ANDROLAB
ANDROLOGY LABORATORY

Spermiogram – providing clarity when faced with the inability to have a child

Information for patients

Not being able to fulfil your wish of having a child can often be difficult. A spermiogram can help shed light on what is going on by providing valuable clues about a man's fertility.

Why a spermiogram is important

The World Health Organization (WHO) defines clinical infertility as the absence of pregnancy after at least 12 months of regular unprotected sex. This health problem affects one in seven couples. Around half of all couples undergoing fertility treatment are affected by male infertility – usually in terms of sperm quality. Ejaculate analysis is therefore the first and also most important step in assessing male fertility. The quantity, concentration, motility and shape of the sperm and their vitality are assessed. The result of the analysis – known as a spermiogram – provides essential clues in the investigation into the unwanted inability to conceive.[1,2]

If it doesn't work right away – three possible causes explained in simple terms

There are a number of factors that can cause male infertility:

- **Congenital causes**
  Malformations or genetic disorders that were already present at birth.
- **Acquired causes**
  Problems that arise over the course of life, e.g. from infections, injuries or operations.
- **Environmental causes**
  External influences – e.g. heat, smoking, alcohol, stress or pollutants.

What the semen analysis reveals – everything you need to know at a glance

Sperm analysis plays a key role in investigating male infertility. The spermiogram uncovers abnormal findings for many of the men affected. To obtain reliable results, the semen analysis should, in accordance with WHO guidelines, be carried out twice ideally – with 6 to 12 weeks in between each test.[3]

What exactly is measured[1,4]

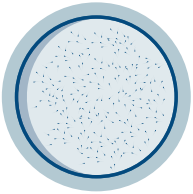
The individual test values indicate whether the man's ejaculate meets the requirements for fertilisation.

pH value

The pH value of the ejaculate is determined using indicator paper and shows whether the environment in the ejaculate is healthy. A value below 7.2 may indicate disrupted drainage, while a value above 8.0 may indicate inflammation.

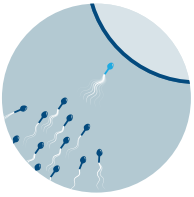
Ejaculate volume

The total amount of ejaculate is measured – either directly in the calibrated measuring cup or by weight. Here, too, deviations from set values may indicate possible problems.



Sperm concentration

Sperm concentration is determined by taking a count with the SCA-CASA (Computer Assisted Sperm Analyser) system.

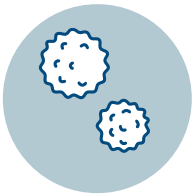


Sperm motility

The SCA-CASA (Computer Assisted Sperm Analyser) system is used to determine whether the sperm cells can move (progress) properly. Motility is divided into four categories: rapidly progressive, slowly progressive, non-progressive and immotile.

Sperm vitality

Special tests can be used to check whether the plasma membrane of the sperm is healthy. Healthy and functioning sperm cells remain unstained during a staining process or swell in a test solution. Non-intact sperm absorb dye and turn red.

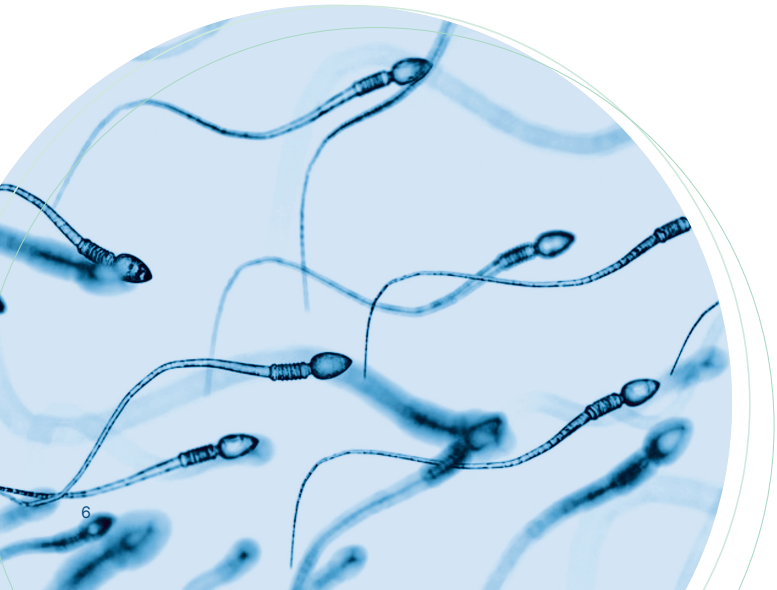


Round cells/leukocytes

Leukocytes (white blood cells) can be detected in ejaculate by applying a dye to make them visible. If there are more than 1 million leukocytes per millilitre in the ejaculate, this may indicate inflammation or infection and should be further investigated.

