Scripts Final

Introduction

Hello. My name is Kurt Hildebrand. This channel's primary purpose is to critically consider the relationship between science and religion. My main focus will be to answer the question: "Who is God?"

The Bible tells us that "God is the same yesterday, today, and tomorrow" (Hebrews 13:8, Malachi 3:6, Revelation 1:8, James 1:17, Psalm 89:34) and that "God is Love" (1 John 4:8). So then why is there seemingly such a big difference in God's character between the Old and New Testaments of the Bible? If God is a God of love, why do natural disasters, diseases, suffering, cancer, and death exist? Why did Jesus have to die to provide salvation for sinners? Did God demand the payment of blood because we've broken His laws? Does God punish sinners by burning them in fire forever and ever?

These are important questions I hope to answer along the way but first lets establish some ground rules.

Number one: the Bible is to be its own interpreter which means that the Bible is to be taken literally unless the Bible explicitly states that certain passages should be taken figuratively. If the Bible is God's primary means of revealing Himself to humanity, then common people should be able to read and understand it. If the Bible is not interpreted as written, then any text could be twisted and contorted into any meaning. To avoid this problem then, I think the Bible should be taken as it reads. Furthermore, if God is all-powerful and all-knowing, then He should be able to preserve the words in the Bible even through translations. Finally, many people have died to preserve the words in the Bible; every page in the Bible is high rent area. Nothing in the Bible is unnecessary.

Number two: Science should be harmony with the Bible. The God who inspired the writings of the Bible also created nature. Therefore, science should give an identical view of God as presented through the Bible. On the flip side, the Bible should be in harmony with nature. Both the Bible and Science should match.

Genomic View

God's Law

What is God's law? Many of my religious friends would say "Leviticus" or "the 10 Commandments!" I agree, but I think God's law is more fundamental. Psalms 119:15 says, "Thou art near, O Lord; and all thy commandments are truth." John 17:17 says, "Sanctify them through thy truth: thy word is truth." God's law, God's word is truth and truth is a description of reality. So, God's law is fundamentally a description of reality.

In Science, there are physical laws which describe reality. Physical laws such as Conservation Laws (Conservation of Mass, Conservation of Energy, Momentum, Angular Momentum, Conservation of Charge), Newton's Laws of Gravitation, Kepler's Laws of Planetary Motion, Laws of Thermodynamics, Maxwell's Equations for Electromagnetism and the Lorentz Force Law, Quantum Mechanics, Quantum Field Theory, Radiation Laws, Laws of Chemistry. Since these "laws" are also descriptions of reality, I believe that physical laws **are** God's laws. God's laws are natural laws.

Any discussion about laws leads to the second question, what happens when you break the law? Can the laws of Conservation of Mass or Energy be broken? No, it's ridiculous. Life depends on these laws staying constant. These laws can't be broken. If they were broken, the natural consequences would be that reality as we know it would cease to exist. Planets would go careening off into space, airplanes would drop out of the sky, matter itself would disintegrate. It would be chaos.

With this in mind, let's go to the Bible and see what it says about breaking God's law. 1 John 3:4 says, "Whoever commits sin also commits lawlessness, and sin is lawlessness." So sin is lawlessness. Or put another way, sin is transgression of the law. What else does the Bible say? Romans 6:23 says, "For the wages of sin *is* death, but the gift of God *is* eternal life in Christ Jesus our Lord." And John 8:34, "Jesus answered them, 'Most assuredly, I say to you, whoever commits sin is a slave of sin.'" So sin is lawlessness, transgression of the law, slavery, and sin also causes death. But there's one very important characteristic of sin found in Romans 5:12-14.

> 12 Therefore, just as through one man sin entered the world, and death through sin, **and thus death spread to all men, because all sinned**— 13 For until the law

sin was in the world, but sin is not imputed when there is no law. [14] **Nevertheless death reigned from Adam to Moses**, even over those who had not sinned according to the likeness of the transgression of Adam, who is a type of Him who was to come.

Did you catch that? Death through sin spread to all men and reigned from Adam to Moses. It was passed down through generations. Out of all the branches of science, one has been described as lawless: Biology. In physics and chemistry for example, there are many well defined equations and consistent outcomes. This is not the case in biology. If there is **one** law in biology, its DNA. DNA is the law of life.

So if sin is transgression of the law, is there evidence that the law of life, genetic code, has been changed? Yes. There are sequences of DNA called transposable elements which can move themselves almost anywhere in the genome. Transposable elements, also known as transposons, or jumping genes, or (ironically) selfish genes, were originally thought to be junk DNA because they did not code for proteins. However, it was discovered that transposable elements actually function in regulating and controlling the expression of other genes. Also, transposable elements can disrupt the normal functions of the genome by jumping into the middle of other genes. In essence, it looks like DNA was originally read-only but became read-write through transposable elements.

a. Frank-Kamenetskii, Maxim D. "Are There Any Laws in Biology?" *Physics of Life Reviews*, vol. 10, no. 3, 2013, pp. 328–330., doi:10.1016/j.plrev.2013.07.002
b. Shapiro, James A. "How Life Changes Itself: The Read-Write (RW) Genome." *Physics of Life Reviews*, vol. 10, no. 3, 2013, pp. 287–323., doi:10.1016/j.plrev.2013.07.001
c. Koning, A. P. Jason De, et al. "Repetitive Elements May Comprise Over Two-Thirds of the Human Genome." *PLoS Genetics*, vol. 7, no. 12, 2011, doi:10.1371/journal.pgen.1002384

Referencing Romans 5:12-14, the only way death can reign from Adam to Moses, that is be passed down through generations, is for sin to be inherited. If sin is inherited, it has to be genetic. Furthermore, Jeremiah 13:23 says "Can the Ethiopian change his skin or the leopard its spots? *Then* may you also do good who are accustomed to do evil." The only way the Ethiopian could change his skin or the leopard change its spots is for their genome to be changed. Sin has to be genetic. I

hypothesize that sin **is** transposable elements, or more accurately, sin is the actions caused by transposable elements.

Finally what does this say about God? I think there is sufficient evidence to conclude that God's original code has been severely hijacked by Satan. God did not intend for selfishness, greed, pain, disease, cancer, and death. All these are direct consequences of breaking God's law and not caused by God himself and can be traced back to transposable elements. So how did sin originate? The Bible tells us in Isaiah 14:12-14

> **12** "How you are fallen from heaven,
> O Lucifer, son of the morning!
> *How* you are cut down to the ground,
> You who weakened the nations!
> **13** For you have said in your heart:
> 'I will ascend into heaven,
> I will exalt my throne above the stars of God;
> I will also sit on the mount of the congregation
> On the farthest sides of the north;
> **14** I will ascend above the heights of the clouds,
> I will be like the Most High.'

God is the only being which can create and write laws and by extension, write genetic code. Lucifer is described as a covering cherub, second in command only to Jesus. He was filled with pride because of his high standing and filled with jealousy because he wasn't first in heaven. Therefore, to be like the Most High, he sought to alter God's law the only way he could, by changing his genome, his DNA, by inventing transposable elements with the goal to subvert the throne of God and take it for himself. Lucifer hid his true nature from the rest of creation. He accused God of being arbitrary and restrictive and that God was holding creation back from reaching their true potential. By changing their own DNA, Lucifer argued, creation could have true freedom and achieve a higher existence. Lucifer claimed to be operating in creation's best interest.

But God in infinite wisdom tried to show Lucifer the errors of his ways. Yet creation didn't fully understand the nature of Lucifer's rebellion. God had to let Lucifer's argument stand until the nature of sin was fully revealed and the character of

Lucifer fully unmasked. Thus, Lucifer became Satan, the accuser, and took one-third of the angels down into rebellion against God.

Fundamentally, the question of God's character lies at the origin of sin. Does God act in the best interest of all creation or is God vengeful, hateful, and demanding of worship from His subjects? Does God demand love and punish those who don't offer it? In fighting their cases, Satan can use all forms of lying, deceiving, and scheming to accuse God but God must act true to his character and must abide by His own laws that He's established. God must show that His laws are not arbitrary and restrictive, that His laws provide freedom for creation, and that he acts in creation's best interests.

Root Cause

Let's take a closer look at what transposable elements are and how they function, the problems that they cause, and the Biblical evidence that sin is ultimately a genetic problem.

Transposable elements are sequences of DNA that can move around in the genome. They are classified into two major groups: Class 1 and Class 2 transposons. Class 1 retrotransposons copy-and-paste themselves in the genome. They do this by using the cell's existing machinery to create RNA and enzymes called Reverse Transcriptases. The cell transcribes the retrotransposon's code into RNA. The reverse transcriptase then synthesizes a new DNA copy from the RNA and then inserts the DNA copy at a new location in the genome. A little side note on reverse transcriptase: the cell's normal usage of genetic code is that DNA is transcribed into RNA which gets translated into proteins. Never the other way around. Reverse transcriptase upends this by allowing DNA to be synthesized from RNA, reverse the normal process. It's interesting to note that the code for reverse transcriptase originates from transposable elements. Furthermore, reverse transcription is very error prone, frequently halting part way through transcription. I would argue that these characteristics indicate inferior design.

a. Roberts, J., et al. "The Accuracy of Reverse Transcriptase from HIV-1." *Science*, vol. 242, no. 4882, 1988, pp. 1171–1173., doi:10.1126/science.2460925

Anyway, there are two sub-types of class 1 retrotransposons called Long Terminal Repeat (LTR) transposons and Non-Long Terminal Repeat (non-LTR) transposons.

