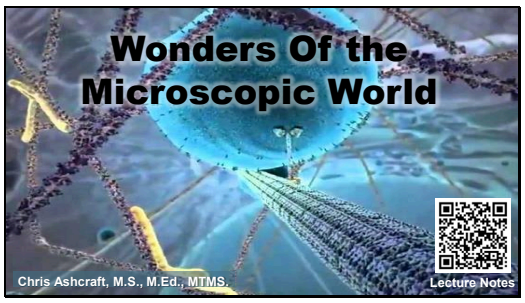
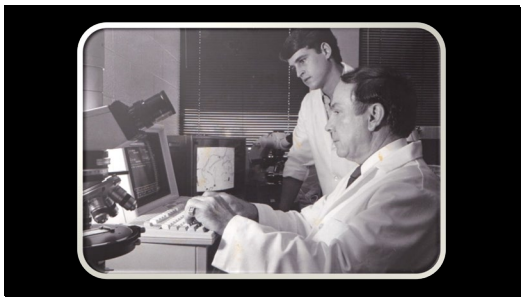
Slide 1



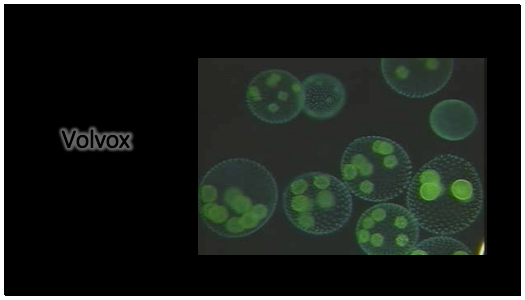
Science is important for a person of faith for many reasons. We need to reconcile the conflicts that exist between the Bible and what is taught today in the "natural sciences", and to do this we need to have a good understanding of science. But its also important because through science we are learning about God's creation and the wondrously designed world He has provided for us. Such knowledge will lead us to a better appreciation of our Father in heaven.

Slide 3



The microscopic world is one of God's amazing creations. As someone who worked for many years in Biotechnology – I spent countless days on a microscope (measuring cell lengths using this Image Analysis System or looking for signs of contamination in my cultures).

Slide 4

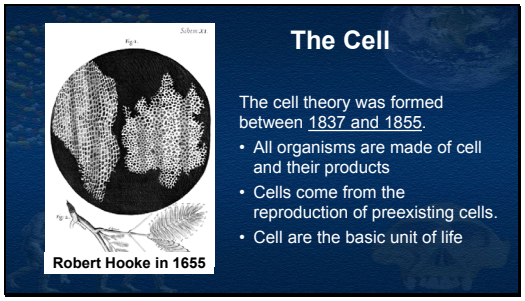


Entering the microbial world in this way allows us to view a part of God's creation never before seen by human eyes.

Slide 5

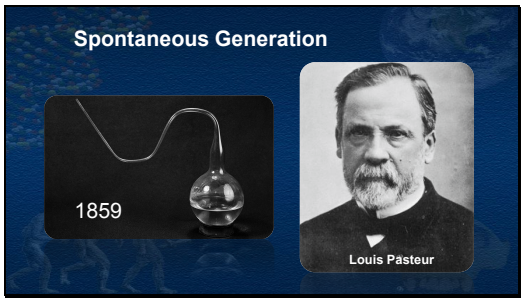
We are able to see single-cells organisms and watch the elegant ways they have of moving. We are truly fortunate to live in these times when technology (microscopes and telescopes) have enabled us to explore these previously unknown realms of creation. Truly God's handiwork has been revealed to us like no other time.

Slide 6



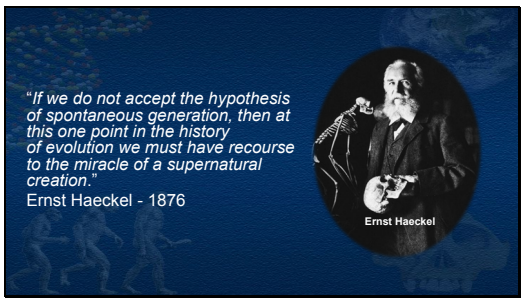
Although microscope technology existed during Darwin's time, they knew very little of the cell. The Cell Theory was only developed during the early to mid 1800s, and the Origin of Species was first published around the same time - 1859.

Slide 7



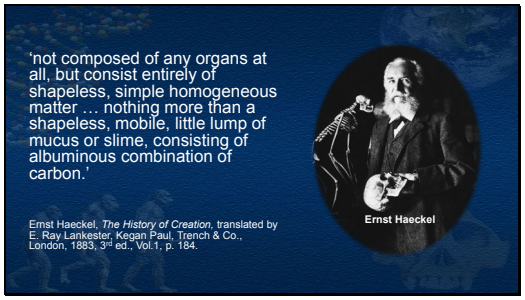
In fact, in Darwin's day evolutionists believed life could spontaneously arise. It wasn't until 1859 that Louis Pasteur conclusively disproved the theory of spontaneous generation by showing that microorganisms only appeared in broth when introduced from the air.

