From: [redacted] <[redacted]>
Sent: Thursday, April 20, 2017 12:02 AM
To: Jeffrey Epstein
Subject: Plants

H= ---

Not sure how to think about the=neurobiology of plants. There is a robust bunch of literature on how plant=cells are stressed, how they respond and how they build biological resilie=ce along the way. Because they are sessile and can't just call their d=c for a prescription, whatever they do has to be relatively simple and par= of a very basic process that either displaces, overcomes, outdoes or modi=ies a stressor to make it manageable.

Plants don't have nerves per se but they have cells that behave in a =imilar way for similar purposes as our nerves. Plants do use what we call =eurotransmitters .... catecholamines like dopamine and norepi- they have t=ns of acetylcholine and the same degradation pathways, and even the same g=utamate pathways and receptors humans do. And, more.

Classes of movements are common to almost all plants, just=as with humans. Darwin described them pretty well. Breakdown in these move=ent systems can look similar in humans - we just have more types of motion=to deal with than plants ... like when we get dopamine deficient in Parkin=on or atrophied alpha motor neurons in ALS. They have similar problems in =heir motor systems, and usually they overcome them if they can adapt to or=beat the stressor.

Plants also have =emory (used mostly for growth and reproduction) and some think different t=pes of cognition too. While glutamate is a big player in that process, it =sn't the only one. Some of the chemicals have also evolved to serve si=ilar functions, including a lot of similarity in core function between chl=rophyll and melanin. Chlorophyll serves to capture light and create energy= the core function require to sustain a sessile plant. Melanin becomes dop=mine, which allows humans to move and somehow plays other more important r=les that we don't yet understand as the melanocytes are derived from n=ural crest cells (high priced embryologic real estate...)

Stressors to motor or cognitive processes include(th=re are more):

Water
Sodium
Temperature
Heavy metals
Pathogens (bugs)

Also, light is v=ry toxic to roots and certain type of internal cells in vascular plants.</=pan>

So c=n plants get Alzheimer-like protein aggregation diseases that slowly disru=t cognitive function to the point of death?
Can they get disordered movement dis=rders like Parkinson where they lack a particular chemical or wasting dise=ses like ALS where their locomotion capacity is slowly diminished.<=div> =span style="font-family:arial,sans-serif;font-size:12.8px">
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<=pan style="font-family:arial,sans-serif;font-size:12.8px">Yes, they do. =nd many more diseases too.

In the case of acidified soil, aluminum (normally no= particularly bothersome unless in super high concentration) acts as a str=ssor in a very similar way to what we see in alzheimer pathology. Using me=abolic pathways, root absorption of other elements, or even transfer of nu=rients from root symbionts, plant cells that are not consumed by the stres= 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 resu=ting behavior in plants.

In humans, there is no viable use for aluminum and toxic=ty has long been known. It is unlikely there is much concern on an environ=ental basis, but maybe. I think there is probably enough silica . silicate= in our water to balance in out. But on a tiny scale, focused hits of alum=num can be very deadly and especially when they are in an acidic environme=t. Rec=ntly, a common type of drug (PPI / proton pump inhibitor) taken for heartb=rn, acid reflux or peptic ulcers was correlated w Alzheimer (Sample from 7=,000 people over age 75 from 2004-2011 in Germany). Specifically, patients=on PPI are thought to have a 44% increased risk of dementia. But in my vie= the mechanism doesn't quite make sense - what does make sense is that=patients with heartburn reflux or ulcers also take antacids. And the most =ommon ingredient in antacids is aluminum. Not just regular aluminum but st=aight to the most acidified part of the human body, so that the aluminum b=comes quite reactive. Some of the aluminum will be uptaken by the bidirect=onal parasympathetics (vagal) and transported into the nervous system, but=some of the aluminum will also pass through the gut and upset both the mic=obiome and the gut (enteric) nervous system as well. It doesn't take m=ch and it doesn't even have to stay for very long, but if you are taki=g aluminum (or other active heavy metal) almost every day for many years, =ou will pay the price - even if your body can find a way to remove it pret=y quickly. Meanwhile the inflammation in the cells will continue.</=iv> <=pan style="font-family:arial,sans-serif;font-size:12.8px">

I do think ther= is a similar situation happening in the enteric nervous system that is th= trigger for Parkinsons - which is why there are gastric, integumentary an= gut symptoms very early and persistently throughout. My suspicion is that=it affects either the microbiome and/or eventually the dopmainergic neuron= of the gut. Over time, this will migrate up the vagus or along some melan=n/dopaminergic pathway to make trouble. Whatever pathway that allowed the =elanin to migrate to the brain the first place is allowing the stressor to=follow, probably bound to some form of co-variable. MOre later on ALS.

But what d= plants do, how do they do it and why aren't we doing it?
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<=iv class="gmail_default" style="font-family:verdana,sans-serif">I've collected =early 100 papers in the literature. We will have to connect all of the dot= because none of the plant scientists are thinking about human science, an= vice versa. Perhaps the most elegant experiments were done by Darwin hims=lf.
<=r>
To=ight I am curating the papers and putting them into a google drive that yo= can click on anytime.

I will try to make a file where you can upload documents t= and send instructions in just a bit.

This is too elegant and simple but my guess=is that it will get crushed by pharma and traditional science. Plus everyo=e who wants to class action lawsuit all of the antacid companies.</=iv> <=pan style="font-family:arial,sans-serif;font-size:12.8px">

More in a bit.<=span>

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