euphoria, just so happy to suddenly be breathing. Like, this machine breathes not just for you but like you. And that was just weird to me. I wanted to experience that.

Norma Brown, who's the historian of all things mechanical breathing, said, "Yeah, there's this woman in Kansas City who died recently, and she used to sleep in an iron lung." She had had polio. She'd recovered enough to be able to spend the days like Ed, in a wheelchair with a sip tube, just taking little hits of air. I asked her husband if I could— *(Laughs awkwardly.)*

"Hello, you don't know me. I would like to come to Kansas City and spend the night in your iron lung."

And he said yes. He said, "Sure. Okay, whatever. Sure. Sure, Mary Roach. You can come here."

It's a really bizarre feeling of, um… It's like deep breaths. There's no effort on your part. This machine just makes you breathe. But you're not timing it. So, if you try to talk—you know, we talk on the exhale. We don't really think about it. But if you're trying to talk to somebody and the machine decides you're gonna inhale, it just cuts you off. It's like *(soft choking sound)*. It's like that. And also, it has to be a good, tight seal around your neck. So, you feel simultaneously really relaxed, and you're breathing deeply, but also it feels like you're kind of being strangled. *(Laughs.)* So, it's kind of odd. But pretty cool that this— You know, these were lifesavers, these machines.

Jesse Thorn: We'll wrap up with Mary Roach after a quick break. When we return: what is a super-clean pig?! And can I pet one? I think the answer's gonna be no, but we'll learn more about them in just a minute. It's *Bullseye* for MaximumFun.org and NPR.

Promo:

> **Music:** Bright, playful music.
>
> **Stacey Molski:** Since 2017 after every MaxFun Drive we've held a sale for MaxFun members where all of the proceeds go to a nonprofit. In December we donated $43000 to Transgender Law Center. $43000! Thank you to all the MaxFun members who made this possible. Transgender Law Center champions the right of all transgender and gender nonconforming people to live freely safely and authentically: a mission that everyone at MaxFun supports. If you'd like to learn more or make an additional donation go to TransgenderLawCenter.org. And for anyone who needs to hear this:
>
> You belong here. You deserve to be able to be yourself. And we love you.
>
> *(Music ends.)*

Transition: Thumpy synth with a syncopated beat.

Jesse Thorn: It's *Bullseye.* I'm Jesse Thorn. My guest is writer Mary Roach. Her new book, *Replaceable You: Adventures in Human Anatomy*, is about the science of replaceable body parts.

Alright, we gotta talk for a second about super-clean pigs.

Mary Roach: Super-clean pigs.

Jesse Thorn: So, in China, Confucianist philosophy and ideology can suppress the rates of organ donation. Because essentially, one's body is a gift from one's lineage. And to donate organs could be interpreted as a desecration of one's lineage for that reason.

Mary Roach: That is how it was explained to me. Exactly.

Jesse Thorn: Organ's gotta come from somewhere. And you know, historically they have come from voluntary donation and—let's say—semi-voluntary donation of people on death row, among other places. But scientists are working extra hard in China for those cultural reasons on alternatives to cadaver organ transplants.

[00:30:00]

What kind of alternatives are they working on?

Mary Roach: They're doing something, and it's happening here too. They're looking at genetically editing pigs. If you took a pig heart and implanted it in a person as is—no genetic changes—the person's body would just go nuts on it. It's called hyperacute rejection. And it starts turning black, and it's just destroyed. So, if you knock out this protein called the Alpha-gal protein, that doesn't happen. You still have reactions similar to what you would have if you took another person's—another human organ—and transplanted it. I think nine months is about as long as somebody has lived with a pig organ, a kidney specifically.

If they could perfect that, then imagine the number of people who would be saved. This is going on here in the us. There are two companies, eGenesis and United Therapeutics, both of whom said, "No, we don't want you hanging around with the pigs." *(Chuckles.)* Which is what I— I was just curious, because I the idea of a super-clean pigsty appealed to me.

(Jesse chuckles.)

But in China, they said, "Sure, you can come here, and we'll show you the facility." *(Chuckles.)*

Jesse Thorn: Something I might not otherwise have thought of about pig organ growing is that there are religious and cultural implications to the animal, the pig.

