

## MONDAY, July 24 - California Ballroom

*Start Time End Time Subject Session Chair/Speaker*

Talk by [@jo\\_microbe](#) on "Convergence of Model Systems and the Natural World" at #JGIPlantSecondary meeting

48 Items

Speaker: Jo Handelsman, Wisconsin Institute for Discovery,  
"Convergence of model systems and the natural world"

**2017 JGI Microbial and Plant Systems  
Modulated by  
Secondary Metabolites Meeting Conference**

July 24-26, 2017 -- Walnut Creek Marriott, Walnut Creek, CA  
*All functions will be held at the Walnut Creek Marriott unless otherwise noted.*

**MONDAY, July 24 - California Ballroom**  
*Start Time End Time Subject Session Chair/Speaker*

4:00 PM	5:00 PM	<b><u>Opening Keynote Presentation</u></b> Speaker: Jo Handelsman, Wisconsin Institute for Discovery, "Convergence of model systems and the natural world"
5:00 PM	6:00 PM	<b><u>Rapid Fire Talks</u></b> Poster session attendees
6:00 PM	9:00 PM	<b><u>Opening Reception and Poster Session</u></b> Host: Yasuo Yoshikuni



**Jonathan Eisen**   
[@phylogenomics](#)



Have arrived at [@doe\\_jgi](#) plant secondary metabolites meeting b/c just can't miss talk by the amazing [@jo\\_microbe](#)

♡ 9 10:32 PM - Jul 24, 2017

[See Jonathan Eisen's other Tweets](#)

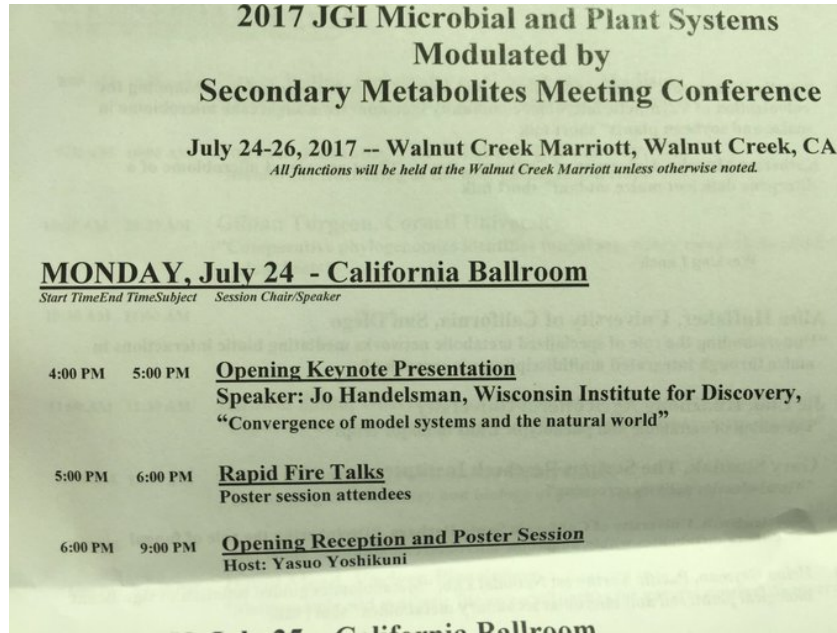




**Jonathan Eisen** ✓ @phylogenomics · Jul 24, 2017



Have arrived at @doe\_jgi plant secondary metabolites meeting b/c just can't miss talk by the amazing @jo\_microbe



**Jonathan Eisen** ✓ @phylogenomics

I note, not only is @jo\_microbe an amazing scientist, she is also a role model in terms of #STEMDiversity issues eg [stemwomen.net/jonathan-eisen/](http://stemwomen.net/jonathan-eisen/) [pic.twitter.com/T2kbGF7dmY](https://pic.twitter.com/T2kbGF7dmY)

♡ 19 10:35 PM - Jul 24, 2017



Jonathan brings up one simple but obvious example, when planning a conference or some other meeting, organisers should **think about childcare**. A few years ago, Jonathan went for a break during an UCLA conference. Once outside, he noticed a woman playing with a one year old child. Curious, Jonathan asked her if she was taking a break from listening to conference talks. She said she was there as a hired nanny for a graduate student who was speaking at the conference. It turns out that the City of Wisconsin had a **program to pay for childcare for graduate students** who wanted to participate in academic conferences. It's the simple logistics of how to attract women speakers that Jonathan is now focusing on. Jonathan uses the advocacy work of molecular biologist, Professor [Jo Handelsman](#), as a model. Handelsman studies [gender](#) and [diversity](#) biases in science. She was awarded the [David C. White Research and Mentoring Award in 2011](#) in recognition for her "unprecedented" work as a role model and mentor. Jonathan says of Handelsma's work:



