WitnessKit 2
God And Creation

Class 2
Chemistry and the Cell

Proverbs 8:11, 22, 27-31: MIND

11 For wisdom *is* better than rubies,
And all the things one may desire
cannot be compared with her. Prov 8:11 (NKJV)

22 "The LORD possessed me at the
beginning of His way, Before His
works of old. Prov 8:22 (NKJV)

27 When He prepared the heavens,
I *was* there,

Proverbs 8:11, 22, 27-31: MIND

When He drew a circle on the face of the deep,
28 When He established the clouds above,
When He strengthened the fountains of the
deep, **29** When He assigned to the sea its
limit, So that the waters would not transgress
His command, When He marked out the
foundations of the earth, **30** Then I was beside
Him *as* a master craftsman; And I was daily
His delight, Rejoicing always before Him,
31 Rejoicing in His inhabited world, And my
delight *was* with the sons of men. (NKJV)

Have you ever wondered how

Life is defined scientifically?

Life can be defined by its chemistry. The next slide will define various kinds of chemistries to compare to the chemistry of the living cell.

A Simplified Description of Types of Chemistry

Inorganic	Organic	Nuclear	Life or Bio Chemistry
Inorganic Chemistry is the chemistry of metals and acids and bases. It is driven by chance and physical laws. It is centered around ionic bonds such as are found In salts. It is the chemistry of electron removal from the nucleus, forming positive ions, and electron addition to form negative ions.	Organic Chemistry is petroleum chemistry—the chemistry of the residues of formerly alive materials. Organic chemistry is driven by chance and physical laws. It is centered around the carbon atom and its forms of shared electron bonding, with some surface-charge effects thrown into the mix.	Nuclear chemistry is the chemistry of radioactive decay, as the nucleus inside certain unstable elements gives off particles and energy. It is driven by chance and physical law, and it results in large changes in energy, and basic changes in identity of elements.	Life Chemistry is INFORMATION-driven chemistry. It is orders of magnitude more complex than any other kind, and humans cannot create it, but can only manipulate it. If it breaks down, organic chemistry and inorganic chemistry—both chance-driven—take over and that is cell death.

Life Chemistry is Directional.

- Life chemistry can produce more life chemistry through various kinds of reproductive processes.
- Inorganic chemistry and organic chemistry, being chance-driven, cannot reproduce. Inorganic and organic chemicals can be driven into repetitive chains by various humanly-controlled reactions.
- When a living cell dies, the shift to chance-driven chemistry is irreversible. If cell death occurs, the chemicals are all present, but they do not spontaneously return to information-driven life chemistry.

A Little Information About Our first textbook: OF PANDAS AND PEOPLE

- Dr. Dean Kenyon wrote a standard college textbook on the evolution of the first cell, called *Biochemical Predestination*.
- Then he changed his mind. New discoveries in the intricacies of the cell motivated him toward a more thoughtful search for its origin. *Of Pandas and People* lists some of his reasons for thinking life chemistry is <u>not</u> predestined by physical law and chance.

Our first textbook:

Of Pandas and People Only looks at criticisms of materialist Darwinism. It does not bring any religion into the picture.

- It does not bring God into the picture.
  - It restricts itself to a search for limitations of Darwinism's explanations.
  - That is a necessary search.

Many of us come to this study from a different perspective. We already believe in God.

- We may be seeking to integrate that belief with what we have learned in school, or to disprove what we were told in school.
- We will study to understand starting points other than our own.
  - Assumptions often pre-set conclusions.
  - Often *the difficult* data—anomalies—will point toward different assumptions and conclusions.

Romans chapters 1-4 in the Bible

Indicate that God will judge people based on their knowledge of His law.

- He writes that law on our consciences.
- All people sometimes choose to go against their consciences.

God also judges us for unbelief!

- **<u>For judgment of unbelief to be fair, belief must be obviously correct.</u>**

If belief is obviously correct,

Then systems built on unbelief must have obvious flaws.

Darwinism, apart from God, is such a system. Darwinism assumes God did not intervene in the natural world. Darwinism assumes God did not create living creatures.

- The elites in the universities and in our culture are working very hard to prevent anyone from pointing out Darwinism's flaws.

Therefore, we shall happily search for ourselves.

We believe in God.

It is helpful to know the limitations of materialistic Darwinism.

Materialist Darwinism is the foundation for much unbelief in God, and for many attacks against living by faith.

It is the source of much confusion about what is real and true and good.

When we understand its limits, we will find our faith in God strengthened.

Because Darwinism

- Has gained such a huge “market share” of the public conversation, we cannot be superficial in our search.
- We must really understand the flaws, and that takes effort.
- We can stand in perfect confidence both of God’s existence and of His goodness, and we can look with eyes wide open at the claims of Neo-Darwinism, and have no fear of being proved wrong, because the data are on God’s side. Truth is on His side.

In order to gain that kind of confidence,

- We must have clarity of thought.
- Even if we must stand one individual at a time, all alone, with the whole world calling us names,
- We can stand. The Holy Spirit will lead us into all truth according to God's promise. We must love truth and pursue it with clarity of thought.

Part one
Can We See Flaws in Darwinism If We Try to See the Big Picture?

The question of being, or why is anything there at all?

We can demonstrate the flaws in Darwinism

Does Darwinism have a bridge between chance and law and the life chemistry pattern?

By putting Schaeffer's Search Engine for Truth and Complex Specified Information together.

- We can look at the few possibilities for the ultimate beginning
- And the requirements for complex specified information.

