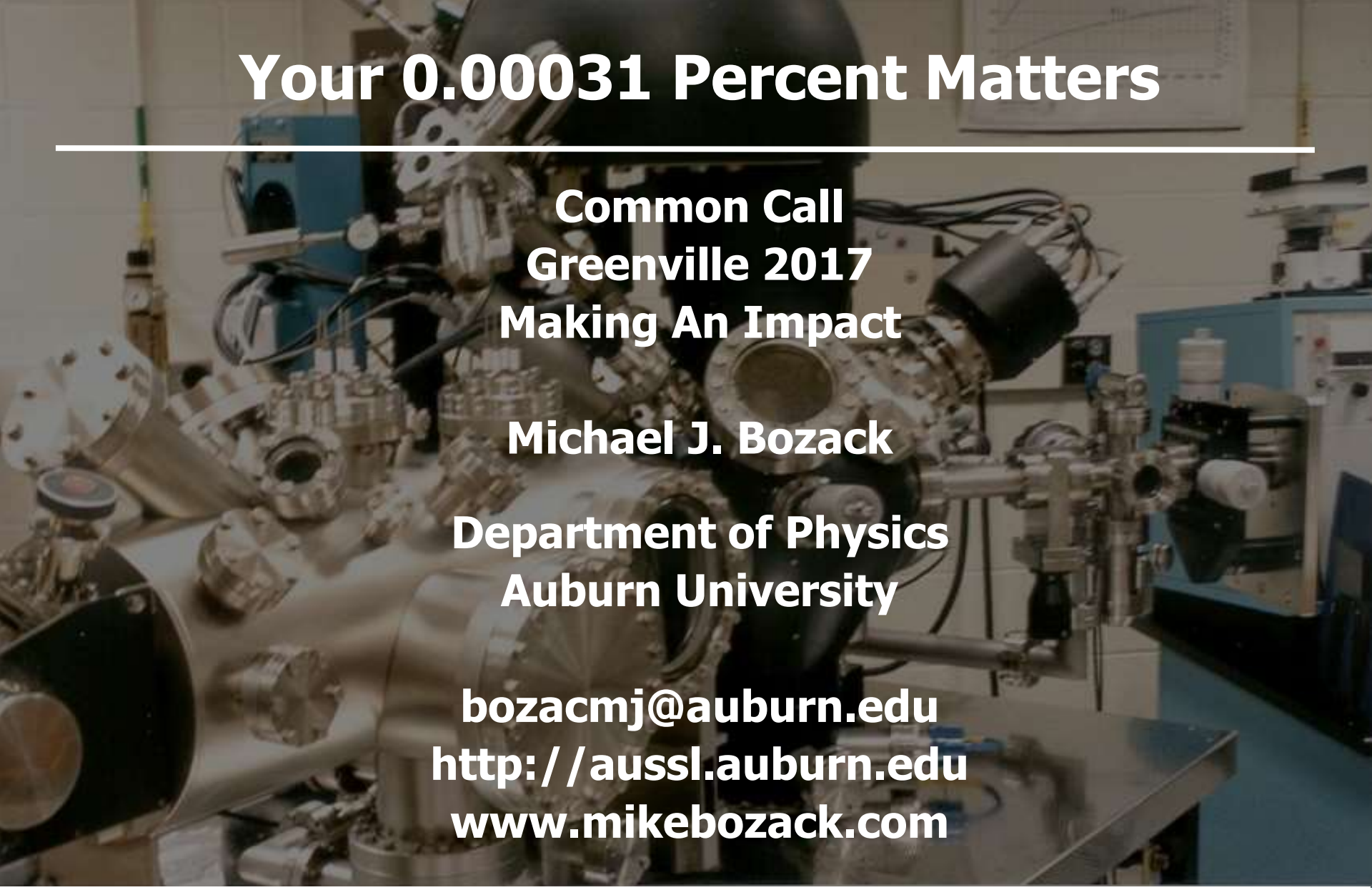

Your 0.00031 Percent Matters

Common Call
Greenville 2017
Making An Impact

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Theme of Presentations

To address the most common question I get from new assistant professors . . .

"How do you glorify God as a Christian college professor in a largely secular institution?"

- **Friday: Glorifying God through Science.**
- **Saturday am: Glorifying God through Teaching, Research, and Outreach.**
- **Breakout session: Glorifying God through Honest and Straight Talk to Christian Students.**

Theme Tonight

Christianity Enhances our Professions, Careers, and Lives

- **Christian college professors in some disciplines are extremely rare in secular universities. In some colleges, we may be the <u>ONLY</u> Christian professor our students will ever meet.**

- **Christian college professors should be able to relate their fields to Christianity and have an answer for students who ask why we believe in God.**

- **How my field of science reinforces my faith and enhances my walk with Christ.**

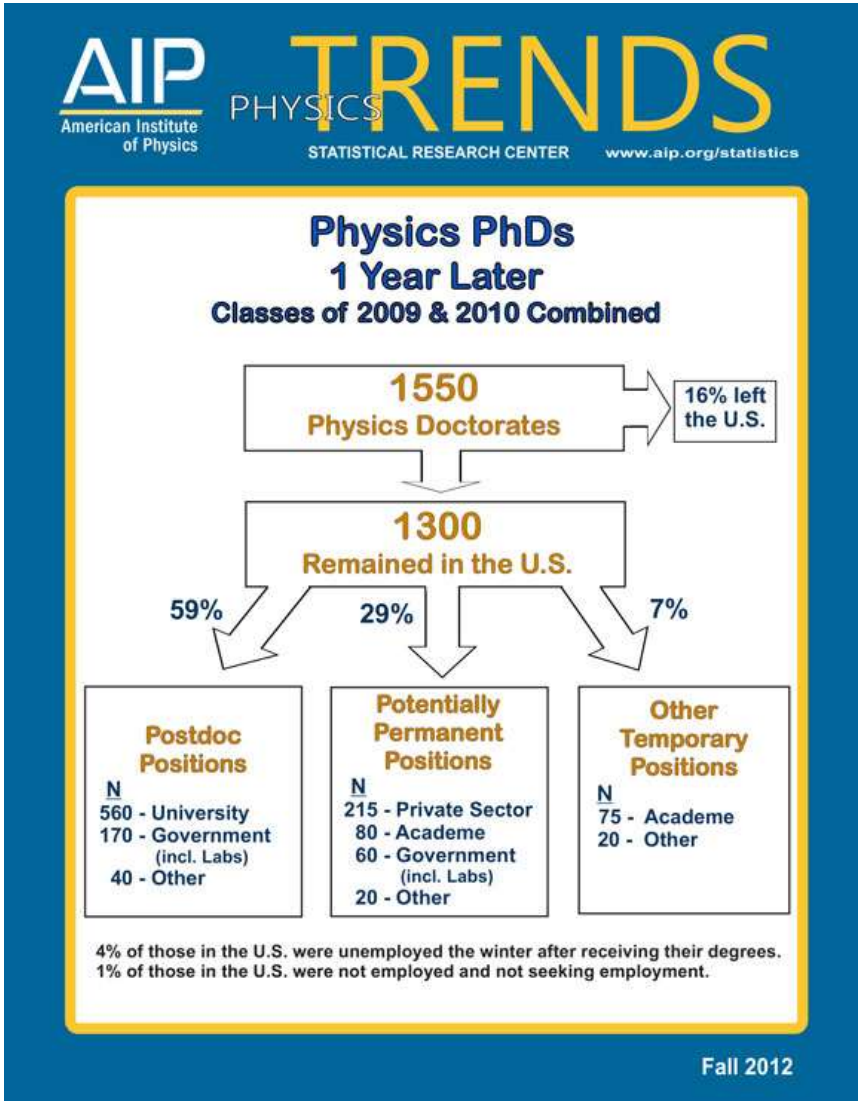
How Rare We Really Are

Christian Professors . . . A Nearly Extinct Breed

- **According to the Higher Education Research Institute, only 12% of university faculty identify as politically right-of-center and only 5% of professors in the humanities and social science departments so identify.**
- **A study by James Lindgren of Northwestern University Law School reports that only 13% of law professors identify as Republican.**
- **A study by Jonathan Haidt of NYU showed that 96% of social psychologists identify as left-of-center, 3.7% as centrist/moderate, and only 0.03% as right-of-center.**
- **In my own study of AU, only 41 out of 1300 (3%) AU professors felt comfortable publishing their names in the campus newspaper in an ad that they have accepted "God's gift of eternal life through faith in Jesus Christ His Son."**
- **In a recent Wall Street Journal article entitled "The One Kind of Diversity Colleges Avoid," John Hasnas, professor at Georgetown University's School of Business, concludes that "in more than 20 years that I have been a professor, no search committee has ever been instructed to increase political or ideological diversity."**

It's Especially Bad in the Sciences

We are a VERY Rare and Mysterious Breed



Sobering Statistics

The entire nation produces only ~ 1000 physics Ph.D.'s per year . . .

$$\frac{\text{physicists}}{\text{U.S. population}} = \frac{1000}{320{,}000{,}000} = 3.13 \times 10^{-6}$$

. . . or ~ 3 in a MILLION

Conclusion

Not many Sheldon's out there.
Even fewer American Sheldon's.
And even FEWER Christian Sheldon's.

Bottom Line: It is a GOD MIRACLE that I ever made it in physics!

Four Streams of Evidence from Science

Displaying the Glory of God

- **Outrageous numbers of nature.**
- **Amazing equations of physics.**
- **Absolute limits imposed by nature.**
- **Intelligent design observed in nature.**

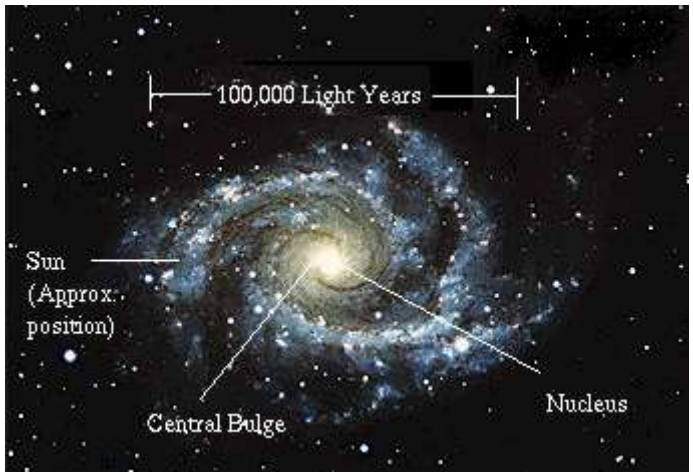
  (over all length scales, energy ranges, and radiation wavelengths)

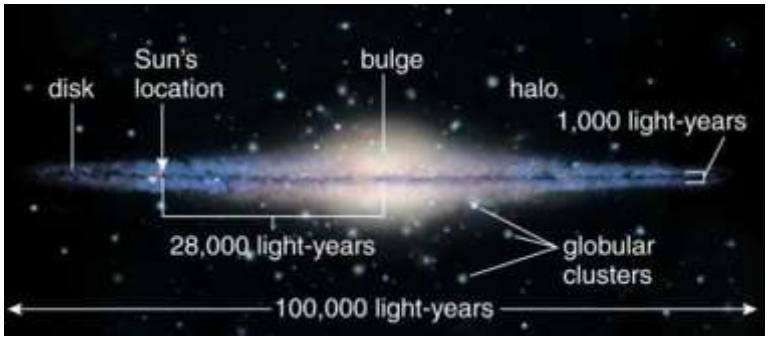
Bottom Line: **Nature is so exquisitely crafted that it requires more faith to believe in a Godless Universe. Precise control of the billions of factors necessary to maintain the balance of nature is beyond human comprehension and requires a supernatural Creator.**

Outrageous Numbers of Nature

Regarding the Cosmos

- **The universe has 100 billion galaxies.**
- **Our galaxy (the Milky Way) has 100 billion stars.**
- **If the Earth and Sun were 1 inch apart, you would have to travel 25,000 miles to reach the center of our Galaxy, which is 100,000 light years across.**
- **The speed of light is so fast (186,000 miles/sec) that light takes 1.3 sec to reach the moon, 8.3 minutes to reach the earth from the sun, and 4.3 years to reach the earth from the nearest star. Since the average distance between stars in our galaxy is ~ 5 light years, we will NEVER explore much of the Universe.**

