I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status
Prepare my detailed draft task list/timeline	Sunday, November 26, 2023	Ma	https://docs.google.com/document/d/1Up4PzsLgQ	Completed
Send emails to mentors, and Genome Alberta. Emails have been recieved a couple weeks later, everyone is busy, I have decided to go as a lone wolf.				Task Cancelled
Read articles on genetic variation and anthropology.	Sunday, December 3, 2023			Completed
Finish explanation on genetic variation and anthropology. Genetic variation and anthropology wil not be sections of their own. Anthropology will not be mentioned in this project entirely because even though it us the study of human genetics, I need to be more specific and focus on genetic variation, as I will not focus on the entirety of genetic anthropology including prehistoric migration, change in language and culture.	Sunday, December 10, 2023			Completed
Finish section on the importance of genetic variation and natural selection. I will not write a section on genetic variation. Genetic variation is a vast topic, and throughout part 1 people will start to understand how it works while reading the different factors that effect. In a way, part 1 is the section of genetic variation, as once people read DNA replication, natural selection and mutations, they'll understand what it is and how it works.	Sunday, December 17, 2023			Completed
Read articles on examples of genetic variation in human history. NO need to read articles on examples of genetic variation throughout history. Instead, focus on mutations, DNA replication, and natural selection. You will be providing three examples of genetic variation in human history when you discuss your three diseases.	Sunday, December 24, 2023			Completed
Finish writing examples of genetic variation in human history. I have decided not to do this section. Since I am already writing the genetic histories and causes for three diseases, writing about more would cause people to think why I did not do those diseases as well. Also, if I already will write a section on genetic histories and causes, I think it will be extra unecessary information.	Monday, December 25, 2023			Task Cancelled
Find the three largest ethnicities in Calgary, (besides caucasians.) Instead of focusing on the three largest ethnicities, I have decided to focus on the atnecities most prone to the three most common genetic diorders. Sub-saharn afrians for sickle cell anemia, Southeast Asian for Diabeties Mellitus, and Caucasian for cystic fibrosis.	Tuesday, December 26, 2023			Completed
Deep dive into their genetic histories. Information on origin and wherabouts about where diabeties is scarce, so I will make an assumption that since Southeast Asians have the largest percent of individuals diagnosed, it must have originated there.	Wednesday, December 27, 2023			Completed
Find cures and medicine associated with common deseases in those races. I have decided to also include lifestyle changes, as that seems to be the biggest form of care reccomended by doctors. I will not go into great depth into the biological reasons these medicines work, and will give them a brief overview and their function. This I so do not go off track on my topic, and also for greater clarity.	Thursday, December 28, 2023			Completed
Begin reading on scientific explanation on how those treatments work	Friday, December 29, 2023			Completed
Finish section on cures and explanation for diseases associated with three most common ethnicities in Calgary. I have just realized, what is my science fair question? I have a purpose and why I am doing science fair, but is it mandatory to have a question? In any case, my question will be as simple as how genetic variation impacts us, and I have conducted a variety of research for my evidence. Besides, I do not think it matters as much as the question as it matters the quality of how you answer it.	Saturday, December 30, 2023			Completed

Part 1:

Genetic Variation and Mutations

Introduction:

My science fair project will focus on anthropological genetics, and why it is fundamental in understanding and preserving our ancestry as a species, as well as preventing genetic disorders. In my project I w

Explain genetic variation and evolution, and how certain mutations can imply harmful effects on humans through several generations.

Focus on genetic testing and how tests are used to prevent genetic diseases.

Discuss types of genetic tests, and pre-diagnosis and treatment for several common diseases so we can prevent them from an early stage in an individual's life.

