JUST ASK

a girl's science book about her body



FOR AGES 8+

Written by Dr José Ignacio Madero

Illustrated by Olivia



JUST ASK

a girl's science book about her body

Written by Dr José Ignacio Madero
Illustrated by Olivia



BUZZ



Just Ask. A girl's science book about her body.

Text: Dr José Ignacio Madero Cervera
Illustrations: Olivia Battle-Madero

First edition, 2026
© 2026 José Ignacio Madero Cervera and Olivia Battle-Madero

Published by **Buzz**
oliviasquestions.com

This book is free. You can print it and share it with anyone who needs it, as long as it isn't sold or changed.

The information in this book is for education and does not replace seeing a doctor.

Hi!



This book is about how the body works, the parts that make it up, how babies are made, and how your body will change as you grow up.

It uses the **real scientific words**, the same ones doctors use.

It started with Olivia's questions. She could ask us anything, and we promised her we would always tell her the **true answer**. If we didn't know, we would say so and find out together.

The whole book was made by Abuelo, Dr José Ignacio Madero, and Olivia, aged 8.

Contents

1	The tiny building blocks	1
2	Your body	2
3	Boys' bodies	7
4	The two special cells	8
5	Making a baby	10
6	Growing up	15
7	Questions people ask	17
8	My body belongs to me	19
	My science dictionary	20
	My questions	21
	Who made this book	23

You are made of cells

Your whole body is built from **cells**: tiny living units, far too small to see without a microscope. You have roughly **30 trillion** of them. That's 30,000,000,000,000.

There are hundreds of kinds: skin cells, bone cells, blood cells, nerve cells. Each kind has its own job.

The instruction book: DNA

Inside nearly every cell is a set of instructions called **DNA**. It says how to build and run *you*: your eye colour, the shape of your nose, how tall you're likely to grow.

The DNA is packed into 46 long bundles called **chromosomes**, arranged in 23 pairs.



A cell



DNA

SCIENCE FACT

If you could unravel the DNA from just one of your cells and lay it end to end, it would be about **2 metres long**. It's packed so tightly it fits inside something smaller than a speck of dust.

The outside parts

The whole area between a girl's thighs, on the outside, is called the **vulva**. Lots of people call it the "vagina", but that's not quite right: the vagina is *inside* (next page).



Real vulvas all look a bit different, just like faces do.

The **urethra** (wee), the **vagina** (periods, and where a baby comes out), and the **anus** (poo).

What each part does

Labia means "lips" in Latin. The **labia majora** (outer) and **labia minora** (inner) are folds of skin that protect the openings. They come in every shape and size, and often one side is longer than the other. That's completely normal.

Clitoris: a small, very sensitive part at the top. You can only see the tip, under a little fold of skin called the **clitoral hood**. Most of it is actually hidden inside the body, and it is much bigger than people used to think: scientists only found and drew its full shape in 1998.

Urethra: a short tube that carries wee out from your **bladder**, the stretchy bag that stores the urine that comes from your kidneys.

Hymen: a thin mucous membrane at the entrance to the vagina, behind the labia minora. It doesn't close the vagina completely, so period blood can come out.

Anus: the opening at the end of your digestive system. Everybody has one.

Breasts and **nipples**: everyone has nipples. In girls, breasts start to grow at puberty.

