The Science Behind Our Tests: Empowering Your Fertility Journey

Powered by **SpermComet® Technology** — trusted by fertility experts in **80% of the UK & Ireland's top private fertility clinics**. Examen provides highly accurate and sensitive tests to guide your next steps toward parenthood.

80% of Top Clinics

Trusted by fertility experts across the UK & Ireland's leading private fertility clinics

SpermComet® Technology

Highly accurate, cell-by-cell DNA analysis

ISO-Accredited Lab

Every test meets the highest standards of accuracy and reliability

THE FUNDAMENTALS

The Role of DNA in Sperm Cells

Every cell in our bodies — except red blood cells — contains DNA in its nucleus. This DNA holds all the information needed for each cell to function. To fit into the nucleus, DNA is carefully packed onto chromosomes (23 pairs in total). This packing must strike a balance: tight enough to protect the DNA, but loose enough to allow access to genetic information when needed.

Sperm cells are unique. Their sole purpose is to deliver **50% of the baby's genetic blueprint** — one set of 23 chromosomes — from the father to the egg, which carries the other 50% from the mother. To ensure the DNA reaches the egg safely, it is tightly packed for the journey — akin to walking from Land's End to John O'Groats and back four times. Like a Formula 1 car, sperm cells strip away everything unnecessary for the journey, including the machinery that repairs DNA damage.

Two Types of DNA Damage

Single-Strand Breaks (ssDB)

More common and less impactful on fertility outcomes.

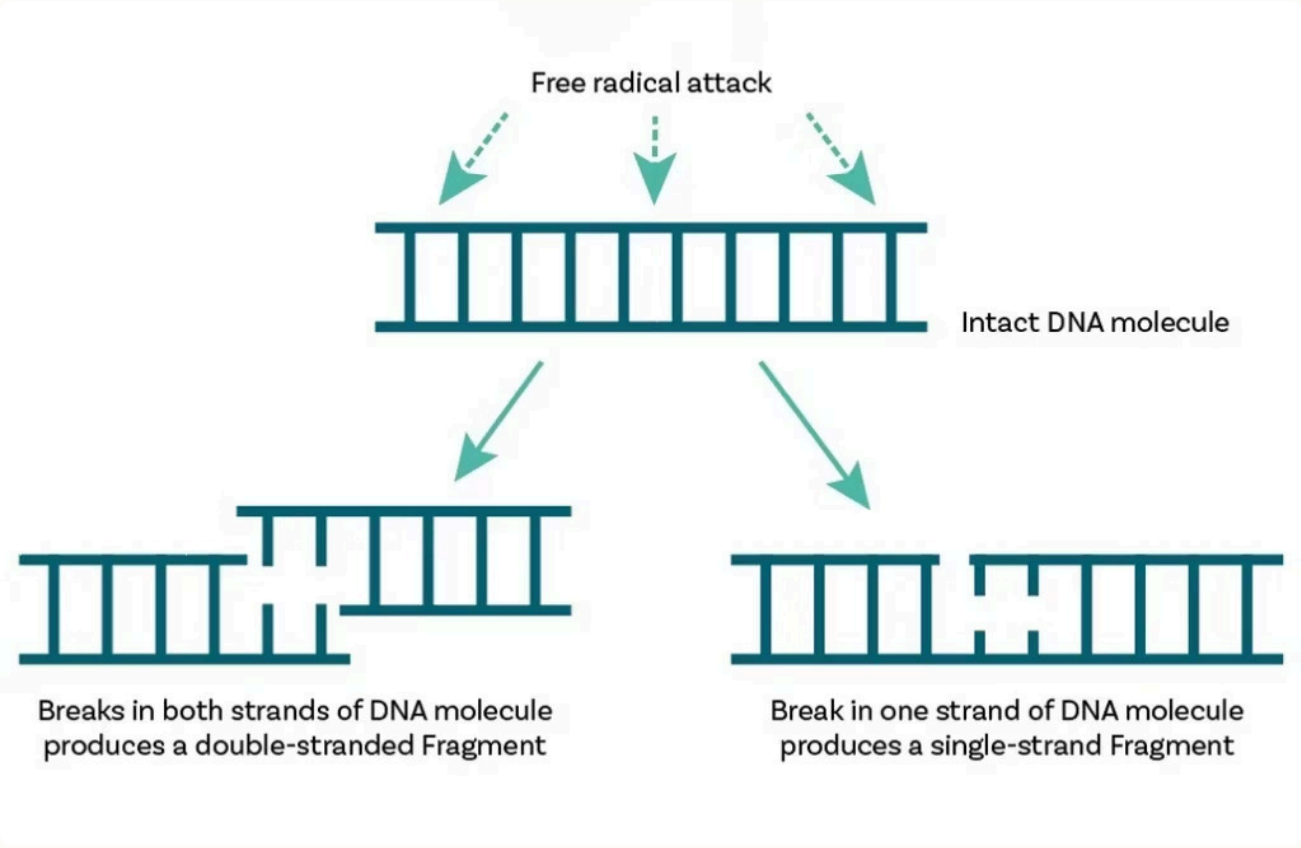
Double-Strand Breaks (dsDB)