I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status	
Review genetic variation and explanation. Finish this review section the same date you finish writing part 1, you do not need extra days to check for spelling and grammer and make it more clear.	Sunday, December 31, 2023			Completed	Investigate three common genetic disorders, sickle cell anemia, cystic fibrosis, and Diabetes and discuss which ethnic groups are prone to that disease.
Review genetic anthropology and explanation. Same thing as above.	Monday, January 1, 2024			Completed	I will share a list of recommendations I have for initiatives AHS (Alberta Healthcare System) can take to make sure they are prepared to the full extent of providing the right care to individuals with genetic c
Review section on the importance of genetic variation and anthropology.	Tuesday, January 2, 2024			Completed	
Review section on examples of genetic variation in human history.	Wednesday, January 3, 2024			Completed	Alberta is a multicultural hub, filled with an abundance of immigrants from several minority groups. For a successful society, we must focus on the health of individuals suffering from familial genetics and t
Review section on the genetic histories of three largest ethnicities in Calgary. For the last few review sections, I have decided to include them on the same day I finish each section. I will be reviewing for grammer and spelling, but also for how clear each section is and to make sure they do not run off into a different topic. My science fair revolves around a vast topic, which in turn relates to even bigger topics and includes big topics, I have to be confident in which topics I am discussing. Also, a bit of a coincidence, but in science we are starting the unit biological diversity, and it is pretty much related to exactly what I am doing, biological diveristy. However, I do not think that the fact this is at my grade level will play a huge part, as I have gone in more depth on mutations and DNA structure, and discussed DNA replication which is not dived into heavily in the curriculum.	Thursday, January 4, 2024			Completed	The raw purpose of studying genetics and anthropology is to come up with efficient ways to provide care for our species and find cures and prevention towards genetic diseases.
Review section on cures and medicine, explanations for these diseases.	Friday, January 5, 2024			Completed	
Deep dive into AHS genetic records. Having difficulty finding AHS genetic cures and prevention for three diseases. Due to this, I have decieded to do a section on genetic testing, ways and methods physicians can see the likelyhood of you inheriting a genetic disease, or if you have one. This will elaborate more into my reccomendations for the AHS, and there needs to be explanation since this is such a big part in the medical world.	Saturday, January 13, 2024			Completed	With this project, I aim fill the gaps in Alberta's healthcare system that would help our province to stay one step ahead of common genetic disorders with the proper resources, and pre diagnose patients su
Finish section on genetic records. There will not be a section on genetic records, as my reccomendations on which gaps AHS needs to fill will give the audience an idea of their genetic records. Also, in my reccomendations I will breifly talk about what they have included in their genetic records, for backup information.	Sunday, January 14, 2024			Task Cancelled	
Finish section on Silent Genomes Project. I have decided to finish this section at end of project during speech.	Saturday, January 20, 2024			Completed	
Contact healthcare professionals through Baba, mentors, and volunteering. No mentors or healthcare professionals will be involved in this project. Ran into a hiccup today.	Sunday, January 21, 2024			Completed	**Important terms:**
Wait for replies, discuss about initiatives with mentors. Since there are no mentors, I have decided to limit my number of reccomendations to 10, also due to scarcity of information AHS has on genetic treatment.	1/25/2024- February 19, 2024			Completed	
Finish section on initatives we can takes from discussion from mentors. This is taking longer then anticipated, instead of writing a full page per reccomendation, I have decided to do a maximum of one paragraph. Also for more clarity and clearness.	Tuesday, February 20, 2024			Completed	Variation: A change or difference in the level, amount, or condition of something.
Review Part 2. Changed the name to Part 3, today I have formatted everything differently. The first part will be my research and actual science information, as planned. The second part will be my three genetic diseases, their care and treatment, genetic causes, overview, and demography and origin, while my third part will include Alberta's demography, and all my reccomendations. Due to the vastness of information, splitting it up into three parts will make it easier to read. It also helps the formatting issue of the trifold, as each part of the trifold will have one section.	Wednesday, February 21, 2024			Completed	Genes: The smallest units of deoxyribonucleic acid (DNA), or strands of nucleotides.

I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status
Print everything out, including logbook and buy a trifold with printed relevant images. Finish trifold. The trifold layout will look like this; the middle part of the trifold will incide my introduction, title, and about my project, as it is the first part which grabs people's attention. It will house part one and all my research. Unfortunately, I have decided not to include sections Components and Functions of the Cell and The chemical structure of DNA. I want to structure in a way that part 1 only supports the information presented in part 2, and does not branch out in unrelated topics not mentioned in part 2, but I will still include the cell compenents and DNA structure in my pamphlet or original research document. Also, since is the attention grabber, I will include a variety of pictures, 3-5. 2 of them will be about the cell compenents and DNA structure, to emphasize that I have still learned avout these, while the others will focus soley on DNA replication. Either sides of the trifold will be part 2 and 3. I am thinking a navy blue for my project, with sploshes of yellow or black chart paper from my previous science fair project. If all else fails, I will just buy some light blue chart paper.	Thursday, February 22, 2024			Completed
STEMIA Science Fair	Friday, February 23, 2024			Completed

Genetic variation: Differences in the DNA sequences that make up genes of a particular species, causing evolution to occur.
Genetics: The study of hereditary, or the physical and mental characteristics passed from generation to generation in the evolution of a species.
Evolution: The gradual changes in the physical and mental characteristics of a particular species over many generations.
DNA: A molecule that carries the genetic information for an organism to grow, reproduce, and function.
Nucleotides: The building blocks of DNA, each made of a phosphate group, a sugar group, and one of the four nitrogen bases, adenine, thymine, cytosine, and guanine(A,C,G,T or U).
Allele: Pair of chromosomes.