Slide 8



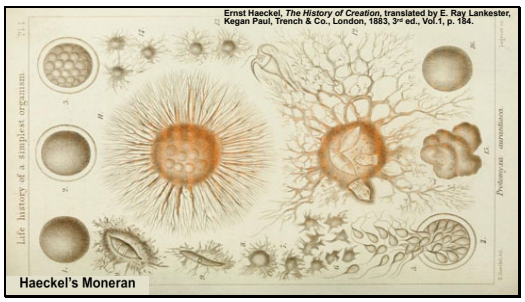
Despite the convincing and internationally acclaimed results of Pasteur's experiment, Ernst Haeckel (an evangelical promoter of Darwinism in Europe) continued to advocate for its belief on purely religious grounds. (CLICK) In 1876 he stated, "If we do not accept the hypothesis of spontaneous generation, then at this one point in the history of evolution we must have recourse to the miracle of a supernatural creation." Haeckel chose spontaneous generation although there was empirical evidence against it because he did not like the alternative – belief in God. And evolutionists continue to accept the hypothesis of spontaneous generation today.

Slide 9



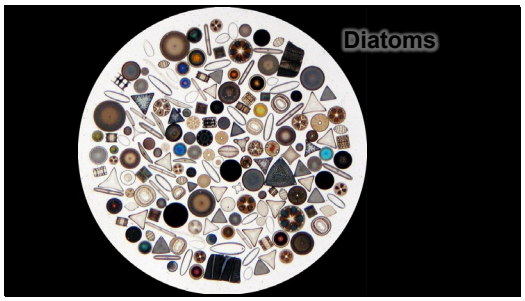
Then in 1883, 24 years after Pasteur's award-winning experiment, Ernst Haeckel committed an act of fraud to prove that life arose spontaneously on Earth. He claimed the existence of first cells he named Monerans and described them as being very primitive "proto-cells" that are… (CLICK - READ SLIDE) But where did Haeckel see this cell he described as a "simple little lump of mucus or slime"? – only in his imagination. They are a theoretical necessity for evolution, but not something that has ever been observed.

Slide 10



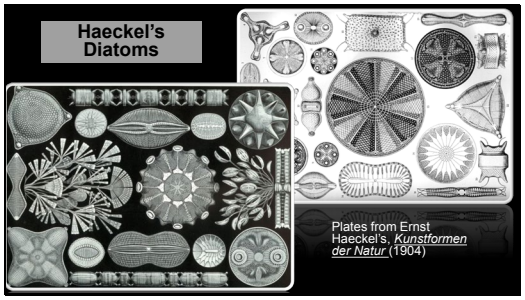
However, this did not stop him from making more than 30 drawings of these imaginary *Monerans*, which along with 73 pages of his speculations were published by a prestigious German scientific journal in 1868. He also gave them scientific names such as *Protamoeba primitivia* – because a primitive proto amoeba must have existed before the complex amoeba we find today – so why not just go ahead and make-it-up until its discovered. The extent of the detail in his drawings of Monera (shown here) is the measure of his fraud.

Slide 11



The height of his deception is fully illustrated by the fact that he had made similarly detailed, but accurate, drawings of other microscopic organisms like diatoms (shown here). Diatoms are a single-celled algae that are enclosed within a cell wall made of silica, which have beautiful symmetrical forms.

Slide 12

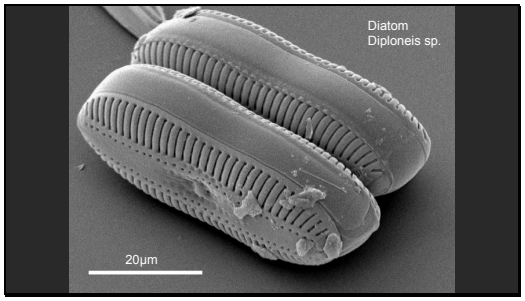


Shown here are a couple of the plates of Diatoms that Haeckel made for his book (Art forms of nature). Haeckel had access to advanced technology for this purpose at Jena University in Germany where he was a professor. And his work shows that he was well aware of the complexity of cellular forms. These single-celled organisms are far from "shapeless, simple homogeneous… lumps of mucus". And isn't it amazing how someone can be so keenly aware of "Art forms" in the Creation and not an artist behind it all. Romans 1:20. For since the…

Slide 13

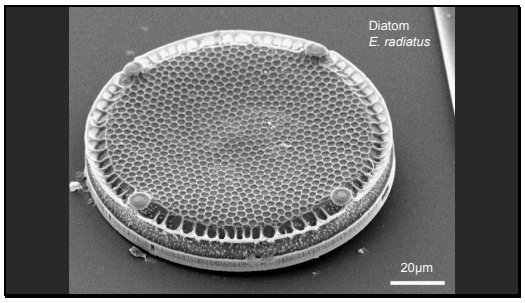
New powerful microscopes like the Electron Microscope reveal even greater details and the remarkable engineering possessed by microbes. The Electron Microscope can magnify images up to 100,000x and have a resolving power of about 2nm.

Slide 14



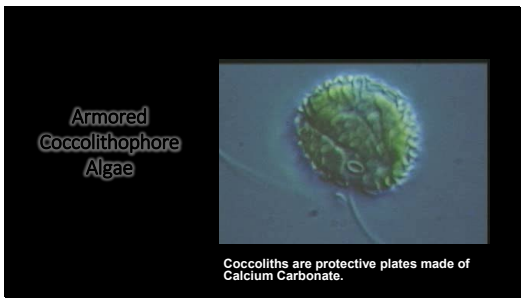
At such magnification we can see the exquisite detail found on the surface diatoms – shown here.

Slide 15



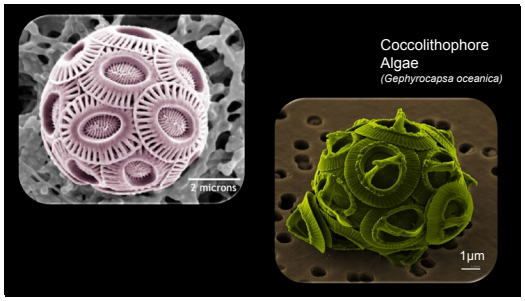
or the engineering possessed by another diatom species….

