Sterile neutrinos explain why

1. the first stars form so early
2. the universe produces more baryons than anti-baryons
3. pulsars’ rapid kickout velocities
4. abundance pattern of r-process heavy elements
5. energetic supernova shocks
Sterile neutrinos explain why

6. exotic dark matter halos are so smooth and symmetric

7. supermassive black holes form so early in cosmic history

8. why the best LCDM cosmic models require the addition of some warm dark matter
Genesis 1 teaches three different origins of life.
Origins of Life

Hugh Ross
Reasons To Believe

www.reasons.org
The world was formless and void.

Genesis 1:2
The Spirit of God was hovering [rahap] over the waters.

Genesis 1:2
Biblical Predictions

1. early
2. under hostile conditions
3. complex, diverse, abundant
4. miraculous, instantaneous
5. marine only
Life arose from a warm pond.

Charles Darwin
Life arose from a vast sea of concentrated prebiotics percolating for nearly a billion years.

Carl Sagan
Atheist Predictions

1. late, after enormous time
2. under benign conditions
3. huge, concentrated soup
4. abundant homochirals
5. one very simple species only
Life Origin Paradoxes

- no time
Late Heavy Bombardment

billions of years ago

4.6

3.9

3.0

NASA/ESO
“In the very oldest rocks that stand a chance of showing the signs of life, we find those signs. ... Life is intrinsic to the earth!”
Life Origin Paradoxes

- no time
- no soup
Lacking Prebiotics

- $^{12}$C enriched kerogen
- $^{14}$N enriched kerogen
- $^{32}$S enriched sulfide deposits
Life Origin Paradoxes

- no time
- no soup
- oxygen/uv crisis
- no homochirality source
- first life complexity
Photosynthetic Life

3.7+ Gyr shale in Greenland shows a high U/Th ratio, proving that ocean water oxidized by oxygenic photosynthetic life precipitated the uranium.

Complex Ecosystem

- methanogens
- anoxygenic photoautotrophs
- oxygenic photoautotrophs
- multiple sulfate reducers
Life from Mars?

- no time
- carbonate crisis
- uneroded craters
- oxygen/uv crisis
- no homochirality source
risky prediction

RTB: Fossils of Earth’s first life will prove to be abundant, 1-10 microns, complex, and diverse.
risky prediction

atheists: Fossils of Earth’s first life will prove to be rare, <0.2 microns, extremely simple, and limited to one species.
Aggressive plate tectonics and erosion have pulverized all Earth-bound fossils of Earth’s first life.
However, huge amounts of Earth material were deposited on the moon’s surface between 3.5 - 3.8 billion years ago.
Most of this material arrived via low-velocity collisions. Since that time, the moon has had very little geological activity.
Thus, we can recover pristine fossils of Earth’s first life from the moon to determine whether RTB, atheists, or others are correct about life’s origin.
Life from Europa?

- thick ice
- oxidants/no oxidants paradox
- oxygen/uv crisis
- no homochirality source
Interstellar Cloud Life?

- no ammonia
- no sugars
- no nucleobases
- no amino acids
- no homochirality source
Interstellar Dust Transport?

- x-ray & uv exposure
- long transport time
- atmospheric entry heating
Interstellar Rock Transport?

At best, only one interstellar rock lands on Earth every $10^{16}$ years.

Jay Melosh (2001)
Directed Panspermia?

- origin of the aliens?
- How could they get here?
What’s left?

“hidden law of physics”
What’s left?

“The Spirit of God was hovering over the waters.”
ORIGINS OF LIFE

Fazale Rana & Hugh Ross

BIBLICAL AND EVOLUTIONARY MODELS FACE OFF
Origin of Spiritual Life
Origin of Humans?
Late Heavy Bombardment

4.6  3.9  3.0
billions of years ago
Causality Laws

- Effects cannot be greater than their causes.

- The created cannot be greater than the creator.
Thus, the living, personal, soulish, conscious, and spiritual cannot come from that which is purely physical, non-personal, and non-living.
Bacteria to Man?
Bacteria to Man?

\[ \text{probability} = 10^{-1,000,000} \]
—Francisco Ayala

\[ \text{probability} = 10^{-24,000,000} \]
—Barrow, Carter, Tipler
Over-Endowed

- mathematical analysis
- typing speed
- music playing, art expression
- prayer
Bipedal Primates

- Fossil record is not a tree.
- Fossil record is a hedge.
- New finds add chaos to naturalistic models.
Who is *Homo sapiens*?

- not human
- tropical Neanderthal types
- lived 80,000 - 170,000 years ago
Who is Neanderthal?