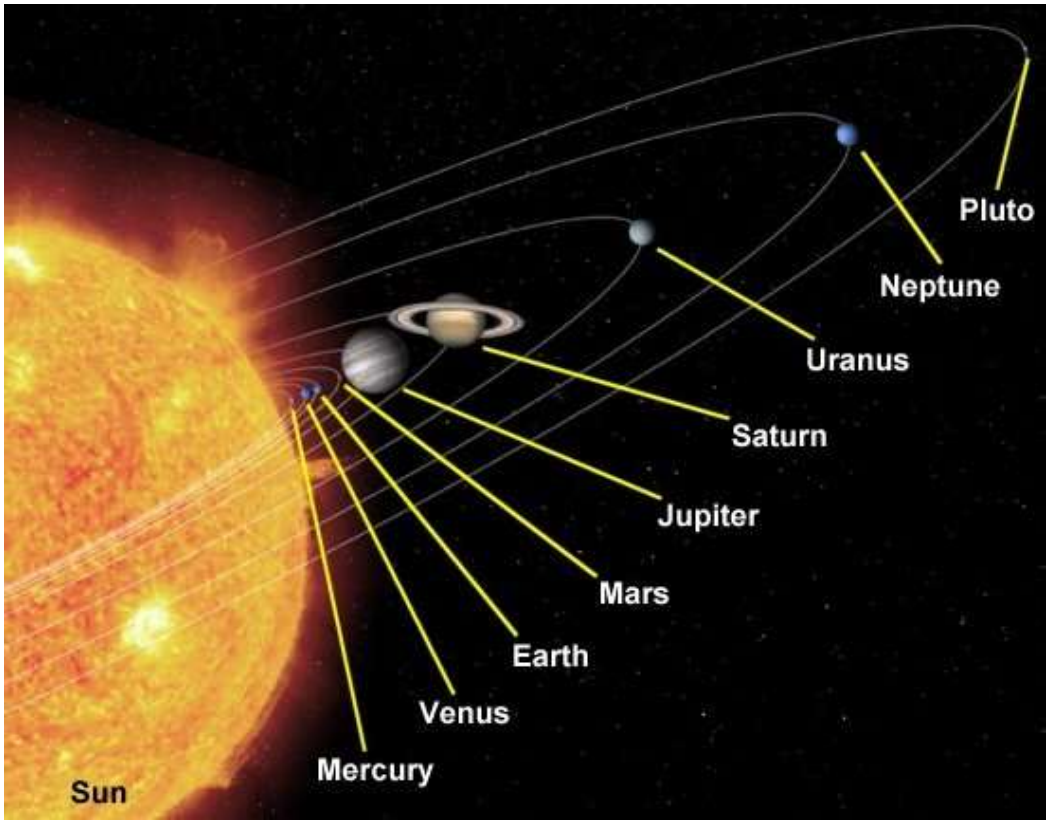




Outrageous Numbers of Nature

Regarding the Solar System

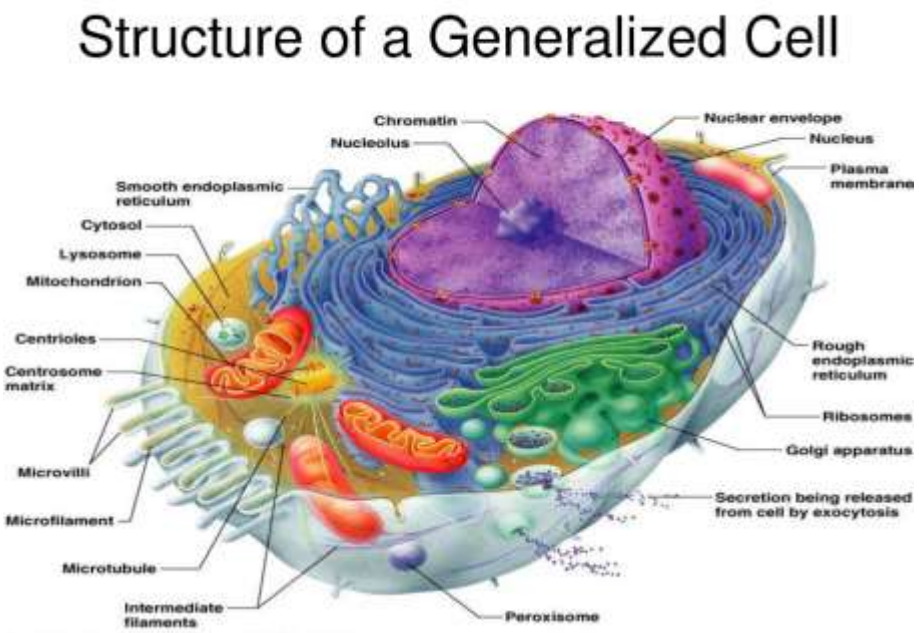
- **The Earth rotates on its axis at 1000 miles per hour; the Earth moves around the Sun at 70,000 miles per hour; the Solar System moves through space at 600,000 miles per hour.**
- **The Moon is 240,000 miles from the Earth. If the Moon were 1/5 closer to the Earth, the tides would cover almost all land masses by 35-50 feet two times a day.**



Outrageous Numbers of Nature

Regarding Cells

- **The human body has 100,000,000,000,000 (100 trillion) cells.**
- **All the cells in the human body lined up side-by-side would encircle the Earth 200 times.**
- **The DNA from one human cell contains a billion biochemical steps.**
- **If all the DNA in a human were placed end-to-end it would reach the Sun and back 400 times.**
- **A <u>single</u> cell contains enough information to fill 10 million volumes.**



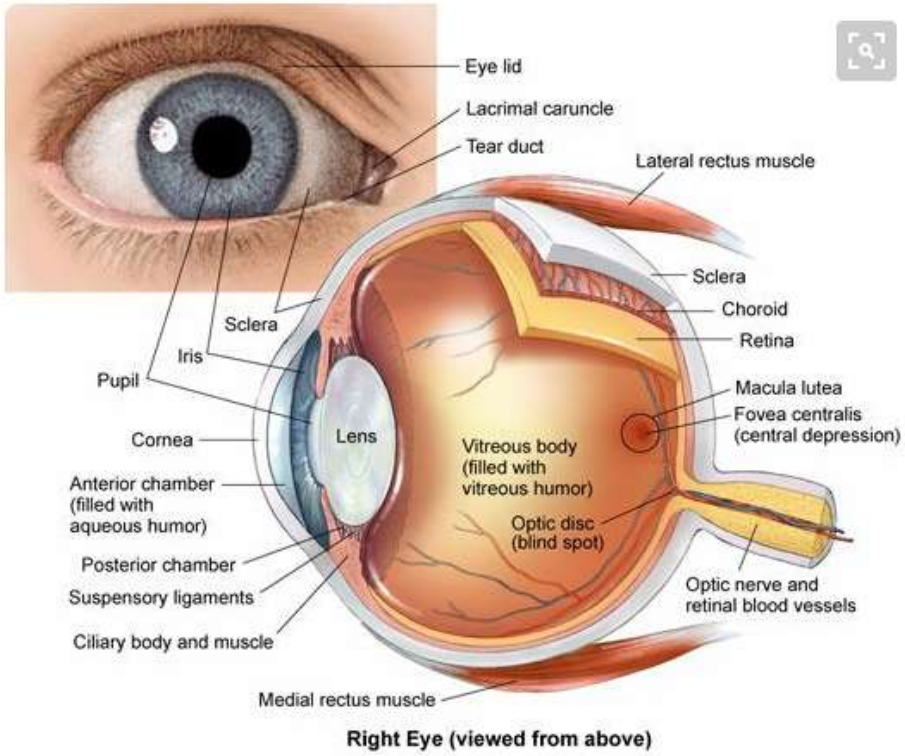
Every human being spent about half an hour as a <u>single</u> cell.

Outrageous Numbers of Nature

Regarding the Human Eye and Ear

The Eye

- **The human eye can handle 1.5 million simultaneous messages.**
- **In a day, the eye moves 100,000 times (the body would have to walk 50 miles to exercise the leg muscles an equal amount).**
- **137 million nerve endings pick up the messages the eye sends to the brain.**



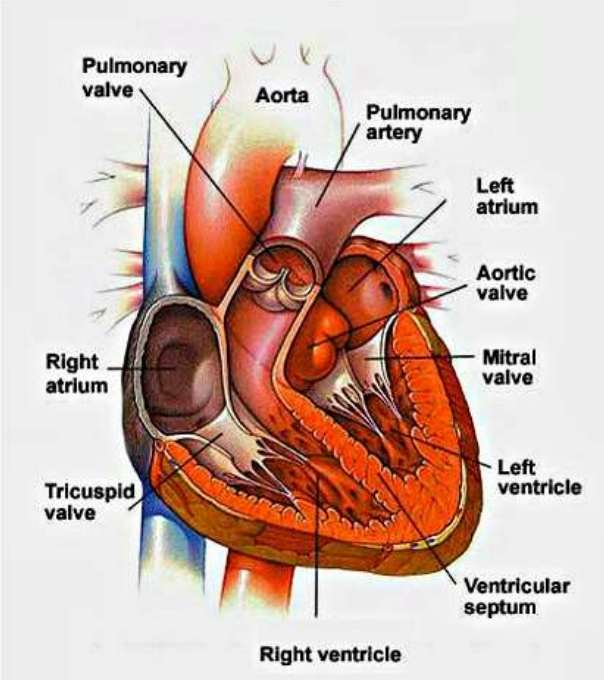
The Ear

- **The inner ear contains as many circuits as the telephone system of a good sized city.**

Outrageous Numbers of Nature

Regarding the Human Heart

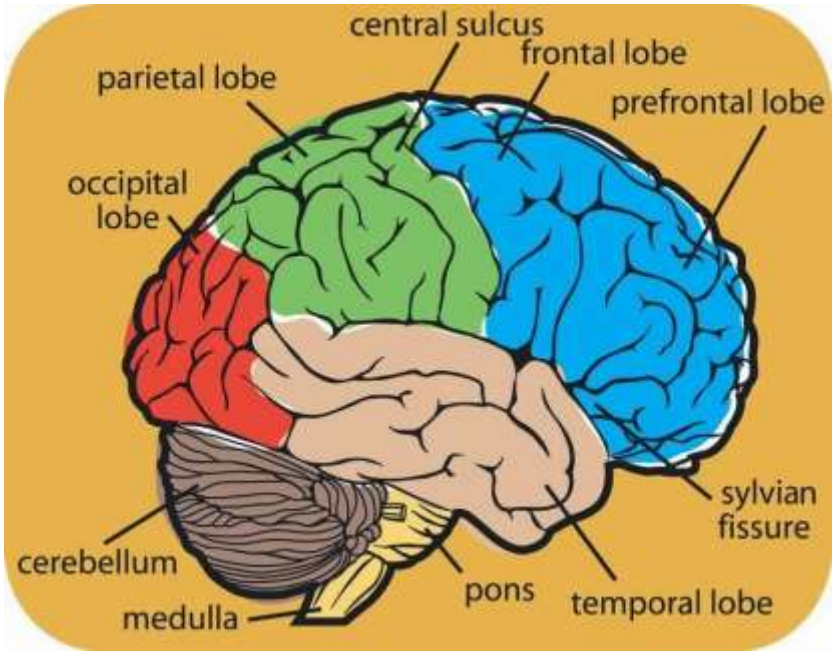
- **The human heart beats 100,000 times a day to send 2000 gallons of blood across the 60,000 miles of blood vessels from your head to feet. It beats 40 million times in a year and 2.5 billion times in an average lifetime.**
- **Over a whole life, the heart pumps nearly 1.5 million barrels of blood, enough to fill 200 rail tankers of 10,000 gallon capacity. A kitchen faucet would have to be turned on for 45 years to equal this amount of blood.**
- **Each day, the heart generates enough power to drive a truck for 32 kilometers or 20 miles. That is enough energy for a trip to the Moon and back to the Earth in your lifetime, just on the energy of your heart.**



Outrageous Numbers of Nature

Regarding the Human Brain

- **The information in the brain equals 20 million books.**
- **A machine matching the human brain in memory capacity would consume electrical energy at the rate of 1 billion watts – half of the output of the Grand Coulee Dam. It would cost $10 billion and fill the Empire State Building.**
- **The brain has 10 billion circuits and a memory of 1,000,000,000,000,000,000,000 = 10^{21} bits, each one being 5-10 times more complex than any computer ever built.**

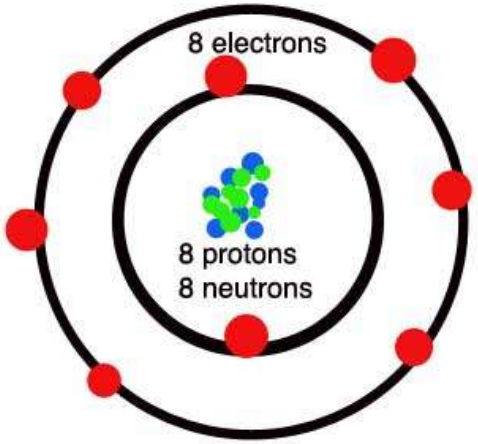


Outrageous Numbers of Nature

Regarding Atoms

- **There are about 100,000,000,000,000,000,000,000 = 10^{23} molecules in a thimbleful of water. This is more than the number of drops of water in all the lakes and rivers of the world.**
- **Atoms are so small that there are about as many atoms of air in your lungs at any moment (10^{22}) as there are breaths of air in the atmosphere of the whole world.**
- **Since every breath you exhale eventually becomes uniformly mixed in the atmosphere (in about 6 years), every person in the world breathes an average of one of your exhaled atoms in a single breath. With each breath you take, you breathe atoms that were once a part of everyone who ever lived. We are literally breathing each other.**

Oxygen Atom



By comparison, on an average day, UPS handles 15.8 million packages (10^7), while FedEx averages 3.4 million (10^6) packages.

Outrageous Complexities of Nature

As Told by Authors and Scientists

- **"To suppose that the eye with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by natural selection, seems, I freely confess, absurd in the highest sense"**

  (Darwin, The Origin of Species)

- **"At whatever level we examine the building blocks of life—electrons, nucleons, atoms, or molecules—the physics of the universe must be meticulously fine-tuned. The universe must be exactingly constructed to create the necessary electrons. It must be exquisitely crafted to produce the protons and neutrons required. It must be carefully fabricated to obtain the needed atoms. Unless it is skillfully fashioned, the atoms will not be able to assemble into complex molecules. Such precise balancing of all these factors is truly beyond our ability to comprehend" (Hugh Ross, Creator and the Cosmos)**

Outrageous Complexities of Nature

As Told by Authors and Scientists

- **"The probability for formation of the smallest, simplest form of living organism known is 1 to $10^{340,000,000}$. This is the number 1 followed by 340 million zeros. This number is truly staggering, since there are only supposed to be approximately 10^{80} electrons in the whole universe" (Harold Morowitz, professor)**

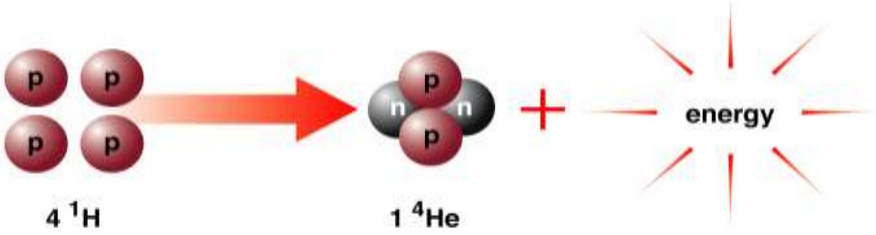
- **"The chance of life evolving on Earth is estimated to be 1 in $10^{2,000,000,000}$ (that is, 1 followed by 2 billion zeros). It would take 6000 books of 300 pages each just to write this number"**
  (Carl Sagan, professor)

- **"The more statistically improbable a thing is, the less we can believe that it just happened by blind chance. Superficially, the obvious alternative to chance is an intelligent designer"**
  (Richard Dawkins, atheist)

The Amazing Equations of Physics

Einstein's Mass-Energy Law, $E = mc^2$, How The Sun Shines

In the Sun, four H nuclei are fused into a He nucleus, which is less massive the H nuclei that combine to make it. The fusion reaction converts the missing mass into radiant energy by $E = mc^2$.



