

FREQUENTLY ASKED QUESTIONS

We know cells, you have questions!

Here is everything you ever wanted to know about stem cell collection, genetic analysis and cryopreservation.

ABOUT CELLS & GENETICS

What is a cell and why are they important?

Our bodies are made up of trillions of cells that all work together to keep us alive. Cells are the basic building blocks of all living things - including humans - and each cell eventually becomes a cell with a very specific function in our body. Once their function is fully developed these cells are often referred to as “differentiated” cells since each is established in its unique role and has a very specialized function. Just like our bodies, our cells age too and as the process of aging takes hold, our cells regenerate less and less and eventually die off.

What is a stem cell, and how is it different than a regular cell?

There are actually many types of stem cells. Embryonic stem cells come from an embryo that is 3 to 5 days old. These cells are undifferentiated and can become every single type of cell in the body, and are thus called “pluripotent.” There are other types of stem cells in the human body. Adult stem cells, or semi-differentiated cells, reside in almost every tissue and organ in adult humans and are responsible for dividing and replenishing the local cell populations, and are called “multipotent.” As we age this stem cell division and replenishment happens less and less efficiently. We all have adult stem cells of varying degrees all over our bodies. An unborn baby’s umbilical cord is full of multipotent stem cells; our blood has adult stem cells; as does our bone marrow; and yes hair follicle bulbs from your head also have these stem cells.

Multipotent vs Pluripotent? What’s the difference?

This is an important distinction. While multipotent cells are useful, they do not have the ability to become any cell type in the human body. Embryonic stem cells are pluripotent, but they can only be obtained by terminating a developing human embryo. Recent advancement in medicine have been able to derive pluripotent cells from adult cells. In 2012, Shinya Yamanaka and Sir John Gurdon were awarded a Nobel Prize for demonstrating a technique that converts fully differentiated human cells into pluripotent stem cells. This means that adult cells in the human body can be turned into cells that behave and function like embryonic stem cells - without having to harvest them from embryos. These embryonic-like cells are called induced pluripotent stem cells (iPSC’s) and can become any cell type in the human body. The hair follicles that Acorn contain cells that become these very valuable pluripotent cells once they are converted into iPSC’s.



I thought stem cells were only in a newborn's umbilical cord, in bone marrow or in blood?

Umbilical cord cells, bone marrow cells or blood cells certainly have traditionally been the most talked-about sources of stem cells. Although those sources of cells are sources of adult stem cells, they are costly, highly invasive and always painful to harvest. In addition, red blood cells are not adult stem cells and also cannot be used for generation of iPSC's. The discovery of iPSC technology has unlocked the ability to use adult cells as pluripotent stem cells. Acorn's proprietary transport medium allows you to collect whole hair follicles from your head that contain live cells and safely transport those follicles back to our lab. Acorn's non-invasive method lets you leverage the innovation behind iPSC technology and removes the historical challenges of highly invasive cell collection methods.

Why do iPSC's matter?

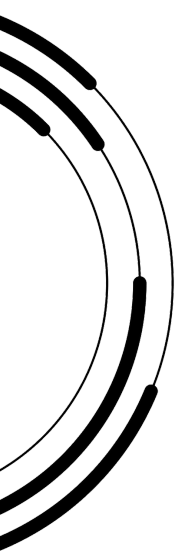
The discovery of iPSC technology in 2012 was one of the most significant medical innovations in our lifetime. It has meant that humans now have access to fully pluripotent stem cells, and are no longer tied to finding multipotent adult stem cells through highly invasive methods such as venous blood draws, liposuction surgery, and bone marrow extractions. The iPSC discovery has allowed us to leverage any type of cell and have them converted into an embryonic-like stem cell, an iPSC. This removes both the cost and painful traditional methods of harvesting stem cells; but it also removes the pressure that many families feel around the single moment in time that they can harvest their child's umbilical cord cells, which themselves are only multipotent. With Acorn, these families can now collect cells at any point in their child's life, virtually anywhere. iPSCs matter because they allow Acorn to offer accessible and affordable live cell collection for future medical use.

Why should my cells be collected and preserved at all - if my body regenerates them why can't I just extract them when I need them?

Much the way we all age, our cells age too. Over time they experience irreversible damage that causes them to be less useful, or viable as we age. Unfortunately, medicine has seen that, when we need our cells most in life - later as we age and accumulate disease and organ failure - it is then when our cells are the least viable for cell therapeutic use. Freezing them at the earliest possible moment in your lifetime will ensure you are preserving the best possible version of your cells rather than depending on aging cells with degenerative changes. Our cells age as we age, so freezing the clock on their age gives you the best possible chance that they can be leveraged later in life when you need them most.

How do I know there will be a use for my stored cells one day?