Slide 16



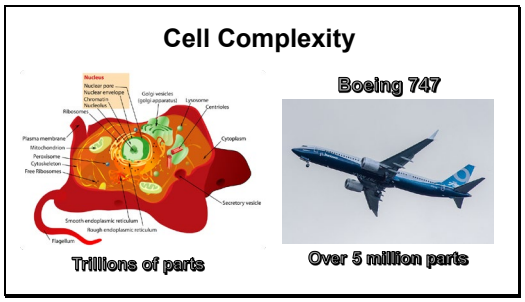
Take a look at this Coccolithophore – viewed using a regular compound microscope – It is a single celled marine golden alga (phytoplankton) that is making coccoliths (protective plates that are composed of calcium carbonate).

Slide 17



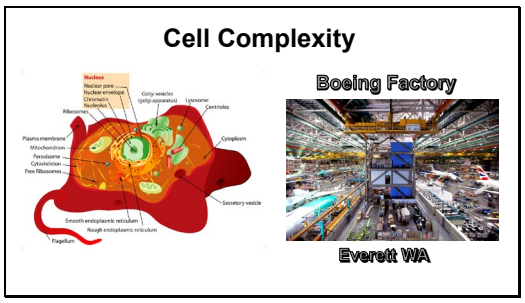
Now look at the same cell using a Scanning Electron Microscope. The structural design features of the protective plates covering these cells should alone be enough to convince an observer of the reality of intelligent design, but a worldview can blind a person to even the most obvious evidence.

Slide 18



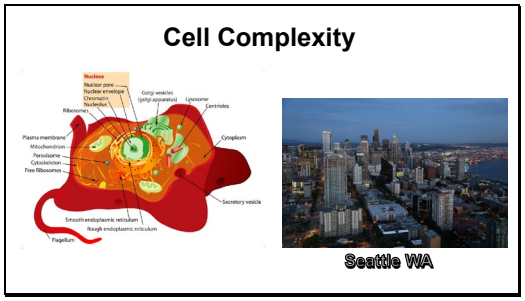
What we have learned is that the cell is tremendously complex. Drawing an analogy from our experiences to illustrate this is difficult. (CLICK) Our marvels of modern technology pale in comparison. The cell contain orders of magnitude more moving parts than a big jet airplane.

Slide 19



Even a Boeing airplane factory does not even come close to the complexity we find in the microscopic world.

Slide 20

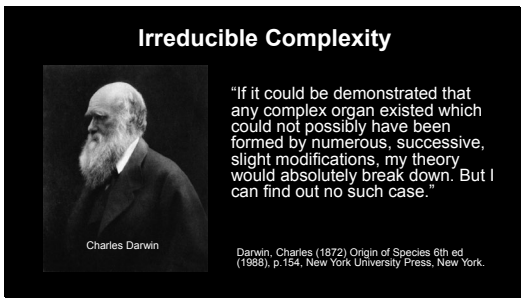


The cell is truly more complex than an entire city.

Slide 21

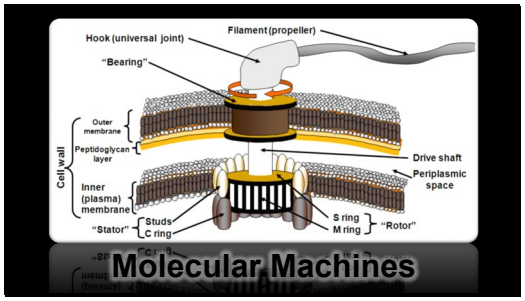
The cell is “Unparalleled in its complexity”. There is nothing on Earth that can serve as an adequate comparison for the complexity found in the cell. It has countless molecular machines (enzymes), factories full of machines in fact (organelles), a central library of information and a system to distribute that information, an infrastructure (cytoskeleton) and highways that self-assemble, and armies of delivery vehicles carrying manufactured good where needed. Truly the cell is unparalleled in its complexity and design.

Slide 22



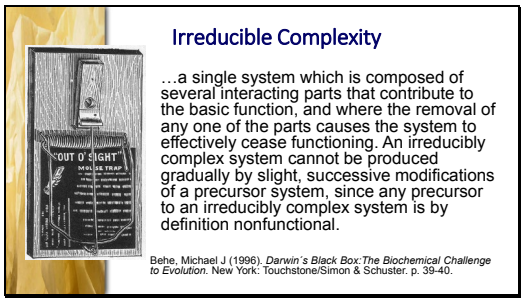
Little was known of the cell's vast complexity in Darwin's day. He stated that "If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down. But I can find out no such case."

Slide 23



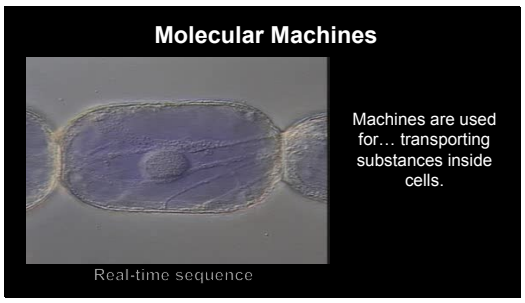
Today, we know that such things do exist. Darwin and his contemporaries didn't know about Molecular Machines. There are machines in cells that could not possibly have been formed through "numerous, successive, slight modifications" over multiple generations. Such structures are termed irreducibly complex.

