

A SciWomen Origin Story

ANA MARÍA PORRAS



**CROCHETED
MICROBES TO
ENGAGE THE
PUBLIC WITH
SCIENCE!**

Juanele 2024

SCI _ ALL

AAAS
AMERICAN ASSOCIATION FOR
THE ADVANCEMENT OF SCIENCE

IF/THEN
Ambassador



HELLO! I'M **ANA MARÍA PORRAS**. MY PRONOUNS ARE SHE/ELLA --

-- I'M A **MICROBIOLOGIST AND ARTIST**, AND I'M FROM COLOMBIA!

LET ME TELL YOU A BIT ABOUT MY STORY AS A **SCIENTIST** AND A **WOMAN** IN STEM.

ANA MARÍA PORRAS

Juanele Tamal
Art & story

BOTH MY PARENTS ARE ENGINEERS. MY SISTER AND I WENT TO A BILINGUAL SCHOOL WITH STRONG **SCIENCE** AND **MATH** PROGRAMS!



I'VE ALWAYS LIKED **MATH** AND **PROBLEM SOLVING**, BUT I WASN'T SO INTERESTED IN THINGS LIKE DESIGNING BRIDGES, GADGETS OR CARS!



WHAT DO YOU WANT TO STUDY ONCE YOU GRADUATE FROM HIGH SCHOOL?

WELL, I REALLY DON'T KNOW

BEFORE COLLEGE, I WENT TO **GERMANY** AS AN EXCHANGE STUDENT

COMPARED WITH COLOMBIA, IT WAS QUITE A **DIFFERENT** CULTURE. I FOUND IT A CHALLENGING BUT **ENRICHING EXPERIENCE!**

JA! FINDE ICH AUCH!



WHILE IN GERMANY, I WAS **STILL** EXPLORING OPTIONS TO STUDY IN COLLEGE.

HEY, DEAR! I JUST LEARNED ABOUT **BIOMEDICAL ENGINEERING** PROGRAMS. WOULD YOU LIKE TO STUDY THAT?

YEAH, SOUNDS REALLY COOL, MOM!



FANTASTISCH!

BUT I FOUND THERE WEREN'T **MANY** OPTIONS IN COLOMBIA FOR THAT TYPE OF ENGINEERING PROGRAM.

I'M MORE INTERESTED IN THE **BASIC BIOLOGY** PART.

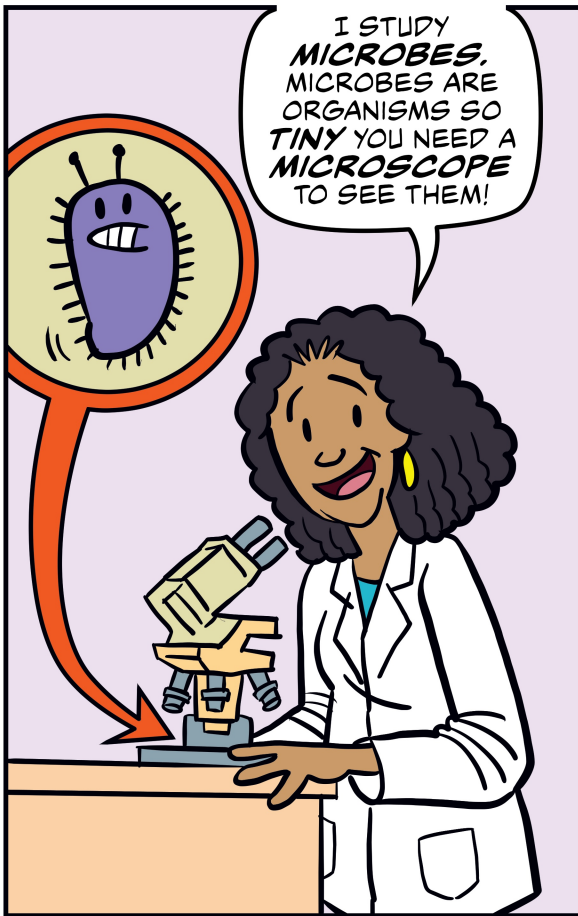
SORRY, IN THIS UNIVERSITY WE'RE MORE FOCUSED ON DESIGNING DEVICES



SO I MOVED TO THE **U.S.**! FIRST TO TEXAS, THEN WISCONSIN, AND FINALLY, FLORIDA!