There are always uses for collected cells. The most common one available today is genetic testing. Almost every day there is a new medical development in the use of cells as therapeutic medicines. Skin tissues and other organs are already being grown today from cells, we believe that growing entire organs on demand is right around the corner. There are a plethora of research avenues being explored. Stem cell treatments range from cosmetic uses (growing or rejuvenating new skin) to growing new, young complete tissues and organs.



Cell therapy is a rapidly emerging area of medicine. As time goes on and research advances, the list will become longer and longer with the potential to cure diseases we never could have imagined. Follow us on social media and visit our website where we share the world's most innovative advances in treating real diseases and ailments using cells. Acorn's deep-rooted biological science expertise tells us that cells are the therapeutic currency of tomorrow. In our lifetime our own cells will be the future of personalized healthcare - and have a real potential to change the way we all think about healthspan.

What is genetic analysis and genetic sequencing and how are they connected to cell banking?

Acorn believes that the future of personal healthcare will be unlocked by the value of your own cells. Cryopreserving your cells today is one way to ensure you will have your best cells for use when you need them most - in the future. Your cells also have the potential to unlock valuable health information from the thousands of data points that they can deliver through human genome sequencing and other analytical capabilities. Over time, as science unlocks the immense health data sets that genome analysis can provide through live cell collection, the more we will all be able to start preventing diseases before they even present themselves. Moving us all closer to prevention and not just treatment. Freezing your cells is the first step - but the future of cell therapy will involve the ability to understand your genetic make-up and treat you for diseases before the first symptom. Acorn will be with you each step of the way as science and medicine advance to very personalized, preventative healthcare.

Why do I keep hearing about stem cells in a negative way?

Two very public conversations have caused this perceived negativity around stem cells and they are important to fully understand. Firstly, and recently, the industry has been plagued by a rush to market for therapies that have not been tested, or therapies not actually rooted in science. Like any new innovation, the hype and anticipation has caused a market rush from many players who are not necessarily rooted in sound medical science. Acorn was born out of fundamental molecular and cell science and we are committed to help facilitate visibility to the therapies that are based in real science that can make a difference in your life. The second area that has caused negativity around stem cell research started nearly 20 years ago as scientists first explored the use of embryonic stem cells for research. Obviously harvesting stem cells from unborn embryos was fraught with ethical issues and drove significant controversy.

The remarkable discovery of iPSCs in 2012 has thankfully put to rest any need to harvest stem cells from sources that compromise ethics. It is precisely due to iPSC innovation that Acorn has been able to bring the value of cells to everyone in an accessible and affordable way. While we are many years past the initial controversial use of embryos for stem cells, the negativity still persists. Taking the time to educate yourself on stem cells and the current areas of research will allow you to fully understand and take advantage of what real science can deliver to the promise of cell and gene therapy.



ABOUT YOUR CELL COLLECTION EXPERIENCE WITH ACORN

How can I prepare for my cell collection appointment?

Please allow for about 15 min per person for your session which includes time to process your collection and to set up your client account at Acorn. Starting in the month following your cell collection, and ongoing, you will be billed your monthly cell storage fee of \$15.99 CAD for the first adult, \$9.99 for a second adult and \$7.99 for any child under the age of 19.

Collecting a few plucked hairs from your head is very easy - most people say it feels like plucking an eyebrow. However, we always like to remind people that you need to have some hair on your head - even if only a small amount - for the cell collection session. So if you happen to be someone who shaves their head, you will need to grow just enough hair on a few areas of your head to allow for a set of tweezers to retrieve a few strands of hair. This can be as short as 0.5 cm in length or less and depending on how fast your hair grows this can be grown out fairly quickly. Please keep this in mind when you chose your cell collection date. Its also a good idea to come to your session with recently washed hair, to minimize the amount of hair product that you use, and to limit the hair accessories that you wear that day (elastics, clips, extensions etc...)

With all the attention around privacy and data security today, how can I trust Acorn with my cells?

Acorn was built on two very important fundamental principles: transparency and consent. We will never share identifiable personal data from your cells to any party - either overtly or surreptitiously; and we will always ask you to opt-in and provide explicit consent to any health-related studies, research or data that could help you or help others that would require your identifiable personal data. Acorn believes strongly that the future of the global digital economy and the communities that thrive in it will be built on transparency and consent. You always need to be fully aware of what is being done with your data and you must always consent to its use. You can read more in our privacy policy and terms and conditions of service on our website (www.acorn.me).

What is cryopreservation?

Cryopreservation is the most widely accepted, medically-proven, method of safe long-term preservation of human samples, specifically cells, at very low temperatures to maintain their viability when thawed. The medical community has been using cryopreservation for generations already for fertility solutions involving the freezing of eggs; or with the preservation of sperm samples - all successfully generating 40 years of live births already.

Is cryopreservation of human cells reliable?