Slide 24



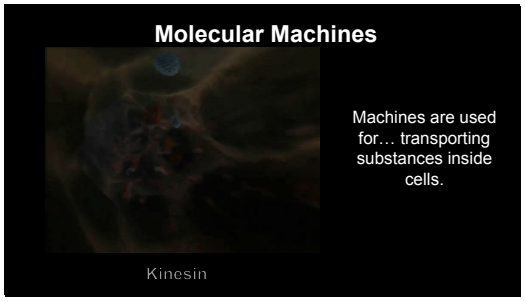
Michael Behe describes irreducible complexity as "a single system which is composed of several interacting parts that contribute to the basic function, and where the removal of any one of the parts causes the system to effectively cease functioning. An irreducibly complex system cannot be produced gradually by slight, successive modifications of a precursor system, since any precursor to an irreducibly complex system is by definition nonfunctional.

Slide 25



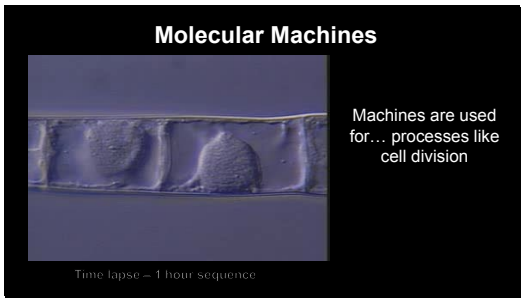
Molecular Machines that defy Darwinian explanation for their origin are used for a variety of process in cells such as … transporting substances – note the highways of the cell seen in this video.

Slide 26



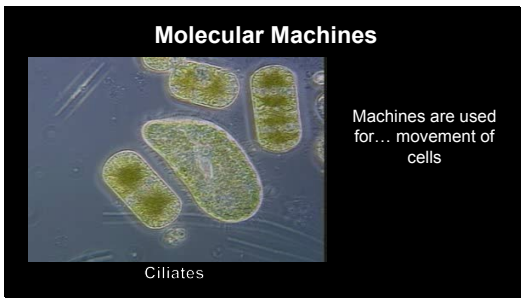
Machines like the Kinesin shown here. A nanoscale micro-robot carrying a vesicle full of manufactured goods down a microtubule highway.

Slide 27



Armies of machines are used for… processes like cell division … note the activity in this time-lapse clip.

Slide 28

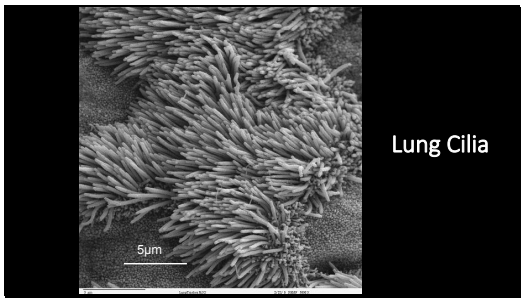


Machines are used for… movement of cells – like these single-celled ciliates that are covered with little motors called cilium that work by a coordinated wave-like motion.

Slide 29

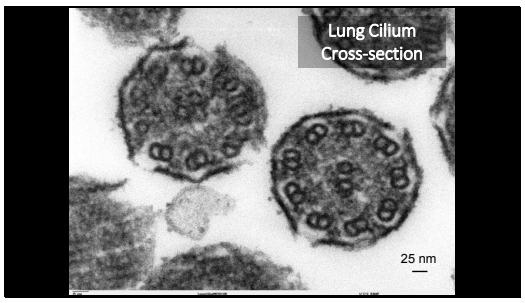
Single-cell ciliate found in the gut of termites.

Slide 30



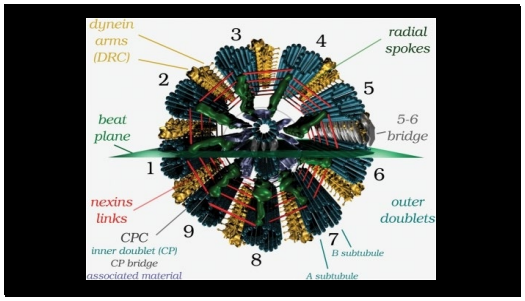
Cilia are used to make your lungs “self-cleaning”. These small hairs-like motors called cilia constantly move particulates that are filtered out of the air.

Slide 31



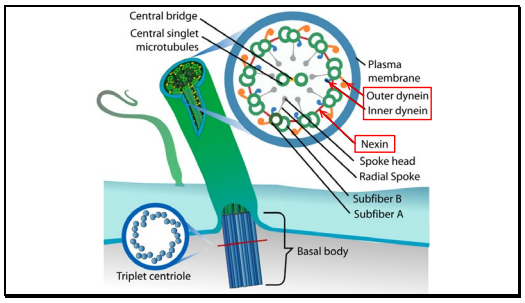
A cross-section of the cilium reveals bundles of nine fused pairs of microtubule surrounding two central single microtubules.

Slide 32



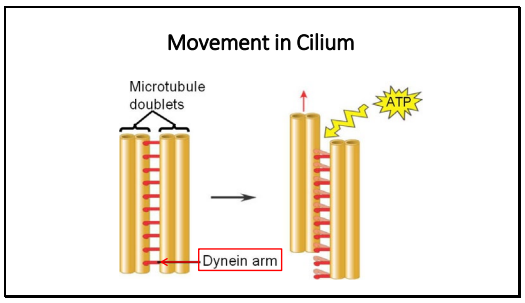
This 3-Dimensional engineering diagram from the National Library of Medicine illustrates how the mechanical parts of the machine fit together.