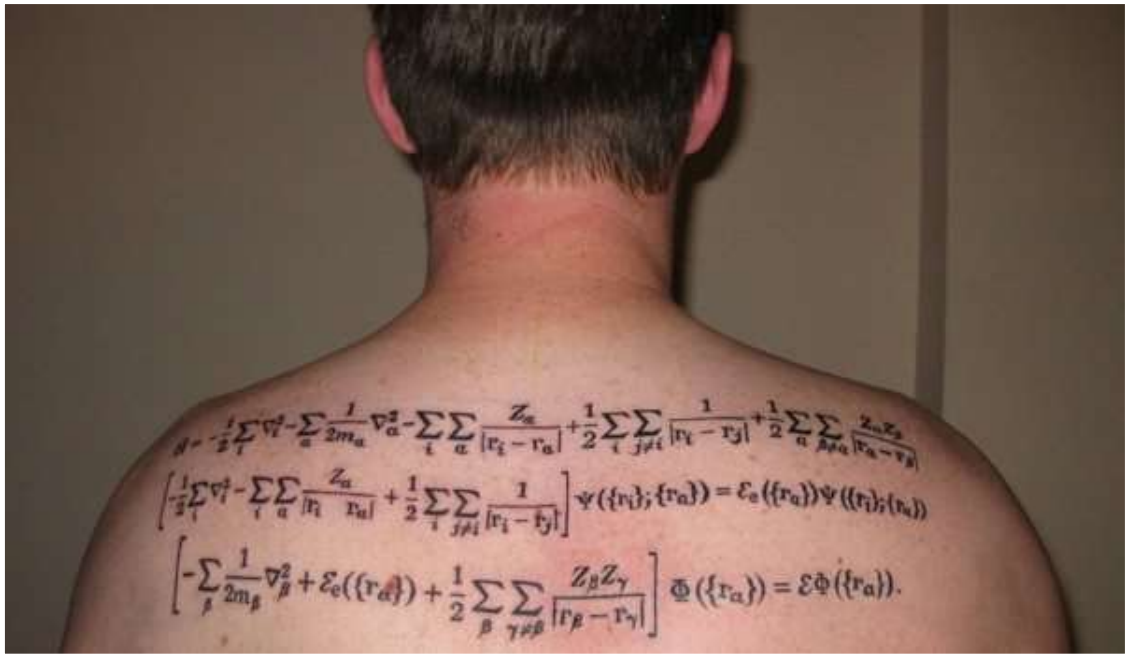
Every <u>second</u>, fusion reactions convert about 700 MILLION TONS of H into He in the Sun's core, releasing tremendous energy. The Sun's luminosity is 4×10^{26} W (almost a billion, billion, billion watts).

The Amazing Equations of Physics

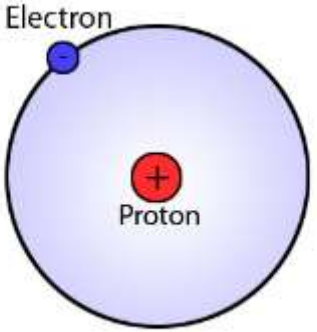
The Schrodinger Equation: Where Electrons Hang Out

The Schrödinger equation of the hydrogen atom in polar coordinates is:

$$-\frac{\hbar^2}{2\mu}\left[\frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2\frac{\partial\psi}{\partial r}\right)+\frac{1}{r^2\sin\theta}\frac{\partial}{\partial\theta}\left(\sin\theta\frac{\partial\psi}{\partial\theta}\right)+\frac{1}{r^2\sin^2\theta}\frac{\partial^2\psi}{\partial\phi^2}\right]-\frac{Ze^2}{4\pi\epsilon_0 r}\psi=E\psi$$



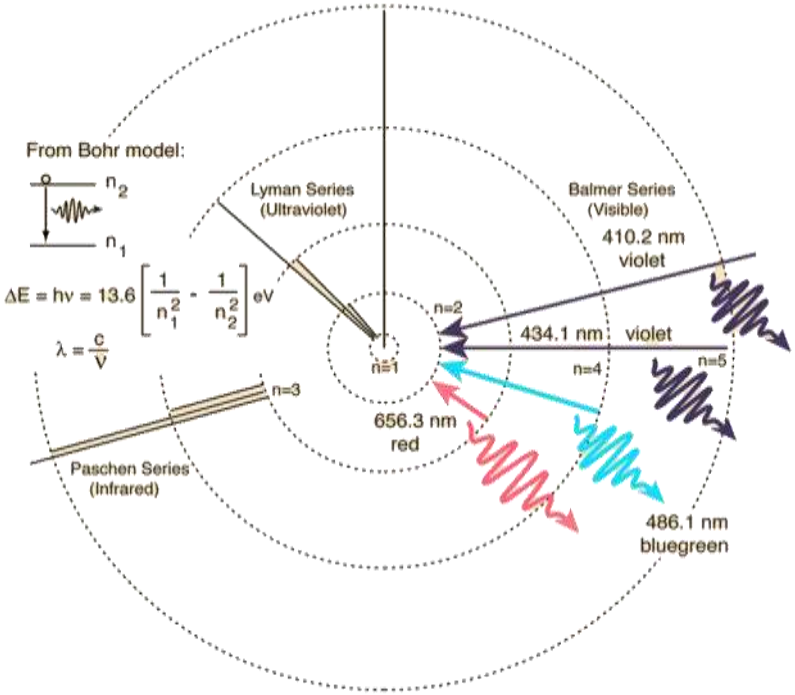
No, this is NOT my back, in case you are wondering.

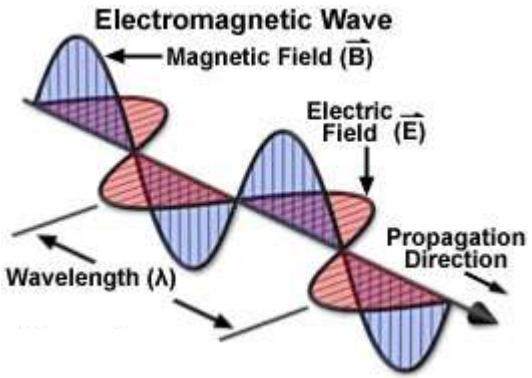


The Point: This equation would be completely untractable for anything BUT the simplest atom, hydrogen.

The Amazing Equations of Physics

Maxwell's Equations: Where Light Comes From





And God said . . .

$$\oint \mathbf{E} \cdot d\mathbf{A} = q / \varepsilon_0$$

$$\oint \mathbf{B} \cdot d\mathbf{A} = 0$$

$$\oint \mathbf{E} \cdot d\mathbf{S} = -d\Phi_B / dt$$

$$\oint \mathbf{B} \cdot d\mathbf{S} = \mu_0 i + \mu_0 \varepsilon_0 d\Phi_E / dt$$

. . . and there was Light !! (Gen 1:3)

Inviolable Limits of Nature

When God Says "I am God and You are NOT"

- **An unbreakable speed limit.**
- **An absolute lowest temperature.**
- **An inviolable limit on seeing nature at its most fundamental level.**

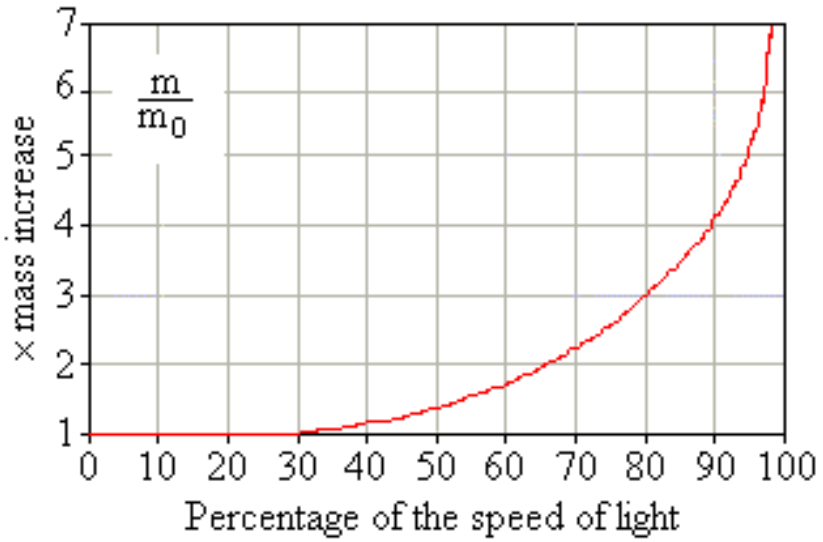
An Unbreakable Speed Limit

Einstein's Mass-Velocity Relationship

Einstein explained why mankind cannot break the speed of light of 186,000 mi/s. Reason: mass increases with speed.

$$m = \frac{m_o}{\sqrt{1 - \frac{v^2}{c^2}}}$$

Where
m = mass of object in motion
m_o = rest mass of object

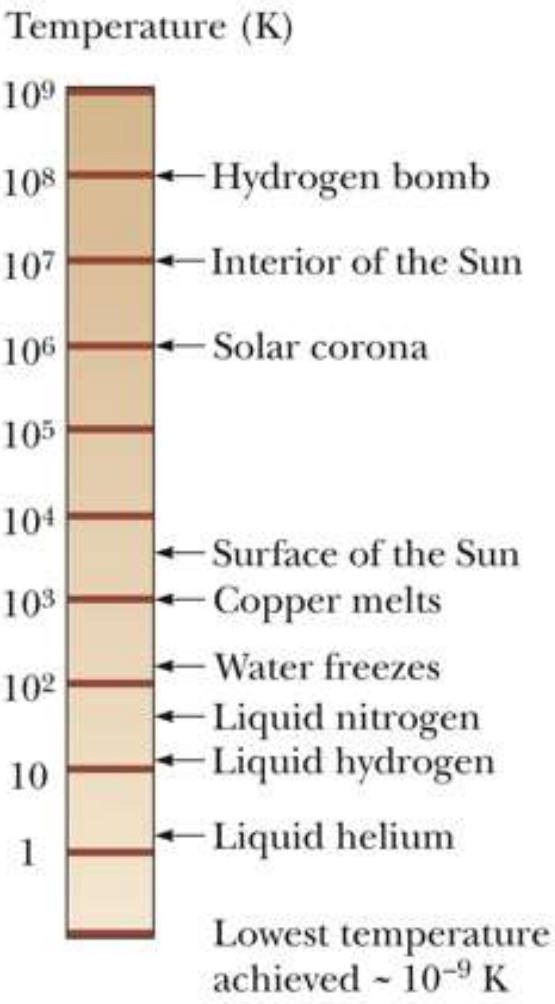


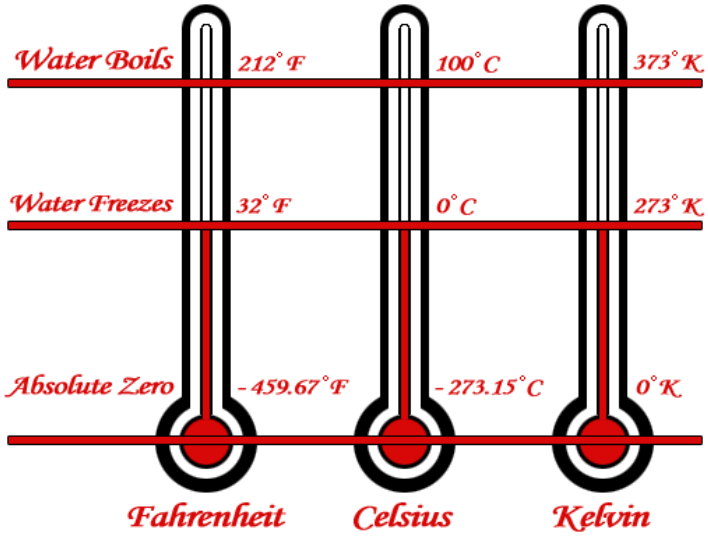
Energy output of Enterprise engines → Enterprise moves faster

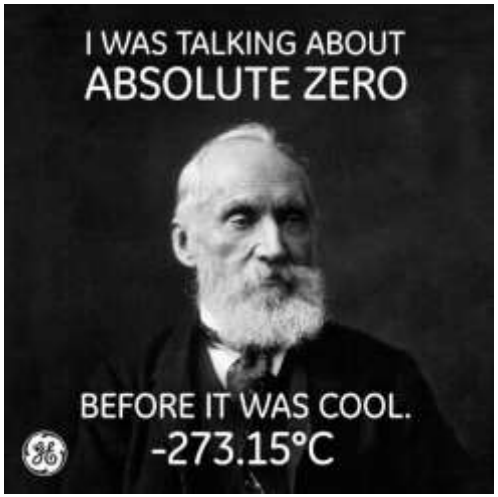
Energy output of Enterprise engines → Enterprise gains mass

An Absolute Lowest Temperature

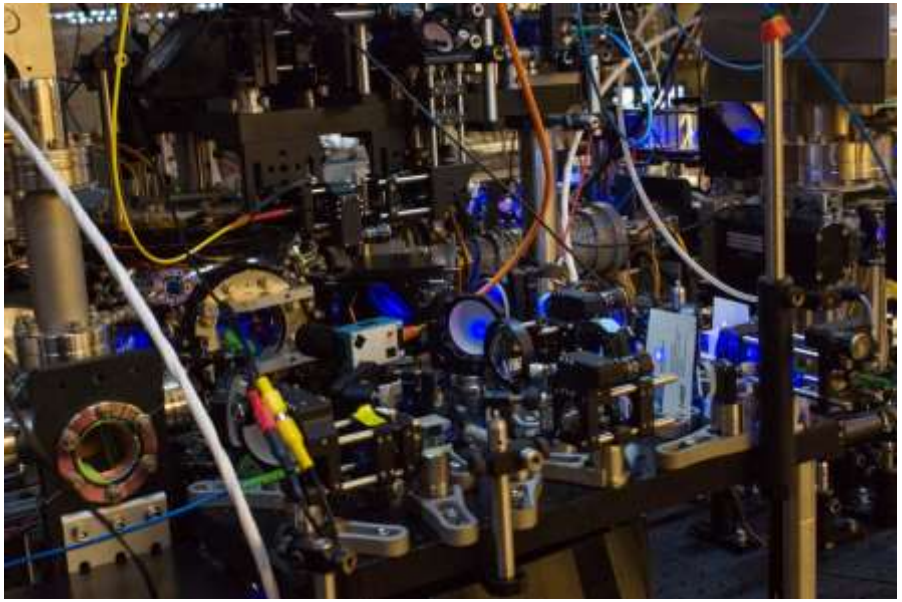
Absolute Zero







Low temperature physics laboratory

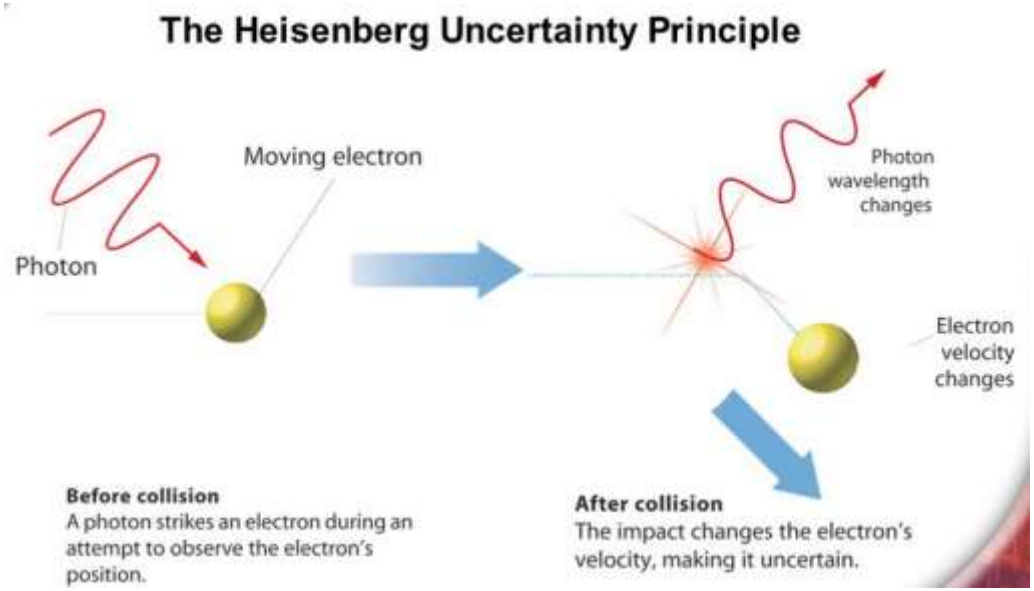


A Limit on Seeing Nature at its Most Fundamental Level

Heisenberg Uncertainty Principle

Formulated by German physicist Werner Heisenberg in 1927, the rule states that the more precisely you measure a particle's position, the less precisely you will be able to determine its momentum, and vice versa.