Less common but far more challenging for the sperm to overcome.

DNA DAMAGE

How DNA Damage Affects Sperm

DNA exists as two strands arranged in a double helix, resembling a spiral staircase. Sperm cells are particularly vulnerable to DNA damage because they lack the repair mechanisms found in other cells. This vulnerability stems from the dense packing of DNA and the absence of cellular machinery that prevents or repairs damage. Factors such as lifestyle choices, stress, and medical conditions can all exacerbate this damage.

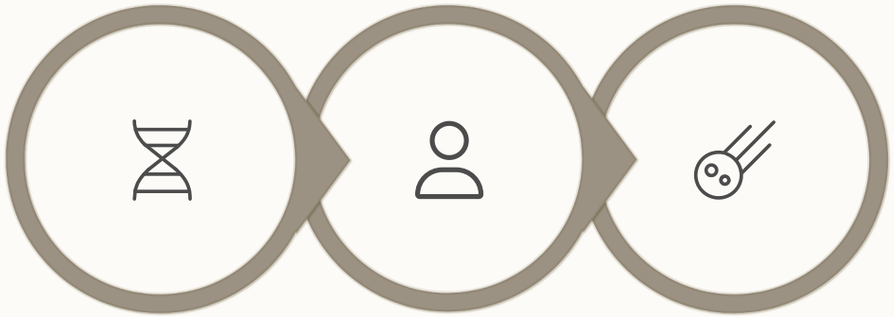


OUR TECHNOLOGY

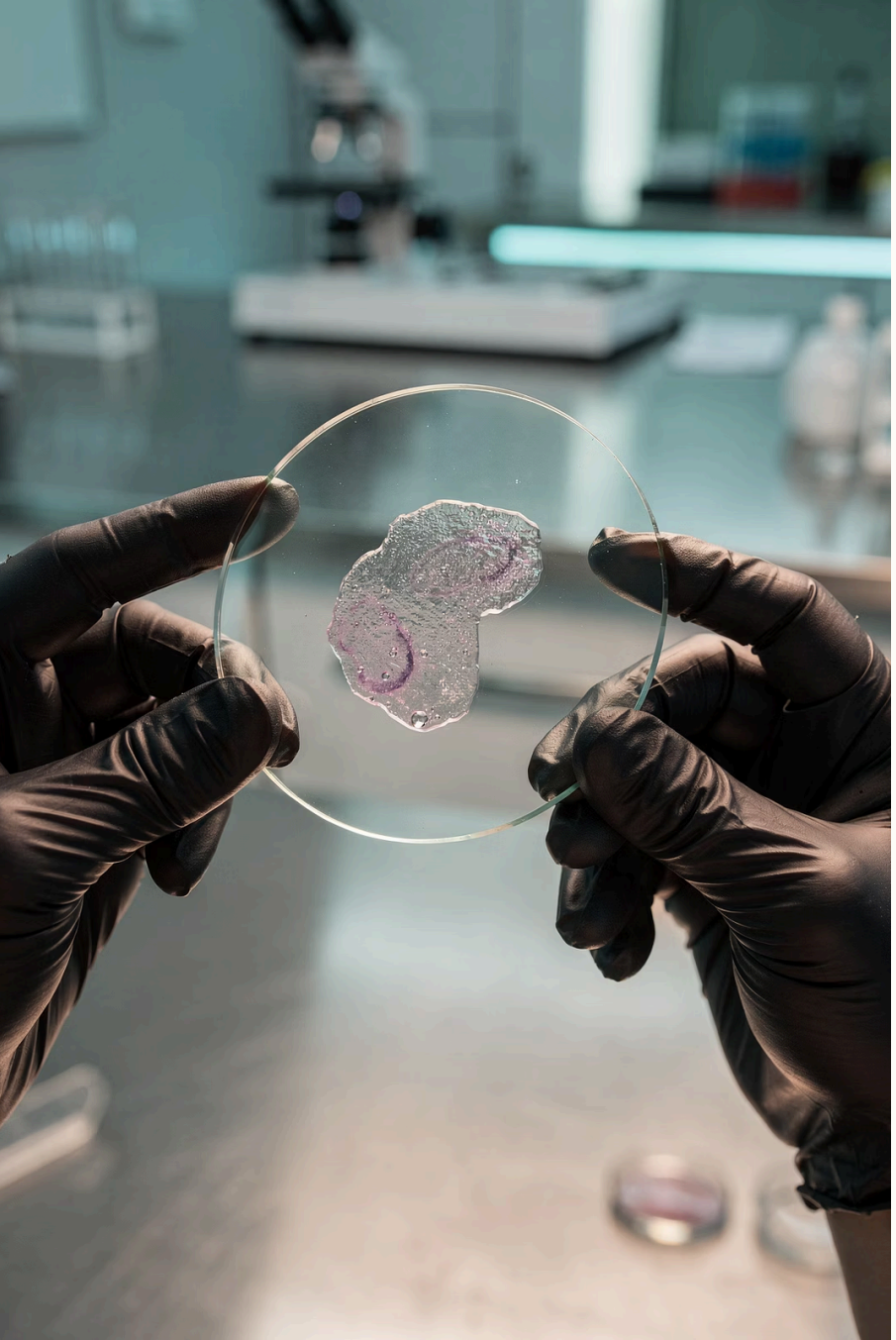
The Science Behind SpermComet® Technology

Examen's tests are powered by **SpermComet® technology**, based on a well-established scientific technique called **single cell gel electrophoresis**. This method measures DNA damage in individual sperm cells, providing unparalleled accuracy and insight — setting Examen apart from tests that rely on bulk measurements or automated processing.

> This detailed, cell-by-cell analysis ensures the most accurate results available in male fertility diagnostics today.



Relax DNA | Electrophoresis | Comet Form



OUR TESTS

Measuring Total and Double-Strand DNA Damage

Examen offers two specialist tests that are particularly valuable for understanding the underlying causes of fertility challenges and tailoring treatment plans accordingly. Each test is designed to reveal a different dimension of sperm DNA integrity.

Exact® Test

Measures **total DNA damage**, including both single- and double-strand breaks. Ideal for a comprehensive overview of sperm DNA health and a strong starting point for fertility investigations.

Extend® Test

A proprietary, **patent-pending test** that specifically measures double-strand break damage, providing deeper insights into sperm DNA integrity for more complex fertility cases.