(Mary confirms.)

Which is to say, you know, they're considered to be unclean by certain cultures and religious groups. *(Chuckling.)* And the answer that this big researcher gave to you about—

Mary Roach: Who is Muslim, by the way! Yeah.

Jesse Thorn: Yeah! When someone writes him a letter to complain, like "how come you can't do this about a clean animal?"—what did he tell you?

Mary Roach: He said, "We're not eating them. We're saving lives." There was some paper where they had like the heads of—you know, higher ups and muckety-mucks in Islam and Judaism, they got together and had to talk this out. Like, "Is it gonna be okay?" I think the fact that it's a super-clean facility— Actually, these are super-clean. Like, these are sterile conditions. These pigs don't— They are not dirty, these animals.

Jesse Thorn: You talked to a surgeon who performs genital construction/reconstruction surgeries and specializes in gender confirmation surgeries. And one of the things that you learned from talking to this dude was the ways that the relative lack of diversity in the plastic surgeon pool—the fact that most plastic surgeons are cisgender men—affects plastic surgery for both transgender people and cis women. What did he tell you?

Mary Roach: He sometimes has men—trans men; sometimes a man who's had cancer—who've come to him and said, "This penis that was built for me, it's too big! It's just too big! I didn't ask for that."

And it was this surgeon's opinion that it was the surgeon himself kind of patting himself on the back and going, "Ohh, check out this one. This one's really big."

And so, they would come to this surgeon, who's Cedars-Sinai Center for Transgender Surgery and Health, and come to him for a reduction! Also, with trans women, there's two different procedures. You gotta— There's the vulva, which is the external bits, and then the internal—the vagina. And he's like, you know, if you're gonna have complications, it's likely to be the vagina. So, if you're not interested—and some of them are not really interested in penetrative sex; whatever the reason is—he's like, "Then just do the vulva."

And he said, "I would get surgeons coming up to me going 'I can't believe you would deny a woman a vagina!'" And he's like, "They wanted it that way! What do you mean!?" Yeah, a little bit of projection, a little bit of cis assumptions there. Similar to how, for years, women who had mastectomy were not really presented with this option of going flat. They were just kind of shuttled off to the plastic surgery/reconstructive surgery. And like, nobody said, "You know, you don't have to do that. And there's a lot of procedures and complications and infections and things that might happen. It'd be a lot easier just to sew it up and be flat. Or use, you know, external prosthetics." So.

Jesse Thorn: I was thrilled to read in your book the example of a multiple-time past guest on this show and pal of mine, Tig Notaro, who—when she had a mastectomy—did not have a reconstructive surgery afterwards, had no implants, and did a comedy set topless. That's something that trans men comics I know have also done.

[00:35:00]

And it's such a powerful expression that like people are allowed to have agency over their own body's expression in the world.

Mary Roach: Yeah. Yeah. And it's so… just kind of appalling. 'Cause people trust their surgeon. I mean, it's hard to kind of stand up to a surgeon. You know, you're a patient; you're vulnerable; you don't know what you should or shouldn't say. And so, they have this kind of power, and people are not comfortable—I would imagine—saying, "This is the size that I want," or "I don't want it at all."

Jesse Thorn: Did any of the experiences you had writing this book make you think differently about your own body?

Mary Roach: Well, the— *(Giggles.)* Yeah, there was a guy who wrote a paper who tried to incorporate the Fibonacci sequence. You know, kind of the golden ratio from Greek and Roman times, this ideal of physical perfection. And he liked to incorporate that when he was doing a Brazilian butt job.

(Jesse laughs.)

You know, he's taking fat from one place, and—you know, sometimes implants, sometimes not. And I was like—

Jesse Thorn: Like, he'd like point to that poster that my math teacher had on the wall in eighth grade?!

Mary Roach: *(Trying to restrain laughter.)* Yeah, exactly! That's exactly right. You know, with the—

Jesse Thorn: With the seashell and everything?