The principle is often invoked outside the realm of physics to describe how the act of observing something changes the thing being observed, or to point out that there's a limit to how well we can ever really understand the universe.



It's impossible to know exactly where an electron is at a given moment.

$$\Delta x \Delta p \geq \frac{h}{4\pi}$$

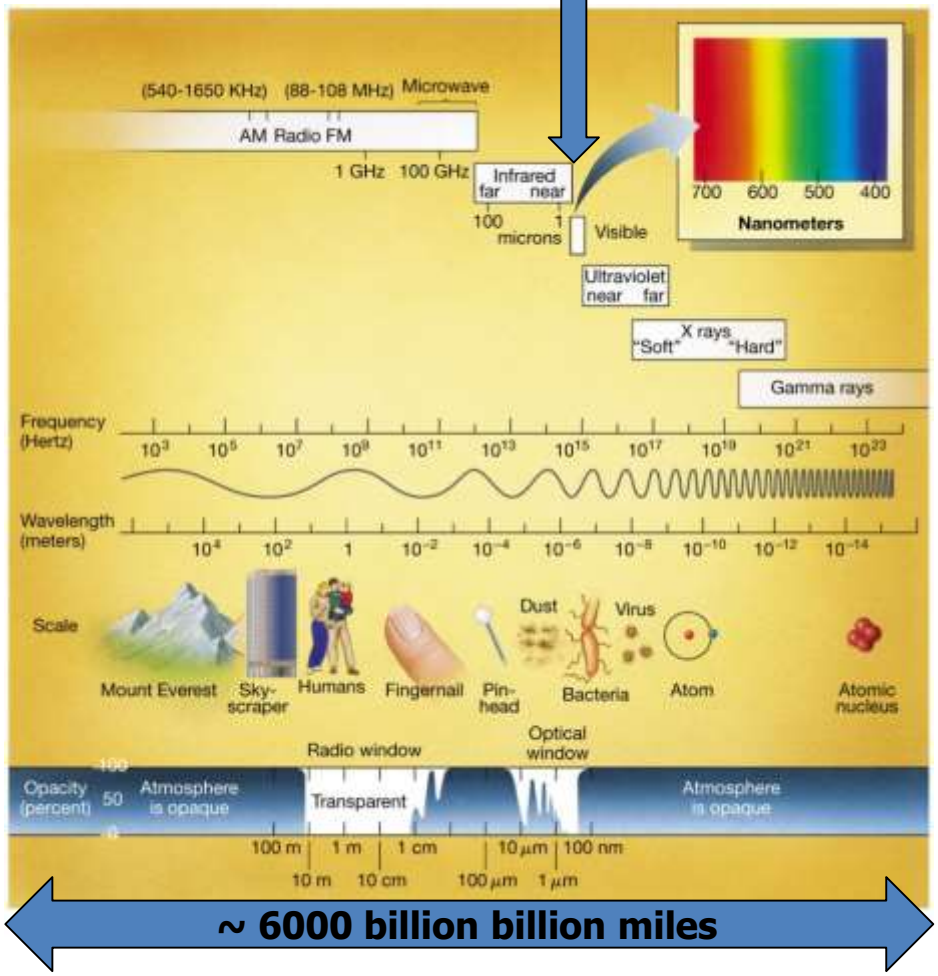
THE UNCERTAINTY PRINCIPLE

A Reply to Elitist Views of Human Knowledge

God to Man: "You're Not Even Close, and Never Will Be"

The human eye's "inch" of accessible information.

The Electromagnetic Spectrum, God's Information Carrier



~ 6000 billion billion miles

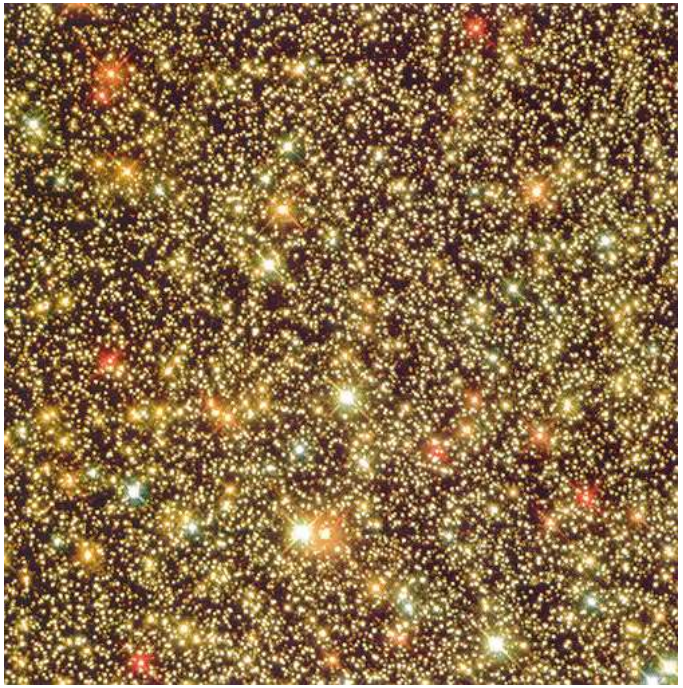
Only in the last <u>fifty or so years</u> has technology (electronics, optics, computers, space exploration) improved to the point where mankind can see beyond the INCH of radiation available to the naked eye.

The Point: Much more of the physical universe is INVISIBLE than visible. Mankind has been effectively <u>BLIND</u> for the majority of human history.

Views of the Creation

Photographs from Telescopes and Electron Microscopes

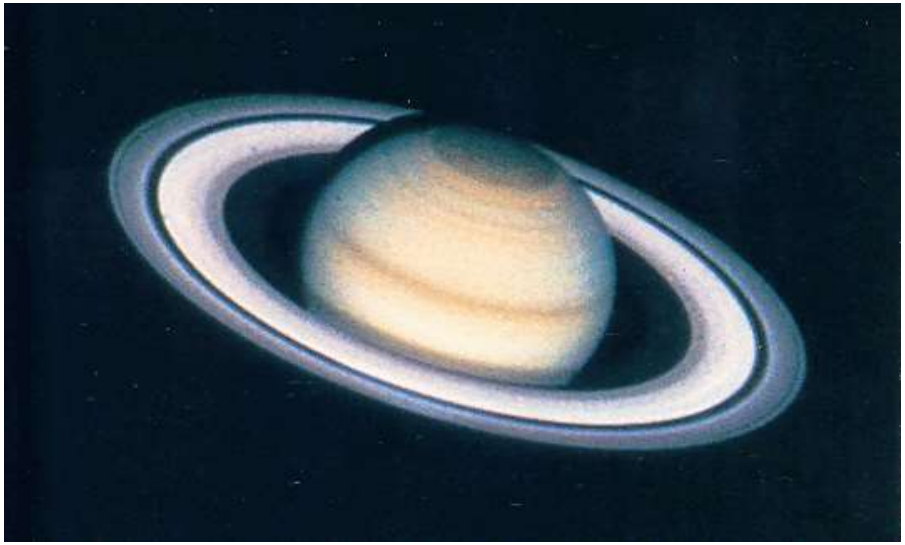
Our Home, Milky Way Galaxy



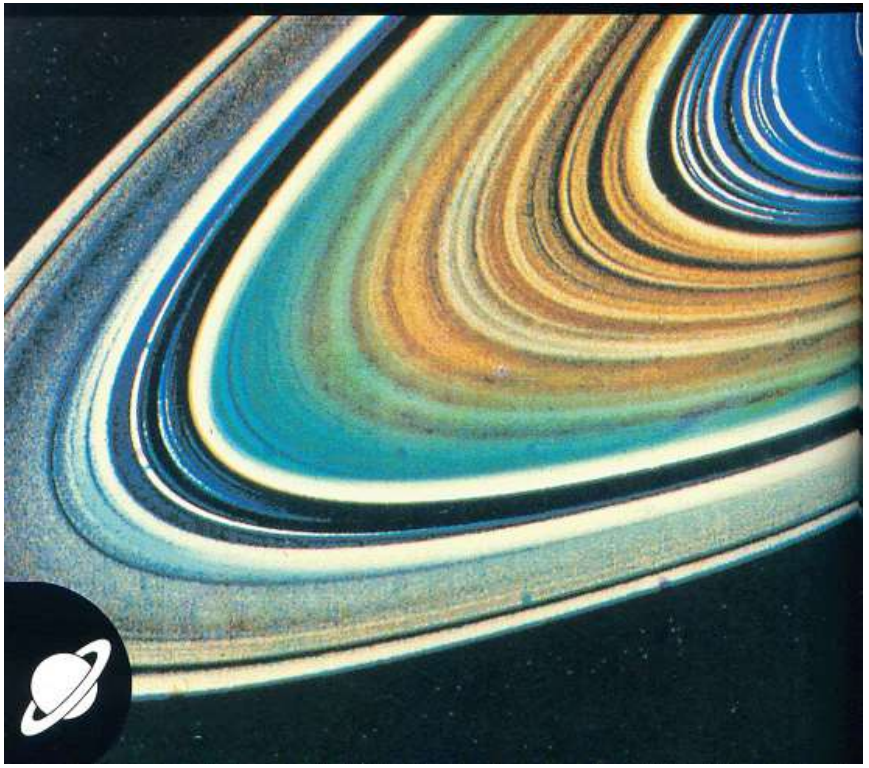
**Density of Stars
Near Galactic Center**

