

How a Respected Scientist Became a Creationist Superstar—and How To Debunk a Creationist ‘Superstar’

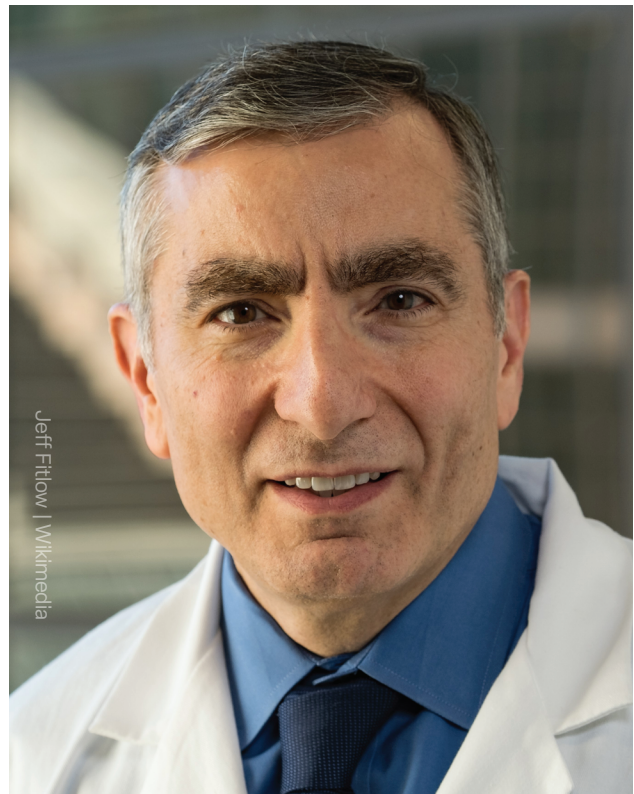
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Professor James Tour is a world-leading chemist and creationist. He is also a prime example of an educated and intelligent person who has been led astray by religious dogma and propaganda. In this article, I explain and debunk some of his more preposterous claims, such as his pseudoscientific convictions about macroevolution, genetics, and social bubbles in science. In rebutting his claims, I focus on the assertions he made on Tucker Carlson’s show in December 2025, which resulted in widespread publicity for his views.

In fact, the first time I heard of Tour was in December 2025 when I saw a post on Quora.com, a website where you can get answers to popular questions. Someone posted the following question: “Dr. James Tour just appeared on Tucker Carlson’s broadcast and thoroughly debunked evolutionism. Should evolutionists pay attention to one of the most respected scientists in the world?”

Admittedly, I did not pay much attention to it, as I had never heard of Tour and thus ignored it. But a day or two later, I got an email from an acquaintance who sent me a link to the interview on YouTube.¹ By the time I watched it a few days later, the interview had already garnered 600,000 views, and at the time of writing this article, it had more than 750,000 views. Carlson has more than five million subscribers on his YouTube channel. So, yes, we should pay attention.

As I found out later, Tour has been in the evolution debate arena since 2023. He did his first public debate at Rice University that year with Dave Farina, a science educator and YouTuber.² That debate had more than one million views, but it focused almost entirely on the origin of life. The video is rather lengthy, and I will largely ignore it—mostly because the events leading to the first life-forms are speculative—but I will briefly comment on the topic because it came up in the Carlson interview as well.



Tour (age sixty-six) is indeed a respected scientist and professor of chemistry and materials science at Rice University in Houston, Texas. In fact, his scientific record is outstanding. He has authored more than 800 publications and has more than 150,000 citations on Google Scholar (the average for tenured chemistry professors in their sixties is usually much less than 20,000 citations). Tour certainly understands chemistry, and chemistry is absolutely required for an understanding of the origin of life and evolution.