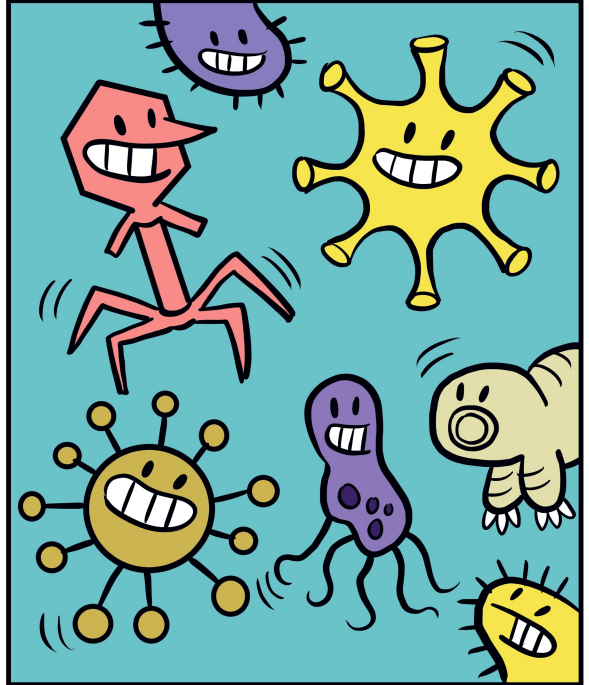
MY YOUNGER SELF FROM SEVEN YEARS AGO WOULD BE SURPRISED!





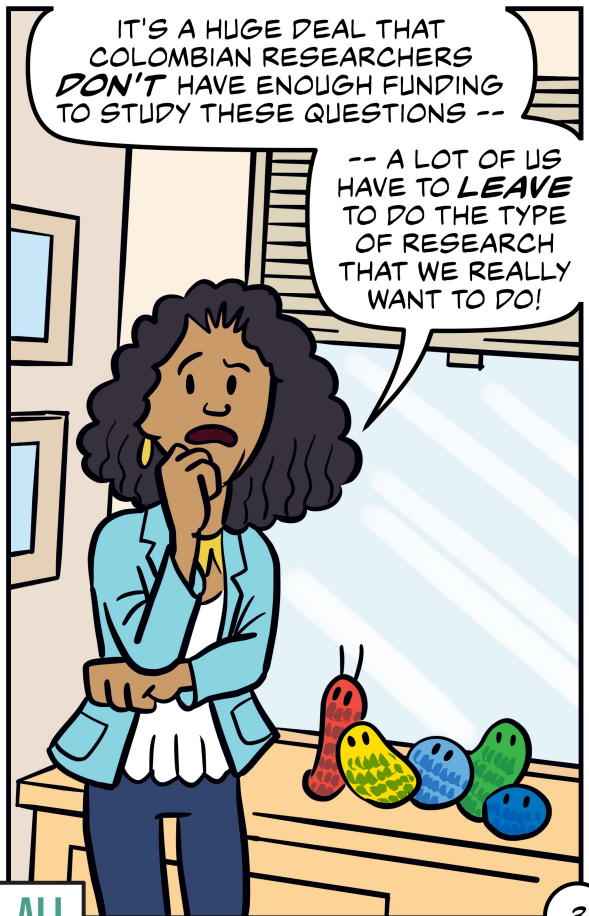
I STUDY **MICROBES**. MICROBES ARE ORGANISMS SO **TINY** YOU NEED A **MICROSCOPE** TO SEE THEM!

MICROBES INCLUDE **DIFFERENT TYPES** OF ORGANISMS INCLUDING VIRUSES SUCH AS COVID-19, BACTERIAE, SMALL FUNGI, AND EVEN **MICROANIMALS** LIKE TARDIGRADES!