Views of the Creation

Photographs from Telescopes and Electron Microscopes



Saturn from Hubble



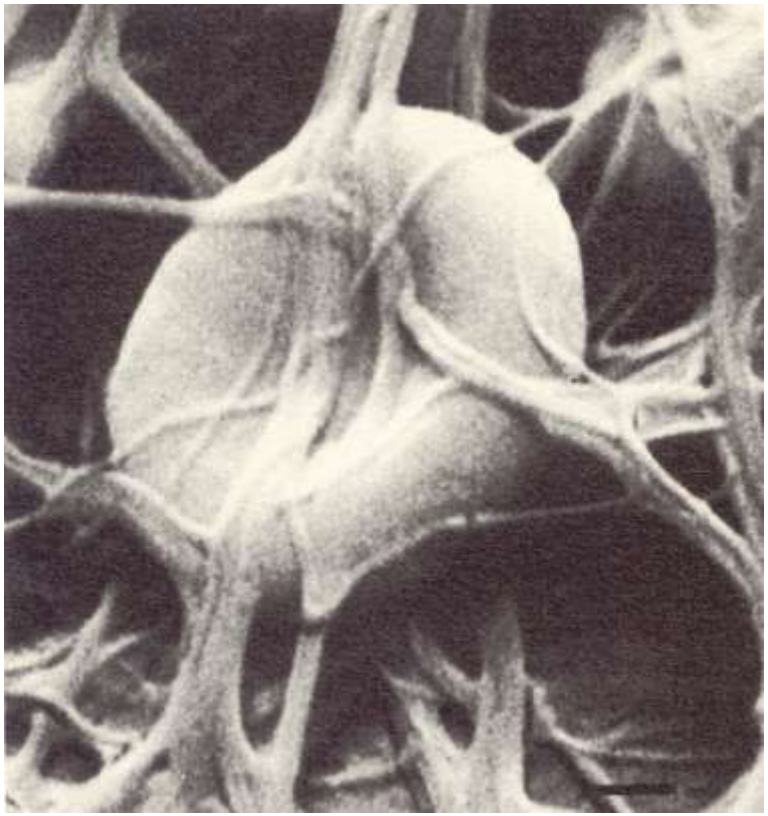
Rings of Saturn Up Close

Views of the Creation

Human Embryo in Amniotic Sac at 9th Week of Gestation

Views of the Creation

Photographs from Telescopes and Electron Microscopes

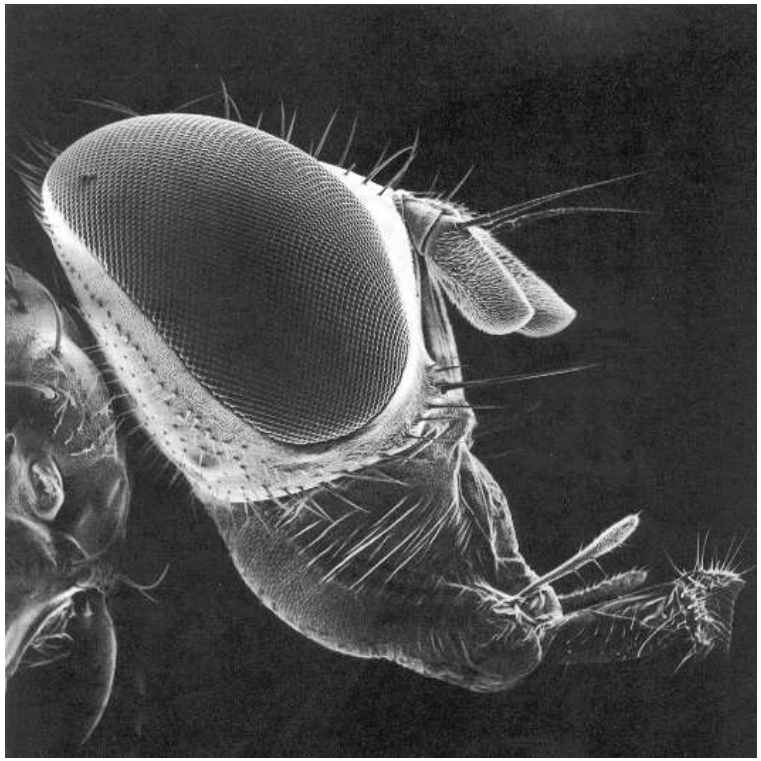


Red Blood Cell Being Woven Into a Blood Clot

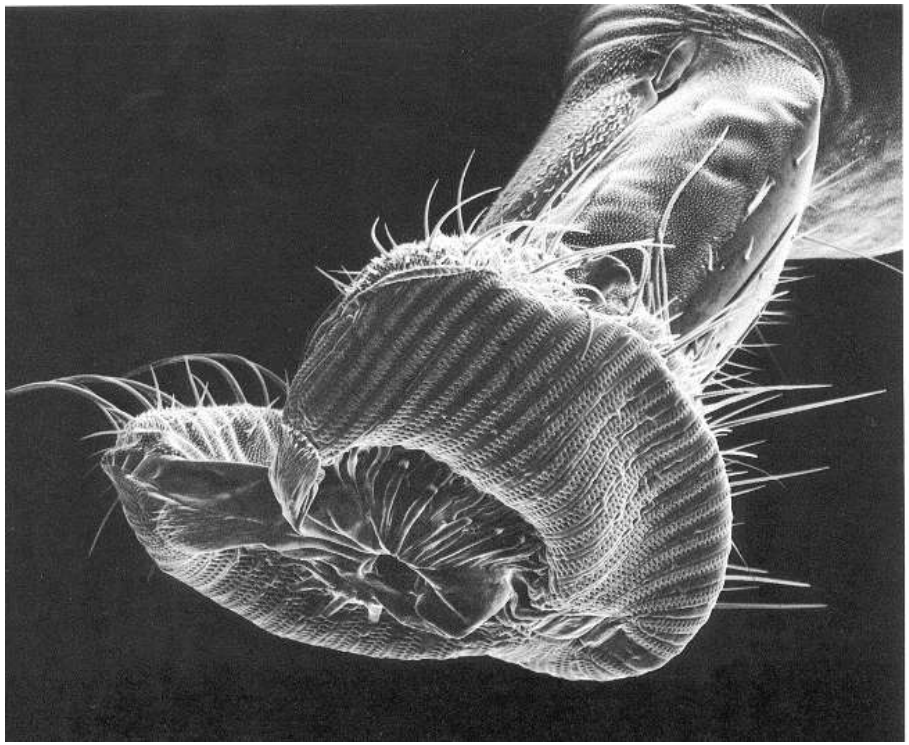
Cleanly Sliced Beard Hair

Views of the Creation

Photographs from Telescopes and Electron Microscopes



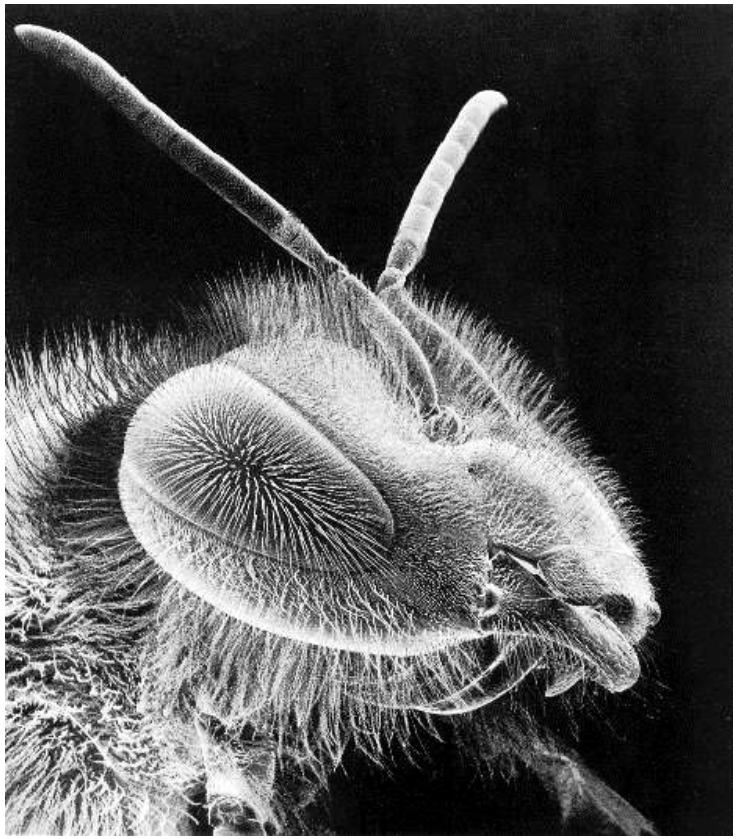
Head of a Common Housefly



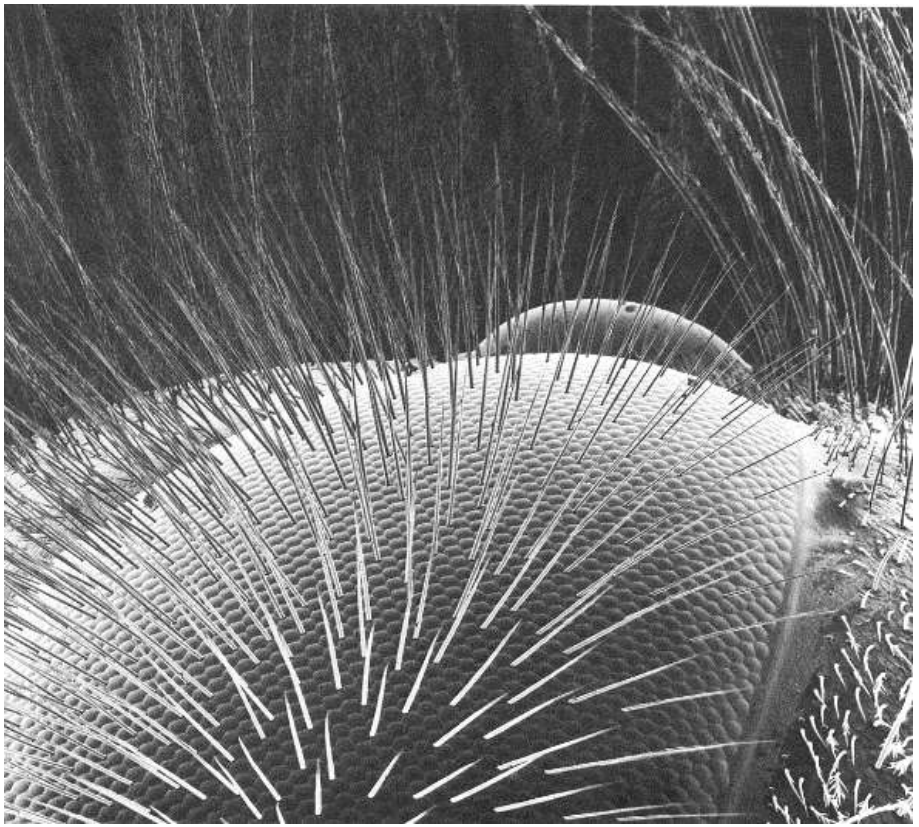
