

LBRIS

We know
books

9
MONTHS
THAT
COUNT
FOREVER

*How your
pregnancy diet shapes
your baby's future*

JESSIE INCHAUSPÉ
The Glucose Goddess

NR

Contents

You are not an oven	ii
My story	20
The trimesters	27
Chapter 1: The cookie equation	39
Chapter 2: The six-egg problem	103
Chapter 3: The real body-building	133
Chapter 4: The underwater factor	181
Chapter 5: The final crumbs	213
Giving birth	233
Breastfeeding and formula	253
Supplements	256
Trimester-by-trimester recap	260
All the best	269
Thank you	272
Scientific references	273
About the author	274
Notes	276
Index	278
Recipes	289

Dear reader, I've referred to the baby as 'he' in this book, because I had a baby boy and I was thinking about him as I wrote. But please replace however you see fit.

You are not an oven

Have you ever baked something in an oven? A cake, a loaf of bread, vegetables? You set the oven's mode, its temperature, the timing, and your trusty appliance does what it promises: heats up the space to a number of degrees for a certain amount of time.

So let's say you are baking a delicious cake. You select, buy, measure, and prepare the ingredients. You sift them, melt them, whisk them, combine them. When the batter is done and you are satisfied with it, it goes into a tin, then into the oven in question. But importantly, once the cake is baking, it can no longer change. The oven can't transform a chocolate cake batter into an upside-down banana cake. It can't add sugar, tweak the amount of vanilla, or add more bananas. It can't change the quality of the flour or the provenance of the eggs. As long as it doesn't break on you, or randomly change its temperature along the way, the oven simply does its appointed job: it bakes. Everything else about the cake is already set.

With no transition, let's now talk about your *uterus*. Do you know what your uterus and the oven have in common? Not much. Even though you might have heard people say they have 'a bun in the oven' when referring to growing a baby in their womb, this analogy is misleading: it implies that your baby is entirely predetermined when the sperm meets the egg. It sends the message that all you have to do now is keep the temperature at 37°C, try to not do anything obviously harmful (cigarettes, drugs, bungee-jumping while drinking vodka), and just wait 40 or so weeks. It sends the

message that you are a vessel of oxygen, nutrients and heat, and that you are simply *allowing* your baby to grow. The conveyed sentiment is something along the lines of ‘don’t stress, just let nature do its thing’. But this is wrong.

My job is scientific research, and in my previous work I’ve explored how blood sugar affects our body and mind. I wrote two books in which I shared small habits that can keep our glucose levels steady to improve our health and wellbeing. It helped me, and lots of other people too. So when I became pregnant, I used those same skills. I dove into the latest studies on pregnancy nutrition conducted by scientists across the world. I found decades of published evidence, population surveys and fantastic books – all full of crucial information that every mother needs to know. I found that we are far from simple ovens: during pregnancy, we are actively **influencing our baby**, his cognition and his long-term health with what we eat – or don’t eat – during these nine months.

I discovered many shocking facts – for example, that 90% of pregnant women are not eating enough choline, a key molecule (which we get from foods like animal liver and eggs) that forms a baby’s brain cells in the womb, and that can positively influence his memory and attention levels. Seventy per cent of us are also consuming too little protein, a lack that can not only erode our own muscle mass, but may also program our baby’s body to build less muscle and develop weaker organs. Other interesting research suggests that sugar cravings during pregnancy may be driven by an ancient biological mechanism – originally meant to ensure that we supplied enough energy for the baby – that’s now backfiring in today’s overly abundant food environment. Indeed, most of us eat more sugar when pregnant than when not pregnant (partly due to old wives’ tales, such as ‘you’re eating for two’, which leads

us to eat more sweet foods than we might need to). But sugar in pregnancy can impact your baby’s brain development; and is linked to the likelihood of mental health disorders later in life, as well as diabetes, high blood pressure, and obesity as an adult. Worrying, to say the least. And gestational diabetes, a common condition during pregnancy in which your blood-sugar levels become too high, also has a real impact on a baby’s long-term health. Further, the majority of pregnant mums don’t eat enough DHA during pregnancy. DHA is an omega-3 fatty acid that helps your baby’s neurons (the brain cells that process information) connect with each other, while also lowering the risk of allergies and reducing the likelihood of preterm birth – a complication that is rising worldwide and carries its own long-term consequences. Along the way, I uncovered fascinating explanations for many common pregnancy experiences, from new insights into first-trimester nausea to how your body composition changes after birth.

I also learned something that changed the way I saw pregnancy for ever: by the time your baby is born, all of his 100 billion neurons are already formed – and *they won’t get replaced*. This means the nutrients you provide during these nine months help shape the foundation of his brain for a lifetime.