- mDNA from 20 specimens
- no evolution in the DNA
- distinct DNA
- distinct morphology
Who is *Homo erectus*?

- 0.2 - 1.8 million years ago
- no DNA
- distinct morphology
- no evolution in morphology
Large Mammal Extinctions
Large Mammal Extinctions

Australia 94%
South America 79%
North America 73%
Europe 30%
Asia 14%
subSahara Africa 4.5%
If all cosmic history were compressed into 24 hours, humans would have existed for just the last 0.3 seconds!
Anthropic Inequality

~14 billion year minimum to prepare a home for humanity

<41,000 year maximum longevity for cooperative civilization
Oklo, Gabon
Solar Flare Activity

/activity level

age of Sun (billions of years)

0 1 2 3 4 5 6 7 8

NASA/JPL-Caltech
Solar Stability

- Sun has optimal mass.
- Flaring minimum occurs when Sun = 4.57 billion years old.
- Extreme solar stability lasts only 100,000 years.
Growth of Continents

age of Earth (billions of years)
Ocean Oxygenation
Ocean Oxygenation
Ice Age Timing
Atmospheric Oxygen

age of Earth (billions of years)
Mineable Petroleum

years relative to the present (my)

quantity

-600 -300 0 300 600

released into public domain by Eric Kounce
Mineable Clathrates

- Arctic Regions
- Blake Ridge
- Cascadia
- Gulf of Mexico
- Nankai Trough
Wedding Ceremony Analogy
Adam and Eve

God’s *final* creation miracle

the *only* spiritual beings

created on Earth

progenitors of *all* humans
Biblical Date for Adam

Dates for Abraham and Peleg permit calibration of Genesis 11 genealogy.
Dividing of the World

Two sons were born to Eber: One was named Peleg, because in his time the earth was divided.”
—Genesis 10:25
Bering Land Bridge

21,000 years ago
Bering Land Bridge

11,500 years ago
Biblical Date for Adam

Calibration of Genesis 11 geneology puts Adam’s time at 60,000 ± 30,000 years ago.
Biblical Date for Flood

Dates for Abraham and Peleg permit calibration of Genesis 11 genealogy: Noah’s flood = 40,000 ± 15,000 years ago.
Middle East 40-50 kya
Biblical Date for Adam

Dates for Abraham and Peleg permit calibration of Genesis 11 genealogy: Adam’s birthday = 60,000 ± 30,000 years ago.
Cultural Big Bangs

art and music  33,000 BP
jewelry       40,000 BP
clothing      40,000 BP
language      40,000 BP
complex tools 40,000 BP
Chromosome 21

Only three haplotypes (sets of mutated nucleotides) describe 80% of the human population.

So few indicates a recent origin for humanity.
The 7,000 Sumatran orangutans showed more genetic diversity than the 45,000 orangutans in Borneo.
“We don’t fully understand the relationship between genetic diversity and population size.”

Chromosome 2

natural fusion of two ancestral chromosomes?
Vitamin C

Did an evolutionary accident cause humans, simians, guinea pigs, and fruit-eating bats to lose the ability to make vitamin C?
Junk DNA?

Only 2% of the human genome codes for proteins. Is the other 98% the accumulated junk from hundreds of millions of years of evolution?
Useful “Junk”

- pseudogenes
- SINES
- LINES
- endogenous retroviruses
- LTRs
Useful “Junk”

pseudogenes: protect protein-coding genes from breakdown or malfunction
Useful “Junk”

SINES: protect the cell from stress; regulate the expression of protein-coding genes
Useful “Junk”

LINES: some inactivate the X-chromosome so as to prevent genetic disorders; others turn off one of the two genes inherited from the organism’s parents
Useful “Junk”

endogenous retroviruses: some disrupt the life-cycle of invading retroviruses; others function as protein-coding genes
Useful “Junk”

LTRs: some protect the organism from retroviral attacks; others regulate the expression of certain protein-coding genes
DNA Tests for the Garden of Eden Hypothesis
Mitochondrial DNA

descent from one/a few females

lived near juncture of Africa, Asia, and Europe

lived \(~150,000\) BP (with heteroplasmy, \(~50,000\) BP

insignificant mDNAevolution
Y-Chromosome DNA

descent from one/a few males

lived near juncture of Africa, Asia, and Europe

lived 42,000 - 56,000 BP

insignificant yDNA evolution
younger Adam paradox

Stable kiths show mDNA - yDNA date = a few thousand years.

How can the first woman live thousands of years before the first man?
Noah resolution

The yDNA stops at *Noah*, while the mDNA could extend back to *Eve*.
I am fearfully and wonderfully made.