LTR transposons are so named because they are flanked on either side by long repeating sequences. Retroviruses are viruses that insert themselves into the host's genome and are classified as LTR transposons because they share many of the same characteristics. Retroviruses are basically LTR transposons that encode for a protein envelope allowing movement between cells. HIV is an example of an LTR transposon.

The second sub-type called non-LTR transposons consequently lack terminal repeats and are further subgrouped into LINEs (Long Interspersed Nucleotide Elements) and SINEs (Short Interspersed Nucleotide Elements). LINEs are 4-7 kbp (thousand basepairs) long and are autonomous which means they encode the enzymatic machinery to move themselves around the genome. LINE-1 are the most common LINEs in mammals. SINEs are 150-500 bp (basepairs) long and are non-autonomous meaning SINEs can't move themselves and must rely on the enzymatic machinery from LINEs already existing in the genome to mobilize. Both LINEs and SINEs can be identified by a repetitive tail and the lack of long terminal repeats. In fact all transposons can be identified by various forms of repetitive sequences.

Class 2 transposons, called DNA transposons, cut-and-paste themselves in the genome. They do not rely on an RNA intermediary and instead rely on several transposase enzymes which perform the cut-and-paste operation directly on the DNA itself. Some transposase enzymes are very specific in the sites that DNA is pasted to while others are not very specific pasting DNA at random. DNA transposons can be identified by Terminal Inverted Repeats which are short direct repeats at the target "paste" site, followed by inverted repeats which help transposase identify and "cut" the transposon. DNA transposons make up about 3% of the human genome but are thought to be nonfunctional in humans due to losing the ability to transpose.

a. ~~Kazazian, Haig H., and John V. Moran. "The Impact of L1 Retrotransposons on the Human Genome." *Nature Genetics*, vol. 19, no. 1, 1998, pp. 19–24., doi:10.1038/ng0598-19~~
b. ~~Pace, J. K., and C. Feschotte. "The Evolutionary History of Human DNA Transposons: Evidence for Intense Activity in the Primate Lineage." *Genome Research*, vol. 17, no. 4, 2007, pp. 422–432., doi:10.1101/gr.5826307~~

That was just a brief overview in how transposable elements function.

The point is that transposable elements are sequences of genetic code which move themselves to other places in the genome and that they can be identified by repeating sequences. Most scientists would argue that transposable elements provide a vital means for genetic diversity and genetic mutation to facilitate evolution. However, I don't think that this is the case. I believe that all changes caused by transposable elements are degenerative.

a. ~~De, Subhajyoti. "Somatic Mosaicism in Healthy Human Tissues." *Trends in Genetics*, vol. 27, no. 6, 2011, pp. 217–223., doi:10.1016/j.tig.2011.03.002~~
b. ~~Freed, Donald, et al. "Somatic Mosaicism in the Human Genome." *Genes*, vol. 5, no. 4, 2014, pp. 1064–1094., doi:10.3390/genes5041064~~

Here's why. Transposable elements cause significant damage to the genome and are implicated in a vast array of diseases. Chronic pancreatitis, Hemophilia A, Hemophilia B, Leukemia, Cystic Fibrosis, genetic diseases, autoimmune diseases, endocrine and metabolic diseases, psychiatric diseases such as Alzheimers disease, Parkinson's disease, Friedreich's Ataxia, Schizophrenia, Bipolar disorder, depression, Post Traumatic Stress Disorder, Alcohol dependence, Autism, ADHD, selfish behavior, cancer such as lung cancer, brain cancer, colorectal cancer, colon cancer, liver cancer, esophageal cancer, pancreatic cancer, ovarian cancer, breast cancer, aging, and death all have root causes implicating transposons.

1. Genetic Diseases
   a. Ayarpadikannan, Selvam, et al. "Transposable Element-Driven Transcript Diversification and Its Relevance to Genetic Disorders." *Gene*, vol. 558, no. 2, 2015, pp. 187–194., doi:10.1016/j.gene.2015.01.039
2. Autoimmune Diseases
   a. Volkman, Hannah E, and Daniel B Stetson. "The Enemy within: Endogenous Retroelements and Autoimmune Disease." *Nature Immunology*, vol. 15, no. 5, 2014, pp. 415–422., doi:10.1038/ni.2872
3. Endocrine and Metabolic Diseases
   a. Costello, Kevin R., and Dustin E. Schones. "Chromatin Modifications in Metabolic Disease: Potential Mediators of Long-Term Disease Risk." *Wiley Interdisciplinary Reviews: Systems Biology and Medicine*, vol. 10, no. 4, 2018, doi:10.1002/wsbm.1416
   b. Barreau, Olivia, et al. "Identification of a CpG Island Methylator Phenotype in Adrenocortical Carcinomas." *The Journal of Clinical Endocrinology & Metabolism*, vol. 98, no. 1, 2013, doi:10.1210/jc.2012-2993

   c. Du, Juan, et al. “Chromatin Variation Associated with Liver Metabolism Is Mediated by Transposable Elements.” *Epigenetics & Chromatin*, vol. 9, no. 1, 2016, doi:10.1186/s13072-016-0078-0
4. Psychiatric Diseases
   a. Bundo, Miki, et al. “Increased L1 Retrotransposition in the Neuronal Genome in Schizophrenia.” *Neuron*, vol. 81, no. 2, 2014, pp. 306–313., doi:10.1016/j.neuron.2013.10.053
   b. Larsen, Peter A., et al. “Warning SINEs: Alu Elements, Evolution of the Human Brain, and the Spectrum of Neurological Disease.” *Chromosome Research*, vol. 26, no. 1-2, 2018, pp. 93–111., doi:10.1007/s10577-018-9573-4. **Alzheimers disease, Parkinson’s disease, Friedreich’s Ataxia**
   c. Reilly, M. T., et al. “The Role of Transposable Elements in Health and Diseases of the Central Nervous System.” *Journal of Neuroscience*, vol. 33, no. 45, June 2013, pp. 17577–17586., doi:10.1523/jneurosci.3369-13.2013
   d. Guffanti, Guia, et al. “Transposable Elements and Psychiatric Disorders.” *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*, vol. 165, no. 3, 2014, pp. 201–216., doi:10.1002/ajmg.b.32225. **Schizophrenia, Bipolar disorder, Major depression, PTSD, Alcohol dependence, Autism, ADHD**
   e. Gandal, Michael J., et al. “Shared Molecular Neuropathology across Major Psychiatric Disorders Parallels Polygenic Overlap.” *Science*, vol. 359, no. 6376, 2018, pp. 693–697., doi:10.1126/science.aad6469
5. Selfish Behavior
   a. Israel, Salomon, et al. “The Oxytocin Receptor (OXTR) Contributes to Prosocial Fund Allocations in the Dictator Game and the Social Value Orientations Task.” *PLoS ONE*, vol. 4, no. 5, 2009, doi:10.1371/journal.pone.0005535
6. Cancer
   a. Scott, Emma, and Scott Devine. “The Role of Somatic L1 Retrotransposition in Human Cancers.” *Viruses*, vol. 9, no. 6, 2017, p. 131., doi:10.3390/v9060131. **Cancer: Lung, Brain, Colorectal, Liver, Esophageal, Pancreatic, Ovarian**
   b. Hancks, Dustin C., and Haig H. Kazazian. “Roles for Retrotransposon Insertions in Human Disease.” *Mobile DNA*, vol. 7, no. 1, June 2016, doi:10.1186/s13100-016-0065-9. **Diseases: Chronic pancreatitis, Hemophilia A, Hemophilia B, Leukemia, Cystic Fibrosis, Breast Cancer, Ovarian Cancer, Hereditary Cancer, Colon Cancer**
7. Aging
   a. Cecco, Marco De, et al. “Transposable Elements Become Active and Mobile in the Genomes of Aging Mammalian Somatic Tissues.” *Aging*, vol. 5, no. 12,

2013, pp. 867–883., doi:10.18632/aging.100621
b. Sturm, Ádám, et al. “The Mechanism of Ageing: Primary Role of Transposable Elements in Genome Disintegration.” *Cellular and Molecular Life Sciences*, vol. 72, no. 10, 2015, pp. 1839–1847., doi:10.1007/s00018-015-1896-0
c. Wood, Jason G., and Stephen L. Helfand. “Chromatin Structure and Transposable Elements in Organismal Aging.” *Frontiers in Genetics*, vol. 4, 2013, doi:10.3389/fgene.2013.00274
d. Cecco, Marco De, et al. “Genomes of Replicatively Senescent Cells Undergo Global Epigenetic Changes Leading to Gene Silencing and Activation of Transposable Elements.” *Aging Cell*, vol. 12, no. 2, 2013, pp. 247–256., doi:10.1111/acel.12047
8. Death
a. Cecco, Marco De, et al. “Genomes of Replicatively Senescent Cells Undergo Global Epigenetic Changes Leading to Gene Silencing and Activation of Transposable Elements.” *Aging Cell*, vol. 12, no. 2, 2013, pp. 247–256., doi:10.1111/acel.12047
9. Other References
a. Morrish, Tammy A., and Jose L. Garcia-Pérez. “Editorial: Mobile Genetic Elements in Cellular Differentiation, Genome Stability, and Cancer.” *Frontiers in Chemistry*, vol. 5, 2017, doi:10.3389/fchem.2017.00108

Most alarming is the fact that transposons are very active in brain cells. LINE-1 retrotransposition is active in neurons and causes somatic mosaicism, which means that normal cells have different genomes from one another due to random LINE-1 insertions. The rate of LINE-1 transpositions is disputed, but at 80-100 billion neuron cells, even the most conservative transposition rates results in extensive genome variation within an individual.