Clearly Tour has something to say. I wanted to talk to him. Luckily, he even offered meetings on his website (although that offer seems to have disappeared after his rise to YouTube fame). Anyway, I emailed Tour and asked for a personal interview. His assistant, Brandon Thomas, sent me a friendly message, saying that Tour would be

1. Tucker Carlson, “World-Leading Scientist on the Evolution Myth, Super Humans, Genetic Engineering & Origin of Life.” YouTube, December 15, 2025. Available online at <https://www.youtube.com/watch?v=I0InjvwBXTg>.

2. Professor Dave Explains, “Dave Farina vs. James Tour Debate (Are We Clueless About the Origin of Life?)” YouTube, May 23, 2023. Available online at <https://www.youtube.com/watch?v=KvGdlIx9pJU>.

happy to talk to me—but only about the resurrection of Jesus. When I told him that I would like to talk about evolution, he politely declined. As a last resort, I sent him an earlier draft of this manuscript for comment—again without response. So here it goes.

Tour may be an outstanding chemist and materials scientist, but he is not a biologist. In fact, his publication list contains only twelve papers with the term *evolution* in them, one with the term *protein*, and three with *DNA*. Almost all are about chemistry with no relation to biological evolution. There is only one exception: a chapter in the book *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*.³ “Theistic evolution”? Ouch!

The frequency with which the term *evolution* appears in the title of a paper does not mean much; most biologists do not even mention the term in publication titles, tacitly assuming that everything is driven by evolution anyway. For instance, in the 200 or so papers that I have (co)authored, only three have that word in their title, but at least thirty deal with evolution in one way or another, and pretty much all of them support evolution.

Tour is a creationist because he is a believer and biblical literalist, at least as far as creation goes. It is interesting that he rejects a purely chemical origin of life because scientists have not been able to prove every single (chemical) step leading to the origin of life.⁴ However, he doesn’t seem to demand the same rigor for biblical claims, such as the *just-so* creation story, which doesn’t have any evidence whatsoever. I am not an origin-of-life researcher, and I find the arguments about it rather pointless given the vast uncertainties and the abundance of speculation, so let’s focus on the question of evolution as presented by Tour in Carlson’s interview.

I will address only the most important arguments, skipping some minor points.

Social Pressure Forces Scientists to Be ‘Evolutionists’

Tour repeats the common belief that scientists, especially in academia, must be “evolutionists” or risk being excluded or shunned in the scientific community. Tour also claims that scientists will not admit that they do not understand how life works, much less how it came into being. This, of course, leads to the self-fulfilling prophecy that creationists do not get jobs in academia, leading to intellectual incest with only evolutionists being self-selected.

This much is true: the scientific community, like any community, often lives in a social bubble. If you do

promote completely heretical opinions, you will get stiff headwind or even become an outcast. That’s where Tour is right. But if you swim against the stream and promote controversial ideas, you will also get a lot of attention and more scrutiny. If your unorthodox ideas turn out to be true, your skeptical colleagues will eventually confirm them—even if they try hard to disprove you. There are countless examples of that. A good one is the discovery of prions, which took decades to figure out.⁵ As far as evolution goes, no one has managed to refute it, and it would be very hard indeed because you would have to refute every single instance in which evolution has been demonstrated.

Biologists Do Not Know the Chemistry of Evolution

Tour goes on to claim that we do not really understand the chemistry of biology and evolution. Again, to some extent, Tour has a point. However, even if we do not fully understand every single chemical reaction in a cell, the general biochemistry of cells is fairly well understood—which is why biochemistry is one of the most dreaded areas in college. There are very few comprehensive biochemistry textbooks under a thousand pages for good reasons!

Tour also has a point regarding the biochemical complexity of evolution. If you need a thousand pages to explain the chemistry of a cell, how many pages would you need to understand an evolving cell over millions of years? Isn’t he right that nobody understands biochemical reactions that presumably happened 100 million years ago? Indeed—but the argument is simply not convincing as a broadside against evolution.