HUMAN EXPERTISE

Why Human Expertise Matters

Unlike automated methods, the **SpermComet® technique** incorporates a high degree of human skill and experience. Our laboratory experts analyse each sample with precision, ensuring reliable and reproducible results. This human expertise is what makes Examen's tests the most accurate male fertility tests available — no algorithm can replicate the nuanced judgement of a trained specialist working with individual sperm cells under the microscope.

Examen's **ISO-accredited** laboratory and proprietary SpermComet® technology ensure that every test performed meets the highest standards of accuracy and reliability, underpinned by rigorous scientific research and a genuine commitment to advancing male fertility diagnostics.

Cell-by-Cell Analysis

Every sperm sample is examined individually by a trained specialist, not processed in bulk by an algorithm.

Precision & Reproducibility

Human expert analysis ensures reliable, consistent results across every test performed.

ISO-Accredited Standards

Rigorous scientific research underpins every test, meeting the highest standards of accuracy.

RISK FACTORS

Factors That Can Affect Sperm DNA

A wide range of lifestyle, medical, and environmental factors can compromise sperm DNA integrity. Understanding these factors is the first step toward addressing them and improving fertility outcomes.

Lifestyle Choices

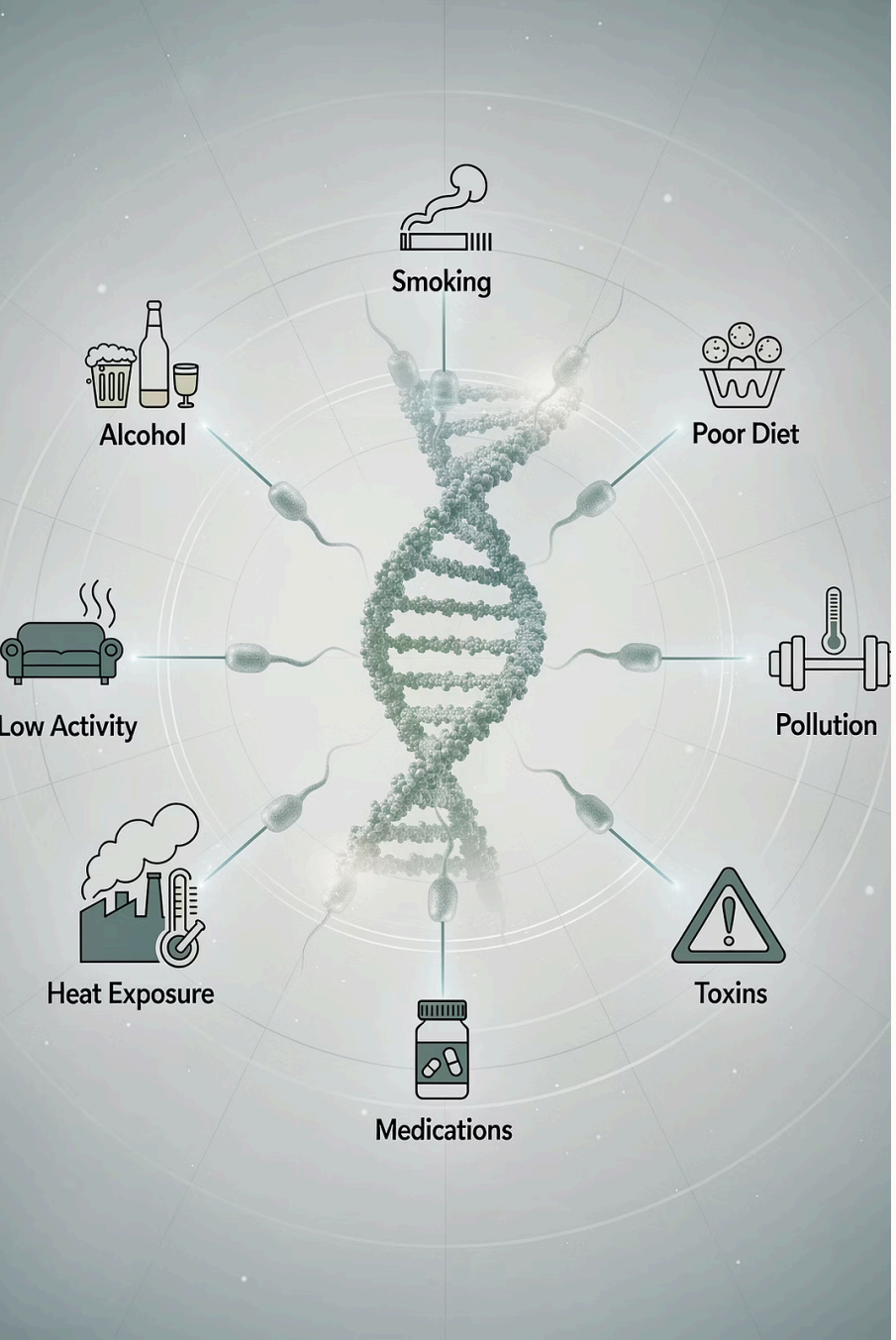
Smoking, alcohol consumption, poor diet, caffeine, high BMI, and psychological stress have all been shown to increase sperm DNA fragmentation levels.