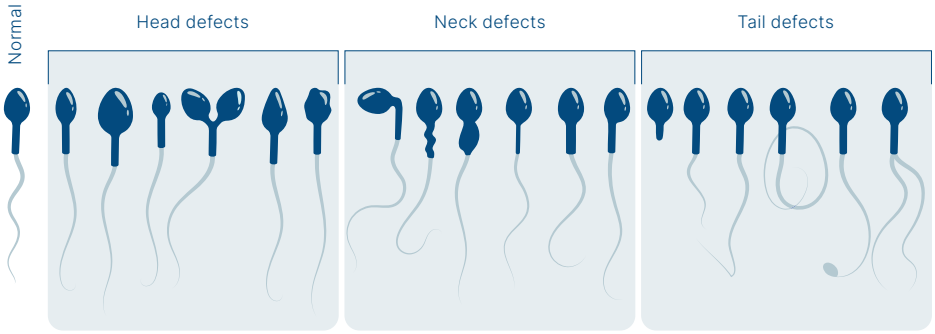
Sperm autoantibodies

Sperm autoantibodies are antibodies produced by the body's own immune system that mistakenly attack the sperm. They can impair sperm motility or their ability to fertilise eggs and thus make conceiving more difficult.



Sperm morphology

To assess the sperm shape, a drop of ejaculate is fixed on a microscope slide, stained and evaluated under a microscope. The percentage of normally shaped and abnormally altered sperm is thus determined.



How to submit a sample

In order for the spermiogram to produce usable data, a few points should be observed:

- Make an appointment with the laboratory in good time.
- The last ejaculation should have occurred between at least 2 and max. 5 days before.
- Avoid using condoms, lubricants or massage oils when producing the sample.
- If collected at home: bring the sample to the laboratory within 45 minutes and keep the container close to your body (e.g. in your pocket).

If a spermiogram is not sufficient

Sometimes a spermiogram alone is not enough to identify the cause of an unfulfilled desire to have children. In these cases, further examinations and special tests provide important additional information on male fertility. In addition to the spermiogram, biochemical, genetic, microbiological or electrophysiological examinations can also be carried out in order to clarify the causes of male infertility in a more targeted manner.

An overview of the supplementary diagnostics

Biochemical analysis

A biochemical analysis of the ejaculate can help to find the cause of infertility. The **alpha-glucosidase, zinc** and **fructose** levels are measured as part of this analysis. For example, low alpha-glucosidase levels in combination with a small number of sperm can indicate a blockage of the seminal tract.[3]

Microbiological examination

Infections caused by sexually transmitted bacteria (e.g. chlamydia) or pathogens in the urine can affect male fertility. They can cause inflammation of the epididymis or testes, leading to male infertility. Timely diagnosis and treatment are therefore particularly important.[2,4]

Electrophysiological measurement

Oxidative stress is one of the main causes of DNA damage in sperm and can severely impair male fertility. Targeted treatment with antioxidants and a healthy lifestyle, such as stopping smoking and eating a healthy diet, can help protect sperm DNA and improve fertility. The level of oxidative stress can be determined using the sORP value in the ejaculate.[4,5]

Molecular genetic analysis

In some cases, male infertility can have genetic causes. These contexts are often complex and are usually only investigaged in more detail if there is a definite suspicion. There are special molecular genetic analyses that can be performed for this purpose.

