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James Tour: A Chemist's Questions on Evolution

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https://peacefulscience.org/articles/tour-friendship-across-disagreements/

Dr. James Tour is the great chemist from Rice University. We have our disagreements. He is not an Intelligent Design (ID) proponent, but he is more friendly to ID than am I. He even signed *The Dissent from Darwinism*, a statement that I see as a misleading garden path. Across our disagreements, we still found common ground. Over the last few years, Jim and I grew to be friends.

How did we meet? For many years, Jim had this invitation, a challenge, on his website.

> Does anyone understand the chemical details behind macroevolution? If so, I would like to sit with that person and be taught, so I invite them to meet with me. Lunch will be my treat. Until then, I will maintain that no chemist understands, hence we are collectively bewildered.

In 2017, I responded. That same day, James answered my phone call, and we talked for a couple hours. To my surprise and to his credit, Jim quickly booked a plane flight to St. Louis to discuss this with me in person. He paid for this ticket with his own money, and scheduled for the next week. I cleared my schedule. When he arrived, we spent two full days talking about science, family, faith, and evolution. This whirlwind exchange is how we first met and how we became friends.

Meeting Dr. Tour for the first time was intimidating. He has well over 800 publications, and an H-index of 150. For comparison, I have about one tenth as many publications, and an H-index of just 29. For comparison, this year, Jennifer Doudna won the 2020 Nobel Prize in Chemistry for CRISPR, and she has an H-index of 126. Of course, Emmanuelle Charpentier also shared this Nobel Prize with an H-index of just 18, which goes to show that H-index is not everything. Still, James is an uncommonly accomplished chemist. At the time, I was not even tenured.

I soon found that Jim was also humble. We discussed the evidence for common descent and neutral theory. Soon after, he removed the challenge from his website, replacing it with text that explained some of what we learned together.

> This is the idea that all life shares a common ancestor. For those less trained in science, this theory does not propose, for example, that humans evolved or descended from chimpanzees, but that humans and chimpanzees share a common ancestor in the distant past. I can understand why those fluent in the field of genetics would be convinced by that theory; there is an impressive quantity and insightfulness to the work.

Early on, with some exceptions, our friendship was largely private. More recently, however, our friendship has become more visible. Earlier this year, we had a "fiery debate" on a podcast about the Origin of Life. Soon after, Tour interviewed me on his new podcast to discuss *The Genealogical Adam and Eve*. Tour's endorsement of the book was very generous:

> Joshua Swamidass might not get a Nobel Prize in biology for *The Genealogical Adam and Eve*, but he should get a Nobel Peace Prize for his approach of kindness in trying to unite several disparate camps on the front lines of the origins debate...I think all camps can walk away happy that they're right, in a way.

I am sure I will not get a Nobel Prize of any sort for my book, but I am honored and humbled by his endorsement.

Just before the pandemic hit, in February of 2020, Tour publicly asked me a question at the end of my exchange with Michael Behe at Texas A&M.

> Joshua, you and I have spoken many times and I consider you a good friend. We've disagreed on several things and you mentioned it again tonight, you mentioned mechanism. Being an organic chemist, and the chemists who are here, we look at mechanisms.
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> Very specifically, it is so hard to fathom how you can get mechanistic changes in a complex system to change one into another. The problem is that when this is described by biologists it sounds as if there's storytelling. And even when I've talked to you, I said "how does it change," you say "well one small change at a time."
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> So, get me started: what would change? Tell me how one changes into another. It's extremely hard to see that so you can come with little models that are mathematical to talk about relations but you ultimately have to change a lot of chemistry. It's really difficult to begin to look at these evolutionary models that are going to allow you to have these kinds of complexities of change. So, how do you think about this happening when you really have to go back to your organic chemistry from when you were a sophomore in 1998. They say what kind of reactions are you going to do to do that.

This question continues our conversation from 2017.

How did I answer? In the video, I explained that science was non-intuitive, and that I looked forward to discussing it with him the next day in far more detail. And so we did. I spent the night at his home, and his wife cooked us a massive breakfast in the morning. For the rest of the day, we explored his graphene laboratory the next day. As

we walked around the campus, we discussed how complex biological systems change.

Jim and I do not agree on everything. We found something more valuable than agreement. We found virtue in the wasteland. We found friendship across our disagreements.

January 9, 2021 this article was given a new title.

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