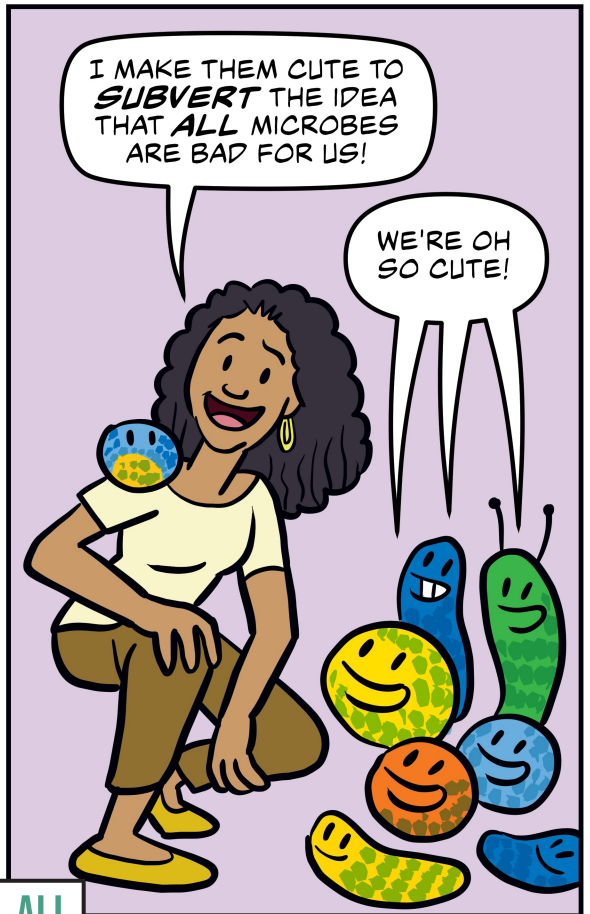
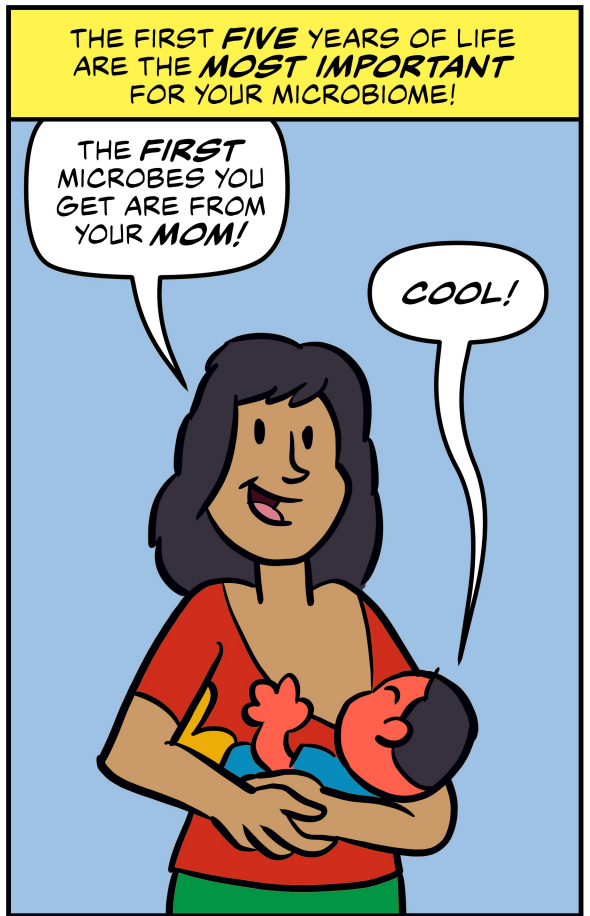
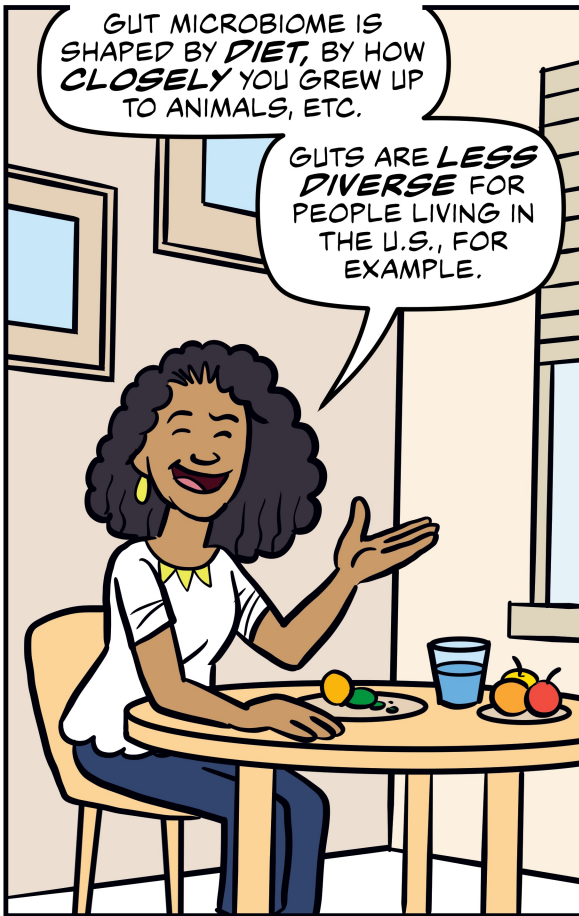
A **MICROBIOME** IS A MICROBIAL COMMUNITY --