Furthermore, normal neuron activity, thinking thoughts, causes double strand breaks (DSBs) in the genome of neurons. These double strand breaks occur at locations in the genome where transposable elements are abundant and allow even more transposon insertions at the break point. These breaks change how brain circuits functions and even changes thought processes. Basically, transposable elements can alter our thoughts and behaviors.

a. Faulkner, Geoffrey J., and Jose L. Garcia-Perez. “L1 Mosaicism in Mammals: Extent, Effects, and Evolution.” *Trends in Genetics*, vol. 33, no. 11, 2017, pp. 802–816., doi:10.1016/j.tig.2017.07.004

b. Newman, Andrew G, et al. “Activity-DEPendent Transposition.” *EMBO Reports*, vol. 18, no. 3, 2017, pp. 346–348., doi:10.15252/embr.201643797
c. Madabhushi, Ram, et al. “Activity-Induced DNA Breaks Govern the Expression of Neuronal Early-Response Genes.” *Cell*, vol. 161, no. 7, 2015, pp. 1592–1605., doi:10.1016/j.cell.2015.05.032

Here’s one short example of how transposons have altered behavior. Research was done investigating the difference between monogamous Prairie voles and promiscuous Montane voles. Researchers wondered why the Prairie voles mated with one partner for life and showed more interest in and care for offspring while the Montane voles didn’t show the same pair-bonding nor care. It was found that Prairie voles have greater binding to vasopressin 1a receptors (V1aR) in the brain while Montane voles have less binding at these receptors. Vasopressin 1a receptors are necessary for societal and emotional behaviors such as forming pair bonds in voles and also in humans. Thus, the higher receptor activity results in monogamous behavior in prairie voles while lower receptor activity results in promiscuous behavior in Montane voles.

Researchers further showed that variations in vasopressin receptors correspond to changes in behavior by altering the expression of the receptors in the voles. Previously monogamous prairie voles showed promiscuous behavior when the researchers down-regulated vasopressin receptors while previously promiscuous Montane voles showed monogamous and pair bonding behavior when vasopressin receptors were up-regulated. The root cause of the variations in the vasopressin receptors in voles was variations in the length of microsatellite gene regions. Microsatellites are repeating sequences of genetic code caused by transposable elements. Basically, transposable elements cause microsatellites which cause variations in vasopressin receptors which cause variations in behavior. Transposable elements effects behavior.

a. Barrett, Catherine E., et al. “Variation in Vasopressin Receptor (Avpr1a) Expression Creates Diversity in Behaviors Related to Monogamy in Prairie Voles.” *Hormones and Behavior*, vol. 63, no. 3, 2013, pp. 518–526., doi:10.1016/j.yhbeh.2013.01.005
b. Abdurakhmonov, Ibrokhim Y. “Introduction to Microsatellites: Basics, Trends and Highlights.” *Microsatellite Markers*, 2016, doi:10.5772/66446

What Biblical evidence is there to link transposable elements to sin? First, I'm going to propose the following key: when the Bible reads "iniquity" or "unrighteousness", substitute transposable elements. When the Bible reads "sin" it means actions caused by transposable elements. Lets looks at some examples.

Psalms 31:10

> For my life is spent with grief,
> And my years with sighing;
> My strength fails because of my iniquity [transposable elements],
> And my bones waste away.

Psalms 38:3-4

> **3** *There is* no soundness in my flesh
> Because of Your anger,
> Nor *any* health in my bones
> Because of my sin.
> **4** For my iniquities [transposable elements] have gone over my head;
> Like a heavy burden they are too heavy for me.

These two verses are describing sin and iniquity as physical and tangible things which are weighing the psalmist down. Iniquity is a burden which fits with the effects of transposable elements. Some others:

Psalms 51:1-2

> **1** Have mercy upon me, O God,
> According to Your lovingkindness;
> According to the multitude of Your tender mercies,
> Blot out my transgressions.
> **2** Wash me thoroughly from my iniquity [transposable elements],
> And cleanse me from my sin.

And Jeremiah 33:8

> I will cleanse them from all their iniquity [transposable elements] by which they have sinned against Me, and I will pardon all their iniquities [transposable

elements] by which they have sinned and by which they have transgressed against Me.

These two verses are describing a physical process of cleansing the body of sin and iniquity (transposable elements) as if sin and iniquity are physical things.

Finally, the Bible gives many accounts of Leprosy.

1. True Leprosy was incurable in Bible times.
2. It was contagious, spreading via droplets.
3. It physically deforms the victim.
4. It spreads throughout the whole body.
5. It isolates its victims as outcasts.
6. It attacks the sheath of nerve cells gradually causing inflammation, then death of the nerve.

There are many parallels between Leprosy and sin.

1. Sin is incurable.
2. Sin is contagious.
3. Sin physically deforms its victims.
4. Sin spreads through the whole body.
5. Sin isolates its victims as outcasts.
6. Sin causes death.

Mycobacterium leprae, the bacteria culprit for Leprosy, has been heavily invaded by transposable elements.

a. Cole, S. T., et al. “Massive Gene Decay in the Leprosy Bacillus.” *Nature*, vol. 409, no. 6823, 2001, pp. 1007–1011., doi:10.1038/35059006
b. Wegner, Michael. “Mighty Bugs: Leprosy Bacteria Turn Schwann Cells into Stem Cells.” *Cell*, vol. 152, no. 1-2, 2013, pp. 15–16., doi:10.1016/j.cell.2013.01.001

I’m trying to make the argument that **all sin** is caused by transposable elements.

The blueprint for all life is defined by DNA. The reason we have a head, two eyes, a nose, a mouth, a neck, a body, two arms, and two legs is because these are all coded

for in DNA. The reason we have senses to see, smell, taste, and touch is because these are all coded for in DNA. The reason we have brain circuitry to think and act on those senses is because its coded for in DNA. The reason we have a tendency to lie, cheat, steal, gamble, gossip, covet, commit adultery is because we have defective brain circuitry which results from defective DNA. The root cause of sin must be in DNA.

Sin is **not** a legal problem where the sinner has transgressed God's law and needs a lawyer to be justified. Sin is a physical problem where the sinner needs to be healed. God is pleading to let Him heal us and fix this transposon problem. The reason God gave us the 10 commandments is to diagnose us with sin. If we had no transposable elements we would not break God's commandments; we would keep God's law implicitly. But keeping the 10 commandments doesn't save us. Removing transposable elements does. Does God punish for breaking His law? No. Selfishness, greed, coveting, pain, disease, cancer, and death are natural consequences of breaking God's law.

Finally, with the hypothesis that all sin is caused by transposable elements, we can make a prediction about nature: I predict that **all** disease is caused by transposable elements.

Adam and Eve's Sin

In the beginning, God created the Heavens and the Earth and all that is in them and saw that it was very good. How did sin corrupt the world? Through Satan's temptation of Adam and Eve. We can read the account in Genesis 3.

The first thing we learn is that Satan is cunning and subtle. He speaks through the serpent to hide his true identity from Eve. The second thing we learn is that his temptation of Eve is not bumbling and clumsy but very precise and calculated. The serpent asked Eve, "Has God indeed said, 'You shall not eat of every tree of the garden'? God had said something similar but not identical. In Genesis 2:16-17 God had said,

> **16** And the Lord God commanded the man, saying, "Of every tree of the garden you may freely eat; **17** but of the tree of the knowledge of good and evil you shall not eat, for in the day that you eat of it you shall surely die."

God had told Adam and Eve that they may **freely** eat of **any** tree of the garden, except one. God is giving Adam and Eve a vast horizon of freedom with a narrow sliver of restriction. Satan misrepresents the command of God as a vast horizon of restriction with a narrow sliver of freedom. “Has God indeed said, ‘You shall not eat of every tree of the garden?’” The implication is that God is highly restrictive and a withholder.

Eve, taken aback by the serpents criticism, tries to defend God’s character and is tricked into overstating her case. Genesis 3:2-3

> 2 And the woman said to the serpent, “We may eat the fruit of the trees of the garden; 3 but of the fruit of the tree which *is* in the midst of the garden, God has said, ‘You shall not eat it, **nor shall you touch it**, lest you die.’ ”

God never commanded them to not touch it, only to not eat it. Eve unwittingly removed herself off the sure word of God and placed herself into Satan’s territory. The serpent replies in Genesis 3:4

> 4 Then the serpent said to the woman, “You will not surely die.