Slide 33



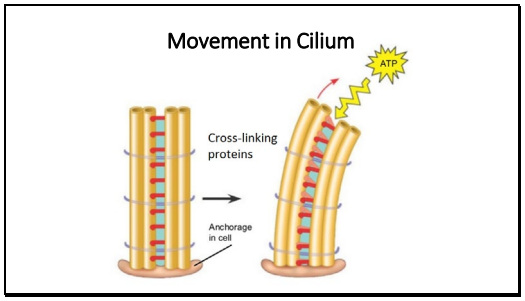
The cilia moves side-to-side in a wave-like manner due to a motor protein (called a Dynein - CLICK) that grabs and pulls down on the neighboring microtubule. But the microtubules are also linked together (by a protein called Nexin - CLICK). This architecture works together to accomplish the bending motion.

Slide 34



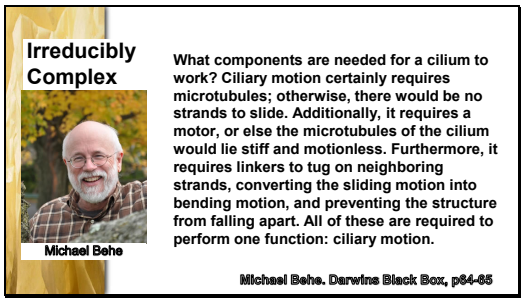
If there were no Nexin linkers, the Dynein motor proteins would cause the microtubules to slide past one another – like they are here...

Slide 35



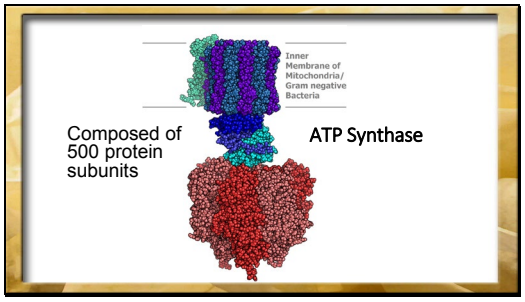
But, because they are linked, when the Dyneins pull on the neighboring microtubules they both bend together.

Slide 36



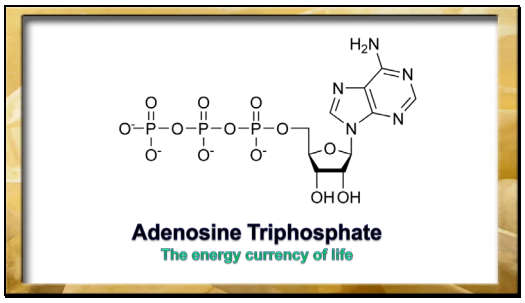
Michael Behe – a professor of Biochemistry at Lehigh University describes the irreducible complexity of the microtubule design. "What components are needed for a cilium to work? Ciliary motion certainly requires microtubules; otherwise, there would be no strands to slide. Additionally, it requires a (Dynein) motor, or else the microtubules of the cilium would lie stiff and motionless. Furthermore, it requires (the Nexin) linkers to tug on neighboring strands, converting the sliding motion into bending motion, and preventing the structure from falling apart. All of these are required to perform one function: ciliary motion."

Slide 37



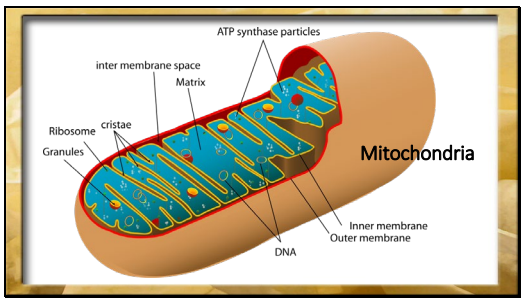
Another important molecular machine is the ATP Synthase – a massive enzymatic complex composed of 500 protein subunits. It is of such importance to the cell that the discoverers of this motor were awarded the Nobel prize in 1997.

Slide 38



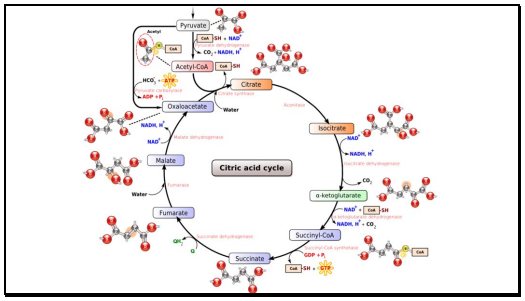
The machine makes the energy carrier molecule called ATP. To understand its importance, our cells make and use half of your body weight in ATPs each day. Cyanide stops ATP from being produced and causes death in 30 seconds.

Slide 39



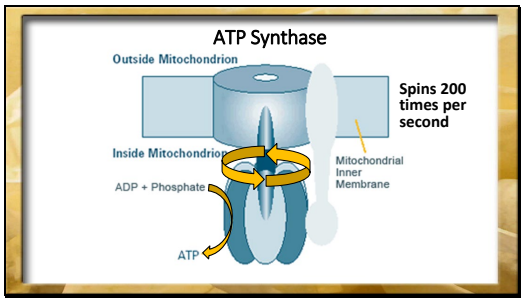
ATP is made by a factory (organelle) in the cell called the mitochondria.

Slide 40



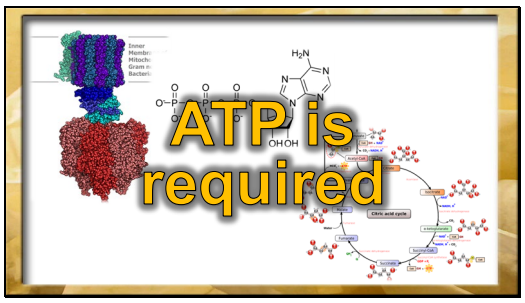
And requires an entire army of enzymes to catalyze each stage of the breakdown of a glucose molecule into carbon dioxide which you breathe off. The citric acid cycle shown here is just part of the reaction series that occurs during this metabolic process. The molecules made during this stage (NADH, FADH) are used to drive the ATP synthase.