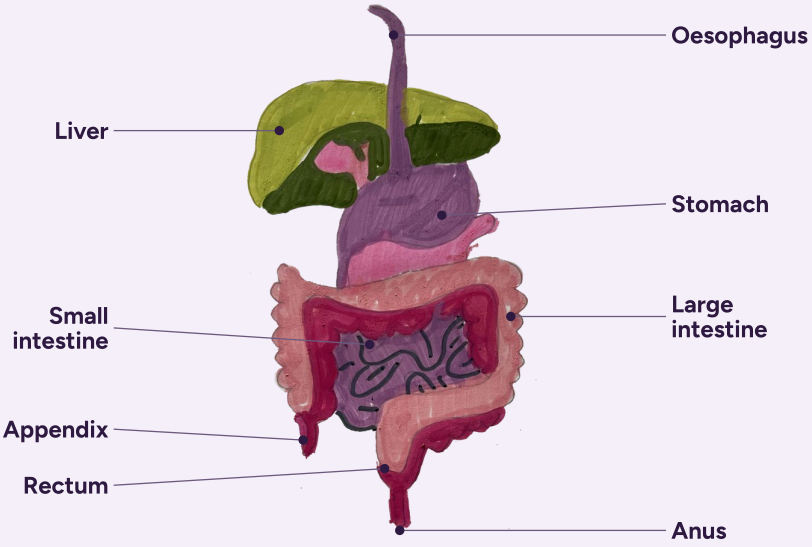
SCIENCE FACT

The vagina **cleans itself**. It makes a small amount of clear or white fluid that keeps it healthy. You only ever need to wash the outside, the vulva, with plain water. Soap and bubble bath inside can make it sore.

These parts are **private**. Private doesn't mean bad or rude. It means they belong to you, and you decide who sees or touches them.

The digestive system

In your body, food comes in through the mouth and reaches the top, or first part, of the digestive system, where it starts being transformed to give you energy. In the last part, whatever wasn't used becomes poo.



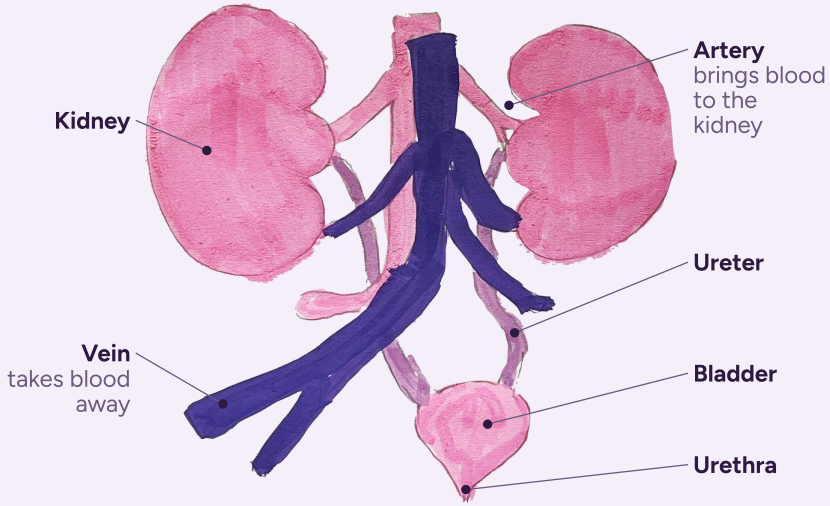
Food goes down the **oesophagus** to the **stomach**, where its transformation begins. The **small intestine** takes out the useful parts and passes them into your blood. What's left goes through the **large intestine** (also called the **colon**), waits in the **rectum**, and leaves through the **anus** as poo.

SCIENCE FACT

A grown-up's small intestine is about **6 metres long**, all folded up inside the belly.

The urinary system

Your body has another system that cleans your blood, and what it takes out becomes wee.



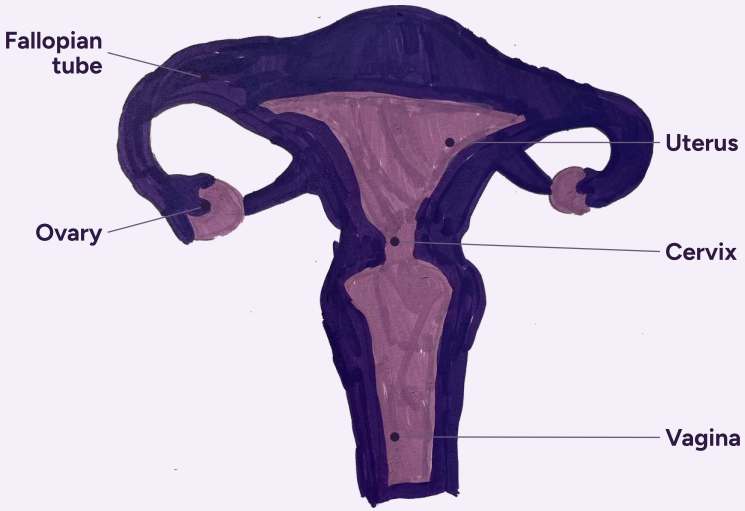
Your two **kidneys** filter your blood and turn the waste into wee. It runs down two thin tubes called **ureters** to the **bladder**, which stretches as it fills. When you go to the toilet to wee, it leaves through the **urethra**.