Now the serpent makes a direct contradiction to what God said in Genesis 2:17. God says that on the day they eat, dying they will die. Satan says that on the day they eat, dying they will **not** die. One of them is lying and Eve is stuck between these two competing views. The serpent then seals the deal with Genesis 3:5 by giving a motive to God’s command.

> 5 For God knows that in the day you eat of it your eyes will be opened, and you will be like God, knowing good and evil.”

The serpent is implicating that God knows that eating the fruit will make Eve like God and He wants to keep it for Himself. Satan sought to misrepresent the character of God painting God as restrictive, not perfectly upfront, unclear, untruthful, and that He is looking out for His own selfish interests. What broke out in heaven was a controversy over the character of God, an argument over what kind of person is God. This controversy is reflected in the garden. Was God’s command to not eat the fruit of the Tree of Knowledge of Good and evil an arbitrary command?

I've always been told that the Tree of Knowledge of Good and Evil was simply a test of loyalty to see if Adam and Eve would choose to serve God and that sin didn't happen until a false picture of God had been planted in Eve's mind. I've been told that sin is a fundamental distrust of God, of His goodness, and of His trustworthiness. When a false picture of God is planted in the mind, then sin starts to corrupt the mind. Thus sin entered when Eve thought a thought against God.

But what about Adam? Adam was not deceived and didn't believe a lie (1 Timothy 2:14) yet he still got the consequences. His motivation for eating the fruit was that he could not bear the thought of living without Eve so He ate the fruit with her. Ok, so maybe sin corrupts when we have a false picture of God or we choose to love something other than God. But what about those who have died without hearing the truth about God? They have never had the chance to correct their picture of God and love Him, yet they still lived with the consequences of sin. Or what about all other creation that hasn't sinned? Surely they questioned the character of God since Satan raised the controversy yet they never had the corrupting consequences of sin.

Clearly the previous view that sin is the direct result of an incorrect thought is wrong. I believe the reason God said not to eat the fruit was because there was something bad in the fruit. The Bible clearly states in Genesis 2:17 that they die in the day that they eat of the fruit, not in the day that they think of eating the fruit. Satan's temptation of Eve was a means to an end to get both Eve and Adam to sin. I believe that Satan placed his transposable elements in the fruit of the Tree of Knowledge of Good and Evil and eating the fruit caused the transposable elements to spread. The sin was eating the fruit.

a. Forsman, A., et al. "Uptake of Amplifiable Fragments of Retrotransposon DNA from the Human Alimentary Tract." *Molecular Genetics and Genomics*, vol. 270, no. 4, 2003, pp. 362–368., doi:10.1007/s00438-003-0930-3
b. Palka-Santini, M., et al. "The Gastrointestinal Tract as the Portal of Entry for Foreign Macromolecules: Fate of DNA and Proteins." *Molecular Genetics and Genomics*, vol. 270, no. 3, 2003, pp. 201–215., doi:10.1007/s00438-003-0907-2

So, was the Tree of Knowledge of Good and Evil a test of loyalty? In a way it was, but that was not it's main purpose for being in the garden. Was the command of God to not eat of the Tree of Knowledge of Good and Evil arbitrary? No, I think God knew

exactly what was in the fruit and was trying to prevent Adam and Eve from being corrupted.

God's Curses

Let's look at how God responds to Adam and Eve after they sin. Even though Adam and Eve sinned by eating the fruit, God did not punish them for their transgression. Genesis 3:7 says,

> Then the eyes of both of them were opened, and they knew that they *were* naked; and they sewed fig leaves together and made themselves coverings.

This happens before God even steps foot into the garden. This verse shows that Adam and Eve were suffering the natural consequences of their own sin. Punishment was not administered by God. Furthermore, God waits til the cool of the day to come to the garden. If God was going to punish Adam and Eve, wouldn't He do so immediately? Why would He wait?

Lets continue the story. It's late in the day and God is calling out to Adam, "where are you?" (Genesis 3:8-9). Adam responds, "I heard your voice in the garden, and I was afraid because I was naked so I hid" (Genesis 3:10). God questions Adam, "Who told you that you were naked? have you eaten from the tree of which I commanded you that you should not eat?" (Genesis 3:11).

God already knows the answer to His question. He knew that Adam and Eve had eaten the forbidden fruit but He asks the question so that the nature of sin can start to reveal itself. Adam and Eve respond by doing something unthinkable in their previous state: they start blaming each other. Genesis 3:12-13

> **12** Then the man said, "The woman whom You gave *to be* with me, she gave me of the tree, and I ate."
> **13** And the Lord God said to the woman, "What *is* this you have done?"
> The woman said, "The serpent deceived me, and I ate."

Hours ago, Adam could not bear the thought of living without Eve. Now, Adam is more than willing to throw Eve off a cliff to save himself. Shame, fear, covering, hiding, blaming are all natural consequences of transposable elements corrupting Adam and Eve's genome.

Now God intervenes by cursing the snake, the woman, and the man. Are these curses punishment from God for breaking His law? Does God demand that vengeance be distributed because Adam and Eve have made a mistake? No. God's curses in Genesis 3:14-19 are simply statements of the natural consequences of sin, of breaking His laws. Genesis 3:14-19 are direct consequences of transposable elements. Let's investigate.

First, Genesis 3:14

> So the Lord God said to the serpent:
> "Because you have done this,
> You *are* cursed more than all cattle,
> And more than every beast of the field;
> On your belly you shall go,
> And you shall eat dust
> All the days of your life.

As Satan's instrument, the snake most likely got the largest dose of transposable elements out of all other creatures. We can find evidence of this in the snake's genome. There sections of the organisms genome called Hox genes which are the organism's blueprint. They are what tell a developing embryo to start forming a head, a spine, a chest, two arms, two legs, and so on. They control the rate at which the limbs grow so that corresponding limbs have matching lengths. The way Hox genes work is that they are sequential. Genes in the Hox cluster are turned on then off one at a time down the line till the organism is developed.

In most organisms the Hox genes are sacred, almost entirely devoid of transposable elements. Squamates, scaled reptiles, are the exception. A snake's Hox genes actually encode for limbs and even wing buds but transposable elements have disabled these sections in the Hox genes. A transposable element has prevented a Hox gene called Tbx5 which controls growing thorax segments from turning off. In essence, once the Tbx5 genes are active, all the snake can produce is thorax segments. Transposable elements have rewritten the body plan of the snake.

a. Di-Poï, Nicolas, et al. "Changes in Hox Genes' Structure and Function during the Evolution of the Squamate Body Plan." *Nature*, vol. 464, no. 7285, 2010, pp. 99–103., doi:10.1038/nature08789

b. Woltering, Joost M., et al. “Axial Patterning in Snakes and Caecilians: Evidence for an Alternative Interpretation of the Hox Code.” *Developmental Biology*, vol. 332, no. 1, 2009, pp. 82–89., doi:10.1016/j.ydbio.2009.04.031
c. Peter, Isabelle S., and Eric H. Davidson. “Evolution of Gene Regulatory Networks Controlling Body Plan Development.” *Cell*, vol. 144, no. 6, 2011, pp. 970–985., doi:10.1016/j.cell.2011.02.017

God continues with the snake in Genesis 3:15.

> **15** And I will put enmity
> Between you and the woman,
> And between your seed and her Seed;
> He shall bruise your head,
> And you shall bruise His heel.”

Why does God single out the snake and the woman? Why their seed and her seed? What does it mean by seed anyway? It’s referring to genetic material.

When an embryo is first developing, the first cell divides into two, then into four, then into eight. At this point, cell divisions stop and the chromosomes unwind and line up. Heterochromatin and DNA methylation marks which previously locked down many transposons are completely removed and the entire genome is open and accessible. At this point, methylation marks are reapplied to the chromosomes effectively resetting the methylation from the mother and father’s chromosomes. No one knows for sure how the cell is able to distinguish between original DNA and transposable element DNA.

If these transposable elements are not locked down, the embryo isn’t viable and the pregnancy is aborted. Furthermore, because the genome is fully unlocked and open, transposable element activity is at its highest guaranteeing that the developing baby is infected.

#TODO Mention why God single’s out the woman.

a. Dean, Wendy, and Anne Ferguson-Smith. “Genomic Imprinting: Mother Maintains Methylation Marks.” *Current Biology*, vol. 11, no. 13, 2001, doi:10.1016/s0960-9822(01)00311-6

b. O'donnell, Kathryn A., and Jef D. Boeke. “Mighty Piwis Defend the Germline against Genome Intruders.” *Cell*, vol. 129, no. 1, 2007, pp. 37–44., doi:10.1016/j.cell.2007.03.028
c. Malone, Colin D., and Gregory J. Hannon. “Small RNAs as Guardians of the Genome.” *Cell*, vol. 136, no. 4, 2009, pp. 656–668., doi:10.1016/j.cell.2009.01.045

Now lets continue to Genesis 3:16 where God curses the woman.