A Review of an Important Idea

Only three options exist for the ultimate beginning:

1. Absolute nothingness
2. An impersonal beginning
3. A Personal Beginning.

The Options for Origins

- Option 1, total nothingness, is absurd. Nothing comes from nothing.
- The first law of thermodynamics says the sum of matter plus energy in the universe is a precise constant. That sum, which is VERY LARGE, could not happen *by chance* from a ZERO starting point.
- If science is restricted to causes that we see operative in the present, this option has **no** possible explanation. We can discard it.

Option 2: An Impersonal Beginning

Option 2 and 3 are the real possibilities.

Let's look at option 2.

An impersonal beginning restricts events to

chance plus

time plus

physical law.

We already know SOME Problems with option 2– It does not meet **the many facets of reality**.

Option 2, an impersonal beginning, gives

- no reason for meaning in life,
- no reason for morals and human rights that apply to all people equally,
- no universal right and wrong,
- and no source for the personality or soul.
- Personality is an aberration in the vast impersonal universe.
- Death is destiny, and even the universe itself will one day die.

Option 2: An impersonal beginning also has problems with Complex Specified Information.

- An impersonal beginning leaves only **physical law and chance** as causative agents for all that we observe.
- An impersonal beginning has no explanation for physical law, but accepts the existence of physical law by faith.

The CSI Questions: Complex Specified Information

Can law plus chance plus time create information?

- Can law plus chance plus time create a decision code that matches an external, independent pattern?
- Can it do so on a level that brings life into existence?
- Can law plus chance plus time create minds?

Information is a decision code.

- Physical Law eliminates decision.
- From our previous lesson, physical law creates repeating patterns that are not contingent—not floppy. Structures produced by physical law such as inorganic crystals do not meet the contingency requirements for information. **Physical law cannot create information.**
- The map of information is located far from the physical law section of events.

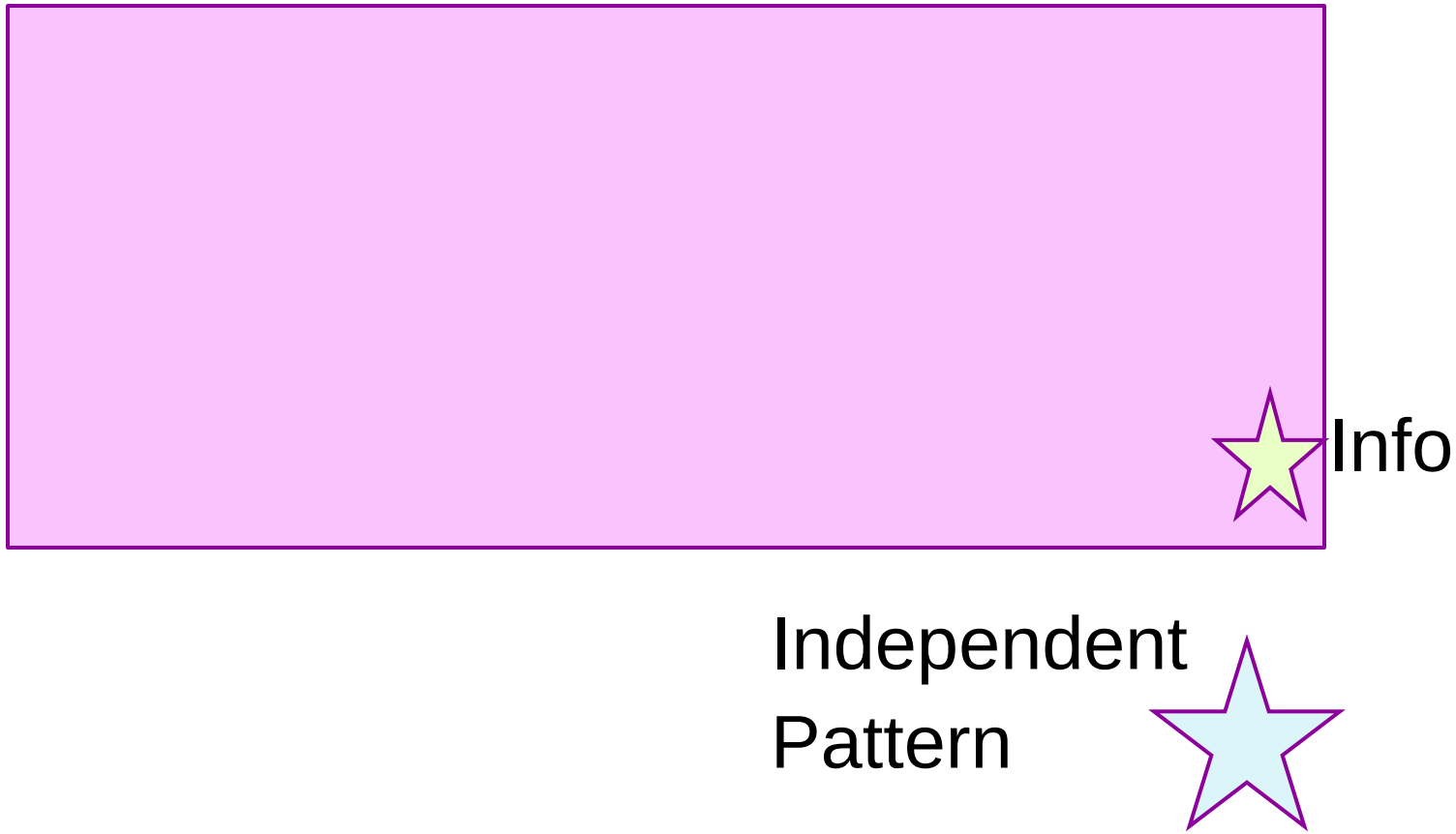
Map of Physical Law, Chance, and Independent Pattern

Physical Law

P=1

Chance

P → 0



Information is a decision code.