Why does genetic variation occur? Homo sapiens, (humans), have lived on Earth for nearly 6 million years, without variation, would we have survived to this point? Without variation, will we continue to su

Cell Components and their Functions:

Cells are the basic unit of life, found in every organism on our planet. They are the smallest unit of matter that can live, and contain all our genetic material. The three major functions of the cell are;

1. Energy production so your body can carry out basic and biological functions.
2. Protein synthesis so your body has a structure.
3. Cell replication so your body can grow.

Components of the cell include:

Cytoplasm: The gelatinous semi-fluid composed of water, organic molecules, and salts in which the rest of the components float.
A plasma membrane: The barrier that separates the inside of the cell from the external environment, made of many organic compounds including a lipid bilayer that consists of phospholipids and cholester
Mitochondria: Organelles that produce energy in the form of ATP, (adenosine triphosphate) to support the chemical processes in the cell. They produce ATP using a process called oxidative phosphorylatior
Chromosomes : Strands of DNA supercoiled around a protein called a histone. They are the primary carriers of genetic information. Humans have 23 pairs of chromosomes in each cell, or 46 chromosomes
Nucleolus: Primary ribosome production site. It takes ribosomal RNA and proteins to develop a fully formed ribosome.
Ribosomes: Organelles that synthesize proteins by bonding amino acids together based on the instructions of messenger RNA.
Proteins: Organic molecules that provide structural support, tissue growth, and aid in many processes in the cell. RNA, (ribonucleic acid), is a nucleic acid like DNA, however, the four nitrogenous bases of R
Transcription: The process in which a the series of nucleotides of a DNA strand are decoded by RNA polymerase to form mRNA. RNA polymerase is an enzyme with this specific job.
Ribosomal RNA: Transcribed in the nucleolus by mRNA. Nuclear pores are holes in the membrane of the nucleus so mRNA and ribosomes can get in and get out. ATP also needs to enter the nucleus so it ca

Cells must divide themselves so your body can increase in size. When they divide themselves into two, they must also replicate the chromosomes to the new cell so the hereditary information of the new c

But how do they replicate? To understand DNA replication we need to know DNA structure and all components take part in replication.

The chemical structure of DNA:

First, we need to understand the chemical structure of a DNA molecule. DNA is made of two strands intertwined in a double-helix structure, discovered by Watson and Crick in 1951. Each strand is made up

Models of DNA strands are depicted with 3’ and 5’ ends. So the end of one strand with be 3’, and the end of the other would be 5’. The 3’ and 5’ refer to the number of carbon atoms the phosphate groups
(T) thymine. Now that I’ve given you a brief overview of the chemical structure of DNA, lets look at the key players involved in DNA replication. These key players are enzymes, proteins that accelerate chen

Helicase
Primase
Ligase

I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status

DNA Polymerase 1
DNA Polymerase 3
SSB Proteins
Topoisomerase

DNA Replication:

Helicase breaks the hydrogen bonds holding the nucleotides together, separating the double helix into its two strands. While it's separating the DNA molecule, it forms a replication fork, with the two stran

To prevent supercoiling and tangled strands, the enzyme topoisomerase travels ahead of helicase and unwinds the tangled DNA and puts it back into it's double helix structure before its separated.

SSB (single-stranded) proteins will bind to the two open strands to prevent them from reassociating.

DNA primase initiates an RNA primer, about 5-10 nucleotides long at a specific location in the leading strand. The leading strand starts from 5' and ends at 3'. Once the primer is initiated, it serves as a temp

Since A (adenine) bonds with T (thymine,) and C (cytosine) bonds with G (guanine,) the polymerase needs to add bases complementary to the bases of that strand. For example, if guanine was on the leadi

Once helicase separates the entire molecule into two strands, and primers and bases are added to both completely, DNA Polymerase 1 switches the RNA primers for DNA bases. RNA contains uracil instead
Finally, ligase, the "gluing" enzyme attaches the primers and bases together, to form a complete sugar phosphate backbone. At the end, we have two identical copies of the first DNA molecule.