-- AND THE **HUMAN GUT MICROBIOME** CAN CHANGE A LOT DEPENDING ON **WHERE** YOU LIVE!



IT'S A HUGE DEAL THAT COLOMBIAN RESEARCHERS **DON'T** HAVE ENOUGH FUNDING TO STUDY THESE QUESTIONS --

-- A LOT OF US HAVE TO **LEAVE** TO DO THE TYPE OF RESEARCH THAT WE REALLY WANT TO DO!



I SEE MYSELF AS A **COMBINATION** OF DIFFERENT THINGS: SCIENTIST, ENGINEER, ARTIST... **CREATIVITY** IS THE COMMON FACTOR!



A **MAJOR** PART OF SCIENCE IS **COMMUNICATING** IT TO OTHER PEOPLE. THAT'S A REALLY **CREATIVE** PROCESS!

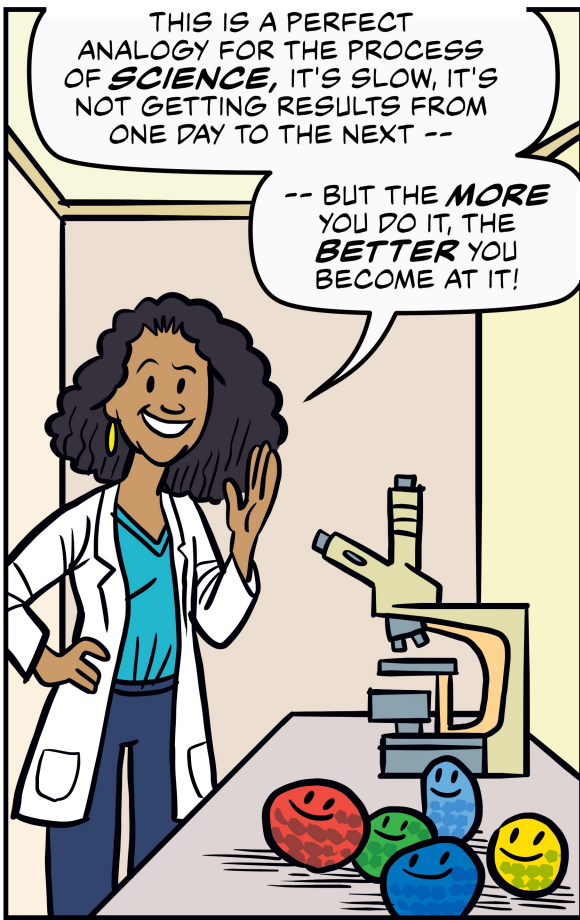


YARN ART IS **SLOW**. IT TAKES TIME TO DEVELOP THE SKILLS. THERE'S **NO WAY** TO SPEED UP THE PROCESS --



-- IT TAKES AS LONG AS IT TAKES. BUT THE **MORE** YOU DO IT, THE **BETTER** YOU ARE AT DESIGNING YOUR **OWN** THINGS!





THIS IS A PERFECT ANALOGY FOR THE PROCESS OF **SCIENCE**, IT'S SLOW, IT'S NOT GETTING RESULTS FROM ONE DAY TO THE NEXT --

-- BUT THE **MORE** YOU DO IT, THE **BETTER** YOU BECOME AT IT!



JUST AS IN CROCHET, SOMETIMES YOU **MESS** THINGS UP AND YOU HAVE TO **UNDO** A BUNCH OF THINGS TO **FIX** YOUR MISTAKES!