> To the woman He said:
> “I will greatly multiply your sorrow and your conception;
> In pain you shall bring forth children;
> Your desire *shall be* for your husband,
> And he shall rule over you.”

This implies that transposable elements are involved with birth. Can we find evidence of this? Yes, in fact there is overwhelming evidence that the way humans give birth has been totally hijacked. To quote a 2009 study: “the human placenta has been compared to an organ transplant based on its semi-allogeneic status. Its invasive properties, however, have caused investigators to liken it to a tumor.” (Sugimoto 2009). The placenta is created by transposable elements.

Endogenous retroviruses are implicated in many of the tissues required by the placenta. The syncytiotrophoblast which surrounds the fetus, invades and fuses with the wall of the uterus. This fusion uses a protein called syncytin-1 which is derived from an endogenous retrovirus. Furthermore, a DNA transposon called MER20 is thought to be the origin of the regulator network in endometrial cells. Many genes used in endometrial expression are located near MER20. The way humans give birth has been totally rewritten by transposable elements.

a. Lynch, Vincent J, et al. “Transposon-Mediated Rewiring of Gene Regulatory Networks Contributed to the Evolution of Pregnancy in Mammals.” *Nature Genetics*, vol. 43, no. 11, 2011, pp. 1154–1159., doi:10.1038/ng.917
b. Kaneko-Ishino, Tomoko, and Fumitoshi Ishino. “The Evolution of the Placenta and Viviparity Is Related to LTR Retrotransposon-Derived Genes in Mammals.” *Journal of Mammalian Ova Research*, vol. 30, no. 1, 2013, pp. 16–23., doi:10.1274/jmor.30.16

c. Sugimoto, Jun, and Danny J. Schust. "Review: Human Endogenous Retroviruses and the Placenta." *Reproductive Sciences*, vol. 16, no. 11, 2009, pp. 1023–1033., doi:10.1177/1933719109336620

Finally, lets consider God's last curse in Genesis 3:17-19.

> **17** Then to Adam He said, "Because you have heeded the voice of your wife, and have eaten from the tree of which I commanded you, saying, 'You shall not eat of it':
>
> "Cursed *is* the ground for your sake;
> In toil you shall eat *of* it
> All the days of your life.
> **18** Both thorns and thistles it shall bring forth for you,
> And you shall eat the herb of the field.
> **19** In the sweat of your face you shall eat bread
> Till you return to the ground,
> For out of it you were taken;
> For dust you *are,*
> And to dust you shall return."

In the genomic view of the Bible, Genesis 3:18 would suggest that thorns and thistles are caused by transposable elements. Is there scientific evidence to support this claim? Unfortunately, there does not seem to be much research related specifically to thorns and thistles, but here is what I have found.

Many plants are polyploid which means that they have more than two sets of chromosomes. Studies suggest that polyploidization contributes to invasive species success, which kind of sounds like a weed to me. Polyploidization can occur in the union of unreduced gametes, but stressful situations such as nutritional stress, physical stress, and climate fluctuations, may also contribute to polyploidization. Furthermore, polyploidization may disrupt the epigenetics of a plant and allow previously silenced transposons to be released.

a. Mable, B. K. "'Why Polyploidy Is Rarer in Animals than in Plants': Myths and Mechanisms." *Biological Journal of the Linnean Society*, vol. 82, no. 4, 2004, pp. 453–466., doi:10.1111/j.1095-8312.2004.00332.x
b. Beest, M. Te, et al. "The More the Better? The Role of Polyploidy in Facilitating Plant Invasions." *Annals of Botany*, vol. 109, no. 1, 2011, pp. 19–45.,

doi:10.1093/aob/mcr277
c. Moghe, Gaurav D., and Shin-Han Shiu. “The Causes and Molecular Consequences of Polyploidy in Flowering Plants.” *Annals of the New York Academy of Sciences*, vol. 1320, no. 1, 2014, pp. 16–34., doi:10.1111/nyas.12466

In other very recent research, the rose genome has been sequenced. The study found that transposable elements constitute 67.9% of the sequenced genome, out of which 50.6% were long terminal repeat retrotransposons. The function of these transposable elements still needs to be determined. Research into the genetics of thorns is low hanging fruit.

a. Raymond, Olivier, et al. “The Rosa Genome Provides New Insights into the Domestication of Modern Roses.” *Nature Genetics*, vol. 50, no. 6, 2018, pp. 772–777., doi:10.1038/s41588-018-0110-3

The lack of research presents an opportunity: good scientific theories are testable and make falsifiable predictions. Therefore, following the genomic view of the Bible, I predict that transposable elements will be the root cause of thorns.

In the midst of all this mess, God gave the first future prophecy in the Bible in Genesis 3:15

> He shall bruise your head,
> And you shall bruise His heel.

God is effectively saying: “Satan, you may have won the battle, but you will lose the war.” God has a plan out of this transposable element mess and will have victory over sin.

Jesus’ Nature

To lay the groundwork for the plan of salvation, we need to establish the nature of Jesus. Who is He and what are His objectives in coming to Earth?

To understand the nature of Jesus, we must first look at His two parents Joseph and Mary. Joseph’s lineage is given in Matthew 1:1-17 and establishes Joseph as an heir to the throne of Israel. Interestingly, Mary’s lineage is also given in Luke 3:23-38 which establishes Mary to be of royal blood. This is important because it means that Jesus

is an heir to the throne of Israel both paternally (as was supposed), and by blood through Mary. Furthermore, Jesus is especially mentioned as being born of a virgin because this is an extraordinary event. Yet no special mention is given of Mary's birth. This, along with Mary's lineage, means that Mary herself was born of a human mother and human father. Mary was not immaculately conceived.

Ok what about Jesus? He would've had to have gotten 23 chromosomes from His mother Mary, and 23 chromosomes from His father God. This makes Jesus fully human and fully divine. The evidence for this is given in Hebrews 2:16:

> For verily he took not on him the nature of angels; but he took on him the seed of Abraham. (KJV)

And Romans 1:3:

> Concerning his Son Jesus Christ our Lord, which was made of the seed of David according to the flesh; (KJV)

And yet again, Jesus' coming was predicted by Moses in Deuteronomy 18:15,

> The Lord your God will raise up for you a Prophet like me from your midst, from your brethren.

In essence, Moses is saying that God would raise up Jesus just like you and me. He wouldn't be different. John 6:14 verifies that Jesus is the prophet referenced by Moses.

Most important of all however is that Jesus had a full complement of transposable elements. Being born of a woman guarantees that the baby will be infected by transposable elements. To quote scientific literature, "The close apposition of uterine and placental tissues creates a site for viral transmission from mother to fetus. By this path, a heterozygous ERV in the mother could potentially colonize all of a mother's offspring, not just the 50% that inherit the ERV by Mendelian means."

a. Haig, David. "Retroviruses and the Placenta." *Current Biology*, vol. 22, no. 15, 2012, doi:10.1016/j.cub.2012.06.002

Despite this fact, could Jesus have miraculously been born without transposable elements? The Bible doesn't give any evidence to support this. If Jesus had been born without transposable elements, He would have no visible traces of sin. He would've stood out. Yet Isaiah 53:2-3 says

> 2 For He shall grow up before Him as a tender plant,
> And as a root out of dry ground.
> He has no form or comeliness;
> And when we see Him,
> *There is* no beauty that we should desire Him.
> 3 He is despised and rejected by men,
> A Man of sorrows and acquainted with grief.
> And we hid, as it were, *our* faces from Him;
> He was despised, and we did not esteem Him.

He had to have been infected with transposable elements. If he had no transposable elements, He would have no visible traces of sin. Hebrews 2:14-15 backs this up:

> 14 Inasmuch then as the children have partaken of flesh and blood, **He Himself likewise shared in the same**, that through death He might destroy him who had the power of death, that is, the devil, 15 and release those who through fear of death were all their lifetime subject to bondage.

And one more verse 2 Corinthians 5:21

> For He made Him who knew no sin ***to be* sin for us**, that we might become the righteousness of God in Him.

Could Jesus' brain have Adam's nature before sin? No. The genome is a vast, complicated, interconnected information system. Many genes are pleiotropic, which means the gene is used in multiple, seemingly unrelated, phenotypes. Basically, most protein coding regions are used by different cell types in different ways. Phenylketonuria, which causes mental retardation and abnormal skin coloration, is just one example of a defect in one pleiotropic gene affecting the brain. Both the Bible and science do not support the notion that Christ could've had a perfect brain. Hebrews 4:15 says

> For we do not have a High Priest who cannot sympathize with our weaknesses, but was in all *points* tempted as *we are, yet* without sin.

And in Hebrews 2:17-18 which says

> [17] Therefore, in all things He had to be made like *His* brethren, that He might be a merciful and faithful High Priest in things *pertaining* to God, to make propitiation for the sins of the people. [18] For in that He Himself has suffered, being tempted, He is able to aid those who are tempted.

If Christ had a perfect brain, then he couldn't have been tempted as we are.