SCIENCE FACT

Your kidneys filter all the blood in your body many times every day.

The inside parts

Inside, low down in the belly, a girl has a set of organs called the **reproductive system**. "Reproduce" means "make more of", so these are the parts that can, one day, help someone become pregnant and make a baby.

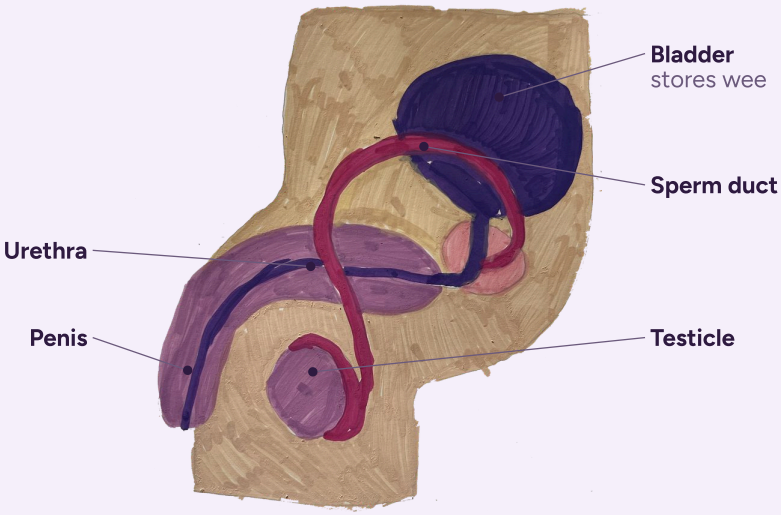


Seen from the front. A grown-up's uterus is about the size of a fist; a child's is smaller.

- **Ovaries**: two, one on each side. They store eggs.
- **Fallopian tubes**: carry an egg from the ovary to the uterus. The frilly ends (called **fimbriae**) sweep the egg in.
- **Uterus**: a strong muscle that can grow to make room for a growing baby. It's shaped like an upside-down pear.
- **Cervix**: the narrow lower part of the uterus.
- **Vagina**: a stretchy tube from the cervix to the outside.

How boys' bodies are made

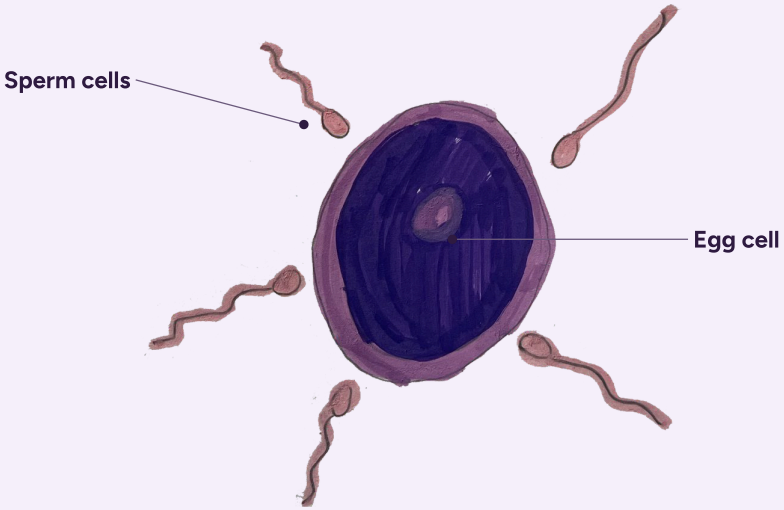
Boys have different reproductive parts. Most of theirs are on the outside.