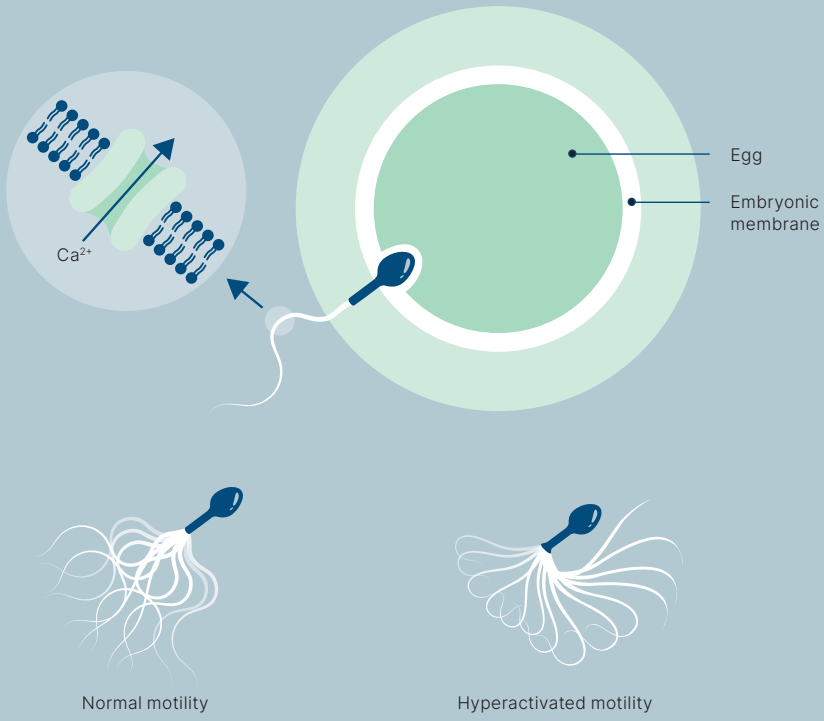
AZF deletion	A genetic defect on the Y chromosome that can disrupt the production of sperm cells (spermiogenesis defect).[6]
CFTR mutation	A genetic defect on chromosome 7 can cause cystic fibrosis and the absence of a spermatic duct.[6]
DNA fragmentation	The genetic information in the sperm is damaged – this can be analysed by means of special tests (halosperm or DFI test).[3,7]

Cell biological test (CatSper)[8,9,10]

The CatSper test examines whether the sperm can move strongly enough to reach and fertilise an egg. The test checks whether a certain ion channel (CatSper) in the sperm is working properly. If this is disrupted, fertilisation is prevented despite normal findings from a spermiogram. Recent studies show that approximately one in a hundred men who have not been able to have children and whose semen sample was normal has CatSper-related infertility.

A detailed look at the CatSper test

To fertilise the egg cell, the sperm must penetrate the protective embryonic membrane. To do this, they have to strike particularly forcefully with their flagellum (tail). This intensified movement (hyperactivation) is triggered by messenger substances that recognise the sperm via the calcium channel (CatSper) in the flagellum. If the CatSper channel is defective, there is no hyperactivation, which prevents fertilisation. This is usually caused by congenital genetic changes in the CatSper genes. The CatSper test has been developed for early detection, which is particularly recommended for men with unexplained infertility. If men have a CatSper defect, only the ICSI method can successfully lead to pregnancy, as the sperm is injected directly into the egg cell.



How much does the test cost?

The examinations listed below are some of the most common laboratory tests that are carried out as part of a male fertility assessment. The cost of a spermiogram is CHF 180.00. The general bacteriological examination, including chlamydia, mycoplasma and ureaplasma, costs CHF 311.40. The biochemical analyses – consisting of alpha-glucosidase, zinc and fructose – costs CHF 148.00. In addition, the CatSper test can be carried out, which costs CHF 145.00 (prices plus processing fee).

These laboratory tests are covered by your health insurer as part of your basic insurance. The costs for the fructose analysis, alpha-glucosidase and CatSper test are usually borne by the patient, but they may be covered by supplementary insurance.

List of sources

(1) Kliesch S, Cooper TG. Die Ejakulatdiagnostik: Spermiogramm nach WHO-Kriterien [Semen analysis: spermiogram according to WHO criteria]. Urologe A. 2008 Dec;47(12):1548, 1550-4. German. https://doi.org/10.1007/s00120-008-1796-0

(2) Stojanov M, Baud D, Greub G, Vulliemoz N. Male infertility: the intracellular bacterial hypothesis. New Microbes New Infect. 2018 Aug 22;26:37-41. https://doi.org/10.1016/j.nmni.2018.08.012

(3) Hunziker, M., Lautenbach, N. & Eberli, D. Ein Blick auf das Spermiogram. Urol. Prax. 26, 111-116 (2024). https://doi.org/10.1007/s41973-024-00265-1

(4) Sciorio R, De Paola L, Notari T, Ganduscio S, Amato P, Crifasi L, Marotto D, Billone V, Cucinella G, Perino A, Tramontano L, Marinelli S, Gullo G. Decoding the Puzzle of Male Infertility: The Role of Infection, Inflammation, and autoimmunity. Diagnostics (Basel). 2025 Feb 24;15(5):547. https://doi.org/10.3390/diagnostics15050547

(5) Bisht S, Faiq M, Tolahunase M, Dada R. Oxidative stress and male infertility. Nat Rev Urol. 2017 Aug; 14(8:470-485. https://doi.org/10.1038/nrurol.2017.69