Mutations:

Mutations are what cause genetic variation. To put it simply, mutations are changes in the sequences of nucleic acids of an organism, such as DNA and RNA. If the DNA molecule in a chromosome in your b

An example is if I have a chocolate cake recipe, and in the ingredients list it says 2 cups of sugar. A neutral mutation would be if it said 2 kups of sugar. You'd still understand the typo, causing no difference t
Spontaneous mutations occur in the inside of a cell, most commonly when DNA is being replicated. Induced mutations occur as a result of the environment and external factors, such as smoking, increased

Natural Selection:

So genetic variation is the result of mutations, which are mistakes in our nucleic acid sequences. How does this help us and other species on our planet? Has it helped us for 6 million years? The answer is y

You are a blob-like herbivorous creature, you live in a humid climate with plenty of tropical plants and fruits to feed on. There are around fifty of you and the same species on this small, remote, tropical isl

For natural selection to occur, there needs to be genetic variation, reproduction or inheritance of traits, environmental pressures, and differences in mutations between phenotypes. Phenotypes are physic

Natural selection is a long process, taking millions to hundreds of millions of years. There's a high chance natural selection is occuring within our species right now, but we cannot predict the future and kno

Part 2:

Impacts of Mutations on Humans

Introduction:

In part 1, I have explained how mutations occur in several generations through DNA replication and reproduction. In part 2, I will discuss three common genetic disorders that dominantly effect three ethni

I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status

Sickle Cell Anemia:

Overview and Symptoms:

Hemoglobin, an iron-rich protein found in your red blood cells, responsible for delivering oxygen to the tissues in your body. Too much hemoglobin clumped together means blood clotting, too little means
Symptoms that are introduced include episodes of extreme pain when sickle cells block the arteries in your chest, abdomen, and joints. Red blood cells have a lifespan of 120 days before they are engulfed

Genetic Causes:

This is a genetic disorder, meaning a gene has undergone a mutation in both parents of an offspring. If both parents have this mutation in one copy of a specific gene, then the offspring has a 50% chance o
The gene that is mutated to cause sickle cell disease is called the HBB gene, found in chromosome 11p15.5. This gene encodes a protein for your hemoglobin, specifically the two beta-globin subunits out o
During DNA replication, a single base pair has been added, deleted, or changed in the HBB gene, and this mutated strand of DNA has been replicated through a series of sexual reproduction and cell replica

Demography and origin of mutation:

Mutations are random, and are rarely beneficial to an organism. 50-150 years ago in sub-saharan Africa around 50% of the population was suffering from a disease known as malaria. In broad terms malari

Sickle Cell Anemia: Care and Treatment

Sickle cell anemia (SCA) is a lifelong occurring disease, and one of the oldest and most common genetic disorders. Individuals who suffer from SCA require lifelong medical care and treatment, otherwise, t

Individuals of sub-saharan African descent are most commonly affected by this disease. 10 - 40% of Africa's entire population is affected, roughly 40 countries, and with a steadily growing population, inher

Gene therapy in broad terms is when a patient's cell is extracted from the body, its specific gene is modified to not carry that mutation, and later reintroduced into the body through bone marrow tran

Bone marrow transplants are in most cases applied to youth under 16, as eradicating the mutated cell before adulthood would greatly increase the chance for a healthy lifestyle. First, a bone marrow stem
If the child's immune system is not weakened before the transplant, it may recognize the foreign bone marrow cells as dangerous, and quickly eliminate them. This is why gene therapy is becoming a much

Lifestyle choices include staying hydrated, plenty of physical exercise, eating and sleeping well, and avoiding smoking and drinking. Individuals older then 2 are recommended to get checkups once a year. I

Using newborn screening, we can see if a child carries the recessive gene for SCD 24 hours after his birth. Hematologists say individuals with SCD should drink 8-10 glasses of water every day, and keep a he

There is also a plethora of prescribed medication for SCD, including; Hydroxyurea, L-glutamine oral powder, Crizanlizumab, Voxelotor, and pain-relieving medicines. Hydroxyurea, L-glutamine oral powder, a

Major organizations elaborating the importance of SCD gene therapy and providing new methods include SCDAA, Casgevy, NOVARTIS, and several CRISPR technology companies such as Vertex Pharmaceut