I'm trying to get across the fact that Jesus was fully human, with all our defects, and with all our propensities to sin. Why does it matter? Jesus' objectives in coming to Earth was to destory the Devil (Hebrews 2:14), his works (1 John 3:8), and any sympathy creation had for the Devil, to replace and rewrite genetic code that was lost in the fall of man (Hebrews 8:10, Matthew 13:15), and to set the captives free (Isaiah 61:1, Isaiah 42:7, Psalms 102:20, Zecharaiah 9:11).

To do this, Jesus had to come and take our fallen condition yet never once yield to sin. He had to have every propensity to sin, every malformed circuit caused by transposable elements, yet never once act upon them. He had to adhere to God's law while having the sickness of sin to show all creation the final, terrible consequences of sin. Jesus, the first born of creation, the only begotten son of God, is our only hope for salvation.

Jesus' Death

To review, God has been accused by Satan of being arbitrary and restrictive in His dealings with creation. In a malicious effort to undermine God's law, Satan offers an amendment which he claims allows creation to write their own laws to supposedly give creation more freedom. Namely, Satan creates transposable elements to change his genome at will. However, God claims that His laws are the best for creation and that His laws are immutable. But most importantly, God claims that the natural consequences of sin (transgression of the law) is death.

God needs to show creation the ultimate results of sin which will also unveil the true character behind Satan's motives. In addition, He needs to provide a cure for the sin

problem, but He needs to do it without changing the law given that Satan's argument specifically targets God's law as being defective. Basically, God has to get rid of transposable elements using no other means besides what was originally in Adam's genome. Which also means that God had to design countermeasures into the original design in the event that someone tried to change the genome. So now let's shift our focus to how transposable elements are dealt with from a scientific point of view.

The genome is a vast, extraordinarily complicated information system. In order to fit all the genetic information into a cell, DNA has to be folded and coiled into increasingly larger superstructures. DNA is wound around histones which act kind of like a cassette storing the DNA. Loosely packed histones form euchromatin and allows the cell's machinery access to the DNA for transcription. However, histones can be methylated which coils the histones together forming heterochromatin. This densely packed form makes the packed DNA physically inaccessible effectively silencing large portions of the genome. Furthermore, the DNA strand itself can be methylated at specific sites to repress individual genes. Both heterochromatin and DNA methylation are used by the genome to silence transposable elements. What does the Bible say? Job 14:17

> My transgression *is* sealed up in a bag,
> And You cover my iniquity.

That sounds awfully similar to heterochromatin.

a. Goodier, John L. "Restricting Retrotransposons: a Review." *Mobile DNA*, vol. 7, no. 1, Nov. 2016, doi:10.1186/s13100-016-0070-z

So how does heterochromatin form? Heterochromatin is formed through a diverse family of molecular complexes called RISC or RNA-Induced Silencing Complexes. RISCs can target virtually any nucleotide sequence for silencing at virtually any level. RISCs can repress translation at the protein level, at the transcript level by degrading mRNA, and at the genome level by forming heterochromatin. Two defining aspects common to RISCs are 1.) an Argonaute family protein and 2.) a small RNA which guides RISC to a target sequence. Argonaute proteins bind with small RNAs and locate the target site to either cleave the target directly or recruit other gene-silencing proteins at the target site.

a. Pratt, Ashley J., and Ian J. Macrae. "The RNA-Induced Silencing Complex: A Versatile Gene-Silencing Machine." *Journal of Biological Chemistry*, vol. 284, no. 27, 2009, pp. 17897–17901., doi:10.1074/jbc.r900012200

Three classes of small RNAs are found in animals: microRNAs, small interfering RNAs, and PIWI RNAs. PIWI RNAs are highly expressed in germ line cells while microRNAs and small interfering RNAs are expressed in somatic, or body, cells. MicroRNAs and small interfering RNAs are very similar in function. They differ in that small interfering RNAs are very specific cleaving one exact mRNA match while microRNAs are inexact: one microRNA may target multiple mRNAs, sometimes hundreds of mRNAs. MicroRNAs are abundant and very powerful gene regulators. It is predicted that microRNAs target over two-thirds of all genes in the human genome but I think this is a conservative. MicroRNAs probably target all genes.

a. Lewis, Benjamin P., et al. "Conserved Seed Pairing, Often Flanked by Adenosines, Indicates That Thousands of Human Genes Are MicroRNA Targets." *Cell*, vol. 120, no. 1, 2005, pp. 15–20., doi:10.1016/j.cell.2004.12.035
b. Friedman, R. C., et al. "Most Mammalian MRNAs Are Conserved Targets of MicroRNAs." *Genome Research*, vol. 19, no. 1, 2008, pp. 92–105., doi:10.1101/gr.082701.108
c. Khanduja, Jasbeer S., et al. "Nuclear Noncoding RNAs and Genome Stability." *Molecular Cell*, vol. 63, no. 1, 2016, pp. 7–20., doi:10.1016/j.molcel.2016.06.011
d. Groh, Sophia, and Gunnar Schotta. "Silencing of Endogenous Retroviruses by Heterochromatin." *Cellular and Molecular Life Sciences*, vol. 74, no. 11, 2017, pp. 2055–2065., doi:10.1007/s00018-017-2454-8

Basically, microRNAs are perfectly positioned to control all gene expression. Why is this important? Because I think microRNAs are one aspect where Jesus could provide salvation and cleansing of transposable elements. The Bible gives us some hints. Isaiah 53:5,

> But He *was* wounded for our transgressions,
> *He was* bruised for our iniquities;
> The chastisement for our peace *was* upon Him,
> And by His stripes we are healed.

Isaiah 53:11-12

[11] He shall see the labor of His soul, *and* be satisfied.
By His knowledge My righteous Servant shall justify many,
For He shall bear their iniquities.
[12] Therefore I will divide Him a portion with the great,
And He shall divide the spoil with the strong,
Because He poured out His soul unto death,
And He was numbered with the transgressors,
And He bore the sin of many,
And made intercession for the transgressors.

Hebrews 2:10

> For it was fitting for Him, for whom *are* all things and by whom *are* all things, in bringing many sons to glory, to make the captain of their salvation perfect through sufferings.

Hebrews 5:7-9

> who, in the days of His flesh, when He had offered up prayers and supplications, with vehement cries and tears to Him who was able to save Him from death, and was heard because of His godly fear, [8] though He was a Son, *yet* He learned obedience by the things which He suffered. [9] And having been perfected, He became the author of eternal salvation to all who obey Him,

As it turns out, stress can change heterochromatin and DNA methylation. Jesus was subjected to intense temptations by the Devil throughout life, significantly worse temptations than you or I can be subjected to. I hypothesize that Satan tried every mechanism possible, any transposable element generated circuitry, to get Jesus to sin. Yet, not even by a single thought would Jesus yield to temptation. Thus, Jesus was able to create every possible beneficial variety of microRNAs resulting in a solution to wash away all sin, all transposable elements. Remember Hebrews 5:9

> And having been perfected, He became the author of eternal salvation to all who obey Him,

a. Stankiewicz, Adrian M., et al. “Epigenetics of Stress Adaptations in the Brain.” *Brain Research Bulletin*, vol. 98, 2013, pp. 76–92., doi:10.1016/j.brainresbull.2013.07.003

b. Siomi, Haruhiko, and Mikiko C. Siomi. “Stress Signaling Etches Heritable Marks on Chromatin.” *Cell*, vol. 145, no. 7, 2011, pp. 1005–1007., doi:10.1016/j.cell.2011.06.009
c. Horváth, Vivien, et al. “Revisiting the Relationship between Transposable Elements and the Eukaryotic Stress Response.” *Trends in Genetics*, vol. 33, no. 11, 2017, pp. 832–841., doi:10.1016/j.tig.2017.08.007

But why did Jesus have to die? Jesus was able to silence enough transposons so that no brain circuitry responded to any temptation from Satan. John 14:30,

> I will no longer talk much with you, for the ruler of this world is coming, and he has nothing in Me.

But the transposable elements are still there in His body and some are still being actively transcribed. It was recently discovered that gene transcription does not stop immediately even after death. In fact, it takes 24-48 hours after death for transcription to halt. After death, many sections of the genome that were locked away in heterochromatin become active. Stress response, inflammation response, and ion and protein transport genes were observed to increase after death. Most importantly, developmental control genes, which are only expressed from a very early embryo stage to adulthood, are expressed after death. I hypothesize Jesus had to die to prove that his solution to remove all transposable elements worked with these locked away genes.

a. Pozhitkov, Alex E., et al. “Tracing the Dynamics of Gene Transcripts after Organismal Death.” *Open Biology*, vol. 7, no. 1, 2017, p. 160267., doi:10.1098/rsob.160267
b. Ferreira, Pedro G., et al. “The Effects of Death and Post-Mortem Cold Ischemia on Human Tissue Transcriptomes.” *Nature Communications*, vol. 9, no. 1, 2018, doi:10.1038/s41467-017-02772-x

Furthermore, Jesus had to completely remove the transposable elements, not just silence them.

> Hebrews 9:26 He then would have had to suffer often since the foundation of the world; but now, once at the end of the ages, He has appeared to put away sin by the sacrifice of Himself.