IN A WORLD WITH SO MUCH INSTANT GRATIFICATION, **SLOW THINGS** ARE IMPORTANT!



ARTISTS ARE **NOT SCARED** TO FAIL. THEY'RE NOT SCARED TO DESTROY THEIR ART, OR TRY SOMETHING COMPLETELY **NEW**!

SCIENTISTS DON'T HAVE AS MUCH FLEXIBILITY IN THEIR WORK...

ALSO, ARTISTS ARE MUCH MORE OPEN WITH THE **SOURCES** OF THEIR INSPIRATION!



FOR SCIENTISTS, SOMETIMES WE GIVE OUR STUDENTS THE IMPRESSION THAT IDEAS COME FROM AN "A-HA" MOMENT --

EUREKA!

SIR, YOU'RE NAKED



HOW DO I DESCRIBE MYSELF AS A SCIENTIST? WELL, I LOVED BEING A POSTDOC RESEARCHER AT **CORNELL UNIVERSITY** --

-- THERE, THEY CALL THEMSELVES "**SCHOLARS**"



FOR ME, IT'S THE **BEST** WAY TO DESCRIBE MYSELF!

A SCHOLAR IS INTERESTED IN LEARNING, TEACHING, ASKING QUESTIONS, AND BEING **CURIOUS** ABOUT THE WORLD!



A **TYPICAL DAY** OF A SCIENTIST DEPENDS ON **WHICH STAGE** IN THEIR CAREERS THEY ARE...

AS A POSTDOC, I WOULD SPEND SEVERAL HOURS A DAY DOING ACTUAL **EXPERIMENTS** OR READING PAPERS



NOW, AS A PROFESSOR, IT'S DIFFERENT. IN THE MORNINGS, IT INVOLVES A **HUGE AMOUNT OF WRITING**. IT CAN BE GRANT APPLICATIONS --

-- OR WRITING UP THE **RESULTS** OF YOUR RESEARCH FOR PUBLICATION.



-- AND THEN I USUALLY **MEET** WITH COLLABORATORS, **TEACH** A CLASS, OR GIVE **FEEDBACK** TO STUDENTS, WHO ARE THE ONES THAT DO THE EXPERIMENTS!



IT'S DEFINITELY **NOT** A TRADITIONAL JOB. IT'S HARD TO GET BORED, YOU **NEVER** FEEL LIKE YOU'RE DOING THE SAME THING!



ON TOP OF ALL THE WORK I DO ON SCIENCE COMMUNICATION WITH MY LITTLE MICROBES, I DO VARIOUS THINGS TO GIVE YOUNG WOMEN THE **SAME OPPORTUNITIES** IN STEM --

-- IN COLOMBIA, I WORK WITH ORGANIZATIONS FOCUSED ON **MIDDLE AND HIGH SCHOOLERS...**



WE PUT TOGETHER **SCIENCE CLUBS AND WORKSHOPS** IN RURAL AREAS, TRYING TO REACH A 50/50 PARTICIPATION OF BOYS AND GIRLS.

IN FLORIDA, I WORK WITH ORGANIZATIONS THAT PUT TOGETHER **WORKSHOPS AND BILINGUAL PROGRAMS** FOR LATINO FAMILIES, MOST OF THEM RECENT IMMIGRANTS.



WE TRY TO GET THE FAMILIES **INVOLVED**, TOO. IN A LOT OF CULTURES, IT'S NOT JUST ABOUT THE **KIDS** BEING INTERESTED IN BIOMEDICAL ENGINEERING --

-- IT'S ALSO ABOUT THE **FAMILIES** UNDERSTANDING WHAT IT IS, AND WHY IT'S IMPORTANT.



BUDGETS DEVOTED TO SCIENCE IN LATIN AMERICA ARE SO **LOW** COMPARED TO THOSE OF THE U.S., RESEARCHERS FROM THE GLOBAL SOUTH ARE SEVERELY **UNDERREPRESENTED!**