Cystic Fibrosis:

Overview and Symptoms:

Mucus. You may have second thoughts about its importance in your body, but it plays a vital role, acting as a lubricant for tubes and passageways, and trapping bacteria and viruses. Cystic fibrosis is an inhe

Cystic fibrosis also blocks the tubes that carry digestive enzymes from your pancreas to your small intestine, meaning your intestines cannot completely absorb the nutrients in your food. Symptoms caused

Genetic Causes:

Like many genetic disorders, symptoms of cystic fibrosis are caused by a mutation in a specific gene which encodes for a specific protein. In this case, the gene is the CFTR or cystic fibrosis transmembrane

Demography and origin of mutation:

In modern times caucasians and especially those of northern european descent are affected the most by CF. 20 000 individuals from europe have this disease, and 30 000 from America. Researchers have t

Care and Treatment:

Cystic fibrosis or (CF) is an inherited disease that damages multiple organs including your lungs and digestive tract. The defective gene passed down generation from generation causes irregularities in your

Multiple healthcare organizations and systems of the States offer many forms of prediagnosis, prevention, and prescribed medication to make sure individuals lead normal, healthy lives.
First, I will describe forms of prevention. There are four types; controlling infections in the lungs, loosening mucus in the lungs, preventing intestinal blockage, and providing adequate nutrition.

I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status

Preventing and controlling infections in the lungs can come in the form of washing your hands often, getting a yearly Influenza vaccine, getting a yearly pneumococcal vaccine, avoiding first and second-har

Washing your hands decreases the chance for respiratory infection because germs and bacteria from your hands can rub off on surfaces and people. Those germs can be inhaled later and cause issues in yo

Flu or Influenza is a highly contagious illness caused by a virus, and if this virus enters the body of an individual with CF, regular symptoms can worsen and lead to dangerous outcomes. Flu vaccines use ant

Pneumococcus is a type of bacteria that can cause sinus and ear infections, to pneumonia and bloodstream infections. Similar to Influenza, Pneumococcus can worsen the already dangerous symptoms of

Air pollutants such as particulate matter, nitrogen oxide, ozone, sulfur dioxide, and carbon monoxide are known to irritate your airways, which can lead to lung cancer, heart attacks, asthma episodes, whee

Cigarette and tobacco smoke also include toxins such as tar and carbon monoxide, so it is important to avoid them as much as possible. The second form of prevention is loosening mucus in your throat, by

By gargling salt water, the saline solution coats your mouth and throat, which also lessen inflammation and throat pain.

Drinking plenty of water every day means the mucus in your throat is thinner, lubricates our eyes and joints, and food move through our digestive tract and gut. If you are over 14, doctors recommend 8-12

Nasal sprays eradicate or lessen the number of nasal polyps, which interfere with the normal drainage or recylation of your sinuses.

Humidifiers increase the moisture or water vapor levels in air, making it easier to breathe. Humidifiers are especially useful for individuals living in dry climates. There is also preventing intestinal blockage,

An adequate diet for CF patients includes plenty of fats, carbs, and salts.

Diabetes Mellitus:

Overview and Symptoms:

Diabetes is a chronic disease, meaning it lasts for more than one year. It is where the pancreas, an organ located in your abdomen which plays the role of secreting digestive enzymes and hormones, makes

Symptoms caused by increased blood sugar include dehydration, increased urination, loss of weight, mood swings, blurry vision, and fatigue. These symptoms can lead to extreme complications in major o

Genetic Causes:

Diabetes usually occurs as a result of two causes. The first is when your immune system, a network of organs and proteins that protect your body against harmful bacteria and viruses destroys the islet cell

Demography and origin:

Its earliest records were in Egyptian papyri 1552 BC, and records have also been found in China, India, Greece, and the Middle East around that time. Although we have no concrete knowledge of when and

Care and Treatment

Although there is no found cure for Diabetes yet, a healthy lifestyle, blood monitoring and prescribed medication can improve an individual's health greatly. But for our most advanced methods of preventi

First, I will describe several changes someone can take hold of to improve their lifestyle and decrease symptoms of Diabetes.