(6) Sobczyńska-Tomaszewska A, Bak D, Wolski JK, Bablok L, Nawara M, Mazurczak T, Bal J. Molecular analysis of defects in the CFTR gene and AZF locus of the Y chromosome in male infertility. J Reprod Med. 2006 Feb;51(2):120-7

(7) Peluso G, Palmieri A, Cozza PP, Morrone G, Verze P, Longo N, Mirone V. The study of spermatic DNA fragmentation and sperm motility in infertile subjects. Arch Ital Urol Androl. 2013 Aug 19;85:1): 8-13. https://doi.org/10.4081/aiua.2013.1.8

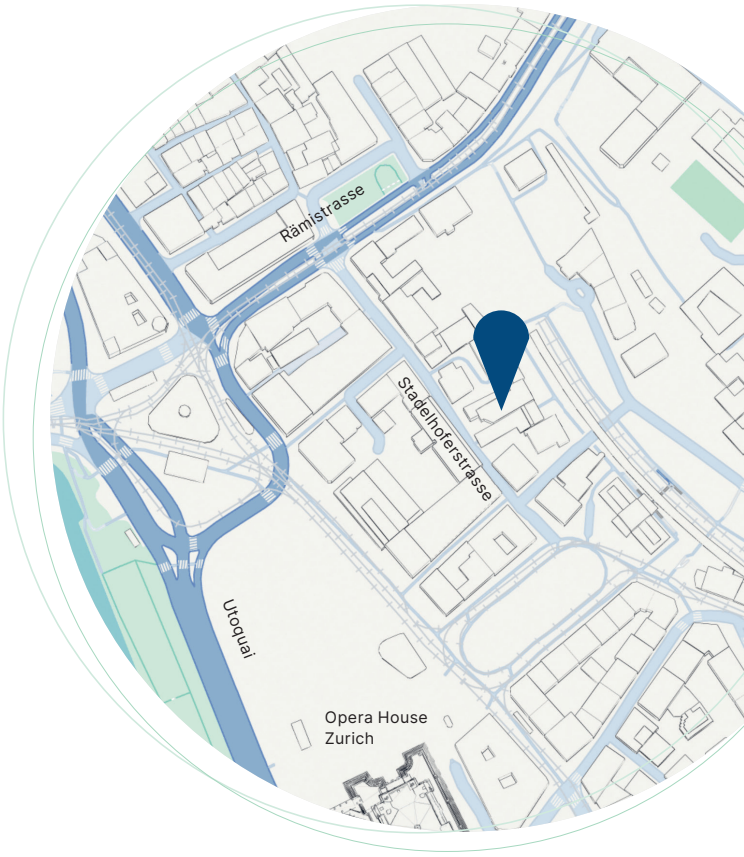
(8) Luo T, Chen HY, Zou QX, Wang T, Cheng YM, Wang HF, Wang F, Jin ZL, Chen Y, Weng SQ, Zeng XH. A novel copy number variation in CATSPER2 causes idiopathic male infertility with normal semen parameters. Hum Reprod. 2019 Mar 1;34(3):414-423. https://doi.org/10.1093/humrep/dey377

(9) Young S, Schiffer C, Wagner A, Patz J, Potapenko A, Herrmann L, Nordhoff V, Pock T, Krallmann C, Stallmeyer B, Röpke A, Kierzek M, Biagioni C, Wang T, Haalck L, Deuster D, Hansen JN, Wachten D, Risse B, Behre HM, Schlatt S, Kliesch S, Tüttelmann F, Brenker C, Strünker T. Human fertilization in vivo and in vitro requires the CatSper channel to initiate sperm hyperactivation. J Clin Invest. 2024 Jan 2;134(1):e173564. https://doi.org/10.1172/jci173564

(10) Williams HL, Mansell S, Alasmari W, Brown SG, Wilson SM, Sutton KA, Miller MR, Lishko PV, Barratt CL, Publicover SJ, Martins da Silva S. Specific loss of CatSper function is sufficient to compromise fertilizing capacity of human spermatozoa. Hum Reprod. 2015 Dec;30(12):2737-46. https://doi.org/10.1093/humrep/dev243

Do you have any questions?

An unfulfilled desire to have children can have many causes. Modern medicine offers many ways to find out the exact reasons. Together with your urologist, you will find the right path.



ANDROLAB
ANDROLOGY LABORATORY

Andrologiezentrum Zürich
Stadelhoferstrasse 22
8001 Zürich
T +41 44 365 10 76
fertilitaet@team-w.ch

M14169/0426