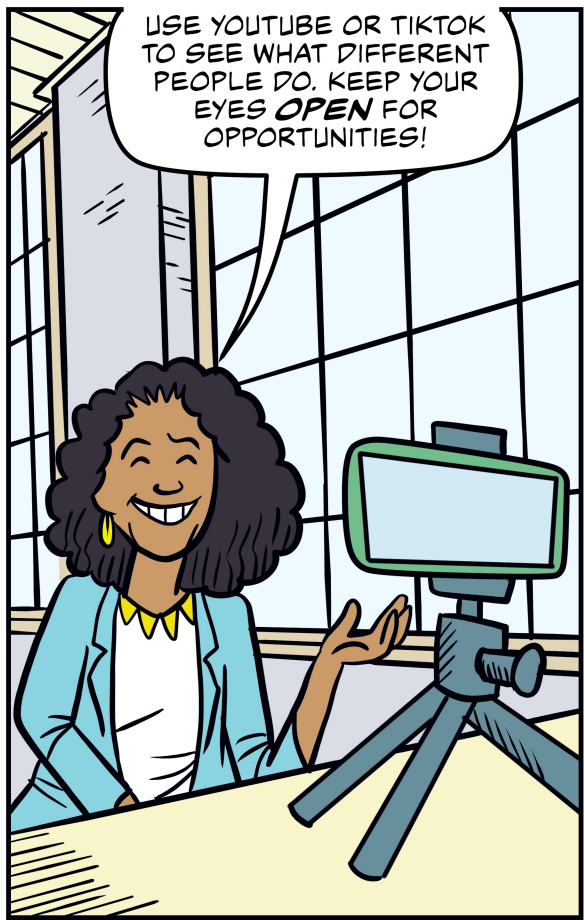
WE NEED TO MAKE STEM **MORE ACCESSIBLE** TO ALL, PARTICULARLY **WOMEN!**



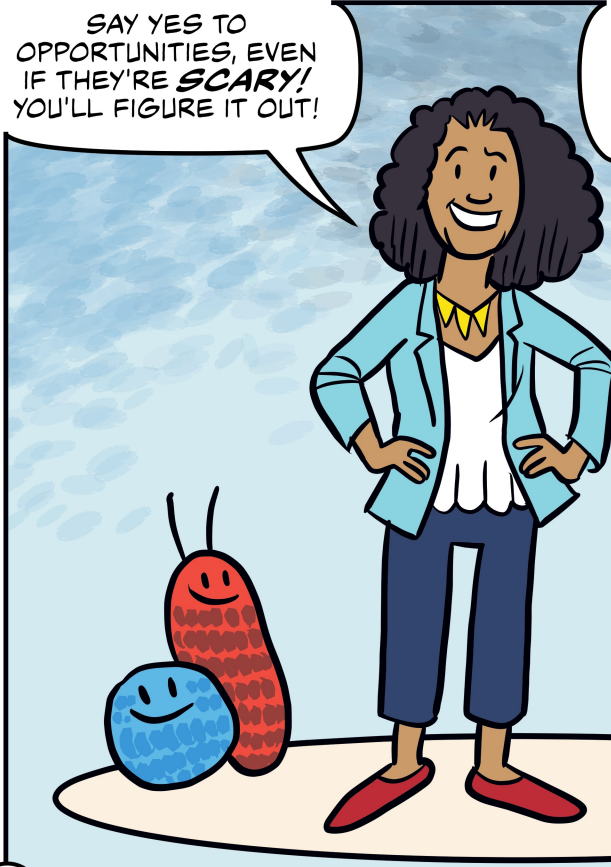


I HOPE YOU'VE ENJOYED MY STORY!
IF YOU'RE INTERESTED IN STUDYING
STEM, MY ADVICE IS: PUT YOURSELF
OUT THERE MORE --

-- TALK TO
DIFFERENT PEOPLE
FROM OTHER MAJORS,
ASK THEM WHAT THEY
DO!



USE YOUTUBE OR TIKTOK
TO SEE WHAT DIFFERENT
PEOPLE DO. KEEP YOUR
EYES **OPEN** FOR
OPPORTUNITIES!



SAY YES TO
OPPORTUNITIES, EVEN
IF THEY'RE **SCARY!**
YOU'LL FIGURE IT OUT!

YOU KNOW, IF I COULD GO TO GERMANY
WHEN I WAS ONLY 17 AND COULDN'T
SPEAK GERMAN AND REALLY MISSED
MY FAMILY, IF I COULD DO THAT, I CAN
DO ALMOST **ANYTHING!**

MANY TIMES,
THERE'S A
BENEFIT IN
DOING SCARY
THINGS!