- Physical law is not contingent. (Not floppy)
- Chance is contingent but is not a pattern or decision code. We recognize chance events by the **absence** of a pattern. What creates the pattern? Not chance—by definition.

- What is the **bridge** between chance and the pattern? The pattern is life **chemistry—information-driven** chemistry.

Information is a decision code. The pattern is life chemistry—information-driven chemistry.

What is the **bridge** between chance and the pattern?

- An impersonal beginning relies on survival of the fittest to be the bridge.
- Survival of the fittest cannot create the external pattern, but can only read the pattern and reject the organisms that fail to meet it. It rejects changes that INTERRUPT the pattern.
- An impersonal beginning needs a source for the pattern and the bridge.

Only Option 3 has a Source for the pattern—information- driven life chemistry—and a bridge:

A MIND bridge between the pattern—information-driven chemistry—and the cell.

Option 3: A Personal Beginning

- We have a source for the information we see in living systems.
- We have a bridge between law and chance and pattern. That bridge is Mind.
- Minds can organize matter into decision codes that match an external plan or pattern.
- If the ultimate beginning were Mind, that Mind could plan and organize matter to create life.
- That Mind could also create physical laws.

Option 3: A Personal Beginning meets the test of **the many facets of reality**.

If option 3 is correct, we have a source for personality, and personality has meaning connected to the ultimate reality of God.

We have a source for moral universals that apply to all people equally, and a source for human rights, and for the human soul.

Death is NOT destiny.

Intangibles like love and goodness and honesty are real and important.

Minds build bridges…

Between ideas and events.

- External patterns need a bridge to real events.
- External patterns need a source.
- The player piano can play a real song because various human minds wrote music, punched out the code into piano rolls, and created the machines that make the player piano work.

A Personal Beginning

- Has a Mind which can build bridges between ideas and events.
- A Personal Beginning has a Mind which can create patterns.
- Because that is so, events can proceed according to ideas such as physical laws and ideas such as purposes.

The Bible Ascribes Physical Laws to God's Mind.

Job 38:1-5,33 [1] Then the LORD answered Job out of the whirlwind, and said: [2] "Who *is* this who darkens counsel By words without knowledge? [3] Now prepare yourself like a man; I will question you, and you shall answer Me. [4] "Where were you when I laid the foundations of the earth? Tell *Me,* if you have understanding. [5] Who determined its measurements? Surely you know! Or who stretched the line upon it? …

[33] **Do you know the ordinances of the heavens? Can you set their dominion over the earth?**

Science has restricted itself by fiat.

- Because science has restricted itself to a search for natural explanations, it has limited its discussion of origins to the first two possibilities: absolute nothingness, or an impersonal beginning.
- That limitation has ruled God out of the discussion without a basis in evidence.

Science has restricted itself by fiat.

- That limitation has caused science to accept some absurd explanations for lack of any others.
- Because science carries prestige as a source of knowledge, people often think science has made the idea of God obsolete. Nothing could be farther from the truth.

Because we believe in God

- We can challenge the assumptions and conclusions of the materialists.
- We can look at the data with a fresh perspective.

Because we believe in God

- We can be skeptical of skepticism.
- We can be open to the possibility of an open universe, where God can interact according to His good purposes, and where we can pray and communicate with Him through His word.

Our intuitions agree with that perspective.

- Our intuitions about gravity work in the real world, even if we don't understand the equations the physicists present. We can test those intuitions by dropping things.
- Our intuitions about God work in the real world, too, and we can test them through prayer and study of His word.
- We do not have to throw away our intuitive knowledge of God in the name of intellectual honesty.

PART TWO
A More Detailed Look at the Origin of the First Living Cell.

Cells are filled with information.

Four Fields of Chemistry:

- Nuclear chemistry—proceeds by chance plus physical law. Results are nuclear power plants, nuclear medicine, nuclear devices.
- Inorganic chemistry—driven by chance plus physical law. Results are ceramics, metals, corrosion inhibition, salts, jewels, and more useful materials.
- Organic chemistry—starts with carbon compounds from formerly living things, but the chemistry proceeds by chance plus physical law. Plastics, fuels, medicines, other consumer products result.
- Biochemistry—the chemistry proceeds as directed by information in the cells and tissues.
- Tissue death reverts to organic chemistry.

Life/Biochemistry is different!

- All the other chemistries depend strictly upon chance plus physical law. All produce random products at the molecular level. The proportions of those products depend upon operating conditions such as heat, pressure, the presence or absence of a catalyst, the ratio of starting materials present.
- Biochemistry proceeds along intricate, choreographed geometrically-and surface-charged pathways, producing precise products in tiny quantities. It is a different world from the other chemistries.

A starting point for thinking about Complex Specified Information in biology…

Is the origin of the first living cells.

A good place to start the challenge:

- The very first cell.
- When we study *the cell* in biology, we find it difficult just to draw all the many parts.
- Even a picture of them is amazingly complex.
- The chemistry of each working assembly within the cell is incredibly complicated.
- And if a cell is damaged, it often dies. It needs all its parts.

A List of Structures in a Cell

- Nucleus, complete with chromosomes, a nuclear envelope, nuclear pores serving as gates, nuclear matrix which holds the shape, nucleolus which builds ribosomes.
- Cytoplasm and its cytoskeleton of microtubules, which support the cell and transport vesicles, and centrioles which serve as anchors for cell division.
- Mitochondria which produce energy – 1000 or 2000 per cell….