- **Testicles**: there are two, and they sit inside a soft bag of skin called the **scrotum**. After puberty they make the **sperm**.
- **Sperm ducts**: tubes that carry sperm up and into the urethra.
- **Penis**: the urethra runs through the middle. It carries wee out and, in grown-ups, sperm. A skin called the **foreskin** covers the tip. In some boys it shows more than in others.

Egg cells and sperm cells

To start a new person you need two special cells: an **egg cell** from a woman and a **sperm cell** from a man.



Drawn to scale with each other. The egg is enormous compared with a sperm.

The egg

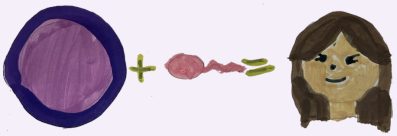
- The **biggest cell** in the human body: about 0.1 mm across, the width of a hair.
- A girl is born with all her eggs already in her ovaries, about a million of them!
- After puberty, usually one egg is released each month.
- An egg lives for about one day once it's released.

The sperm

- One of the **smallest cells**. It has a head (holding the DNA) and a tail to move and swim with.
- After puberty, testicles make around **1,500 sperm every second**.

Half and half makes a whole

Remember the 46 chromosomes in every cell? Egg cells and sperm cells are different: they each carry only **half**, just 23.



23	23	46
from the egg	from the sperm	a brand-new person

When a sperm joins an egg, they form **a new complete set** of instructions, and this new cell is called an **embryo**. It carries parts from each of the parents, and that's why you're not identical to either of them.

It's also why you need **both**. An egg on its own, or a sperm on its own, doesn't have enough instructions to build a person.

SCIENCE FACT

Girl or boy? There is one pair of chromosomes called the sex chromosomes. Most girls have two **X** chromosomes (XX). Most boys have an X and a **Y** (XY). Every egg carries an X. Each sperm carries *either* an X or a Y, so it's the sperm that decides whether the baby will be a girl or a boy.

A small number of people have different combinations, or bodies that are a mix. That's a natural variation too.

What does "sex" mean?

The word **sex** has a few different meanings, which is why it can be confusing.

1. **Male or female.** Sometimes "sex" just means what kind of body someone has. When a form asks "What is your sex?", that's what it means: whether their genitals are a boy's or a girl's.
2. **Something adults do together.** "Having sex" is when two adults touch each other's bodies in a close and private way. It feels good to them, and it makes them feel close.
3. **How babies usually start.** Having sex is the most common way a sperm and an egg meet.

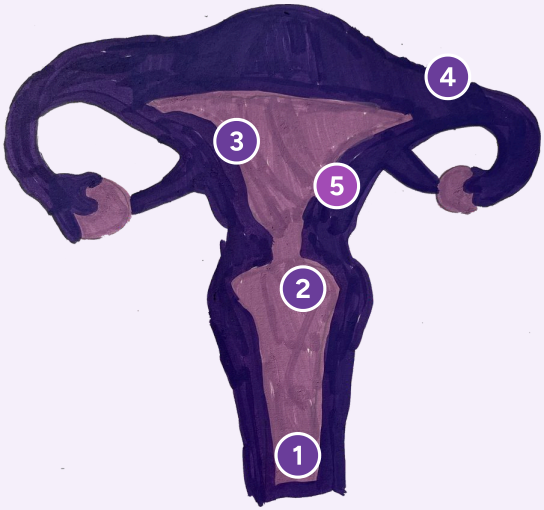
Some important rules about sex

- It is only for **adults**. Children's bodies and brains aren't ready, and it's never OK for anyone to do sexual things with a child.
- Both people must **really want to**. This is called **consent**.
- It happens **in private**.

Here's something that surprises lots of people: **most of the time** when adults have sex, they **aren't** trying to make a baby at all. They can use **contraception** (see page 17).

If it sounds strange or a bit yucky right now, that's completely fine. Lots of children feel that way. Your feelings will change as you grow up.