Controlling the amount of carbohydrates, fats, and proteins you consume by eating healthy foods, and exercising regularly while maintaining your weight are all excellent initiatives an individual can take. T

Exercising helps lower the risk of hypoglycemia, by burning off glucose and improving the way insulin works. This is due to the fact that working muscles cause more insulin sensitivity than resting muscles,

Cardio is the most efficient way of lowering blood sugar, and comes in the form of walking, running, cycling, and aerobics. Specialists recommend at least 150 minutes of exercise per week, and 150-250 gr

Now I will describe more practical treatment including insulin and other medication. The four types of insulin medication are short-acting insulin, rapid-acting insulin, intermediate-acting insulin, and long a

Other blood sugar medications include high blood pressure medications such as ACE and ARB inhibitors which are prescribed to individuals with high levels of mercury which keep your kidneys healthy, asp

More recent or modern treatments for Diabetes include pancreas and islet cell transplants. Pancreas transplants are when a healthy pancreas is inserted in your body through surgery, and your body will n

40% of individuals with Diabetes originate from Bangladesh. Without a strong enough healthcare system, increasing poverty, and Diabetes on the rise, political will and economic resources are key success

Part 3:
AHS Initiatives

I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status

Introduction:

Now I will discuss the practical implications of my project, by gathering all previous knowledge. I will share a list of 5 recommendations for the Alberta Healthcare System (AHS). These recommendations wi

Alberta's Demography:

Sub-saharan Africa, Southeast Asia, and Caucasians are all part of Alberta's population, and statistics show immigration levels from these regions will continue to rise. Immigrants play a pivotal part in our e

The first statistical graph I have chosen shows general immigration levels and their estimated rise until 2041. It shows percent, and number of immigrants.

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The second graph I have chosen shows estimated future immigration levels of African, South Asian, and other ethnic groups until 2041.

Whenever an individual suspects he has a genetic disease or shows symptoms of a genetic disease, it is highly recommended to take a genetic test. Since my project revolves solely around immigrants and

Genetic Testing: The main form of prevention

The last three diseases I have discussed can all be genetically inherited.

Through methods of gene testing, we can see down to the last chromosome every mutation an individual has burdened to be diagnosed with this disease. However, none of these diseases have a definitive

The diagnosis of a genetic disease includes a physical examination, a family medical history, and laboratory testing if available. Common red flags for a genetic disease are symptoms, but another major fac

These includes:

Carrier testing: Carrier testing is often used by couples with a familial history of a certain genetic disease, or if they are part of an ethnic group with a higher risk of mutated DNA sequences. Couples want t

Newborn screening: Newborn screening is the most common form of genetic testing. Newborns within 24 hours of leaving the womb are tested to see if they have certain metabolic disorders and abnorma

Prenatal Diagnostic Testing: Prenatal testing is used to determine if during pregnancy a fetus has mutated genes in its sequence. Most commonly offered to couples who have increased risk of inheriting a

Predictive or Presymptomatic testing: These tests are used by adults and adolescence with a family ancestry that includes multiple individuals of particular disorder. For prevention of the disease down the

Diagnostic testing: If you have symptoms of a particular disease such as cystic fibrosis, then diagnostic testing is done to analyze your DNA sequence to confirm if you really have it. Diagnostic testing is not

Pharmacogenetics: Diagnostic testing is used to confirm if you have a genetic disease first aroused by symptoms, while pharmacogenetics is used to determine the medication and dosage you should consu

Recommendations for AHS:

Genetic therapy for SCA: AHS has already implemented bone marrow transplants and stem cell transplants as part of their program. However, gene therapy has proven to be more successful as it does not

Immigration Genetic Tests: Every immigrant who comes to Canada must undergo a medical exam taken by a professional physician. This is called the IME, (Immigration Medical Exam.) This is so a possible h

Genetic Counseling: During immigration, if an immigrant has a high risk factor of inheriting a genetic disorder or their child inheriting a genetic disorder, there should be a genetic counseller. Genetic couns

Raising Awareness: To raise awareness of the symptoms of a particular disease towards the general public, there should be medical brochures that clearly outline the risks and dangers of that disease. Thes

Newborn Screening in Canada: In Canada, only Ontario provides newborn screening in hospitals. The United States offers newborn screening in all fifty-one states, and newborn screening has become the

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OR

2. Infection Prevention and Control Clinical Care Guidelines | Cystic Fibrosis Foundation
By Anon Container: www.cff.org URL: https://www.cff.org/medical-professionals/infection-prevention-and-control-clinical-care-guidelines

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I am planning to do	by when (date)	I need help from	Resouces (links)	Current Status

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