Romans 6:4-6
4 Therefore we were buried with Him through baptism into death, that just as Christ was raised from the dead by the glory of the Father, even so we also should walk in newness of life.
5 For if we have been united together in the likeness of His death, certainly we also shall be *in the likeness* of *His* resurrection, 6 knowing this, that our old man was crucified with *Him,* that the body of sin might be done away with, that we should no longer be slaves of sin.

Hebrews 1:3 who being the brightness of *His* glory and the express image of His person, and upholding all things by the word of His power, when He had by Himself purged our sins, sat down at the right hand of the Majesty on high,

Hebrews 10:10 By that will we have been sanctified through the offering of the body of Jesus Christ once *for all.*

I have no idea how He got rid of the transposable elements but death was required to do so.

What's most important about Jesus' death though is that it showed to the onlooking universe the final results of sin unhindered. Jesus died the death of a sinner separated from God. Jesus was born of sinful flesh, with a genome filled with transposable elements, yet not once yielded to sin. He kept God's law completely and was not deserving of death. Yet, the transposable elements in him still killed him. Romans 6:23 sin paid its wage death. Jesus' death unveiled the true character of Satan and the actual nature behind his rebellion. God did not kill Jesus. Sin, transposable elements killed Jesus. Satan is the killer, not God.

Judgment

The Bible foretells that at the end of time, God will raise the dead to judge all people whether they have been righteous or not. Those who have been good will receive everlasting life, while those who have been bad will receive everlasting punishment (Daniel 12:2, Mathew 25:46).

Daniel 12:2
And many of those who sleep in the dust of the earth shall awake,
Some to everlasting life,

Some to shame *and* everlasting contempt.

Matthew 25:46
And these [the wicked] will go away into everlasting punishment, but the righteous into eternal life.

What is the day of judgment? Are the wicked burned in torment forever and ever? Revelation 20:12-15 says of the day of judgment

12 And I saw the dead, small and great, stand before God; and the books were opened: and another book was opened, which is the book of life: and the dead were judged out of those things which were written in the books, according to their works.
13 And the sea gave up the dead which were in it; and death and hell delivered up the dead which were in them: and they were judged every man according to their works.
14 And death and hell were cast into the lake of fire. This is the second death.
15 And whosoever was not found written in the book of life was cast into the lake of fire.

What are these books? I've always been told that there is a recording angel meticulously marking down every action I make and that at the end of time, this record is reviewed to make sure I have asked forgiveness for every sin I've committed. As described, it makes God the antagonist trying to catch me out in some small trivial thing to cast me into the lake of fire to be punished forever and ever. Is this what a loving God would do?

No. Lets examine this text under the genomic view. A "book" holds information. So the "book of life" holds information about life. Every cell holds information about life in the genome. Therefore, the "books" described here are each person's genome. In other words, this text implies that we are our own record keeper. Psalms 139:14-16 backs up the interpretation that God's book represents the genome.

Psalms 139:14-16 14 I will praise You, for I am fearfully *and* wonderfully made; Marvelous are Your works, And *that* my soul knows very well. 15 My frame was not hidden from You, When I was made in secret, *And* skillfully wrought in the lowest parts of the earth. 16 Your eyes saw my substance, being yet unformed. And in

> Your book they all were written, The days fashioned for me, When *as yet there were* none of them.

What does science have to say about this topic? Unfortunately, very little. However research has shown that memories may indeed be stored in the genome via methylation.

A generally accepted hypothesis was that long term memories are stored in the synapse between neurons. To test this, researchers at UCLA trained Aplysia sea snails to trigger their defensive gill and siphon withdrawal reflex when their tails were shocked. They tried various ways to create long term memories of the tail shock while either allowing synapses to form or inhibiting synapse formation. What the researchers found was that if memories were formed normally, then the synapses were degraded, that the snail still showed the withdrawal reflex when their tails were shocked despite lacking the synapses which formed with the original memory. This implies that the memories were stored inside the cell and not the synapses. Furthermore, the memories of the tail shock could seemingly be passed to other snails by injecting RNA from a trained snail into a non-trained snail.

a. Chen, Shanping, et al. "Reinstatement of Long-Term Memory Following Erasure of Its Behavioral and Synaptic Expression in Aplysia." *ELife*, vol. 3, 2014, doi:10.7554/elife.03896
b. Bédécarrats, Alexis, et al. "RNA from Trained Aplysia Can Induce an Epigenetic Engram for Long-Term Sensitization in Untrained Aplysia." *Eneuro*, vol. 5, no. 3, 2018, doi:10.1523/eneuro.0038-18.2018

So while there is a small amount of research to support the notion that DNA can encode memories and events, more research is needed to say for certain. Regardless, **why** is there a record? Are we as sinners being judged?

Lets not lose sight of the real issues at stake. Satan accused God of being arbitrary and restrictive, unclear and not totally upfront, and that God's actions were motivated by selfishness. The real issue at stake in this controversy is the character of God. God is the one being judged in the day of judgment, not us.

So whats the deal with the opening of books and the judgment of the dead? God has to be justified whether he saves or condemns in every human's case. God will be justified in saving the righteous because they have responded to God and allowed

Him to "put His law in their minds and write it on their hearts" Jeremiah 31:33. Conversely, God will be justified in rejecting the wicked because they rejected the law of God and followed the passions of their own heart. In the judgment, God will show the wicked every instance where He has tried to save them and will reveal every warning unheeded to the point where the wicked have totally rejected God. God will say to them that there was nothing more that could be done, that nothing in them responds to Him.

So what does God do to the wicked? He let's them go. He declares that He can do nothing more then hides his face from the sinner to suffer the natural consequences of sin unhindered. This is the wrath of God. God removes His protective hand and gives the sinner up to the laws of Satan. Transposable elements are allowed free reign in the sinner and the sinner quickly perishes.

a. Hosea 4:17 "Ephraim is joined to idols: let him alone."
b. Romans 1:17-32.
c. Deuteronomy 32. Especially Deuteronomy 32:20 "And He said: 'I will hide My face from them, I will see what their end *will be,* For they *are* a perverse generation, Children in whom *is* no faith."

Do the wicked burn forever and ever in the lake of fire?

> Daniel 12:2
> And many of those who sleep in the dust of the earth shall awake,
> Some to everlasting life,
> Some to shame *and* everlasting contempt.
>
> Matthew 25:46
> And these [the wicked] will go away into everlasting punishment, but the righteous into eternal life.

No. God does not keep the sinner in eternal torment. The results of sin are eternal, not the punishment. The sinner dies the second death and are dead forever. They reap the natural consequences of sin. "For sin pays it wage death" Romans 6:23. Sin, not God, pays its wage death.

God never kills. This is who God is: God is love. God suffers long and is kind. God does not envy. God does not parade Himself, is not puffed up, does not behave

rudely, does not seek His own, is not provoked, thinks no evil. God does not rejoice in iniquity but rejoices in truth. God bears all things, believes all things, hopes all things, endures all things. God never fails (1 Corinthians 13:4-8). God is love. God has no pleasure in the death of the wicked (Ezekiel 18:23, Ezekiel 33:11). He will say to the wicked "how can I give you up?" (Hosea 11:8). He does not desire anyone to suffer the second death but desires to save every last soul. Ezekiel 18:30-32

> 30 "Therefore I will judge you, O house of Israel, every one according to his ways," says the Lord God. "Repent, and turn from all your transgressions, so that iniquity [transposable elements] will not be your ruin. 31 Cast away from you all the transgressions which you have committed, and get yourselves a new heart and a new spirit. For why should you die, O house of Israel? 32 For I have no pleasure in the death of one who dies," says the Lord God. "Therefore turn and live!"

Salvation

Finally. How can we obtain everlasting life? First, lets clear away some common misconceptions about salvation. Are we saved by God's love? John 3:16

> For God so loved the world, that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life.

Love is God's motivation for saving humanity. It is not what saves us. So then, are we saved by God's forgiveness? Luke 23:34,

> Then said Jesus, Father, forgive them; for they know not what they do. And they parted his raiment, and cast lots.

This forgiveness includes every person that ever lived. Yet, there will still be those that are lost. Every soul who dies the second death dies forgiven by God. So then, are we saved by good works? Matthew 7:21-23

> 21 Not every one that saith unto me, Lord, Lord, shall enter into the kingdom of heaven; but he that doeth the will of my Father which is in heaven.
> 22 Many will say to me in that day, Lord, Lord, have we not prophesied in thy name? and in thy name have cast out devils? and in thy name done many wonderful works?

> 23 And then will I profess unto them, I never knew you: depart from me, ye that work iniquity.

This text indicates that these lost souls claim to do the works of the Lord. The things these people did were not trivial stuff either. They cast out devils, work miracles, yet are still lost. Clearly good works doesn't save us either. Understand what the real issue is with the nature of sin. Sin is a disease caused by transposable elements. If God wants to save a soul then He has to do so at the source of the problem. Fixing sin means removing transposable elements and rewriting genetic code that was lost. Or, restated in biblical terms, salvation is making the sinner righteous or "right with God." But, God has given us our genome. It's the only thing we own on this Earth and it's the only thing we take to Heaven. He will not heal us against our will.

How is Jesus able to accomplish salvation? John 15:5

> I am the vine, you *are* the branches. He who abides in Me, and I in him, bears much fruit; for without Me you can do nothing.