Slide 41



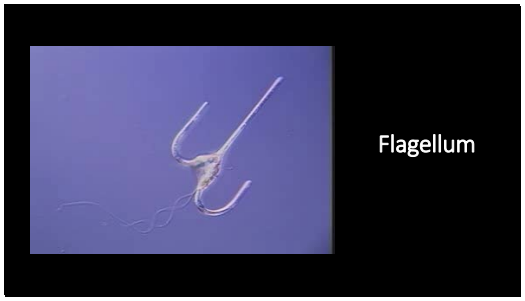
The ATP is ultimately made by this ATP synthase tiny molecule turbine motor. (CLICK) It spins, driven by “proton motive force”, at a speed of about 200 revolutions per second and produces 3 ATP molecules per revolution (producing 600 ATP molecules per second).

Slide 43



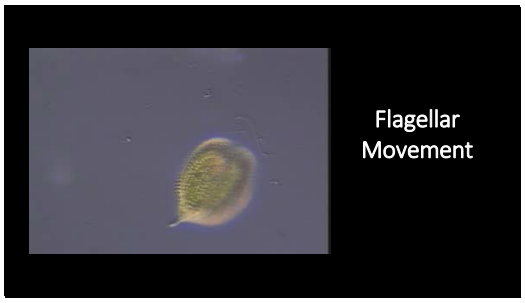
So to reiterate …. to make ATP, the cell must have the enzymes necessary to convert glucose to citric acid, then all the enzymes necessary to metabolize citric acid, plus the ATP Synthase with its 500 protein subunits, and to make the challenge for evolutionists even worse – ATP is also required.

Slide 44



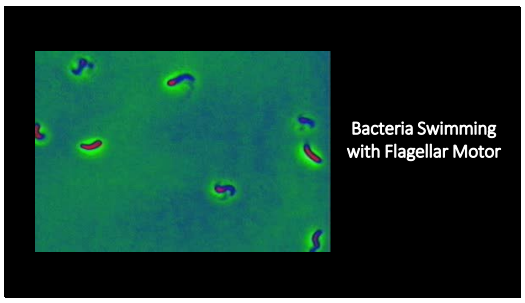
Another molecular machine is the flagellum shown here.

Slide 45



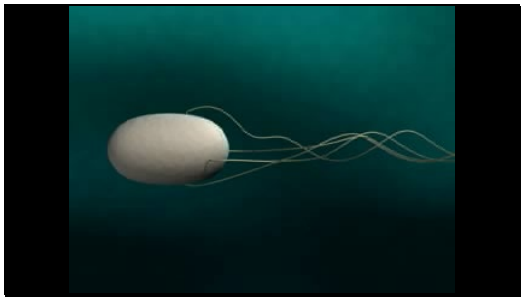
Cells (like this Euglenoid) propel themselves with this machine, which spins like an outboard motor.

Slide 46



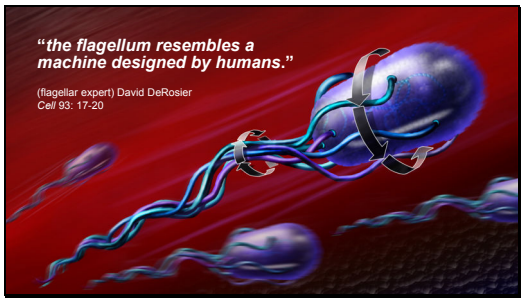
Bacteria also have flagellum, but it is completely different (structurally and functionally) from the flagellum found in the much larger eukaryotic cells. With speed of up to 60 cell lengths/second (sec) – bacteria are moving close to 164 mph relative to other animals like the cheetah, that moves at a maximum rate of about 25 body lengths/sec or 68mph.

Slide 47



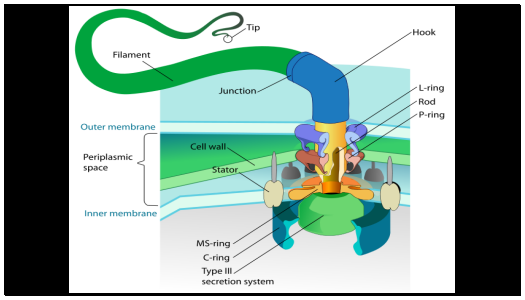
The flagellum is a nanomachine that is built using information from approximately 50 genes and is composed of up to 40 different proteins, each of them in multiple copies ranging from just a few to tens of thousands. The bacteria constructs this complex nano-scale structure more efficiently than any human-designed process.

Slide 48



Flagellar expert David DeRosier said in the journal Cell that "the flagellum resembles a machine designed by humans."

Slide 49



It is The World's Smallest Rotary Propulsion System…. It has all the parts that we would place in a motor. It is constructed of proteins with different function, such those that serve as the rotary motor, others the bushing, drive shaft, rotation-switch regulator, universal joint, helical propeller, and rotary promoter for self-assembly.