It is true that there are many gaps in our knowledge about the exact role chemical mechanisms play in how cells develop into embryos and then into, say, a mouse or an adult elephant. But many of the principles *are* quite well understood. Heck, for my PhD thesis in 1997, I studied the role of a particular protein in limb development in chicken and mice. There has been tremendous progress in molecular embryology over the past decades, and the function of genes in organ development and evolution is well established.

The Origin of Life

Given that evolution is firmly established beyond any reasonable doubt, the elephant in the room of creationism becomes, of course, the origin of life. And Tour tackles the problem head on:

I mean, even articles from 2025 are claiming that scientists finally figured out how to make life. It’s nonsense. These scientists say these sort of things. So, I mean, I’ve challenged them ... You can’t even hook

3. J. M. Tour, “Are Present Proposals on Chemical Evolutionary Mechanisms Accurately Pointing toward First Life?” In J. P. Moreland, et al. (eds.), *Theistic Evolution: A Scientific, Philosophical, and Theological Critique*. Wheaton, IL: Crossway, 2017, pp. 165–191.

4. Carlson, “World-Leading Scientist on the Evolution Myth, Super Humans, Genetic Engineering & Origin of Life.”

5. “Prion.” Wikipedia. Available online at <https://en.wikipedia.org/wiki/Prion#History>.

two molecules of glucose together, let alone a polysaccharide with ... proper attachment using prebiotic chemistry. You can't do it. Am I the only one seeing this? If I'm wrong, come on my channel and tell me how this is done.

First, I am not aware of any scientist who claims to know how to create life from scratch. Sure, Craig Venter's team created an artificial genome and inserted it into a cell and made a lot of fuss about it (incidentally, I was working at the Venter Institute at the very time). But Venter is Venter, and he does like to blow things up—but none of the team I talked to would make such a claim.

Second, and more importantly, a lot of these allegedly "impossible" reactions, such as hooking up two glucose molecules, happen indeed under prebiotic conditions, and this has been shown numerous times—no life required.⁶ How come Tour doesn't know that? In addition, in the debate video Farina cites numerous sources debunking this claim as well.⁷

Tour goes on, claiming that we do not know how handedness in biochemistry arose or the first cell, and so on. He is quite right about that. We don't know how the first cell arose. Does that mean it was created by a creator? No. We simply don't know. Tour doesn't know, creationists don't know, and biochemists don't know either. But we do know a lot about plausible pathways to create most biomolecules necessary for life and that is a strong argument for an abiotic origin of life. (Tour simply rejects that evidence in those YouTube videos but *not* in any proper peer-reviewed publications!) A lot of work is still needed to figure out whether and how life can arise just from prebiotic chemistry. For more details on the topic, please visit the debate with Farina and his well-sourced rebuttal.

The Spirit in the Egg

Tour and Carlson did not talk about religion, but in one notable moment Tour went off the rails. When talking about the first cell in human development (not the first cell on the planet!), Tour believes that God puts spirits into eggs(!):

If you have ... this fertilized egg ... it seems as if this is life. This egg is now fertilized. And God puts a spirit in this. Now, sometimes this egg will split into two. And now you have identical twins. And if there was a spirit there, it's like God puts another spirit in that other egg as well that is just formed. ... They've been made in the image of God.

Amen. The egg was made in the image of God. Lord! Did God exist as an egg before he morphed into God? An embryonic god of sorts? It's embarrassing that Tour completely goes haywire when he starts talking about eggs. Luckily, that's the only moment he talked about God and spirits.

What Tour Knows about Genetics—or Doesn't

It goes without saying that genetics is at the center of every evolutionary mechanism. Charles Darwin realized this without being able to explain where variation comes from.

Tour seems to have a rather perfunctory understanding of evolution and even less of an understanding of genes and genetics and their roles in evolution. Mutations come up only once in the whole discussion when Tour said, somewhat insecurely:

The definition of evolution is constantly evolving. Constantly evolving. It's constantly changing. And ... so what I grew up on was that it was natural selection and random mutation. Exactly. Random mutation, natural selection. That's what a lot of us grew up on. What Darwin ... was talking about, he was talking about natural selection, and he knew less about the mutation aspect and then the mutation and natural selection is what pulled this forward. So natural mutation is, as I understand, the idea that you know you'll have, like, an anomaly and it turns out that anomaly is better suited to the environment and so that creature, that organism, is more successful in breeding and then that becomes the dominant strain.