Fly Proboscis

Views of the Creation

Photographs from Telescopes and Electron Microscopes



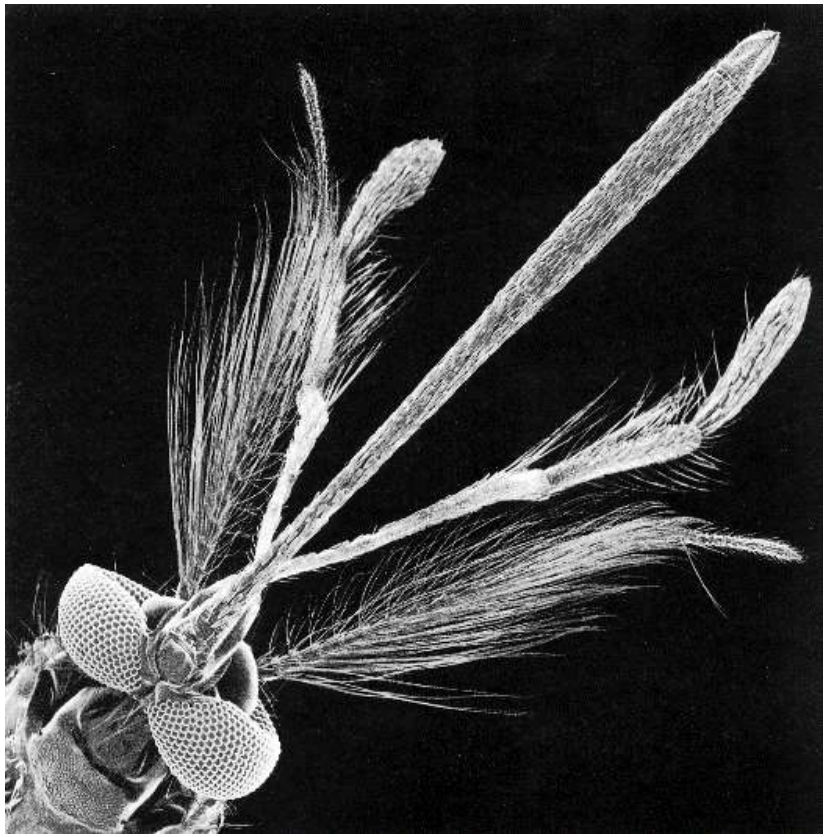
Honeybee Face



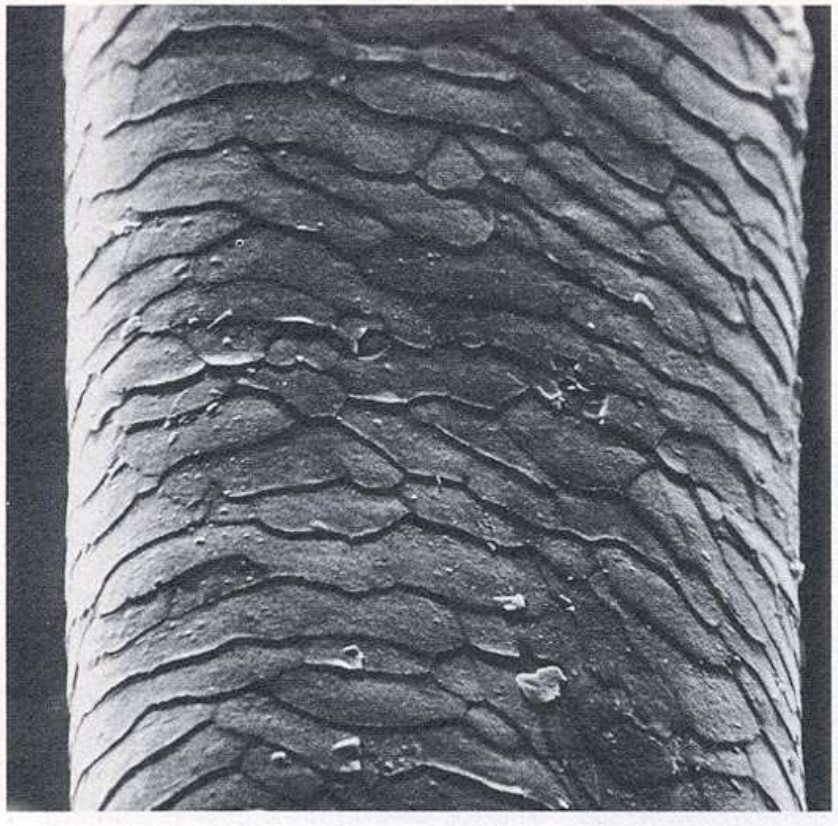
Honeybee Eye

Views of the Creation

Photographs from Telescopes and Electron Microscopes

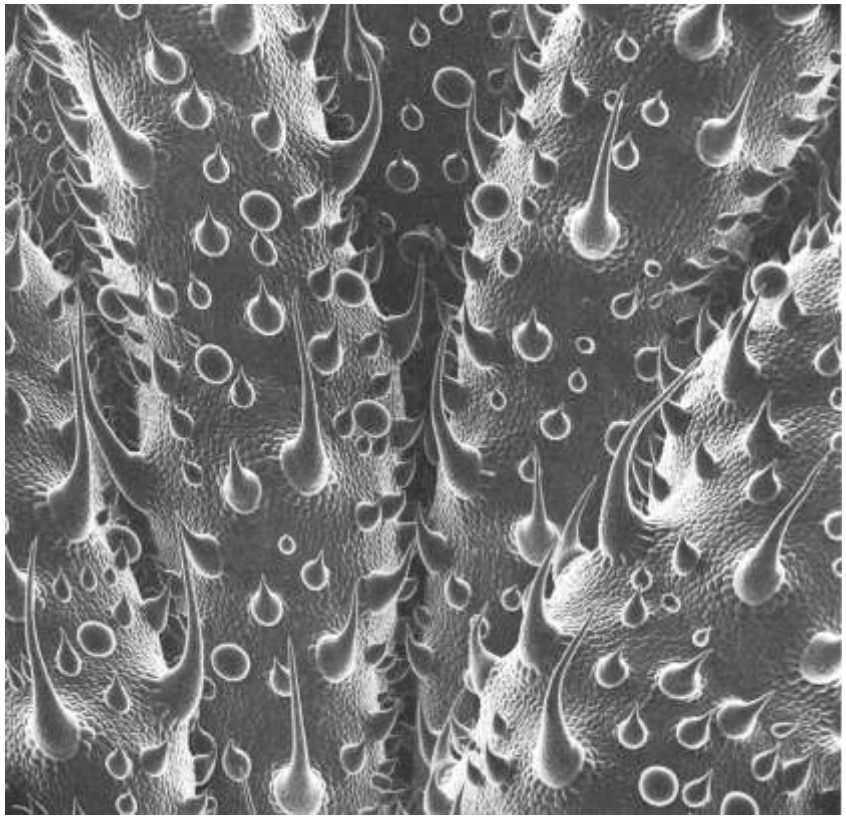


Mosquito

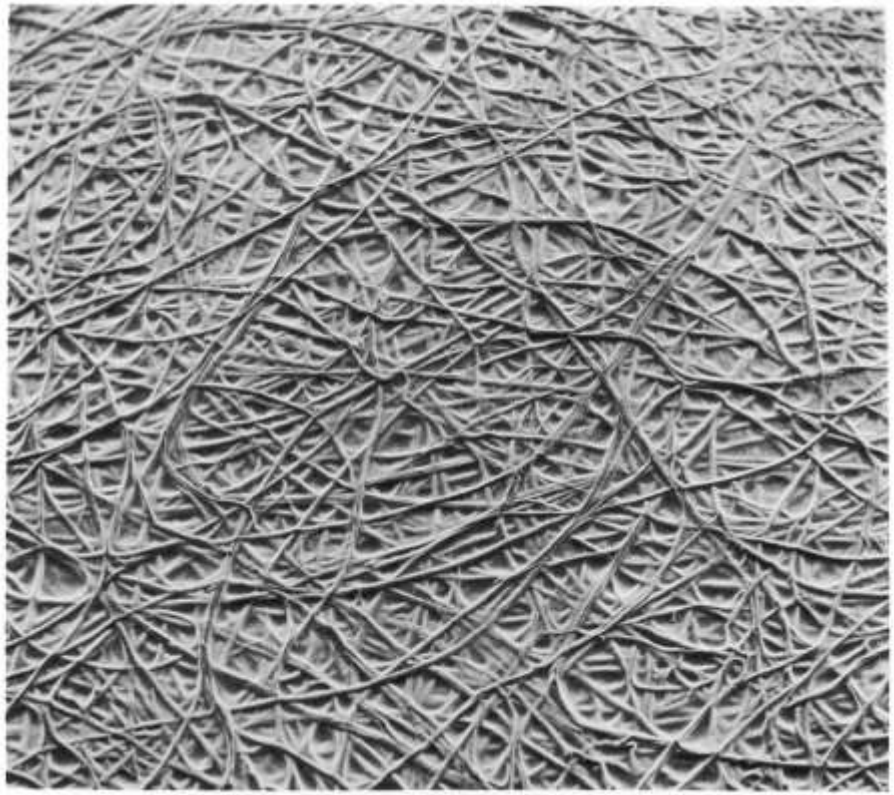


Human Hair

Views of the Creation
Photographs from Telescopes and Electron Microscopes



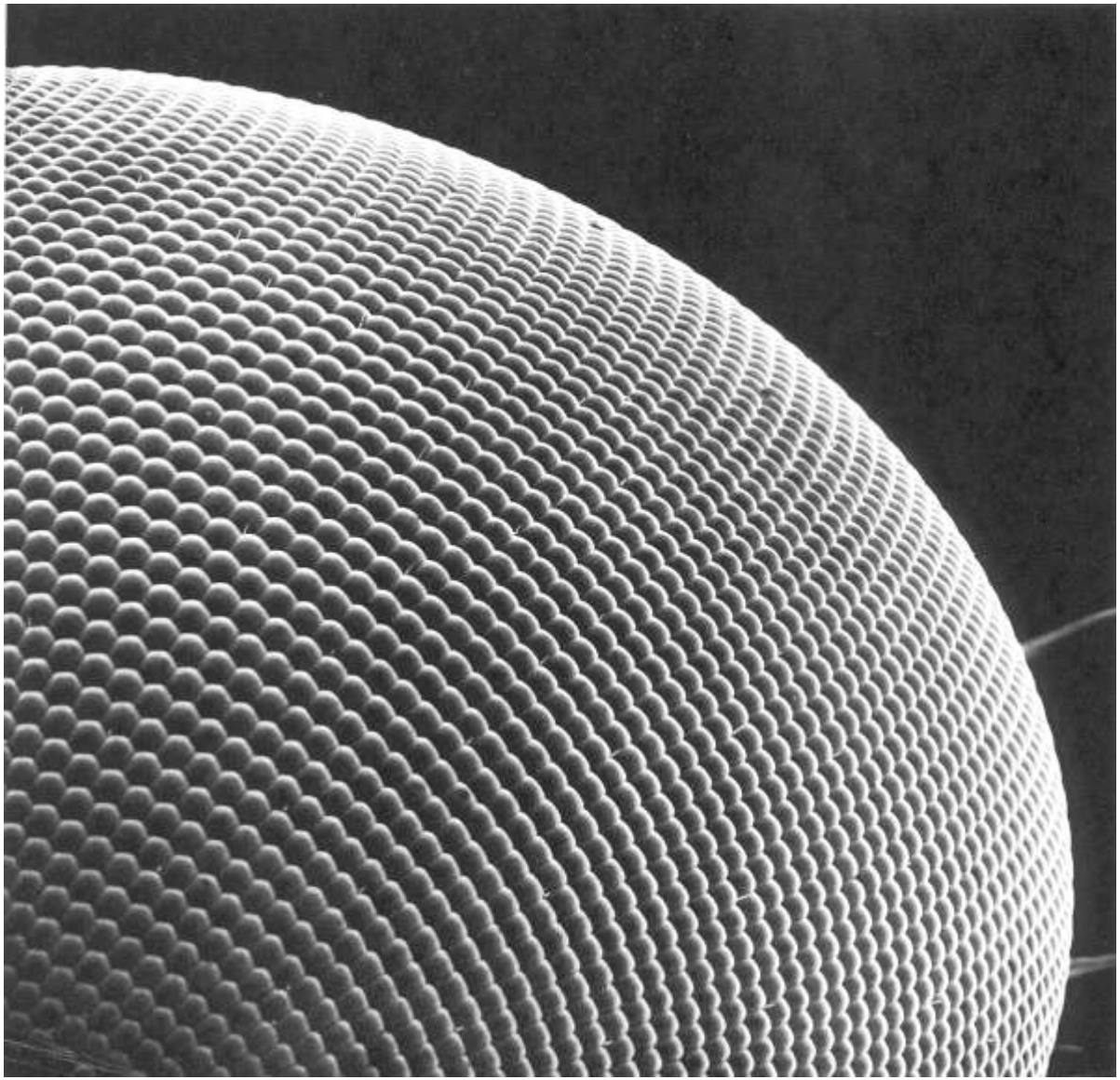
Marijuana Leaf



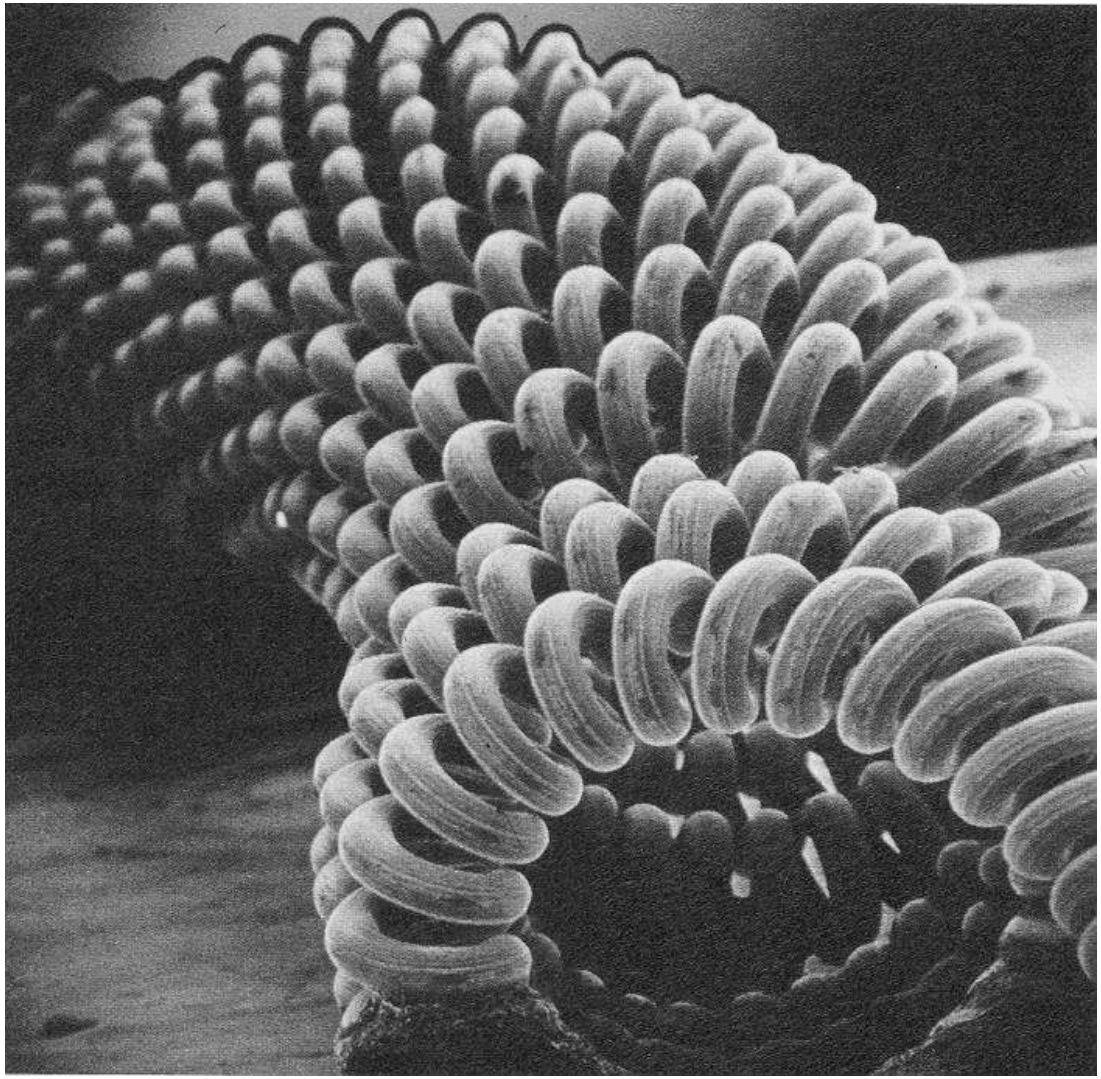
AU Stationary

Some More Fun
Electron Microscope Photographs

Can You Guess What It Is?