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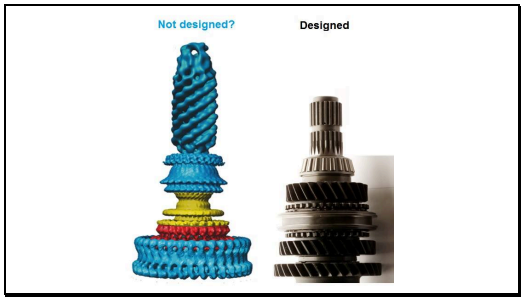

In every way it truly "*resembles a machine designed by humans" like* (flagellar expert) David DeRosier said, but evolutionists argue that it was not designed, but rather evolved by coopting proteins used for other purposes within the cell.

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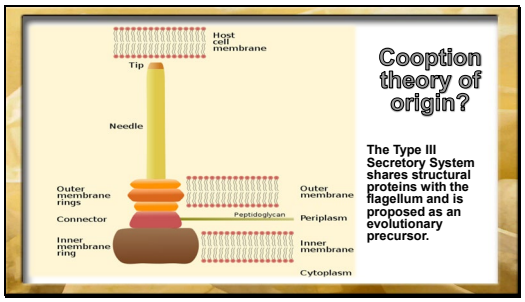

Evolutionists assert that the Bacterial flagellum was developed through cooption of other proteins that already existed in the cell. For example, the Type III secretory system (discovered in 1994) has a subset of flagellar structural proteins. All currently known nonflagellar Type III secretory systems are for injecting toxin into eukaryotic cells. For example, the bubonic plague bacterium *Yersinia pestis* has an organelle assembly very similar to a complex flagellum except that it functions as a needle to inject toxins into host cells.

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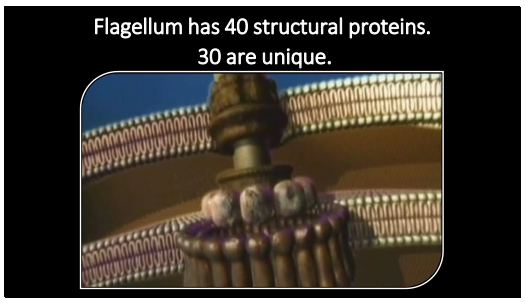
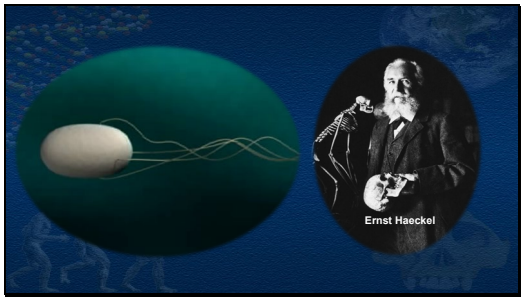


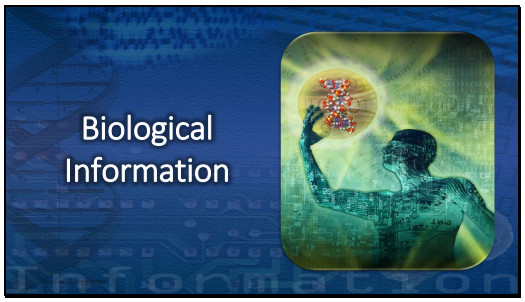
However, of the flagellum's 40 structural proteins - 30 are unique to the flagellum and not found elsewhere in the cell.

Slide 54



And let me remind of the *Monerans* that Haeckel fabricated. The actual organisms (bacteria) that were later assigned to this taxa that Haeckel named are far from simple – and in fact, are in possession of one of the most complex molecular machines we know of – the flagellum.

Slide 55



One of the most spectacular discoveries of our generation is that information governs the biological world. Biological information exists in the cells of all organisms as this complex molecule called DNA (deoxyribonucleic acid).

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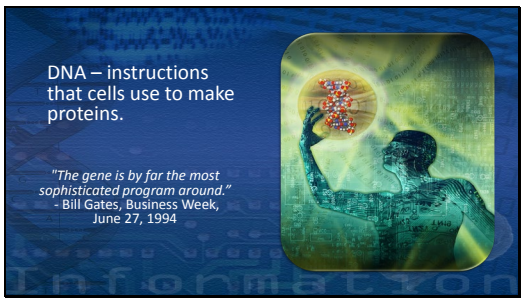

This molecule (DNA) carries complex coded instructions for the assembly and use of proteins in cells – and proteins are the machinery and material that make life possible. Proteins do everything. Some are molecular machine, or enzymes to help you digest your food, or building blocks for structures like fingernails and hair… Everyone acknowledges that DNA is "information" - even Bill Gates said it "is by far the most sophisticated program around".

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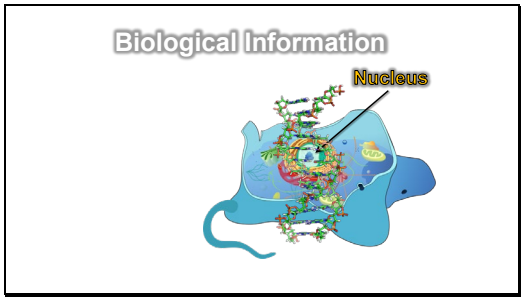
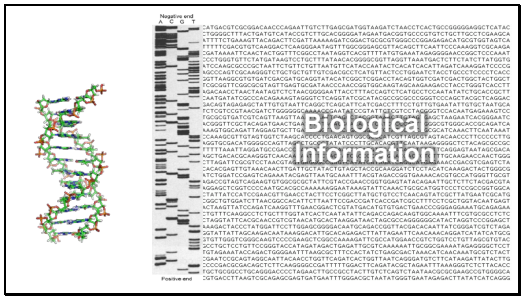


The fact that DNA is coded information causes it to stand as the single most powerful argument for intelligent design – because in all human experience information *invariably* originates from an intelligent source – from a mind or personal agent. When it was discovered that information governed the biological world, it should have led to the conclusion that DNA was also the result of an intelligent mind – that is how science is supposed to work

Slide 58



Since intelligence is the only known cause of specified information, the presence of such information bearing sequences in biological systems points definitively to a designing intelligence behind life on Earth. The amount of information packed into each cell in mind-boggling. To illustrate this, the DNA helix you see here is like a twisted ladder and each step (rung) of the ladder is a different nucleotide, which are represented by the letters ATCG.