It seems that Tour has a rather perfunctory concept of mutations rather similar to that of Darwin and Mendel. That was around 1860.

Do I need to mention that we now have a very detailed understanding of mutations and their role in evolution? A good example is the role of mutations in human evolution because we practically know *all* mutations that happened in the past six million years since our common ancestor split into two lineages, one leading to chimps and the other to humans. That is because we can sequence genomes and even reconstruct ancestral genomes and all the intermediary steps.⁸ (We cannot determine the *order* in which the mutations occurred in evolution, but this can be done to some extent if we analyze the spread of mutations through populations. That's another story.)

Tour would have a legitimate point had he emphasized that we do not know what all these mutations do. We don't. But we do know that they happened and that they still happen. (We can sequence the genomes of parents and their children and see sixty to eighty mutations

6. See N. Li, et al., "High-Yield Synthesis of Glucoooligosaccharides (GIOS) as Potential Prebiotics from Glucose via Non-Enzymatic Glycosylation." *Green Chemistry*, 2019. Available online at <https://doi.org/10.1039/C9GC00663J>; and Z. Li, L. Li, K. R. McKenna, et al., "The Oligomerization of Glucose under Plausible Prebiotic Conditions." *Origins of Life and Evolution of Biospheres* vol. 49 (2019), 225–240. Available online at <https://doi.org/10.1007/s11084-019-09588-3>.

7. Professor Dave Explains, "Dave Farina vs. James Tour Debate (Are We Clueless About the Origin of Life?)"

8. A. B. Diallo, V. Makarenkov, and M. Blanchette, "Ancestors 1.0: A Web Server for Ancestral Sequence Reconstruction." *Bioinformatics* vol. 26, no. 1 (2010), pp. 130–131. Available online at <https://doi.org/10.1093/bioinformatics/btp600>.

in every generation on average.⁹) We also know many disease-causing ("negative") but also many "positive" mutations, e.g., those that give each of us advantages over our fellow human beings. Tour seems rather oblivious about modern genetics and genomics.

So, What Does Tour Know about, uh, Evolution?

About halfway through the interview, Tour gets to the core of the issue, and ... onto thin ice. As soon as he starts talking about actual evolutionary biology, his blatant ignorance begins to show. Admittedly, large evolutionary changes are hard to understand and often even harder to see. We do have fossils and can trace morphological change, but creationists have long argued that all fossils represent immutable species that simply went extinct during "The Flood." Not unexpectedly, Tour makes this argument about such large evolutionary changes:

So, you can see these small permutations, but what you never see, never see, are what is called "body plan changes." Body plan changes. And this encompasses many things, but ... you see these genetic networks would have to change. So, a body plan change would be an invertebrate, something that does not have a spine, going to a vertebrate, something that has a spine. Something like a worm going into something that has a spine. You never ever see that.

Before I explain the fallacy that Tour falls for, let me clarify first what the term *body plan* means. Most biologists use the term to describe a set of morphological features that distinguish *phyla*, that is, large groups of animals that share a lot of anatomical similarities, such as arthropods (e.g., spiders and insects), chordates (mostly vertebrates), or mollusks (e.g., snails, mussels, octopuses). Each phylum can be highly diverse, for instance including tiny blind snakes and elephants (among vertebrates), so it is perfectly legitimate to question how these things originated from a common ancestor. Biologists have established *phyla* because it is indeed difficult to explain the evolution from one body plan (phylum) to another one, but we are still confident about their common evolutionary origin because we have their genome sequences.¹⁰ The reason the origin of body plans is a hard problem in evolutionary biology is rather trivial: all the major body plans originated before or during the famous Cambrian explosion, more than 600 million years ago. Although we have good genomic evidence for the common origin and timing of modern *phyla*,¹¹ events

that happened more than half a billion years ago are, well, simply difficult (but not impossible) to reconstruct. Ask a geologist where the continents were at the time.