The journey of the sperm



1. During sex, the sperm made in the testicles, which have been stored and mixed with other liquids into what is called **semen**, are placed deep inside the vagina. There are millions of them.
2. They swim up through the tiny opening in the **cervix**...
3. ...and keep swimming up until they reach the **fallopian tubes**. Only a few hundred make it this far.
4. If there's an egg in the tube, one sperm gets inside it. The egg's outside instantly changes so no other sperm can get in. This moment is called **fertilisation**.
5. In the tube, the fertilised egg starts to divide and is now called an **embryo**. After 5 days it is called a **blastocyst**. It travels down to the uterus and implants in its inner lining, the **endometrium**. There an organ called the **placenta** starts to form, and that is where the baby gets its food. This is the start of a **pregnancy**.

Nine months of growing



That single cell (the egg), once fertilised (the embryo), starts to divide and multiply: into 2, then 4, then 8... until it becomes a **foetus**. After about **40 weeks** on average, at birth, it will be called a baby.

WHEN	SIZE	WHAT'S HAPPENING
1 week	a dot	A ball of about 100 cells settles into the uterus lining.
6 weeks	about 5 mm	A tiny heart has started beating.
10 weeks	about 3 cm	Fingers, toes and all the main organs have formed. Now it's called a **foetus**.
18 weeks	about 25 cm	The mother can feel it kicking. It can hear sounds and her voice.
30 weeks	about 40 cm	Opens and closes its eyes. Practises breathing.
40 weeks	about 50 cm, 3.4 kg	Ready to be born!

How does it eat and breathe?

The baby floats in a bag of warm liquid. From the moment it implants, a special organ starts to form, called the **placenta**, attached to the wall of the uterus. The **umbilical cord** connects the baby to the placenta, carrying food and oxygen from the mother's blood.

SCIENCE FACT

Your **belly button** is where your umbilical cord used to be! After you were born it was cut (that doesn't hurt), and the stump dried up and fell off.

Being born

Through the vagina

The uterus is one of the strongest muscles in the body. When the baby is ready, the uterus starts having **contractions**: it squeezes from the top downwards, more and more often. This part is called **labour**.

The contractions slowly open the cervix, which goes from closed to about 10 cm wide (this is called dilating), and then push the baby down and out through the vagina, which can stretch a lot and goes back afterwards. Labour often takes many hours, and doctors and midwives can give medicine to help with the pain.

By caesarean

Sometimes a doctor does an operation called a **caesarean**. The mother has medicine so she can't feel it, and the doctor lifts the baby out through a cut in her tummy and the wall of the uterus, then stitches it up again.

In the UK, more than one baby in three is born this way. Both ways are completely normal ways to be born.

SCIENCE FACT

A newborn baby's skull is made of separate plates of bone that can slide over each other a little, so the head can squeeze through. That's why newborns have a soft spot on top of their head. It closes up by about age two.

Other ways families begin

To have a baby you need an egg and a sperm, but they don't always meet through sex.

- **Insemination**: a doctor puts the sperm inside the uterus with a very thin tube (a catheter).
- **IVF**: eggs and sperm are put together in a dish in a laboratory. Once a fertilised egg has started dividing, it's placed in the uterus so it can implant and grow. The first IVF baby, Louise Brown, was born in England in 1978. Today millions of people started this way.
- **Donors**: when a body doesn't make eggs or sperm, some families use an egg or sperm donated by another person.
- **Surrogacy**: a woman grows a baby for another family who can't.
- **Adoption**: a child joins a new family who will look after them for always. Just as real a family.

Two mums or two dads can be parents too. What makes a family is looking after each other, not how the baby started.

How do twins happen?

Non-identical
Two eggs are released and each is fertilised by a different sperm. The twins are like ordinary brothers and sisters who share a birthday.

Identical
One fertilised egg splits into two. Both babies have exactly the same DNA, which is why they look so alike.

Puberty: your body's upgrade

Puberty is when a child's body gradually changes into an adult's body. It takes several years.

It starts in your **brain**. A special area called the **hypothalamus** sends signals to a tiny part called the **pituitary gland**, about the size of a pea. The pituitary gland sends chemical messages called **hormones** through your blood. They tell the ovaries to start making a hormone called **oestrogen**, and after ovulation, **progesterone** (in boys, the testicles make **testosterone**). These hormones cause all the changes.