Medical Conditions

Varicocele (enlarged veins around the testicle) and infections such as prostatitis or STIs can significantly elevate DNA damage in sperm cells.

Age & Environment

Advanced paternal age and exposure to environmental toxins, pesticides, heavy metals, and heat or cold can all negatively impact sperm DNA quality.



A Complete Picture of Sperm DNA Risk

This diagram illustrates the full spectrum of medical, lifestyle, and environmental factors that can compromise sperm DNA integrity — from radiation therapy and chemotherapy to oxidative stress, obesity, and imbalanced microbiome. Understanding your personal risk profile is essential to making informed decisions about your fertility journey.

Medical Factors

Including radiation therapy, chemotherapy, and conditions that directly impact sperm DNA integrity.

Lifestyle Factors

Oxidative stress, obesity, and daily habits that can silently compromise sperm DNA quality.

Environmental Factors

Exposure to toxins, an imbalanced microbiome, and other external influences on sperm health.

WHY IT MATTERS

Why Sperm DNA Quality Matters

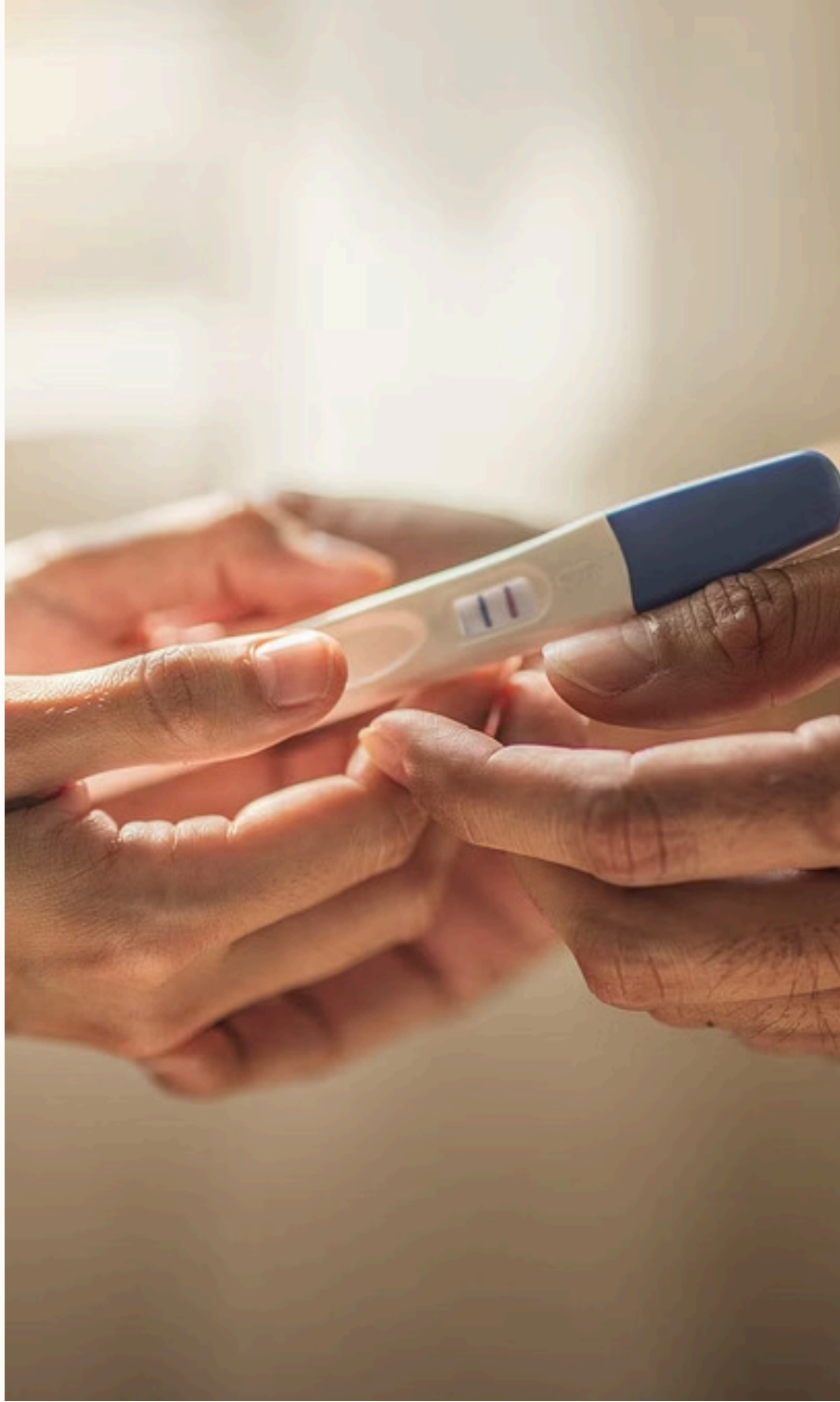
Traditional semen analysis focuses on parameters like sperm count, motility, and morphology — but it does not assess DNA quality. Even if a semen analysis result appears entirely "normal", there could still be significant issues with sperm DNA integrity that are silently impacting fertility. A man can have excellent conventional semen parameters and yet carry high levels of DNA fragmentation that prevent successful conception or contribute to recurrent miscarriage.