While this sounds like an attempt to weasel out of the problem, let me break down the task at hand into manageable parts: if it is difficult to explain the origin of *phyla*, how about the evolution *within* *phyla*, e.g., the evolution of fish to humans? That is a problem almost as big, and creationists will have as much doubt about it as they have with body plans. It turns out, though, that the evolution from fish or amphibians to humans is rather easy to explain in evolutionary terms. In fact, it's even easier in molecular terms. The same way we can reconstruct the genome of our ape ancestor and all the mutations that happened along the way from monkey to human, we can reconstruct the evolutionary path from some ancestral mammal (such as a mouse) to humans. Importantly, since the first vertebrates walked on land, there are very few real novelties: all the organs in amphibians are also present in humans, even if their similarity may have become unrecognizable. The basic body plan of all vertebrates is more or less the same. For example, snakes are tetrapods—four-legged animals that lost their legs 130–180 million years ago¹²—and we even know most of the genes that were mutated and led to limb loss.¹³ Similarly, the organs of frogs and humans are essentially the same, even though some of them, like the human brain, increased dramatically in terms of size and complexity. Nevertheless, frogs and humans have about the same number of genes; in fact, most salamanders have *more* DNA than humans (although still a similar number of genes). These evolutionary pathways can be reconstructed quite reliably from their DNA sequences, and there are few surprises. Given that the genomic revolution started only a decade or two ago, it will become ever easier to reconstruct the evolution of complete genomes, and there is already enough data to confidently say how animals evolved from their common ancestors tens or hundreds of millions of years ago.

Tour and the Intricacies of Molecular Networks

Tour barely mentions DNA because he hardly seems to understand molecular genetics. Even though DNA is chemically simple, molecular genetics is a different beast. He makes this abundantly clear when he talks about the molecular networks that govern embryonic development. He literally says:

9. H. Jónsson, et al., "Parental Influence on Human Germline de Novo Mutations in 1,548 Trios from Iceland." *Nature* vol. 549, no. 7673 (2017), pp. 519–522. Available online at <https://doi.org/10.1038/nature24018>.

10. M. J. Telford and R. R. Copley, "Improving Animal Phylogenies with Genomic Data." *Trends in Genetics* vol. 27, no. 5 (2011), pp. 186–195. Available online at <https://doi.org/10.1016/j.tig.2011.02.003>.

11. C. W. Dunn and J. F. Ryan, "The Evolution of Animal Genomes." *Current Opinion in Genetics and Development* vol. 35 (2015), pp. 25–32. Available online at <https://doi.org/10.1016/j.gde.2015.08.006>.

12. Y. Zheng and J. J. Wiens, "Combining Phylogenomic and Supermatrix Approaches, and a Time-Calibrated Phylogeny for Squamate Reptiles (Lizards and Snakes) Based on 52 Genes and 4162 species." *Molecular Phylogenetics and Evolution* vol. 94, part B (January 2016), pp. 537–547. Available online at <https://doi.org/10.1016/j.ympev.2015.10.009>.

13. C. Zhu, et al., "Convergent Degenerated Regulatory Elements Associated with Limb Loss in Limbless Amphibians and Reptiles." *Molecular Biology and Evolution* vol. 41, no. 11 (2024), msae239. Available online at <https://doi.org/10.1093/molbev/msae239>.



The problem with this [is] in order to have a body plan change ... these genetic networks are going to have to change. So the genetic networks occur very early on in life. This is the wiring that is going to occur to run this system. You clip one wire it is catastrophically lethal to the organism. It is lethal. Everything goes haywire. And people will say this and there has never been an example of this where you can get into these early genetic networks and start changing things because if you change one little thing, you have to have many many downstream things. So, it's not one little change [that] can change this organism. No, no, no, no. It's not going to happen.

