Re: No Grace Period for Metabolism Either

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From: TomHendricks474 (*tomhendricks474_at_cs.com*)
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<< > Where is the energy to allow this replicator to do anything?

rem
I already answered that. UV photons directly break chemical bonds.
geothermal/asteroidcometcrashes are very very hot locally which grossly disrupts molecules. In both cases, free radicals and other unstable chemical species are created. These have a lot of extra energy which is released when they re−combine or react with other neighboring molecules.

Tom
This is not consistent enough to instigate and continue life.
Nor is this energy source stable enough for anything to adapt to it.

> *Why would it use resources.*

rem
Replication consists of converting other chemicals into more of the replicator itself (plus some waste products that are simply discarded).

Tom,
Yes of course but what good is it?
If it is such an advantage − why doesn't water , or salt, replicate?
You can't just pull out of the air, jobs for molecules to do because it suits your def of life.

rem
The word "resources" refers to those chemicals that are input to that process, and the extra−energy content of those chemicals.

> *When did that start?*

If abiogenesis occurred on Earth or Mars, then it occurred sometime after the formation of the Solar System but before 3500 million years ago when we have good evidence that life had already been thriving

rem

Yes again. But if it was nearer 4.2 then it is very hot environment, bombardment phase, and first oceans are forming and sun is shining through for the first time, as Moon sets up incredible tides and spins earth faster for shorter day/nights. This is a hell on earth.
But if at 3.5 it an entirely different scenario. .

rem
If abiogenesis occurred elsewhere in our galaxy, then seeded Earth and/or Mars via panspermia, then it might have occurred long before the Solar System formed.

Tom
This is extremely unlikely for many reasons.

> And how did it get the energy to start doing that?

rem
As I said above, the energy was sitting there in the form of pieces of disrupted molecules that have extra energy available. The replicator got that energy simply by randomly bumping into such molecular pieces or lower energy molecules that are created by initial reactions between the disrupted pieces and other molecules. My idea is that near the geothermal vents, near the surface of the ocean(s), and near asteroid/comet crashes, the densigy of such high−energy molecular pieces and molecules was sufficiently high that a molecule of a catalyst would likely encounter such molecules several times, and thus have several chances to catalyze one instance of a reaction, before the catalyst itself randomly broke apart.

Tom
To me this is highly unlikely and what you may not be considering is IF this energy is high so is the destruction by this energy. IF it is low, then the chance of a lot of energy is low. Overall Destruction is greater than synthesis.
Also why would any replicator not be destroyed the minute that fluke event happened? And if the replicator is not exact it will fall apart within generations − and how can it be exact at the start?

> Where do the resources come from and what energy produced them?
rem
The resources are of two types, broken pieces and their byproducts which I described above, and ordinary stable molecules such as water, carbon dioxide, methane, ammonia, cyanide, formaldehyde, etc. and ordinary stable ions such as metals sulfate carbonate chloride etc. The stable molecules/ions came from the molecular cloud that turned into the formation of the Solar System. I already said where the broken pieces of molecules came from and what energy produced them (UV/geothermal/astcometcrashs). I didn't go into detail about the secondary products, the result of a free radical or other broken piece striking a normal stable molecule and reacting with it to form a semi−unstable molecule which is not quite as active as the original

free radical etc. but is more active than a fully stable molecule/ion
and still has some excess energy compared to a fully stable
molecule/ion.

Tom
This is all very iffy and more a
one time event or a specific
phase event. (And note − it is almost all caused by the sun in the first
place). Why consider that?
Why not the constant non−random
cyclical heat of the sun that is there each and every day. Why avoid the
obvious main consistent energy source to reach for such an unlikely scenario?

> If any of this is not stable already in the environment, it will be
> destroyed by the sun,

rem
What is the mechanism you propose by which the Sun will reach down into
the oceans and destroy chemicals that reside near a geothermal vent?

See conditions above. You are thinking that these chemicals will be safe and
not bothered till they get stable in this environment?
That is what I call a grace period.
It's IMO a false assumption that the environment doesn't in anyway interfer
with replicator until it is conveniently adapted to its environment. Can't
happen IMO.

> The odds of any replicator or replicants lasting when none of them
> are stable in this environment is unlikely.

rem
You write as if "stable" were an absolute yes/no feature, as if
chemicals are either absolutely stable to the end of time or absolutely
unstable even for a moment. In fact virtually all chemicals are
semi−stable, they last a while but not forever.

Tom
Nothing would be stable in this environment unless it was already 'chemically'
selected in this environment. If it in no way was stable in this environment it
would be destroyed.
The point is which is more stable and more likely − chemicals that are already
stable in that environment and out of THESE, a replicator comes
or a replicator comes out of a fluke event and then has its unnatural grace
period.
Why make your scenario so impossible and so unlikely?

rem
As was pointed out earlier, all that's necessary is that something
replicate faster than it decays, so that its quantity increases
exponentially until it dominates available resources.

But none of that makes sense − you just are stretching to get to the first
replicator because that leads to darwinian selection
What molecule wants to use energy or replicate for the first time.
No more calling in for magic.
Or instilling a will to get to us,
in chemicals. Evolution is always about some type of adapting to present day
not the future.

I'll reprint this quote
>The irreducible complexity of genetics−first origin scenarios is
>
>high, requiring joint emergence of catalysis, compartmentation,
>
>and heritability to make the minimal self−perpetuating structures.
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>The concentration dependence of their synthesis also has
>
>been criticized as geophysically unrealistic (9, 10). Metabolismfirst
>
>scenarios are therefore gaining acceptance as both more
>
>plausible and potentially more predictive of observed forms.

The rest of what you wrote was dependent on that false idea, and isn't
worth discussing further.
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