A List of Structures in a Cell, continued…

- Ribosomes where proteins are built and Golgi complex where they are packaged for shipment.
- Endoplasmic reticulum which organizes ribosomes and recycling enzymes.
- Lysosome where proteins are broken down for recycling.

A List of Structures in a Cell, continued…

- Vacuoles for food storage at the cellular level.
- Cell membrane or wall which bounds the cell.
- DNA, messenger RNA, transfer RNA, and ribosome RNA all containing the codes for life chemistry

A single cell

Is much more like an entire chemical plant than it is like a typical chemical reaction vessel.

Let's watch an animation

Of a cell at work making a protein--Chapter 9 or so in UNLOCKING THE MYSTERY OF LIFE by Illustra Media, MMII, available from www.Discovery.org/csc

or found online at http://www.youtube.com/watch?v=1fiJupfbSpg&feature=related

Structures in the video clip

Cell nucleus and nuclear pores

DNA—humans have about **3 billion nucleotides** per cell—letters in a DNA sequence.

RNA polymerase—is the bloblike thing that unzipped the DNA—at the rate of 20 to 50 links per second. Another protein we did not see, called topo-isomerase also can clip the DNA and put it back together if the strain of unwinding it is too hard on the molecule.

Transcription RNA—copies the DNA instructions like a negative.

Transfer RNA—moves the transcription RNA and its attached amino acids around the cell.

Structures in the video clip

Ribosome—shown as the “clamshell” that held the protein as it formed.

Enzymes—are links shown between RNA and amino acids—They act as catalysts to make the reaction happen to stick amino acids together.

Amino acids link at the ribosome.

Golgi apparatus—which folded the protein—the proteins typically start folding as they are created at the ribosome. Some are moved to the Golgi complex for <u>further folding</u>.

Protein folding—as described in the appendix of *Darwin's Black Box*

- Protein folding occurs due to surface charges and oil-loving or water-loving surface regions on the large molecules, which can range from 50 to 3000 amino acids long.
- If the protein needs further folding beyond its own response to being built, it goes to the Golgi apparatus.

The result is a compact molecule with a specific shape and specific surface charges which will fit the next molecule it must interact with. The fit will involve both shape and surface charges.

Protein Structure

- **Primary** structure is the sequence of amino acids in a particular protein, which can range from 50 to 3000 units long.
- **Secondary** structure is the preliminary folding the protein does as it forms. It folds due to surface charges. The video clip did not show this part of the folding process.
- **Tertiary** structure is the folding that takes place at the Golgi apparatus.

Each molecule

Must fit its next purpose

- Like a key and a lock
- Both in terms of three dimensional shape
- And in terms of surface charges.
- Sometimes subunits on the protein will perform a certain function and then detach, allowing the remaining molecule to be ready for its next task. That occurs in the RNA polymerase each time it unzips the DNA. **Subunit structure** is called **quaternary** structure.

Thus, among the hundreds of proteins

In every living cell, each protein has up to four levels of geometric specification. Each protein has a multi-dimensional shape, where shape includes height, length, width, regional surface charge + or – or oil-loving neutral.

The actual specification goes beyond this discussion, because the original sequencing is not necessarily “next door” on the DNA molecule, but may be formed from multiple separate sections interspersed with other non-coding sequences.

And that action of protein formation may differ from one organ to another, from identical sections of chromosomes. This implies additional “meta-plans” governing those differences somewhere yet to be understood in the tissue chemistry.

We see

Layer upon layer upon layer upon layer of information in action in every living cell. Scientists are beginning to understand how much they DON'T know about this.

A huge intellectual disconnect exists between scientists' understanding of the radically complex information world of living cells

And the silly stories students are told about the formation of the first cell.

Everyone can be confident

Issues regarding a Chance Beginning

- In God's creation of the first cell, by understanding these issues regarding a chance beginning.

1. The geometric difference between inorganic chemistry and biochemistry—mirror images.
2. Textbook propaganda confuses the issues.
3. The enzyme interface problem.

Fundamental Differences Exist Between Inorganic Chemistry, Organic Chemistry, and Biochemistry.