A study was published in 2015 where researchers were looking for ways to cure tomato plants of Tomato spotted wilt virus which causes wilting of leaves, reduced fruit production, and eventually the death of the plant. The researchers found that if they took a scion, or a living bud or shoot, from a diseased plant and grafted it onto a plant that had somehow silenced the transgene, that the disease was also silenced in the scion.

There are some interesting characteristics. First, silencing was unidirectional from silenced stock to non-silenced scion. A cured plant could not be uncured by grafting a non-silenced scion onto a silenced stock. Second, both plants had to be infected with the same disease. One plant had to have somehow silenced the transgene. Third, silencing the scion was 100% effective. Even though both stock and scion still had the transgene disease, it was completely silenced in both.

a. Palauqui, JC. "Systemic Acquired Silencing: Transgene-Specific Post-Transcriptional Silencing Is Transmitted by Grafting from Silenced Stocks to Non-Silenced Scions." *The EMBO Journal*, vol. 16, no. 15, 1997, pp. 4738–4745., doi:10.1093/emboj/16.15.4738
b. Mlotshwa, Sizolwenkosi, et al. "RNA Silencing and the Mobile Silencing Signal." *The Plant Cell*, vol. 14, no. suppl 1, 2002, doi:10.1105/tpc.001677

c. Spanò, Roberta, et al. “Grafting on a Non-Transgenic Tolerant Tomato Variety Confers Resistance to the Infection of a Sw5-Breaking Strain of Tomato Spotted Wilt Virus via RNA Silencing.” *Plos One*, vol. 10, no. 10, 2015, doi:10.1371/journal.pone.0141319

Notice the parallels between Jesus and us. Jesus is the stock and we are the scions. 1.) Jesus’ cure is unidirectional, from Him to us. 2.) Jesus was infected with the same disease that infects us. 3.) Jesus is able to save to the uttermost those that come to him (Hebrews 7:25).

One more parallel. The silencing signal in the plant is small RNA carried through the plant’s phloem. This parallels humans in that blood carries microRNA. As we discussed previously, microRNAs are one possible mechanism for silencing and regulating possibly all genes, and they are carried throughout the body in the blood. I don’t think Jesus was making a haphazard analogy between grafting and salvation. Furthermore, It’s not a haphazard analogy when the Bible says we have redemption and forgiveness, or blowing away, or washing away, of sins through Jesus’ blood.

> Ephesians 1:7
> In Him we have redemption through His blood, the forgiveness of sins, according to the riches of His grace
>
> Colossians 1:14
> in whom we have redemption through His blood, the forgiveness of sins.
>
> 1 Peter 1:17-19
> **17** And if you call on the Father, who without partiality judges according to each one’s work, conduct yourselves throughout the time of your stay *here* in fear; **18** knowing that you were not redeemed with corruptible things, *like* silver or gold, from your aimless conduct *received* by tradition from your fathers, **19** but with the precious blood of Christ, as of a lamb without blemish and without spot.

The literal blood of Jesus carries the antidote for sin.

What does it mean to be saved? God gave us his commandments to diagnose us with sin. Breaking God’s commandments shows us that we are still infected with transposable elements. James 2:10

> For whosoever shall keep the whole law, and yet offend in one point, he is guilty of all.

We can't keep His laws by ourselves. We need our transposable elements silenced and our genome rewritten which restores a spiritual nature within us from which flow correct actions and behaviors. This is something only God can do. Jeremiah 31:33

> But this *is* the covenant that I will make with the house of Israel after those days, says the Lord: I will put My law in their minds, and write it on their hearts; and I will be their God, and they shall be My people.

A cherished sin will prevent entry into heaven. Revelation 21:27

> But there shall by no means enter it anything that defiles, or causes an abomination or a lie, but only those who are written in the Lamb's Book of Life.

We need to die to our old corrupt nature. We have a work to do to earnestly seek out the areas of our life in contradiction to the laws of God.

> Colossians 3:5 Therefore put to death your members which are on the earth: fornication, uncleanness, passion, evil desire, and covetousness, which is idolatry.

> 2 Corinthians 5:17 Therefore, if anyone *is* in Christ, *he is* a new creation; old things have passed away; behold, all things have become new.

Be patient with sanctification. It is a gradual, incremental process. 2 Corinthians 4:16

> Therefore we do not lose heart. Even though our outward man is perishing, yet the inward *man* is being renewed day by day.

Salvation is a creative process. The same power which God used to create the Earth will recreate our genome. This restoring power is grace. Ephesians 2:8-10

> **8** For by grace you have been saved through faith, and that not of yourselves; *it is* the gift of God, **9** not of works, lest anyone should boast. **10** For we are His

> workmanship, created in Christ Jesus for good works, which God prepared beforehand that we should walk in them.

Have faith that God can save us not because Jesus died, but because Jesus rose from the dead and lives. We know our faith is rock solid when we see it's evidence. Hebrews 11:1

> Now faith is the substance of things hoped for, the evidence of things not seen.

God is working at the genome level. We can't directly see His work but like the wind, we can't see it directly, but we can for sure see it's effects. Know that God is working to fix your genome when you start to see changes in your thoughts and actions. Also know that once started, God will finish His purifying work of sanctification, of making you "righteous" before Him. Philippians 1:6

> being confident of this very thing, that He who has begun a good work in you will complete *it* until the day of Jesus Christ;

Stay grafted onto Jesus and He will finish His work in you. God is able to do exceedingly more than we ask.

Summary

This is a summary of the genomic view of the Bible.

The main issue at stake is the character of God. Is God a selfless God of love, or is he a selfish God of hatred? God's character is reflected in the way he governs His creation. His laws are natural laws that give us a consistent reality. We have freedom to live because His laws don't change. The Bible tells us that sin is transgression of the law.

Sin originated when Satan sought to be like the Most High God and amended God's genetic law with transposable elements. Satan caused division in heaven by accusing God of being arbitrary, restrictive, and selfish. His argument was that creation should be given the freedom to change their genome at will. However, Satan's true motivation was to subvert the throne of God and take it for himself.

God claims that His law was perfect and that the natural consequences of changing His law is death. We can support some of God's claims because transposable elements are implicated as the root cause in many diseases, cancers, and even actions and behaviors. In fact I made the prediction that **all** disease is caused by transposable elements. I make this prediction based on another hypothesis that sin **is** transposable elements. Furthermore, the Bible **is** in harmony with science when read in a straight forward manner. The Bible can be read clearly when sin is understood to be changing genetic code. These definitions help understand the language in the Bible:

> When the Bible uses Iniquity or Unrighteousness, that is transposable elements.
> When the Bible uses Sin, that is behavior originating from transposable elements.

However, God's claim that sin causes death was not fully realized until Jesus died a sinner's death. More than that, the plan of salvation had to destroy transposable elements, provide salvation for the repentant, and show the final results of sin.

Jesus is able to provide salvation because he suffered all things and never once yielded to sin. One way He could provide salvation is through the RNA-Induced Silencing Complex and microRNAs. Pain and sufferings changed which parts of His genome were expressed and which transposable elements were open and available for transcription. If He even by a thought expressed transposable element circuitry, then the transposable elements would have proliferated. Instead, He was able to silence the transposable elements to the point where His brain circuitry could never respond to sin.

Jesus had to die to prove that his solution could remove all transposable elements. Many genes that are only expressed during adolescence become active after death. Whatever the solution, Jesus had to prove that the transposable elements in these genes could be completely removed. Remember that God can not change His law to provide salvation. That means that the original genetic design had to account for the possibility of sin.

Most important of all however, is that Jesus' death revealed the true nature of Satan's rebellion. Jesus never yielded even a single thought to sin. He lived a life in perfect obedience to God's law and was not deserving of death. Yet He still died. Jesus life of perfect obedience isolated the effects of transposable elements. Only

transposable elements could've caused Jesus to die. His death was the ultimate result of sin. He died the second death, the final death of a sinner.

The fact that Jesus rose again showed that God had accounted for sin in His original design in that death had no hold over Jesus. Jesus showed that God indeed had creation's best interest in mind. He showed that God's law is perfect freedom for creation. That God would stoop so low to save the lost shows that His character is motivated by selfless love.

Jesus can provide salvation to us because He conquered death. The same solution Jesus perfected in His life He offers to us. We must stay grafted onto Jesus so that He may silence every transposable element and rewrite code that was lost since the fall of Adam. Only Jesus can provide the antidote for sin. To turn aside is certain death. This is what it means to be save: we must put to death our worldly nature and be reborn into a spiritual nature. Salvation is a work of God's gracious creative power. It is a gradual process of shedding sin. Our work is to seek out every aspect of our being contrary to God's laws and submit to God that He may rewrite our genome. We can do this only with God's help. We have no capability to keep God's laws ourselves. Instead, come to God first, and then He will write His laws in you.

We have nothing to fear in the judgment if we stay connected to Jesus. We aren't the ones being judged, God is. We should seek salvation because God is a God of love. He wants only the best for creation. That God would stoop so low and be obedient even to death to save a fallen race is evidence of His character. This is the gospel message: God is love.