Yes, the medical community has been relying on cryopreservation to preserve sperm cells and oocytes (eggs) for generations already; and umbilical cord blood banking also uses cryopreservation. Acorn uses the same reliable process and adds its proprietary transport media to collect and ship the cells - which all enable lifelong cell preservation and viability. Cells and other human tissues can theoretically be safely and reliably preserved using cryopreservation indefinitely. That means that cryopreservation is a proven method that will reliably allow you to benefit from future medical innovations for many years to come.



AFTER YOUR CELL COLLECTION

What do you do with my cells when they arrive at your facility?

When your hair follicles arrive at our facility, they are first visually inspected. We then analyse them for contamination and analyze the cells in the follicles for viability. The hair follicles are then suspended in a liquid that helps protect the cells from ice crystal damage. They are placed in a scientifically controlled rate freezer which freezes them at a predetermined rate until they reach -180 °C degrees, to ensure that they are kept viable until cryopreservation. Your hair follicles and the cells in them are then cryopreserved in vapour phase liquid nitrogen in four separate vials and eventually stored in two separate locations which creates redundancy of samples for your peace of mind.

What does “viability” mean at Acorn?

We test your cells for viability, and we consider them viable if they are healthy and still alive which makes them a viable source for future medical therapeutic use. We do this to ensure that your cells have the greatest potential of being leveraged later in life, and to ensure that you are storing valuable cells.

Will my hair grow back after its plucked?

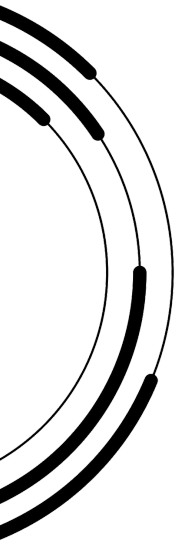
Yes, pulling out the hair follicle doesn't stop hair growth. On average, most people have anywhere from 100,000 to 150, 000 hairs on their heads and naturally lose around 100 to 200 hairs per day that naturally grow back. Scalp hair grows in cycles - each hair follicle undergoes a growth stage that lasts anywhere from two to eight years, followed by a two-month resting stage where no growth occurs. At that point, the hair strand falls out and a new one begins to grow in its place. For a healthy person, this means between 80 and 90 percent of hair follicles are growing hair at one time, while the rest of the follicles are resting or shedding.

What do you do with the data my cells give you after you process my sample?

Acorn uses its advanced biological analytics to learn from your data and aims over time to offer additional services that provide health reports and insights based on your data that is relevant to you. To deliver our services to you, we use the most stringent security standards to keep and maintain data privacy at all times. You can refer to our full privacy policy at www.acorn.me for more information.

How secure is the Acorn facility that stores my cryopreserved cells?

Your cells are stored in a world class facility with state of the art cryogenic storage containers that have vault-like security, 24-7 monitoring and back-up systems. Acorn has taken its lead from generations of umbilical cord banking, sperm banking and oocyte (egg) freezing protocols to ensure your cell storage meets the same stringent conditions. The facility is one of the most secure, safe and high-quality bio-repositories in the world. Experienced staff, dual redundant alarm and real-time temperature monitoring systems, video surveillance and high security access restrictions all ensures continuous security. We operate within ISO standards for cell processing.



How is this different than storing just my digital DNA instead?

Getting your DNA as a digital file is comparable to taking a picture of a person and not getting all the other information you might get from a live interaction with them. DNA alone doesn't capture everything that your cells can uncover.

The live cells that Acorn collects through your hair follicles can be converted into iPSC cells which are those very powerful cells we are able to reprogram, much like stem cells, into the cell types of any organ of the body. This is why they have the potential to be used in therapies. In addition, these cells can also be leveraged as genetic sources of data to help you make better health decisions based on your genetic make-up. They can also be used for gene therapy. The value of live cell collection is immense since it is 100% of the full genome of a human body. In comparison, the DNA obtained from the cells of cheek swabs/saliva currently very popular in home cell collection kits is made up of dead cells. The services that use cheek swabs/saliva focus on less than 1% of a full genome. They are perfect for basic health reports and ancestry data but are limited in their use. They are not viable for use in medical therapy the way that live hair follicle cells could be used from Acorn's non-invasive process. Live cell collection is a very specialized area of science and evolves everyone into a next generation of genetic testing that will go beyond simple ancestry to full medical therapeutics.

Will Acorn turn my cells into stem cells as part of its service?

No. We will be storing your cells as whole hair follicles once we have deemed those cells as viable. When you have use of the cells in the future, we, or an accredited medical institution will isolate and grow the viable cells, called primary keratinocytes, and convert them into stem cells. Our process gives you the comfort that your cells are viable and that they can be converted into stem cells - but we preserve them as they are, in their best state to one day be converted by a medical practitioner.

Where can I get more information?

Please visit us at www.acorn.me, contact our client services team at acorncustomersupport@acorn.me or reach us through our general inbox at info@acorn.me. We would be happy to answer any questions you may have.