
From: jeffrey E. <jeevacation@gmail.com>
Sent: Monday, April 24, 2017 12:14 PM
To: Ed Boyden
Subject: Re: Plants

glad to help. I think we might want to inquire re the similarities of plants and animals. =stressors, disease. energy. =f=n. why do people and trees first get taller than =ider. i get it for plants.

On Mon, Apr 24, 2017 at 8:01 AM, Ed Boyden <[REDACTED]> wrote:

> wrote:

Thanks f=r the metformin reminder! So far my immediate family has avoided diabetes by diet choice, but for my other relatives, I'll let them know.

I agree that mapping out the ways plants communicate, would be fascinating. Perhaps we can write down the words and rules akin to a<=r> language.

Very interesting on the aluminum front. We need ways to see how different building blocks are processed, trafficked, etc. in the body.

One hope I have for our project on the world's smallest mammal is that<=r> we can watch molecules and atoms throughout the entire "life cycle&quo=; of the processes of the body.

Ed

On Thu, Apr 20, 2017 at 6:23 AM, jeffrey E. <jeevacation@gmail.com <mailto:jeevacati=n@gmail.com> > wrote:
>

> dont forget the metformin, for insulin resistance.=C2 it is supposedly
> a wonder drug.

>
> Not sure how to think about the neurobiology of plants. There is a rob=st
> bunch of literature on how plant cells are stressed, how they respond =nd
> how they build biological resilience along the way. Because they are s=ssile
> and can't just call their doc for a prescription, whatever they do=has to be
> relatively simple and part of a very basic process that either displac=s,
> overcomes, outdoes or modifies a stressor to make it manageable.

>
> Plants don't have nerves per se but they have cells that behave in=a similar
> way for similar purposes as our nerves. Plants do use what we call
> neurotransmitters catecholamines like dopamine and norepi- they h=ve
> tons of acetylcholine and the same degradation pathways, and even the =ame
> glutamate pathways and receptors humans do. And, more.

>
> Classes of movements are common to almost all plants, just as with hum=ns.
> Darwin described them pretty well. Breakdown in these movement systems=can
> look similar in humans - we just have more types of motion to deal wit= than

> plants ... like when we get dopamine deficient in Parkinson or atrophy in
> alpha motor neurons in ALS. They have similar problems in their motor <=> systems, and usually they
overcome them if they can adapt to or beat the

> stressor.

>

> Plants also have memory (used mostly for growth and reproduction) and some
> think different types of cognition too. While glutamate is a big player in
> that process, it isn't the only one. Some of the chemicals have also evolved
> to serve similar functions, including a lot of similarity in core function
> between chlorophyll and melanin. Chlorophyll serves to capture light and
> create energy, the core function required to sustain a sessile plant. Melanin
> becomes dopamine, which allows humans to move and somehow plays other more
> important roles that we don't yet understand as the melanocytes are derived
> from neural crest cells (high priced embryologic real estate...)

>

> Stressors to motor or cognitive processes include (there are more):

>

> Water

> Sodium

> Temperature

> Heavy metals

> Pathogens (bugs)

>

> Also, light is very toxic to roots and certain type of internal cells in
> vascular plants.

>

> So can plants get Alzheimer-like protein aggregation diseases that slowly
> disrupt cognitive function to the point of death?

> Can they get movement disorders like Parkinson where they lack a
> particular chemical or wasting diseases like ALS where their locomotor
> capacity is slowly diminished.

>

> Yes, they do. And many more diseases too.

>

> In the case of acidified soil, aluminum (normally not particularly
> bothersome unless in super high concentration) acts as a stressor in a very
> similar way to what we see in Alzheimer pathology. Using metabolic pathways,
> root absorption of other elements, or even transfer of nutrients from root
> symbionts, plant cells that are not consumed by the stress can manage, adapt
> or clear the stressor. The pathology in a very specific part of the root
> appears very similar to plaques/tangles, as does the resulting behavior in
> plants.

>

> In humans, there is no viable use for aluminum and toxicity has long been
> known. It is unlikely there is much concern on an environmental basis, but
> maybe. I think there is probably enough silica . silicates in our water to
> balance in out. But on a tiny scale, focused hits of aluminum can be very
> deadly and especially when they are in an acidic environment.

>

> Recently, a common type of drug (PPI / proton pump inhibitor) taken for
> heartburn, acid reflux or peptic ulcers was correlated with Alzheimer (Sample
> from 74,000 people over age 75 from 2004-2011 in Germany). Specifically,

- Some of the aluminum will be uptaken by the

- > But what do plants do, how do they do it and why aren't we doing it?

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> please note

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=A0 please note

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