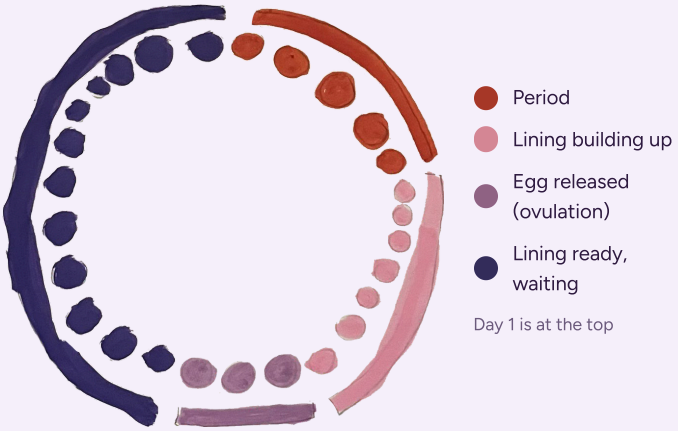
For girls, it usually happens in this order:

1. **Breast buds.** A small, firm lump under the nipple. It can feel sore or itchy, and one side often starts months before the other. Totally normal.
2. **Hair** starts growing above the vulva (the pubic area).
3. **Growth spurt.** You get taller fast, and hips get wider.
4. **Underarm hair**, oilier skin, maybe spots, and sweat starts to smell stronger.
5. **First period**, usually about 2 years after breast buds.

The first changes can start any time from about **8 to 13**. Everyone's clock is different. Starting early or late says nothing about you. **Whatever you notice first, you can tell a grown-up you trust.** It's nothing to worry about.

The monthly cycle

You already know about **periods**. Here's the science of why they happen. Every month the uterus gets a soft, thick lining ready in case a fertilised egg arrives. If none arrives, the lining isn't needed, so it comes away and flows out through the vagina. That's a period.



A typical cycle is about **28 days**, but anything from 26 to 35 days is normal, and in the first year or two it's often irregular. A period lasts 3 to 7 days. It looks like a lot, but it's usually only a few tablespoons of blood in total.

What happens to boys

Boys usually start puberty a little later than girls, around 9 to 14. Their testicles and penis grow and start making sperm. Their voice gets deeper (and can crack for a while), shoulders get broader, and hair grows on the face, under the arms and on the body.

Questions, answered

Does sex hurt?

No. When two adults both want to, it feels good. It should never hurt, and nobody should ever do it with someone who doesn't want to.

How do people stop a baby from starting?

With **contraception**. A **condom** is a thin cover that goes over the penis so sperm can't reach the egg. **The pill** is a medicine that stops the ovaries releasing an egg. There are lots of other kinds. They work very well.

Can you get pregnant from kissing?

No. A sperm has to reach an egg, so kissing or hugging can't start a baby.

Can children have babies?

A child's body can't make eggs or sperm until puberty. And even after puberty, a young teenager's body and life aren't ready to look after a baby.

Why do some people giggle about it?

Because they feel embarrassed, and people often feel embarrassed about things they don't know much about. Now you know the science!

More questions

What does "gay" mean?

Someone who falls in love with people of the same sex. A man who loves a man, or a woman who loves a woman (a woman might also say **lesbian**). Love is love.

What's a virgin?

Someone who hasn't had sex yet.

What's a crush?

When you really like someone and think about them a lot. It's a nice feeling and sometimes a confusing one. It doesn't mean you have to do anything about it.

What if I don't want to have sex or babies when I'm grown up?

Then you don't. Nobody has to. It's always yours to decide.

Do boys have periods?

No, because they don't have a uterus. But their bodies go through lots of changes in puberty too.

Kids at school will say all sorts of things. Some will be right and lots will be wrong. You can always check with a grown-up you trust.

Remember PANTS



1. **P**rivates are private. The parts your underwear covers are yours.
2. **A**lways remember your body belongs to you.
3. **N**o means no. You can say no to any touch, even a hug or kiss from someone in the family.
4. **T**alk about secrets that upset you.
5. **S**peak up. Someone can help.