Mary Roach: The seashell. Yeah. He kind of would draw this sort of spot like the Nautilus shell on the butt. Right? Well, now he's like, "Now, I can eyeball it. I don't have to draw." I went there thinking he was gonna draw and like with the actual—you know, get a protractor out and figure out the actual angles and add up the numbers. But you know, in the course of this field trip and this chapter, I read a number of papers on the ideal butt and also the history of buttock implants and the descriptions of quote/unquote "defects." Okay? Like, the things— These horrible buttocks. *(Chuckling.)* The one that I have is called the senile buttock. A little bit droopy.

(Jesse wheezes into pinched laughter.)

And the fold below, that's only supposed to go a third of the way across. It should not be a fold. It should be a gentle valley. And I'm like, "Okay, I have the senile buttock. That's my defect."

Jesse Thorn: Mary, every time you're on *Bullseye*, I find myself asking "what is the most amusing medical paper or scientific paper that you read in the preparation of this book?"

(Mary agrees.)

However, I don't think it would be possible for you to honestly name any paper other than: "HOW TO MAKE A NEW NOSE FOR SOMEONE: WHICH IS OFF ENTIRELY: AND THE DOG HAS EATEN IT".

Mary Roach: Yeah. Yeah!

(Jesse ramps into a cackle.)

I love that! And that's only like 1500s. And on top of that, it's written in all caps!

Jesse Thorn: Two colons! Colon, "WHICH IS OFF ENTIRELY"—colon, "AND A DOG HAS EATEN IT."

Mary Roach: I had to get that by the copy editor! She was like, "I don't think there should be a colon here."

"Yes, he has two colons." Yeah. I love that.

(Jesse giggles.)

I love that he tried to put a little humor in his paper! Nobody does that now.

Jesse Thorn: Well, Mary Roach, it is always a joy to get to read a new one of your books. It is always a joy to have you back on *Bullseye*. Thank you so much for your time, as always.

Mary Roach: Ohh, Jesse, it's the best. I love it. Thank you so much.

Transition: Jazzy synth with an energizing beat.

Jesse Thorn: Mary Roach, folks! Give her a hand. *(Beat.)* I did not write that.

Her book, *Replaceable You: Adventures in Human Anatomy*, is great. It's out now. Buy it at your local bookstore or online at Bookshop.org.

I only say I didn't write it, 'cause I want to give proper credit to my producer Kevin!

Alright. That's the end of another episode of *Bullseye*. *Bullseye* created from the homes of me and the staff of Maximum Fun—as well as at Maximum Fun HQ in the historic jeeeewelry district in downtown Los Angeles California. Ooh, this week I got to do some cool jewelry district stuff! I went into like an art deco building that had fluorescent, tiny, warren-like hallways full of 1970s fake wood paneling. And I was looking for this— I was looking for this engraver. Oh man, it was great! I had to go ask a kind but sleepy security guard a few questions. Ah! I'd go up back stairs and then switch to other sets of stairs. Different guys went past me holding diamonds in their hands. It was tremendous.

Our show's produced by speaking into microphones. Our senior producer is Kevin Ferguson. Our producers are Jesus Ambrosio and Richard Robey. Our production fellow at MaxFun, Hannah Moroz. Our video producer, Daniel Speer. Special thanks this week to Bryan Matheson at Skylight Studios in Oakland, California for recording Mary Roach. We get booking help on *Bullseye* from Mara Davis. Our interstitial music comes from our friend Dan Wally, also known as

DJW. You can find his music at DJWsounds.bandcamp.com. Our theme music, written and recorded by The Go! Team.

[00:40:00]

It is called "Huddle Formation". Thanks to The Go! Team; thanks to their label, Memphis Industries, for providing it to us. You can follow *Bullseye* on Instagram TikTok and YouTube, where you'll find video from just about all our interviews, including the ones you heard this week.

And I think that's about it. Just remember: all great radio hosts have a signature signoff.

Transition: Gentle trilling music with a steady drumbeat plays under the dialogue.

Promo: *Bullseye with Jesse Thorn* is a production of MaximumFun.org and is distributed by NPR.

Music: "Huddle Formation" from the album *Thunder Lightning Strike* by The Go! Team—a fast, upbeat, peppy song. Music plays as Jesse speaks then fades out.