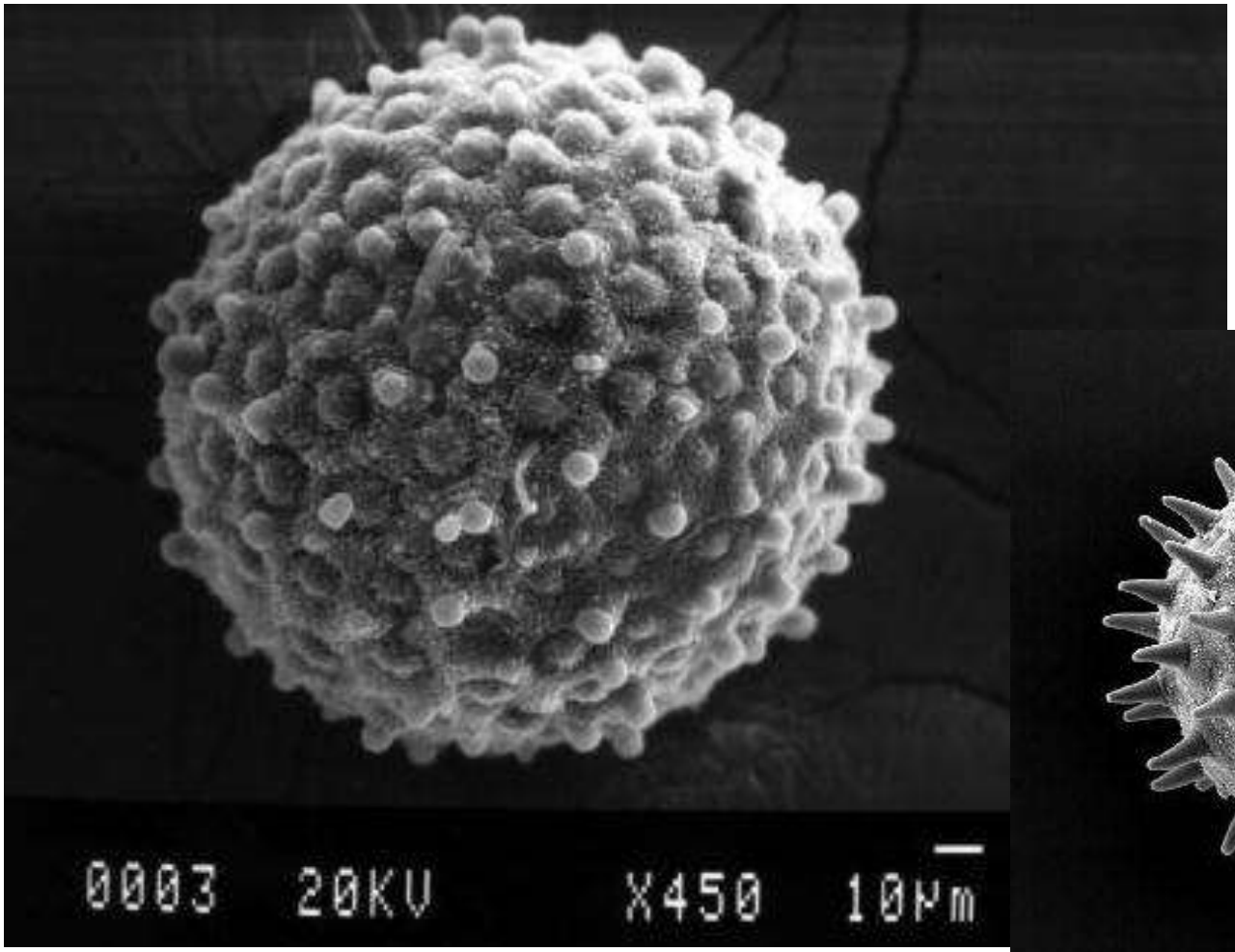


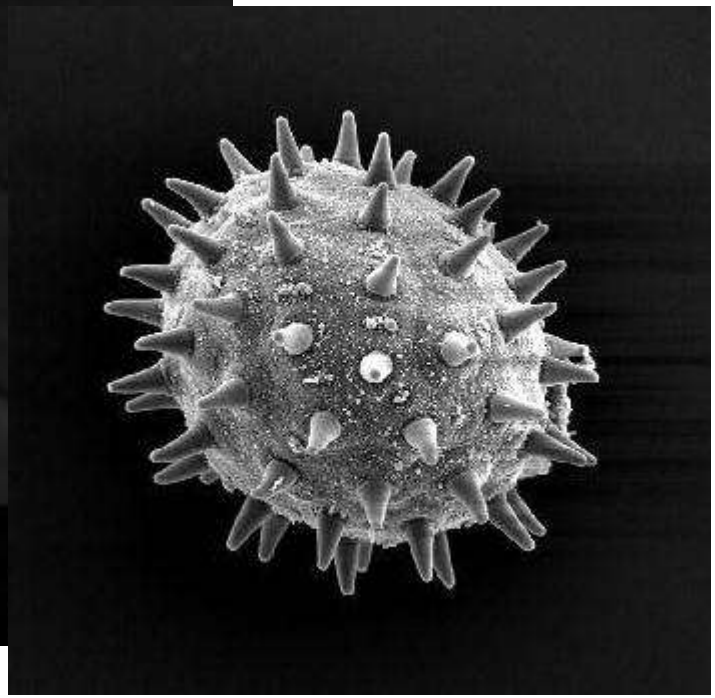
Eggshell



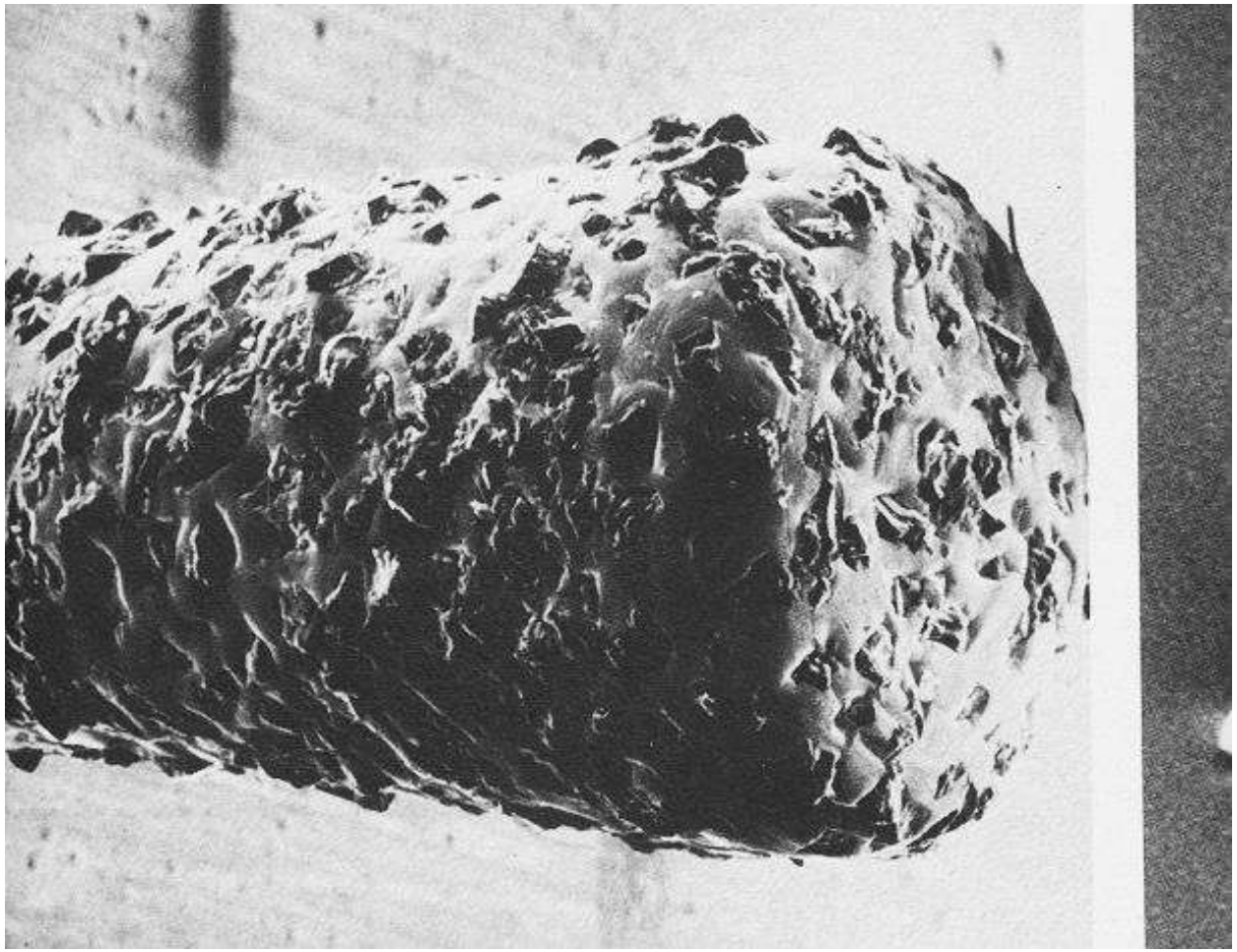
Light Bulb Filament

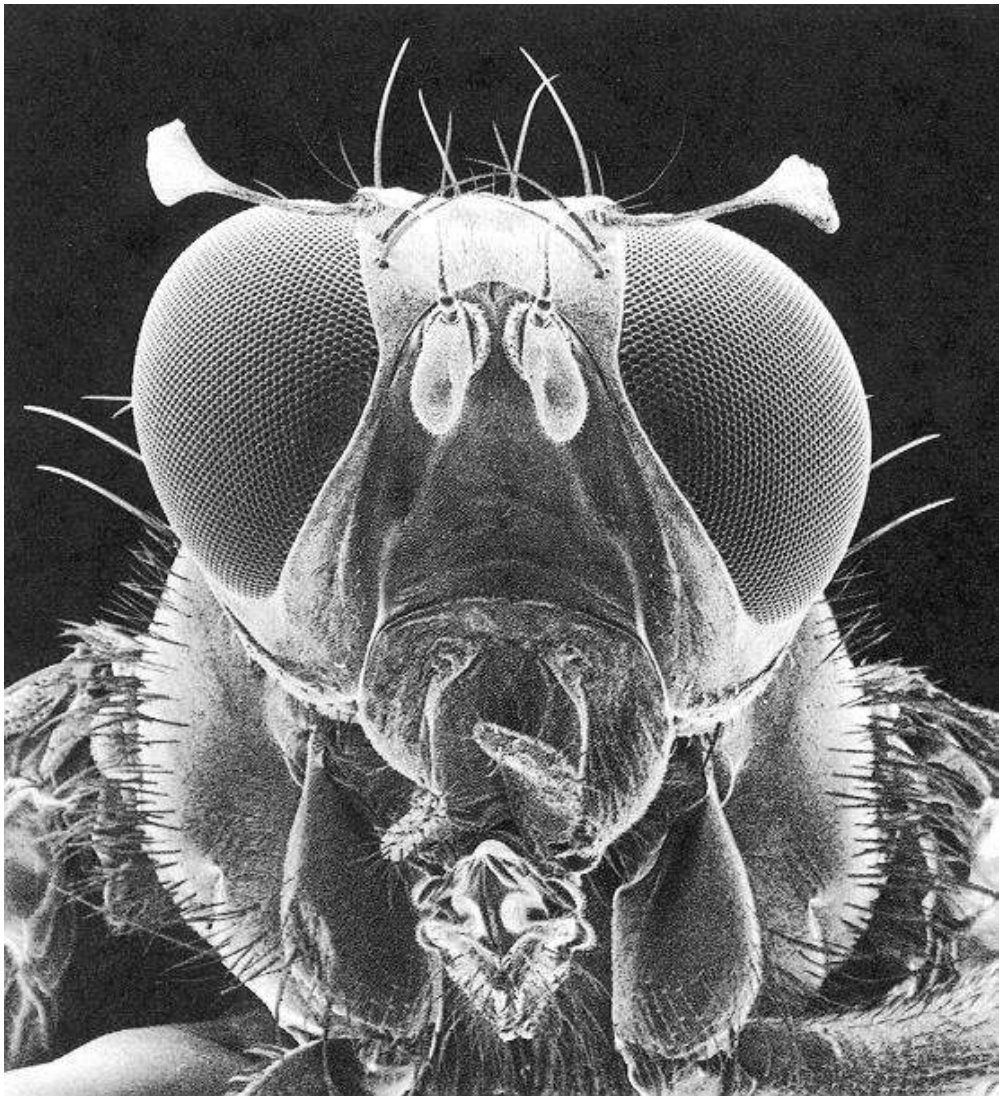
Pollen Spores





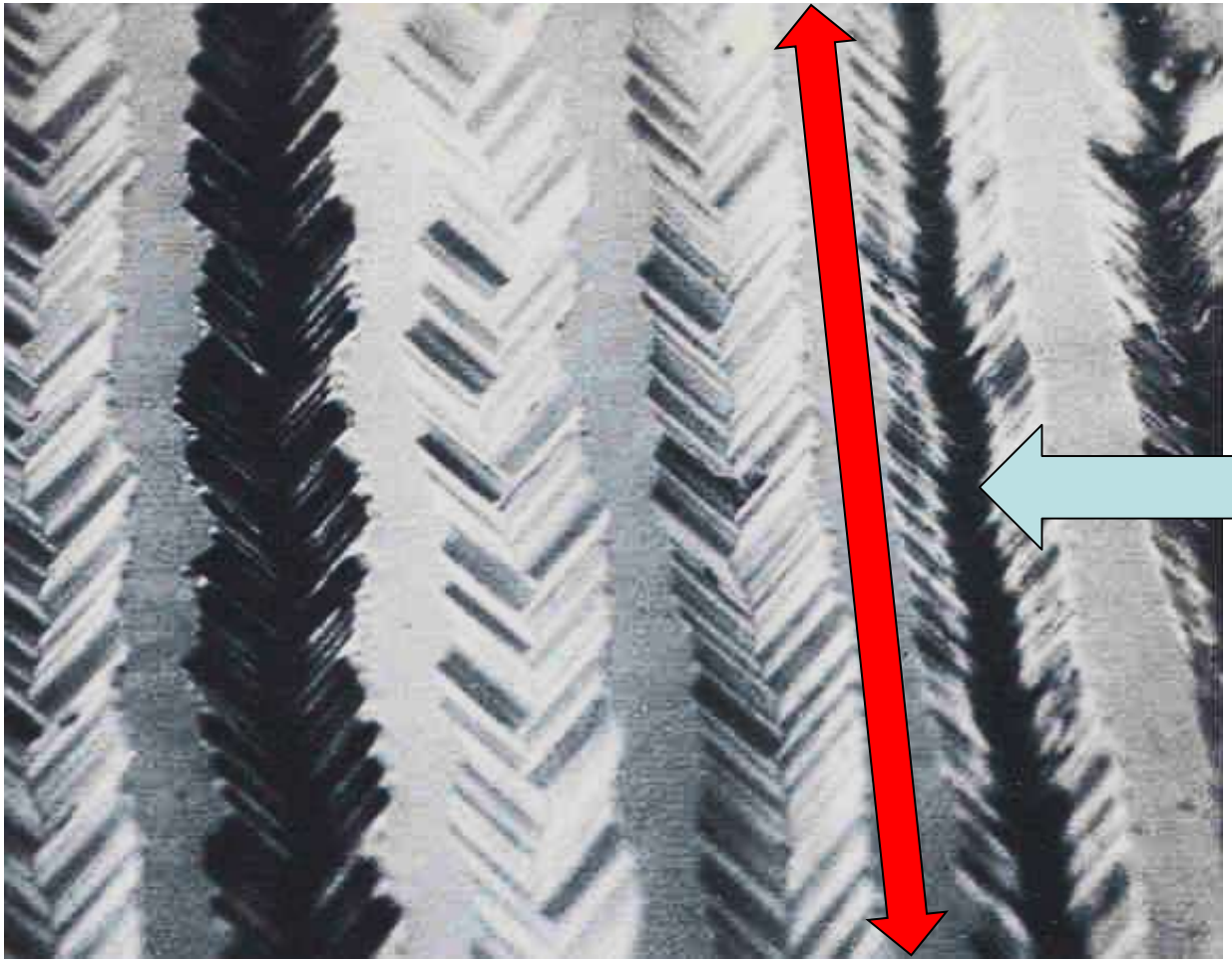
Dentist Drill



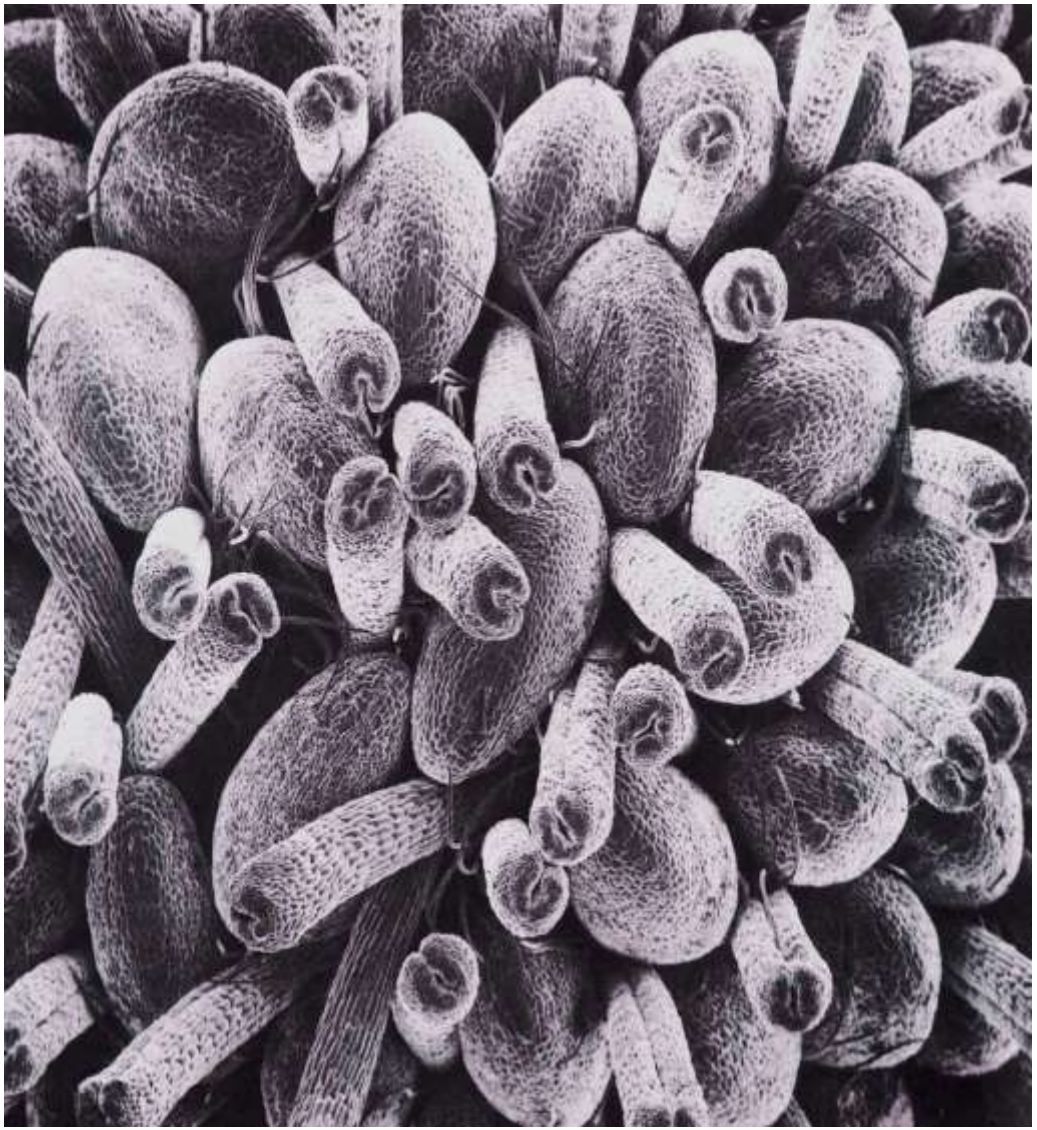


Mediterranean Fruit Fly

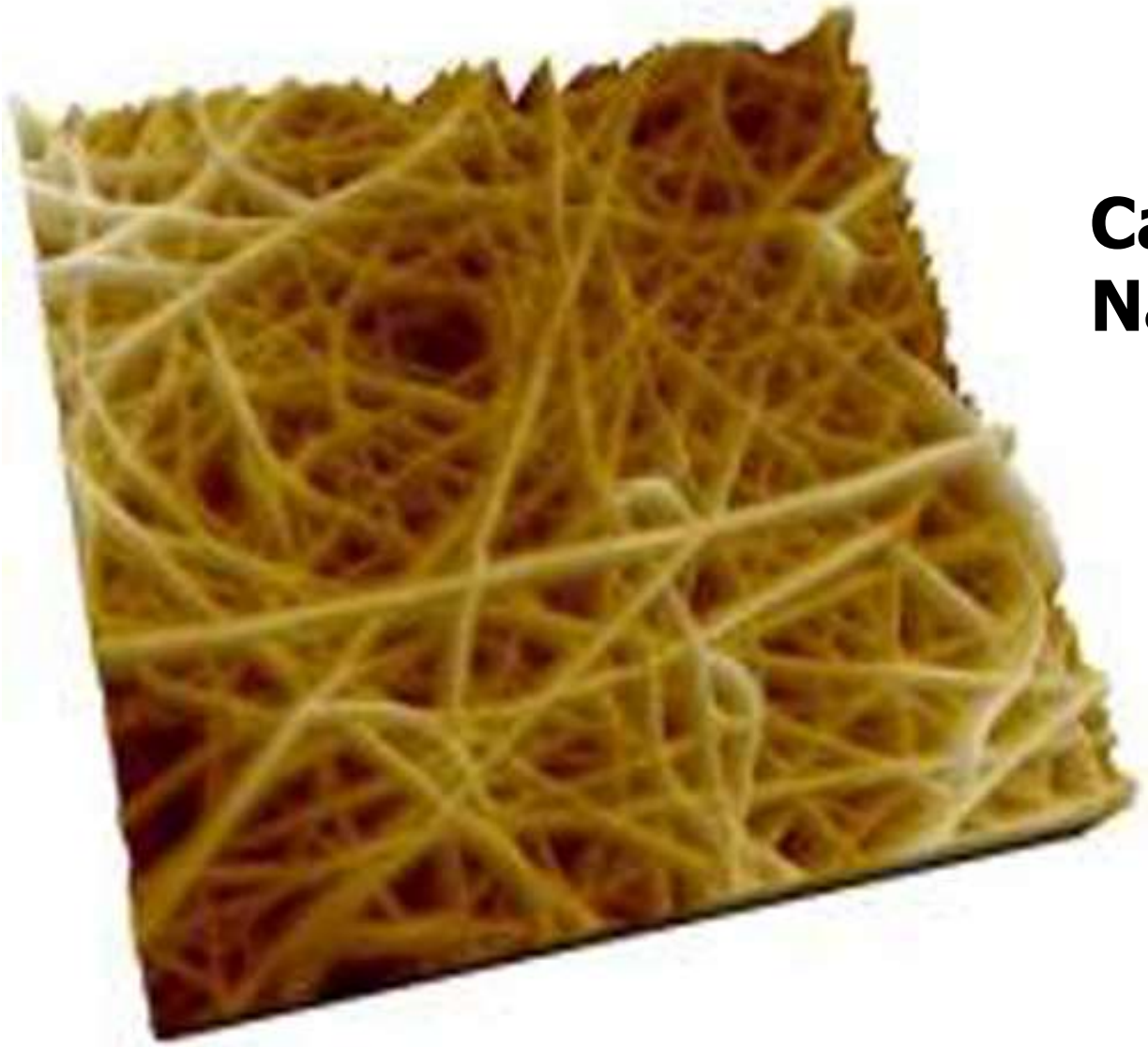
Old School Vinyl Record Groove



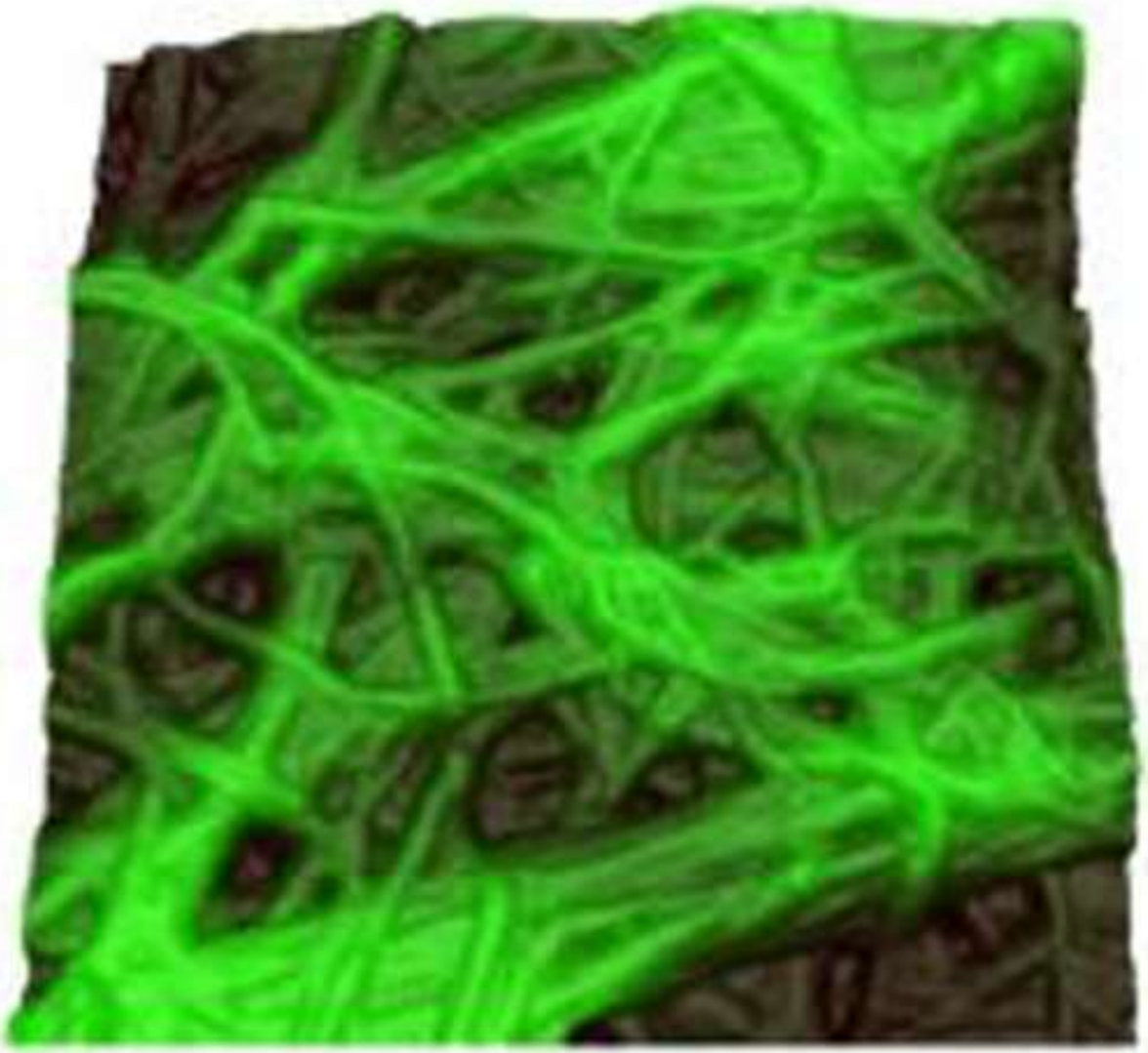
Groove section with Diana Ross and the Supremes singing "You Can't Hurry Love"



