Today, a Sea Slug. Tomorrow, ... ?

The Urth list — 6 messages, 3 voices, 18 Jan 2010

https://urth.darkrealm.vip/thread/urth/5538

David Stockhoff — 18 Jan 2010, 00:48

Severian's friend the Green Man always seemed quite plausible to me. I hadn't realized just how plausible. Apparently a sea slug has incorporate algae genes into its genome and produces and uses chlorophyll inside its body:

http://www.sciencenews.org/view/generic/id/53496/title/Sea_slug_steals_genes_for_greens,_makes_chlorophyll_like_a_plan

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Jeff Wilson — 18 Jan 2010, 02:44 · in reply to David Stockhoff

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> http://www.sciencenews.org/view/generic/id/53496/title/Sea_slug_steals_genes_for_greens,_makes_chlorophyll_like_a_plan

There's still a question of him being able to intercept enough sunlight to be more active than a slug. A man-sized silhouette in Earthly conditions intercepts less than 100 calories worth of sunlight a day. From the Green Man's sunny smile, his people apparently still have humanlike teeth, so presumably they can eat a variety of food to make up the deficit, but I'm not sure if reducing your food needs by 1/30 is worth the hassle.

It might be that the chlorophyll isn't strictly for food, but for sensory purposes; can anyone think of an occasion when the Green Man would need to be able to feel a shadow falling on him, or would have to distinguish between bright lights of different character?

Jerry Friedman — 18 Jan 2010, 04:14 · in reply to Jeff Wilson

> --- On Sun, 1/17/10, Jeff Wilson <jwilson at io.com> wrote:
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That's pretty amazing, if it's confirmed.

> There's still a question of him being able to intercept
> enough sunlight to
> be more active than a slug. A man-sized silhouette in

> Earthly conditions
> intercepts less than 100 calories worth of sunlight a day.

Is that with perfect efficiency? Gosh, are you seriously telling me to do the calculation? Half a square meter in sunbathing position, 1 kilowatt, 8 hours, that's 14,400 kJ or about 3400 big calories. You're assuming something like present photosynthetic efficiency.

> From the Green
> Man's sunny smile, his people apparently still have
> humanlike teeth, so
> presumably they can eat a variety of food to make up the
> deficit, but I'm
> not sure if reducing your food needs by 1/30 is worth the
> hassle.

The sun could be brighter in his time than ours, and genetic engineering could have improved the efficiency of photosynthesis and that of metabolism.

> It might be that the chlorophyll isn't strictly for food,
> but for sensory
> purposes; can anyone think of an occasion when the Green
> Man would need to
> be able to feel a shadow falling on him, or would have to
> distinguish
> between bright lights of different character?

I can't We do fine with vision. Though human color vision is rather klugy, I gather, and those same genetic engineers could probably improve it without any cost by making it more like birds'.

Jerry Friedman

Jeff Wilson — 28 Jan 2010, 07:43 · in reply to Jerry Friedman

> On 1/17/2010 10:14 PM, Jerry Friedman wrote:
> --- On Sun, 1/17/10, Jeff Wilson<jwilson at io.com> wrote:
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> > Severian's friend the Green Man
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Did you see the thing last year? A predator microbe that becomes photosynthetic if it eats this other microbe, then fissions into the original separate microbes again?

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He said it was pond scum, so I presume it was something vaguely like pond scum.

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> The sun could be brighter in his time than ours, and genetic
> engineering could have improved the efficiency of
> photosynthesis and that of metabolism.

maybe, but 30x as efficient?

Jeff Wilson - jwilson at io.com
IEEE Student Chapter Blog at
< http://ieeetamut.org >

Jerry Friedman — 29 Jan 2010, 01:52 · in reply to Jeff Wilson

> --- On Thu, 1/28/10, Jeff Wilson <jwilson at io.com> wrote:
> On 1/17/2010 10:14 PM, Jerry Friedman
> wrote:
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> --- On Sun, 1/17/10, Jeff Wilson<jwilson at io.com>?
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> wrote:
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Missed that one.

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As you said, he probably still needs to eat. If between more sunlight and more efficient photosynthesis and metabolism he gets ten times as much as we would, it would reduce his need for food by about 1/3, which seems worth some hassle.

Jerry Friedman

David Stockhoff — 29 Jan 2010, 23:22 · follows Jerry Friedman

Furthermore, if those calculations are based on American calorie intake, you could cut the Green Man's food energy needs by up to 50% just by changing that assumption to a level more typical of the rest of humanity.

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>
> Message: 4
> Date: Thu, 28 Jan 2010 17:52:02 -0800 (PST)
> From: Jerry Friedman <jerry_friedman at yahoo.com>
> To: The Urth Mailing List <urth at lists.urth.net>
> Subject: Re: (urth) Today, a Sea Slug. Tomorrow, ... —
> Message-ID: <378986.85096.qm at web50706.mail.re2.yahoo.com>
> Content-Type: text/plain; charset=iso-8859-1
>
> --- On Thu, 1/28/10, Jeff Wilson <jwilson at io.com> wrote:
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