Another key insight has to do with your baby’s DNA. While you can’t change the genetic code your baby inherits (half from the mum, half from the dad), the story doesn’t end there. DNA is not a fixed script set in stone at conception. During pregnancy, something remarkable happens: **you influence which of your baby’s genes are read and which remain silent**. This process, called epigenetics, works through chemical switches that turn genes on or off. Scientists call it **foetal programming**, and diet is one of the strongest forces shaping it. In practice, this means your baby is

born with an epigenetic profile influenced by what you eat – and if you have multiple children and eat differently in your pregnancies, your children will be programmed differently.

The resounding message of all this research? That your diet while you are pregnant with your baby has a lifelong impact on him.

I know it's a lot to take in, and rest assured: it's not your fault that you don't know this. I didn't know any of it, either. If you've already had children, they are okay – your body has ways to compensate and ensure your baby grows in a healthy manner. But the power of nutrition is poorly communicated in standard medical care during pregnancy, and unless your job is to research scientific papers, the information is unlikely to just show up on your doorstep. What's more, the science is clear and exciting: diet during pregnancy plays a role in shaping your baby's development. It's *not* just a case of 'set it and forget it', like a bun in the oven.

Indeed, another common but much more accurate way to describe the relationship between you and your baby is as a seed planted in soil. The seed contains crucial genetic instructions: whether it will become a palm tree, a rose bush or a tomato vine. But as any good gardener knows (not me), the *soil* is crucial. It's not as simple as 'plant it and it will grow tall and healthy'. A rich, dense, diverse, fertilized soil will lead to a healthier tree than a soil that hasn't been tended to. The soil is co-creating the tree's genetic plan, and the tree will adapt to its environment, making do with less if less is available.

It's the same during pregnancy: your baby may not always get what he needs, and he will differ in who he is based on what he has access to and what he is exposed to in your womb. That gives you a lot more power than you have probably been told. While you can't choose the seed, you have an extraordinary influence over the soil.

When I first dove into the research, I was both shaken up and over-eager – cue swallowing chunks of frozen beef liver (more on that in Chapter 2). But I was also fascinated, and determined to put the most useful principles into practice. So I distilled everything into a handful of key habits that could improve my baby's health, and that I could actually manage while also crying constantly because of the hormones, juggling work, moving apartments, and feeling overwhelmed by all the planning to welcome my baby.

A few months later, I began sharing what I had learned with friends who were expecting. Their strong reactions to the science – first shock, then empowerment – made me realize just how deeply this information was needed. That's when I decided to gather it all into this book, so more people could benefit from it.

I've kept things simple: we start by looking at how diet affects your baby differently during the nausea-prone first trimester, compared to the rest of pregnancy. Then we dive into the heart of the book – **four chapters, each focused on a dietary principle designed to give your baby a powerful advantage for life; what I call the 'pregnancy building blocks'**. Every section is packed with cutting-edge science and concludes with an Action Plan providing practical tips and recommendations you can start using right away. Toward the end of the book, you'll find a final chapter on several smaller topics such as coffee and alcohol, then a deep dive into the science of labour and birth (as well as what helped me during them), guidance on breastfeeding and formula, a dedicated section on supplements, a full trimester-by-trimester recap, and the collection of scientific references. I end the book with recipes to help bring everything together.

Chapter 1 is all about what happens to your blood sugar during pregnancy. After you eat starches or sugars, your blood sugar

(glucose) naturally rises. These increases are called glucose spikes. During pregnancy, your body becomes less efficient at handling them, so spikes can be sharper and last longer. This matters: they can program your baby's DNA toward certain outcomes, and even set the stage for a lifelong pull toward sugar. I'll also share what to do about cravings, and how managing sugar can lower your child's future risk of conditions like type 2 diabetes. In Chapter 2, you'll meet choline, an extraordinary nutrient hiding in plain sight, with a measurable influence on your baby's brain development. Chapter 3 will reframe how you think about protein, and explore why your muscle mass matters during pregnancy, and why the fact that most of us are protein-restricted can impact our child's body composition even after birth. In Chapter 4, you'll discover DHA, an omega-3 fat derived from ocean algae that helps your baby's neurons connect and communicate, and which is essential for brain wiring in the womb. Most mums are not getting enough of these three building blocks – choline, protein, and DHA. In fact, **studies show fewer than 10% of pregnant women in high-income countries reach optimal levels.** Like I say, this isn't (yet) common knowledge.

I'll end the introduction with this: when you are pregnant, you are a scientist-magician-life-grower with real superpowers. And if you know how to use them, you can positively impact your baby's health for his entire life. So let's get to it.

Some quick housekeeping

First things first: if you don't do any of the things in this book, your child will most likely turn out fine. When my mother was pregnant with me, she ate Special K cereal with a mountain of sugar on top every morning for breakfast – and washed it down with Diet Coke. And I ended up okay: aside from an unhealthy obsession with cats and a daily existential crisis or two – totally normal.

Except... in all fairness, there's a long list of physical and mental health issues I've experienced over the years, from panic attacks and depersonalization (a condition with which you feel like a stranger in your own body), to borderline prediabetes in my twenties. And I can't help but wonder: *what if some of them trace back to what was happening in the womb?* Maybe it was the Diet Coke, maybe it was fate, maybe I was just destined to be a cat enthusiast with mild existential dread. I'll never know for sure – and actually nor do I need to: I'm a functioning, mostly healthy adult, and I get along fine.