Medical Research

Osadchuk et al. (2023) — Effects of cigarette smoking on semen quality, reproductive hormone levels, metabolic profile, zinc and sperm DNA fragmentation in men. *Front Endocrinol (Lausanne).* PMID: 37920251.

Çayan et al. (2025) — Global Andrology Forum Clinical Guidelines on the Relevance of Sperm DNA Fragmentation in Reproductive Medicine. *World J Mens Health.* doi:10.5534/wjmh.250005

This is precisely why **Examen's SDF tests** are so important. They provide a deeper, more complete understanding of sperm health that goes far beyond what a standard semen analysis can reveal, enabling clinicians and patients to make truly informed decisions about treatment pathways.



SCIENTIFIC CONFIDENCE

Test with Scientific Confidence

Don't let sperm DNA damage stand in the way of your dreams. Examen is committed to advancing the field of male fertility diagnostics through rigorous scientific research and innovation. Our ISO-accredited laboratory and proprietary SpermComet® technology ensure that every test meets the highest standards of accuracy and reliability. Book your SDF test with Examen and gain the clarity you need to move forward.

ISO-Accredited

Every test meets the highest standards of laboratory quality and reliability.

80% of Top Clinics

Trusted by fertility experts across the UK & Ireland's leading private clinics.

Fast & Reliable

Accurate results delivered with the precision of human expert analysis.