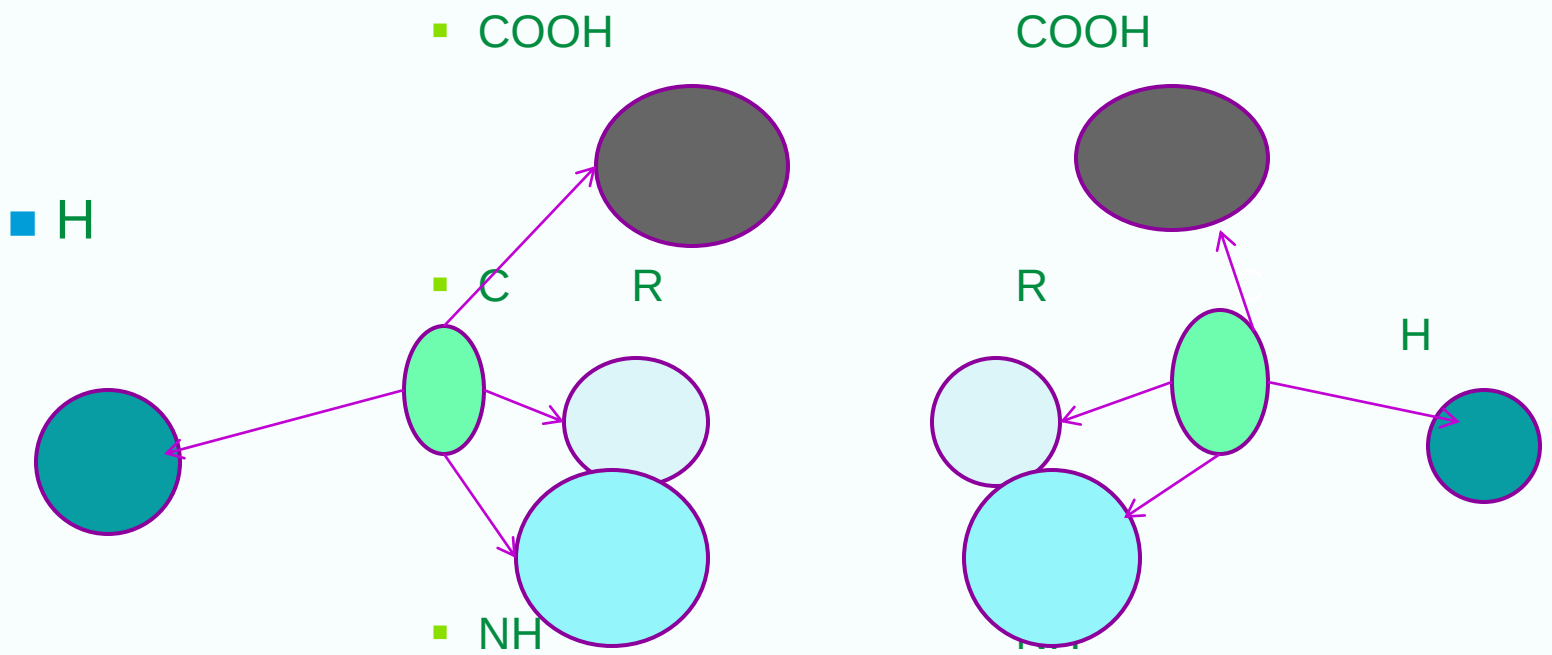
- Inorganic and organic chemistry reactions are chance reactions which chemists and engineers manipulate to create consumer products.
- Because they are chance reactions, molecules which have mirror images always occur in equal proportions.
- Even if only a small drop of liquid is produced, it will have a statistical sample of mirror images. Both images will be present equally.

Individual Molecules Are Very Small.

- One drop of reaction product will have far more molecules than are necessary for a statistical sample.
- If you consider the heads and tails of coin tosses, a statistical sample of coin throws will always show equal numbers of heads and tails, unless the coins are weighted.
- Chance chemistry always produces equal numbers of right and left-handed molecules. This is called a “racemic mixture.” (Pronounced ray-see-mic.)

Mirror Image Molecules: H=hydrogen, C=Carbon, R=C-H chain, COOH=carboxylic acid group, NH=amine group

A Generic Amino Acid



Biochemistry Is Different.

- Reactions inside living cells proceed by geometrically different mechanisms, and ONLY one side of the mirror is seen.
- If the wrong mirror image molecules are added to the system, they sometimes cannot be utilized and may cause damage or cell death.

Biochemistry Is Different.

- Some molecules such as sugars and amino acids have mirror images.
- Glycogens and starches are composed of the right-handed sugar molecules only. The decision code in their production automatically eliminates 50% of the potential components.
- Some left-handed sugars can be broken down for energy, but they cannot be used directly as the building blocks for glycogen and starch.

Biochemistry Is Different.

- Proteins are composed of only left-handed amino acids.
- The molecule building process in living cells automatically eliminates production of complex molecules from 50% of chance molecule building blocks.
- The molecule building process has to involve a decision code for that to be possible.

Biochemistry Is Information Directed Chemistry.

- A decision-code-directed chemistry is not a chance-directed chemistry.
- This would be like tossing a coin 100s of times and only getting heads every time.
- Because racemic (50-50) mixtures are not outcomes in biochemical reactions we know that chance is not their mechanism.

Biochemistry is different in another way.

- Reactions in inorganic and organic chemistry are strong reactions that are statistically predictable based on conditions such as temperature and pressure and pH.

Biochemistry is different in another way.

Reactions within living cells are **geometrically** ordered, THREE DIMENSIONALLY,

- where the shape of molecules in one part of a cell
- fits a receiving shape in another part of the cell,
- where a specific chemical change takes place.
- Intermediate “machines” must also have appropriate molecular shapes to transport molecules between production locations.
- The 3 kinds of surface charges in each case are a fourth, fifth, and sixth dimension that must be satisfied.