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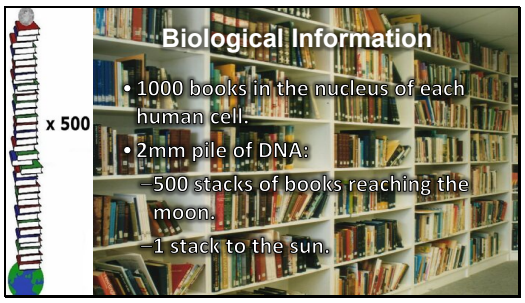

If each of these letters is equivalent to a letter in our alphabet, then in one human cell there is as much information as found in 1000 books. Or a 2mm (pinhead-sized pile of DNA has about as much information as there is in 500 stacks of book reaching the moon or a single stack of books reaching the sun. A staggering amount of information indeed.

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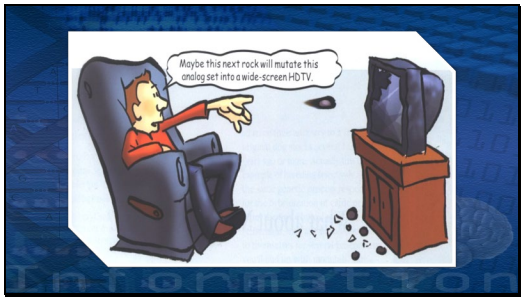
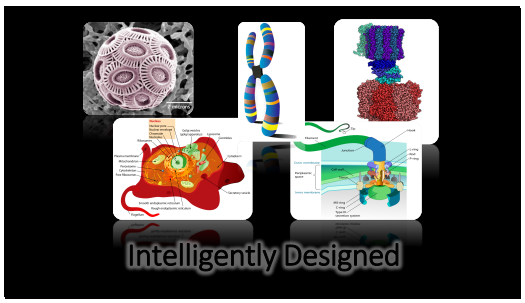


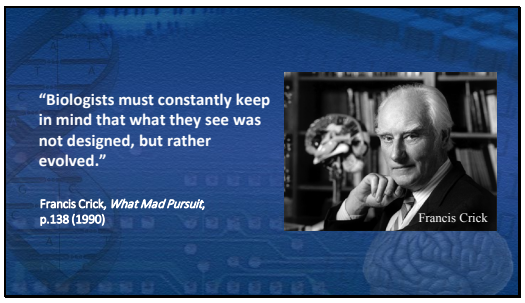
And evolutionists believe that all of this information came about by random mutations – that random changes to the genetic code produced more code. It is literally like saying that random changes to the blueprint of my old tube TV could produce the instructions for building a new 58" LCD flatscreen. This assertion - that random changes can create more information is an affront to reason, an affront to logic and common sense. The interpretation that is most consistent with our observations and experience is that this information was created by an intelligent mind – by God.

Slide 64



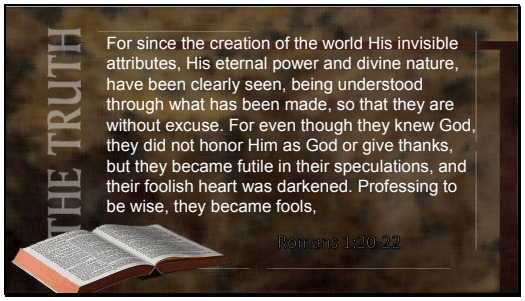
The fact is, there is overwhelming evidence of intelligent design in the biological world. Technologies have given us a look at cells never before seen. These cells are not simple lumps of mucus, but more complex than anyone of Darwin's day could have imagined. The discovery that information governs the biological world and molecular machines are responsible for cellular work should have led scientist to the conclusion that intelligent causation was responsible.

Slide 65



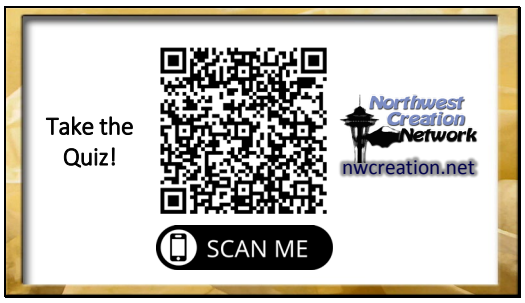
Despite the overwhelming evidences of design found in the cell, a scientist that is committed to naturalism must refuse to acknowledge the obvious implications of these observations – that the world was created. Francis Crick (was the co-discoverer of the DNA helix who won the Nobel Prize in 1962) admits to seeing evidence of design, but states that (CLICK) "Biologists must constantly keep in mind that what they see was not designed, but rather evolved."

Slide 66



God has made the world with abundant evidence that is was created –- but why can these "natural scientists" not see the truth. Paul speaks to this in Romans … "For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that they are without excuse. For even though they knew God, they did not honor Him as God or give thanks, but they became futile in their speculations, and their foolish heart was darkened. Professing to be wise, they became fools." That is the nature of science today – they simply refuse to acknowledge the truth of what they see.

Slide 67



Take the online quiz….

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