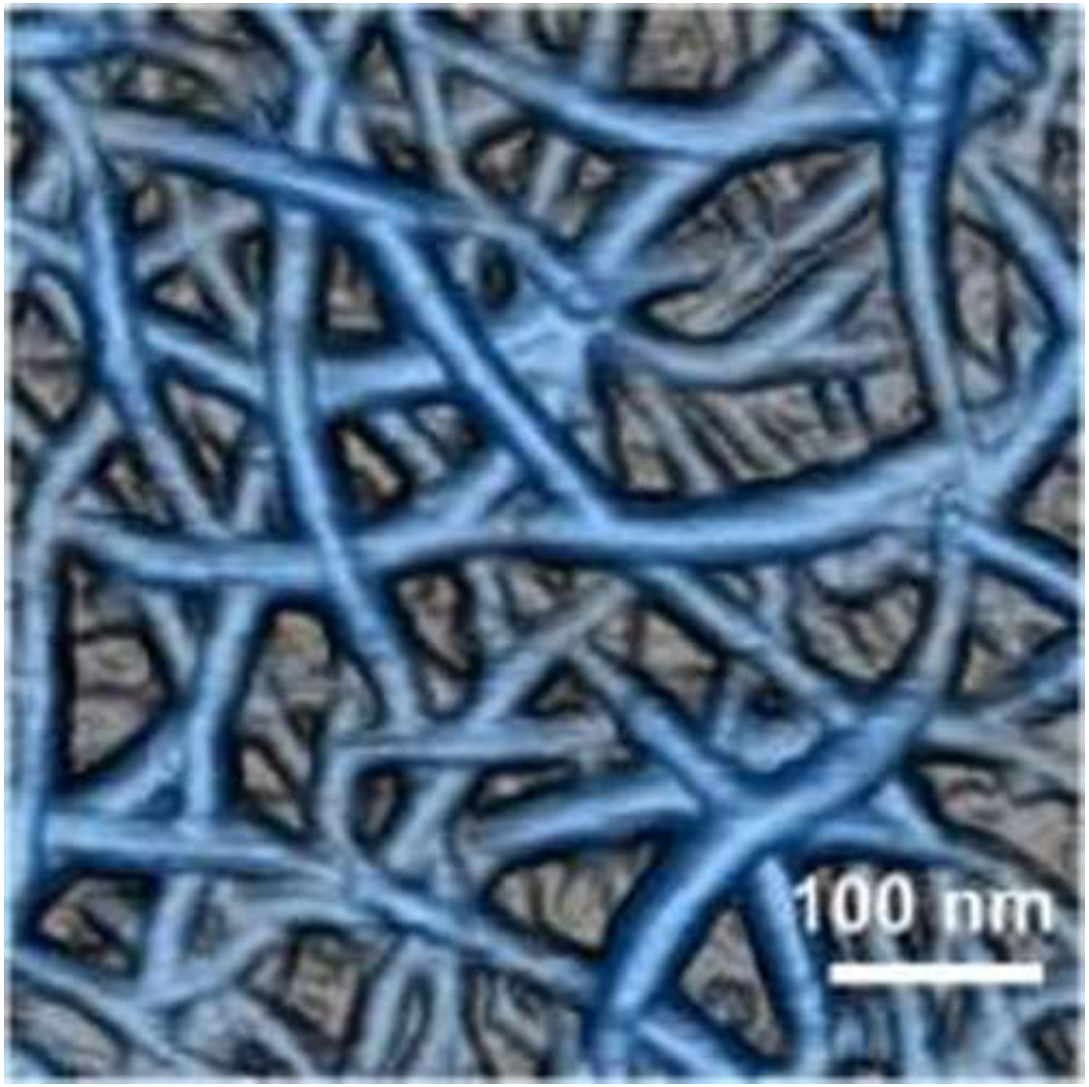
Surface of Strawberries



Carbon Nanotubes

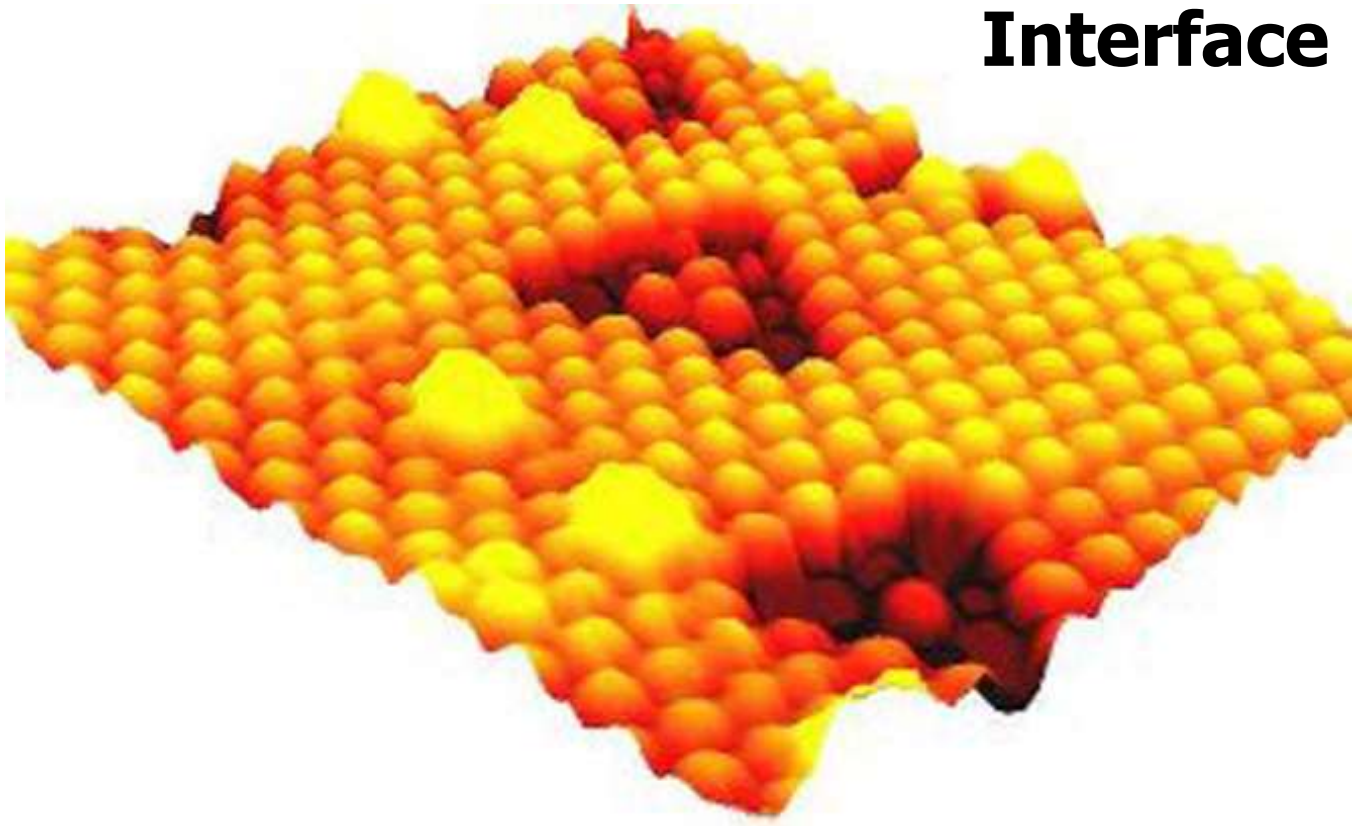


Collagen Fibers



Inner Surface of Cell Wall

Dislocation Loop at Au-Ni(111) Interface



A Departing Thought . . .

"For the scientist who has lived by his faith in the power of reason, the story ends like a bad dream. He has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been waiting there for centuries"

(Robert Jastrow, NASA Goddard Institute for Space Studies