So if you've had kids before and were not aware of this science, or if you're discovering this book only late in pregnancy, don't worry. When it comes to the fundamentals of growing a baby, you already have them: your body (including your uterus), and access to oxygen and food.

While the science in this book may seem overwhelming at first, it's certainly not intended to make you feel guilty or scared. It's here if you're curious about the extra optimizations you can make. Even if you take just a few ideas from these pages and use them now and then, that's fantastic. You don't have to do everything every day (I certainly didn't manage to).

I should also add that this science is by no means a magic bullet to the perfect pregnancy and the perfectly healthy baby. You could follow every principle in this book to the letter and still face things that are beyond your control (I'll share a recent experience of my own on the following pages). What you eat is not the only factor shaping your baby's health: access to medical care, socio-economic status, the environment your baby is born in to, genetics, sheer luck or randomness, things that we don't understand yet, and more, play their part too.

Pregnancy may be a time when you feel like many of the changes that are happening to your body are out of your control, but nutrition is one of the few things you *can* influence – and the simple, science-backed changes I am proposing can genuinely give your baby a stronger start. Today, with chronic diseases on the rise and ever-younger people facing challenges like mental health disorders, diabetes, and high blood pressure, anything that strengthens the womb environment matters – especially given the amount of research pointing to links between a baby's experience in utero and the risk of these, as you'll soon learn. The point is: if you are in the know, you might as well put as many odds in your baby's favour as you can. And you don't need to wait until you get pregnant – applying the principles in this book pre-pregnancy will help set you up for success. It's never too early to start.

Second bit of housekeeping: I'm a biochemist, not a doctor. Think of me like a science translator or teacher. I gather published research from scientists around the world, health agency guidelines, physiology textbooks, and break them down into simple, practical insights you can actually use. As a result, everything in these pages is based on population-level data and guidelines – it's meant to inform and empower, not to diagnose, cure, prevent, or treat any

condition or disease. It doesn't account for your unique medical history or circumstances and isn't medical advice, so it's essential to check with your care team and a qualified provider before making any changes to how you eat or how you manage your health.

My story

Trigger warning: this section discusses pregnancy loss. If that's not something you want to read about today, go straight to the next chapter.

Dear reader: if we haven't met yet, I'm Jessie. It's nice to meet you. I wrote most of this book while I was pregnant with my first-born, a son. But this wasn't my first pregnancy. I want to share the story of what happened, because I felt so alone when it did and I wished more people had shared their own journey with me.

I first became pregnant at 31 years old, two months after removing my IUD. My husband and I were really happy that it happened so quickly. I told everyone straightaway (literally the day I got the positive pregnancy test), and I started preparing myself for the fact that our baby would be born in December.

I began researching pregnancy nutrition, and started writing the first few pages of this book. I went into my scans with great enthusiasm: it didn't even cross my mind that something could go wrong. The health of the baby wasn't a concern – I was, however, stressed about all the usual things: where I was going to give birth, whether we needed to move apartments... It all felt very real, very fast. I had my first scan at just five weeks – we could see a tiny little amorphous thing. Then our second scan a month later, around ten weeks: we heard the heartbeat and we saw the embryo, a bit less tiny, little amorphous thing. It was a great experience.

Even though I started getting quite nauseous around that time, we still felt very excited, picking out names, and wondering about

the baby's sex. At around 14 weeks, we were back in the doctor's office for our next routine check. And, as usual, I lay back on the table and the doctor put some gel on my lower stomach and I watched the screen for the image to come up. As soon as it appeared, I knew the pregnancy was over – the little embryo hadn't changed much since the previous time, and it was at the bottom of my uterus, scrunched up and lifeless, like you would imagine a dead fish at the bottom of an aquarium.

After 10 seconds of silence the doctor confirmed what I had already understood: there was no more heartbeat. The pregnancy had stopped a full three weeks previously (around 10½ weeks), and I hadn't even known. I hadn't felt anything, nor had any miscarriage symptoms. It's called a 'silent' miscarriage. The embryo stops developing, dies, but your body does not expel it.

I felt like life had been knocked out of me. I started sobbing as the doctor told me that I needed to have a procedure. I was in complete and utter shock – from thinking I would be a mum in six months, I now had to accept that it was all over. Legs-stop-working-drop-to-the-ground sort of pain. I remember later screaming in my living room and begging the universe for my baby back. Arguing that the doctor must be wrong and that he had made a mistake. I was really confused about my relationship with my body – that the dead embryo had been inside me for almost a month and I had known nothing about it; and that I now had to live with it still there, until the procedure. I couldn't believe this had happened.

I think one of the reasons I was in so much shock and disbelief is that the idea of a miscarriage was not really in my consciousness. Yes, I had friends going through IVF who had experienced one, but I didn't know that miscarriage is also common in people who