Living Cell Chemistry is like

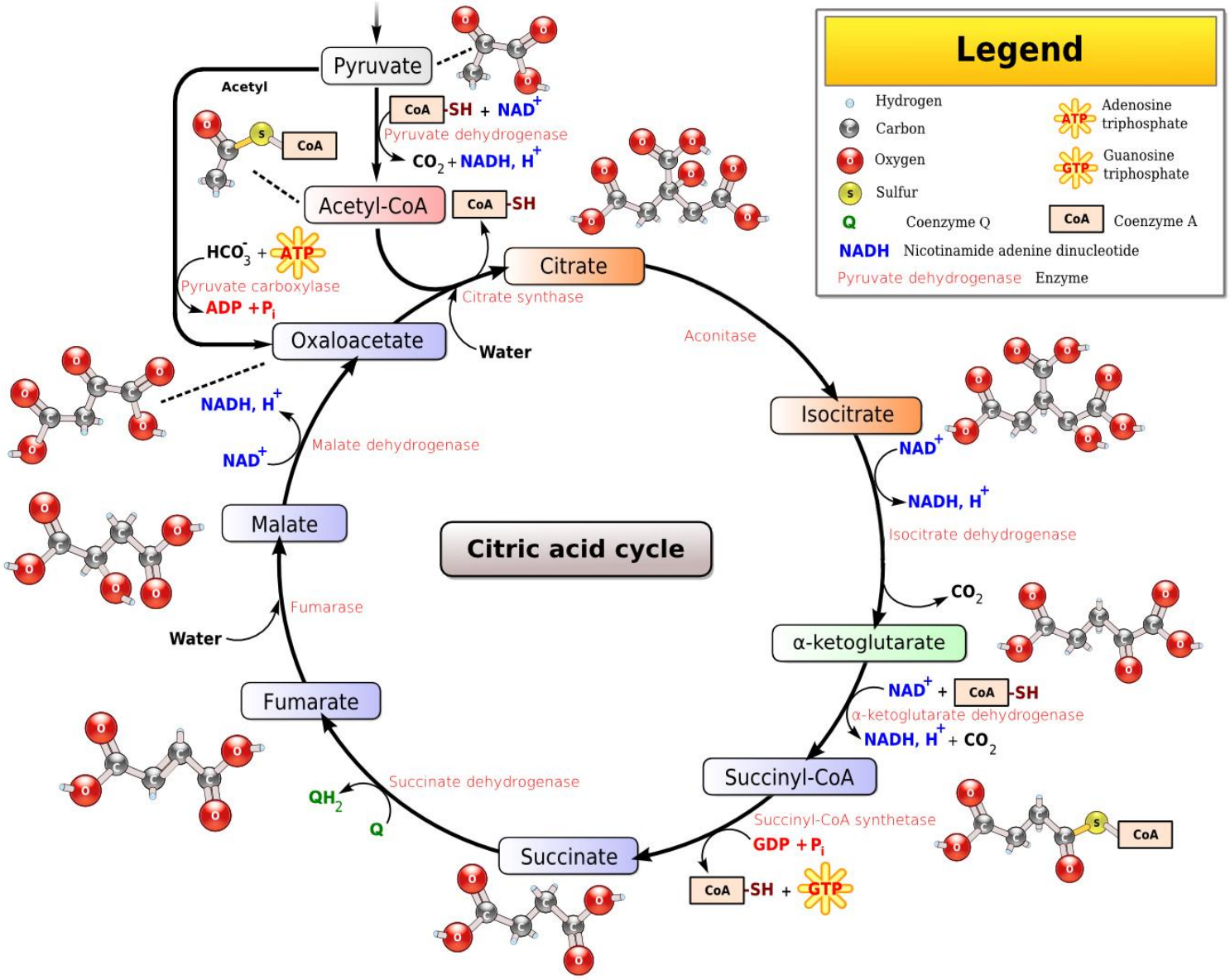
- Chemical Choreography, where little machines are perfectly shaped to move molecules around, like multi-dimensional puzzle pieces that go where they are supposed to go for functions to work.
- The molecules they move around are very complicated items.
- None of this fits a chance production mechanism, but it does fit an Information-ordered production mechanism.

Many extremely complicated reactions

Occur continuously in every living cell all the time. They happen with great rapidity, and with great precision. Here is a picture of the way a cell uses oxygen.

Oxygen Respiration in the Cell: Krebs Cycle

http://en.wikipedia.org/wiki/Krebs_Cycle



The first cell would have to be a transition between inorganic chemistry and biochemistry.

- The complex and information-ordered nature of cellular chemistry makes the origin of the first cell absurdly problematic if that origin is restricted to chance plus law plus time.
- Apart from living systems, chemistry occurs by chance mechanisms.

People can partially control chance mechanisms.

- People can organize the environment and concentration of chemicals to produce desired outcomes.
- But we cannot make a living cell.
- Materialist science insists no God was there to organize the chemistry of the first cell.
- The materialists are insisting no God was there to organize something that is too difficult for human skill.

We recognize the presence of life

By the active presence of this different kind of chemistry.

- Where life is not existent, chemistry proceeds by chance mechanisms.
- Where life is present, chemistry proceeds by information pathways.
- When a cell dies, the chemistry of decay is chance chemistry. You cannot put the cell back together and make it live.

PART THREE
Inadequate Explanations for the First Cell

Where did the INFORMATION come from?