—Psalm 139:14
Nucleotide Differences (relative to present-day humans)
Nucleotide Differences
(relative to present-day humans)

- average among humans: 30
- Neanderthals: 202
- Denisova hominin: 385
- chimpanzees: 1462
two articles

two commentaries

main article: 12 pages

commentaries: 5 pages

podcasts; video

all FREE!
Vindija Cave, Croatia
Vindija Cave, Croatia
Draft Sequence of the Neanderthal Genome
Draft Sequence of the Neanderthal Genome

first draft of 2/3 of the genome

“We will never have a finished sequence for the Neanderthal the way we have for a mouse.”

—Svante Pääbo
Human-Neanderthal Interbreeding?
Human-Neanderthal Interbreeding?

compared DNA of three female Neanderthals to five present-day humans (French European, Han Chinese, Papua New Guinean, San South African, and a Yoruba West African)
Human-Neanderthal Interbreeding?

- Analysis of mtDNA in 20 Neanderthal specimens shows inbreeding did not occur.
- Nuclear DNA is more sensitive to a weak inbreeding signal.
Human-Neanderthal Interbreeding?

- the most parsimonious explanation
- alternate explanation: incomplete genetic homogenization
Human-Neanderthal Interbreeding?

if true: Europeans, Asians, and Pacific Islanders interbred but not sub-Saharan Africans.

if true: Interbreeding occurred before the great migrations.
Human-Neanderthal Interbreeding?

if true: could account for where humanity got its racial diversity (3 of 6 genes carrying multiple substitutions are for skin properties) —Genesis 11:1-9
Human-Neanderthal Interbreeding?

if true: may account for incidence of type II diabetes, Down’s Syndrome, autism, and schizophrenia.
Human-Neanderthal Interbreeding?

- if true: interbreeding occurred at a very low frequency, indicative of a strong cultural taboo
- if true: level is too low to have any impact on human biology or the human soul/spirit
Creation/Evolution Debate Impact
Creation/Evolution
Debate Impact

- Neanderthal genome is distinct.
- Neanderthal morphology is distinct.
- Young-earth creationist prediction is falsified.
Creation/Evolution Debate Impact

- very few apparent mutations for either humans or Neanderthals
- Evolutionary dates for human-Neanderthal common ancestor markedly conflict (270-850 kyr).
Creation/Evolution Debate Impact

- only 78 "evolutionary" substitutions during the last 300 kyr
- 70-kyr-old Neanderthal genome can’t be distinguished from 40-kyr-old Neanderthal genomes.
Creation/Evolution Debate Impact

- Naturalistic and theistic evolutionary predictions are falsified.
- Analysis confirms the Garden of Eden hypothesis.
I will put enmity between you and the woman, and between your offspring and hers. He will crush your head and you will strike his heel.

—Genesis 3:15
The Nephilim were on the earth in those days—and also afterward—when the sons of God went to the daughters of men and had children by them.

—Genesis 6:4
There were 20 attempts on David’s life between the time he was anointed to be the future king of Israel and when he took the throne.

— 1 Samuel 17-30
David survived, and he and his mighty men killed off the last of the Nephilim.

—2 Samuel 21, 1 Chronicles 20
Who are the sons of God?

Both angels and humans can take the title, sons of God.
Who are the sons of God?

Gen. 6:2  Matt. 5:9  Rom. 8:21
Gen. 6:4  John 1:12  Rom. 9:8
Job 1:6  John 11:52  Gal. 3:26
Job 2:1  Rom. 8:14  Phil. 2:15
Job 38:7  Rom. 8:16  1 John 3
Hos. 1:10  Rom. 8:19  1 John 5
Son of Man, Son of God
Son of Man, Son of God

Jesus insisted on the title “Son of Man” before His resurrection and the “Son of God” after His resurrection.
Day of Pentecost

Only after Pentecost did Jesus’ followers become sons of God.
Day of Pentecost
Day of Pentacost

Only after Pentacost did Jesus’ followers become sons of God.
Angels who did not keep their positions of authority but abandoned their own home—these He has kept in darkness, bound with everlasting chains.

—Jude 6
Do not have sexual relations with an animal and defile yourself with it. A woman must not present herself to an animal to have sexual relations with it; that is a perversion.

—Leviticus 18:23
For this reason, and because of the angels, the woman ought to have a sign of authority on her head.

—1 Corinthians 11.10
Our struggle is not against flesh and blood, but against the rulers, against the authorities, against the powers of this dark world and against the spiritual forces of evil in the heavenly realms.

—Ephesians 6:12