Yeah, again, he is right on one discrete point: genetic networks do matter. But Tour is simply plain wrong in his naive assumption that one mutation *is catastrophically lethal to the organism*. His own body disproves this. As explained above, each of us has millions of mutations, many of which alter gene regulatory networks. This is the reason we all look different! The millions of mutations that we all have (compared to any of our fellow humans) explain why we are unique.

As someone who received his PhD in molecular embryology, I'd like to explain something to Tour: you just found out how evolution works! Congratulations! Mutations in those molecular networks (more precisely: gene regulatory networks) can produce something new! For instance, the evolution of bats happened because small mutations changed the expression of genes that determine the length of finger bones. In fact, in a classical experiment, "evolutionists" added a small mutation to a mouse gene to make it more like a bat gene. That small change—you guessed it—led to longer finger bones.¹⁴ It is exactly those finger bones that are elongated in bat wings. It is easy to imagine how an accumulation of such mutations led to longer and longer finger bones, eventually turning those little hands into larger and larger hands and eventually wings. Given that we have many mammalian (including bat) genomes now, we can reconstruct how such molecular networks get reorganized to lead to the morphological changes that we observe in evolution.¹⁵ This leads us to the final elephant in the room: macro-evolution.

'We've Never Seen Macro-Evolution!'

Yes, we have not watched a fish morph into an elephant, but that idea is preposterous anyway, and Tour knows it. The aforementioned argument should make it abundantly clear that we can reconstruct macro-evolution-

ary events on the genome level and actually recapitulate them experimentally; that is, we can make evolutionary events *testable*. The single most important problem with macro-evolution is of a technical nature: the aforementioned experiment, changing a mouse gene into a bat gene, is perfectly feasible, but it's nevertheless technically difficult. When I was a grad student, a postdoc in the lab, Rosanna Dono, deleted a gene in a mouse.¹⁶ The process is similar to mutating a gene as it would happen in evolution. The project took her almost three years, and I painfully watched her over the whole period. Today, the process is easier and faster using CRISPR (gene editing technology), but it is nowhere close to what you'd actually call fast. You always have to inject the genes into eggs, make baby mice, and breed them to establish the gene in the next generation; it is simply impossible to do these experiments in less than a year. That's the only real bottleneck in proving macro-evolution on a larger scale. We can trace all the steps that happened in evolution, but each mutation and thus each step would take a year to make—at least in mice—and that's if it goes fast and as planned, which it rarely does.

For a chemist like Tour, who can do a chemical reaction in a matter of hours, research in evolution may be simply incomprehensible the same way it is difficult for a materials scientist to grasp that evolution can take millions of years, when they can cook up a new compound overnight.

I recommend Tour take a class in molecular genetics and evolution instead of Bible study. Or even better, he should work in a genetics lab and create a couple of mutations himself. Then he should do another interview with Carlson and explain how evolution really works and why it is not trivial to understand—even though it's true.



16. R. Dono, G. Texido, R. Dussel, et al., "Impaired Cerebral Cortex Development and Blood Pressure Regulation in FGF-2-Deficient Mice." *The EMBO Journal* vol. 17, no. 15 (1998), pp. 4213–4225. Available online at <https://doi.org/10.1093/emboj/17.15.4213>.

14. K. E. Sears, R. R. Behringer RR, J. J. Rasweiler, et al., "Development of Bat Flight: Morphologic and Molecular Evolution of Bat Wing Digits." *Proceedings of the National Academy of Science* vol. 103, no. 17 (2006), pp. 6581–6586. Available online at <https://doi.org/10.1073/pnas.0509716103>.

15. A. Rhie, et al., "Towards Complete and Error-Free Genome Assemblies of All Vertebrate Species." *Nature* vol. 592, no. 7856 (2021), pp. 737–746. Available online at <https://doi.org/10.1038/s41586-021-03451-0>.

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