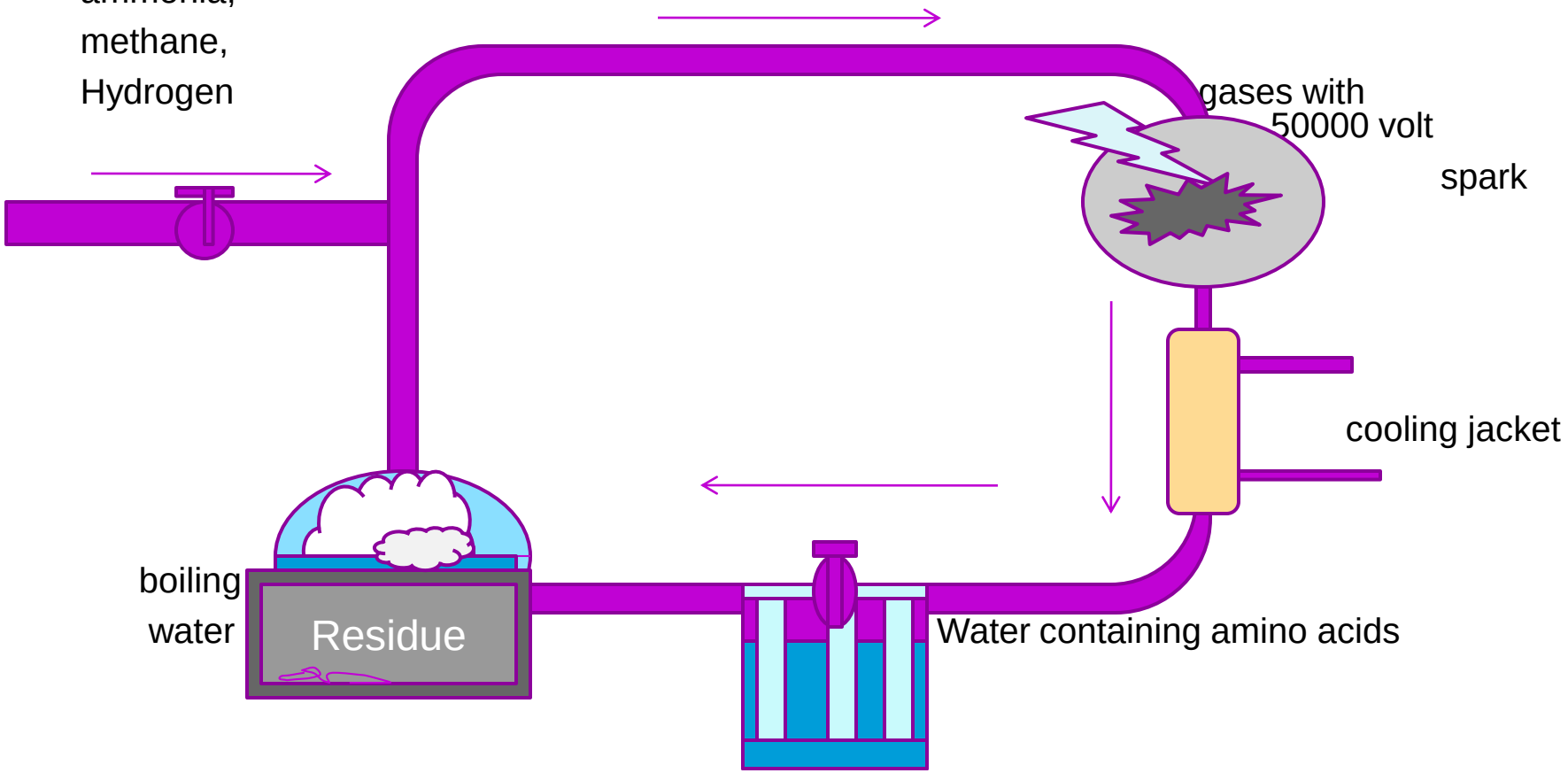
The famous Miller-Urey Experiment in 1934

A famous experiment was conducted to attempt to make amino acids from water, ammonia, methane, and hydrogen. Oxygen was excluded from the apparatus for three reasons:

1. Totally different reaction products would have resulted—cyanide and formaldehyde.
2. Even if some amino acids had formed, they would have oxidized in cross reactions into other chemicals rather than remaining as amino acids.
3. The apparatus would pose a serious safety hazard when the 50,000 volts were applied, had oxygen been present. The hydrogen and oxygen would instantly have combined to form water when the voltage hit. (DON'T TRY THIS AT HOME!)

Miller-Urey Apparatus

Inputs: water,
ammonia,
methane,
Hydrogen



Amino acids

- Amino acids are the building blocks of proteins, and are necessary for life.
- They do **not** generally occur in nature **apart from** living systems.
- Cells use the chemicals in their food supply to form proteins out of an array of amino acids. The process is quite complex, and we have seen the animation of the little chemical machines at work.
- Any description of the first cell must explain how amino acids could be present prior to living things.

The famous Miller-Urey Experiment

- Was an example of inorganic chemistry organized by humans to produce bio-molecules – amino acids.
  Do you think it produced one side of the mirror image, or both sides?
- The answer is BOTH.
- It was not an information-ordered form of chemistry.

Everyone can be confident

Issues Regarding a Chance Beginning

In God's creation of the first cell, by understanding these issues regarding a chance beginning.

1. The geometric difference between inorganic chemistry and biochemistry.
2. Textbook propaganda confuses the issues.
3. The enzyme interface problem.

Inorganic reactions produce by-products.

- In the case of the Miller–Urey experiment, what would be produced if the same experiment were tried using the atmosphere with oxygen, assuming it could be done safely?
- The expected products would be **formaldehyde and cyanide, not amino acids**.
- These are not chemicals that produce life, but that do the opposite.

Students Often Don’t Get to Hear the Real Story

The CASE FOR A CREATOR reports that some textbooks “fudge” by calling formaldehyde and cyanide “organic chemicals,” as though the Miller-Urey experiment can still be considered a success for the evolution story.

It is clear that—

- The materialists do not have a good explanation of the origin of the first cell.
- Consideration of the space alien idea (as explained last lesson) is an admission of that fact by some leading evolutionists.

