www.reasons.org
Designed for Life

God or the Multiverse
Fine-Tuning Problem

The impression of design overwhelming.

- Paul Davies

The Cosmic Blueprint
Fine-Tuning Problem

It seems as though the universe knew we were coming.

Freeman Dyson

The Cosmological Anthropic Principle
A Severe Problem

The required fine-tuning is extreme.
Dark Energy

... would involve the most extreme fine-tuning problem known in physics.

- Lawrence Krauss

Dark Energy

Fine-tuning of 1 part in $10^{120}$ far exceeds the best human design success (gravity wave telescopes at 1 part in $10^{23}$)
A Growing Problem

The evidence for cosmic design for humanity’s specific benefit is increasing exponentially.
gravitational force constant
strong nuclear force constant
weak nuclear force constant
electromagnetic force constant
e-m to grav. force ratio
Cosmic Design for C-Li

1. proton-to-electron number ratio
2. electron-to-proton mass ratio
3. velocity of light
4. cosmic expansion rate
5. cosmic entropy level
<table>
<thead>
<tr>
<th>date</th>
<th># known features</th>
</tr>
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<tbody>
<tr>
<td>1991</td>
<td>17</td>
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<td>1995</td>
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<td>2001</td>
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<td>2004</td>
<td>86</td>
</tr>
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<td>2006</td>
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See reasons.org for features & citations.
Heavenly Body Design

Just right universe
Just right galaxy
cluster
Just right galaxy
Just right star
Just right Jupiter,
Saturn
Just right Earth
Just right Moon
Heavenly Body Design

Just right universe

Just right galaxy

cluster

Just right galaxy

Just right star

Just right Jupiter,

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## Total Fine-Tuning for Life

<table>
<thead>
<tr>
<th>date</th>
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<th>probability</th>
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<tbody>
<tr>
<td>1995</td>
<td>41</td>
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<td>2006</td>
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<td>$10^{-556}$</td>
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See reasons.org for features & citations.
# Bacteria vs. Humans

<table>
<thead>
<tr>
<th>life form</th>
<th># features</th>
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<tr>
<td>90-day bacteria</td>
<td>501</td>
<td>$10^{-311}$</td>
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<tr>
<td>3-Gyr bacteria</td>
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<td>humans</td>
<td>824</td>
<td>$10^{-1050}$</td>
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</tbody>
</table>

See [reasons.org](https://reasons.org) for features & citations.

Hugh Ross
Does a Multiverse Solve the Problem?
Many speculate that a multiverse theory can explain cosmic fine-tuning without invoking God.

We live in the particular universe (or Hubble volume) that is fine-tuned to allow intelligent life to exist.
1. It’s not new! The multiverse, in one form, was present in early Christian thinking.
At present there is no compelling reason for proposing a multiverse except to solve the fine tuning problem.
closed           flat           open

\[-0.0170 < \Omega_k < 0.0068\]
3. Multiverse models do not avoid a transcendent causal Agent for the cosmos.
4. Infinite multiverse models explain too much. Very large multiverses may not be enough.
5. Multiverse hypotheses are in danger of committing a form of the gambler’s fallacy.
Design is seen on all observable size scales. Its observation is limited only by technology.
7. Multiverse hypotheses are testable.
So, what is the bottom line in all of this?
The more we learn about the universe, the case for God as its causal agent becomes more compelling.