Private is not the same as secret.

Private means it's just for you, like going to the toilet. That's normal and fine.

Surprises, like a birthday present, are fine: they get told in the end.

Secrets about bodies are never OK. If anyone ever asks you to keep a secret that makes you feel worried, or touches you in a way you don't like, or asks for a photo of your body, tell a grown-up you trust. It's never your fault, and you will never be in trouble.

This rule is about **everybody**: family, friends, teachers, coaches, older children, people online. If a doctor needs to look, a grown-up you trust will be with you.

WORDS TO KNOW

My science dictionary

Anus: opening behind the vulva where poo comes out.

Bladder: stretchy bag that stores wee.

Caesarean: operation to lift a baby out when, for some reason, it can't come out through the vagina.

Cell: the tiny unit all living things are made of.

Cervix: the narrow neck at the start of the uterus. It opens during labour so the baby can be born.

Chromosome: a bundle of DNA. Most cells have 46.

Clitoris: small, very sensitive part at the top of the vulva.

Consent: really agreeing, freely, to something.

Contraception: ways to stop a baby starting.

DNA: the instructions for building a living thing. When an egg and a sperm join, their DNA combines to form an embryo, then a foetus and, at birth, a baby.

Egg cell: the cell from a woman that can make a baby.

Embryo / foetus: names for a baby growing in the uterus.

Fallopian tubes: carry eggs from ovary to uterus.

Fertilisation: when a sperm joins an egg.

Hymen: thin mucous membrane at the entrance to the vagina, behind the labia minora. It doesn't close the vagina completely, so period blood can come out.

Hormones: chemical messengers that travel in the blood from one organ to another, for example from the pituitary gland to the ovary.

IVF: egg and sperm meet in a laboratory.

Labia majora / minora: the outer and inner folds of skin around the openings.

Labour: the uterus squeezing to push a baby out (these squeezes are called contractions).

Oesophagus: tube that food goes down, from the mouth to the stomach.

Ovaries: store eggs and make oestrogen and progesterone.

Ovulation: when an egg is released.

Penis: boys' outside part; wee and sperm come out.

Period: when the uterus lining flows out each month.

Placenta: feeds the foetus in the uterus.

Puberty: the years when a child's body becomes an adult's.

Scrotum: bag of skin holding the testicles.

Sperm: the cell from a man that can make a baby.

Testicles: make sperm and testosterone.

Umbilical cord: links the baby to the placenta, where its food comes from. It is cut at birth, then heals and becomes your belly button!

Urethra: tube that carries wee out.

Uterus (womb): muscle where a baby grows.

Vagina: stretchy tube that joins the bottom of the uterus to the outside.

Vulva: all the outside parts between a girl's thighs.

YOUR PAGE

My questions

Write down anything you're wondering about.

YOUR PAGE

My drawings

Draw anything from this book: a cell, a baby growing, or your own idea.

ABOUT THE AUTHORS

Who made this book



Text

Dr José Ignacio Madero Cervera is a gynaecologist specialising in fertility and assisted reproduction (IVF). He is Medical Director of Eugin Colombia, a fertility clinic in Bogotá, where he leads a team of gynaecologists and embryologists who help people have babies through IVF, artificial insemination and genetic testing. He is Olivia's abuelo.

Illustrations

Olivia Battle-Madero was born in 2018 and lives in London. Her questions started this book, and she did all the drawings. She loves gymnastics and reading books.





JUST ASK

Olivia could ask us anything, and we promised her we would always tell her **the true answer**. This book is that answer.






WHAT'S IN THIS BOOK

A science book about the human body, made by a girl and her abuelo, a fertility doctor. It uses the real words doctors use.

- Cells, DNA and chromosomes
- Girls' and boys' bodies
- The digestive and urinary systems
- Eggs, sperm and how a baby starts
- Nine months of growing, and being born
- Puberty and the monthly cycle
- Questions, answered
- My body belongs to me
- A science dictionary

Written by Dr José Ignacio Madero
Illustrated by Olivia
oliviasquestions.com

FREE TO SHARE WITH ANYONE WHO NEEDS IT.