Everyone can be confident

Issues regarding a Chance Beginning

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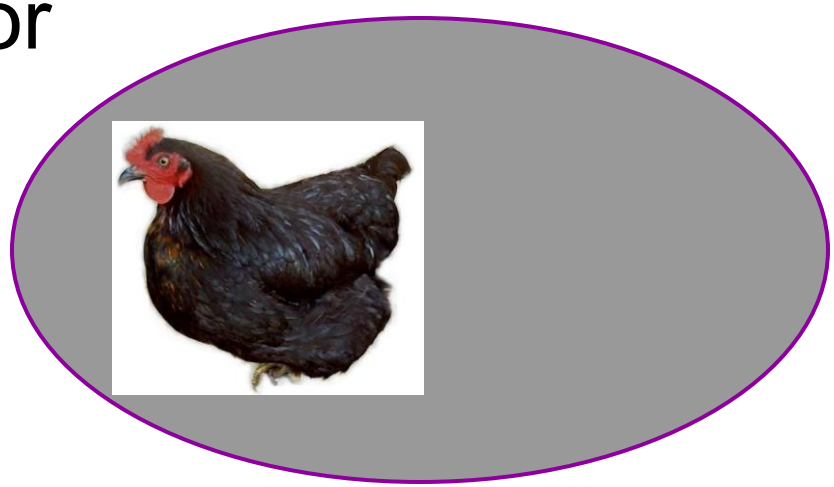
The enzyme interface problem: Which came first…?

The Enzyme Interface is a “chicken and the egg” problem for the first cell.



Proteins are made from amino acids.

Amino acids do not just jumble into proteins, though. They require <u>enzymes</u> to join together in specific ways that are useful to the cells.

In the animation we saw,

- The enzymes were pictured as links between the transfer RNA and the amino acids that linked together to form the protein.
- But where did the enzymes come from?

The enzyme interface problem

- Enzymes are **also** proteins that form according to the coded instructions in RNA or DNA.
- So proteins AND enzymes need DNA or RNA to get started.
- But DNA and RNA are MORE complicated than proteins.

So which came first,

- The enzymes (made of protein) needed to put protein together from amino acids
- Or the DNA and RNA needed to create enzymes, so that enzymes and other proteins could begin to form?

The enzyme interface problem

- The experiments to use chance to form early “organic chemicals” from non-living sources can manage only to produce simple amino acids.
- Even that only happens with artificial starting conditions.
- They do not produce anything like the complicated molecules that contain the information in the living cells.

The enzyme interface problem

- The enzyme interface problem demonstrates that the materialist story of cellular evolution—
- Does not have a source for the information coded into living cells.
- The information-guided nature of bio-chemistry is vastly different from the chance guided nature of inorganic chemistry.

PART FOUR
The Laws of Information

Statistical Effects of Randomness

Information Does Not Grow by Itself. It follows physical laws similar to thermodynamic laws.

- Information systems tend to either **maintain the same level** of information or to **lose information over time** if left to chance and physical law.
- Only the addition of more information from a Mind will reverse that trend.
- The first cell needed to obtain information from a Mind to begin the information-guided nature of life chemistry.

Homework to follow:

In 3 sets

Job 38:36

- **36** Who has put wisdom in the mind? Or who has given understanding to the heart?

Homework Class 2 Set 1

- Devotional Section: In Genesis chapter 1, what phrase is used to describe boundaries of genetic inheritance?

Textbook Section: Read Overview section 2 in OF PANDAS AND PEOPLE.

- Define Neo-Darwinism.
- The fallacy of composition occurs when someone asserts that because something is true for a small part of a population, it must also be true for the population as a whole. When someone asserts that microevolution, observable in real time, proves macroevolution of all animals and plants over all time, have they committed this fallacy?

Homework Class 2 Set 1

- In the giraffe, the genes for the long neck are separate from the genes for the circulatory system and the genes for the long legs and the genes for the instinct to kick a predator. Yet the traits produced by these genes work together for the animal's preservation. Does Neo-Darwinism account for the necessity of multiple gene mutations in varying traits to produce one new coordinated survival system?

Homework Class 2 Set 1

- Does coordination of multiple gene mutations at the same time in the same individual sound more like a random change or more like a designed change? Consider that only one per thousand chance mutations is expected to be beneficial, with the other 999 per thousand harmful or fatal.

Homework Class 2 Set 2

- Devotional Portion: Read John 6:15-25.
- How did the disciples know that walking on water was a miracle? Couldn't the water molecules have undergone sudden random chilling to ice under Jesus' feet while surrounding water molecules warmed? Isn't there some tiny probability that among all the random occurrences in water molecule temperature, that something so rare could happen naturally? Why relegate the event to the miraculous? Use the math categories of Intelligent Design to answer the question.

Homework Class 2 Set 2

- Textbook Section: Read Excursion Chapter 2 in OF PANDAS AND PEOPLE. The evolution of a new body plan by cumulative favorable mutations requires a string of exceedingly rare events and clusters of events, all favorable to the organism. (Bear in mind that miracles are recognized by their improbability.)

Homework Class 2 Set 2

- Also bear in mind that for the story of macroevolution to be true, these strings of exceedingly improbable events and clusters of events had to occur by the billions, for every new organ or survival system that came into the gene pool from bacterium to human.
- Explain how the production of new working structures requires more changes in cellular chemistry than the variation within species observed in microevolution.

Homework Class 2 Set 3

- Devotional Section: Read Psalm 104.
- Does this Psalm indicate God's creative hand in filling ecological niches?
- Is it a fortuitous coincidence that large predatory animals prowl at night, and people work in the day?

Textbook Section: Read Overview Section 3 in OF PANDAS AND PEOPLE.

- Explain what happens when genetic isolation occurs.

Homework Class 2 Set 3

- How can reproductive isolation occur?
- What is the founder effect?
- What is the bottleneck effect?
- Why does this form of diversification not explain macroevolution?