Professor Jo Handelsman, PhD Molecular Biology & STEM woman role model. (Image via [DavidCWhite.org](http://DavidCWhite.org))

“  
 She is one of my inspirations and role models... I was blown away by her vision. That it's not sufficient to just invite people to a meeting. You have to think about why they may not want to be there, or why they may not be able to come.

[See Jonathan Eisen's other Tweets](#)





**Javier Izquierdo**  
@IzquierdoLab



The 2017 @doe\_jgi Microbial and Plant Systems Modulated by Secondary Metabolites Conference is about to begin w/ none other than @Jo\_Microbe

♡ 8 11:04 PM - Jul 24, 2017 · Walnut Creek, CA

[See Javier Izquierdo's other Tweets](#)



**Jonathan Eisen** ✓  
@phylogenomics



Now up at #JGIPlantSecondary @Jo\_Microbe giving the keynote talk - convergence of model systems and the natural world

♡ 4 11:06 PM - Jul 24, 2017



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**Jonathan Eisen** ✓  
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: plant microbiome studies poised to lead new synthesis to understand contributors to community function

♡ 1 11:07 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): outlining some of ways that plant microbiome interactions can lead to new synthesis in community studies

♡ 11:09 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): one reason to focus on plant microbiome - cheaper, easier, bigger scale that most animal microbiome work

♡ 3 11:10 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): plant microbiome work has led the way in many discoveries of host-microbiome interactions

♡ 11:11 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): plant studies led way in many discoveries incl. germ theory of disease (e.g., Debary on Phytophthora)

♡ 6 11:11 PM - Jul 24, 2017



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**Susannah Tringe**  
@sgtringe



[@Jo\\_Microbe](#): we need a model system for plant microbiome [#JGIPlantSecondary](#)

♡ 11:12 PM - Jul 24, 2017 · Walnut Creek, CA



 [See Susannah Tringe's other Tweets](#)





**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) @jo\_microbe: pioneered in plants: virus discovery, cell culture, promoter trapping, and more

♡ 1 11:12 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) @jo\_microbe: groundbreaking work on host-microbe interactions on rhizobium, myccorhizal, rhizosphere, phyllosphere, etc

♡ 11:15 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) @jo\_microbe: power of 20th century biology largely came from model systems but required reducing variation in systems

♡ 1 11:18 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) @jo\_microbe: model systems allowed manipulation (eg. genetics, biochem, isolated molecules) to isolate variables

♡ 1 11:20 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) @jo\_microbe: what needed in model microbiome? simple but multi species, surrogate for host plant, scalable, genetics

♡ 11:22 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): what needed in model microbiome? small molecule driven, competitive & cooperative interactions,

♡ 2 11:23 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): what needed in model microbiome? community interactions relevant to natural system

♡ 1 11:25 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): discussing a candidate model plant microbiome system based on her past 25 years of research

♡ 1 11:25 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): student in her lab isolated strain of *B. cereus* from alfalfa root, suppresses plant disease in lab/field

♡ 11:26 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): led to isolation of Zwittermicin - new class of antibiotic antagonistic to oomycete plant pathogens

♡ 2 11:27 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): assumed that Zwittermicin was ALL that was needed for disease suppression but now thinks that is unlikely

♥ 11:28 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): why B.cereus UW85 - rapid growth, 2ary metabolites, interacts w/ plants/microbes, ubiquitous & abundant

♥ 11:30 PM - Jul 24, 2017



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**Sophien Kamoun**  
@KamounLab



[#JGIPlantSecondary](#) [@jo\\_microbe](#) Zwittermicin A  
[en.wikipedia.org/wiki/Zwittermi...](https://en.wikipedia.org/wiki/Zwittermicin)

♥ 1 11:31 PM - Jul 24, 2017



 [See Sophien Kamoun's other Tweets](#)



**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): discussing work of then PhD student Greg Gilbert who suggested she was being too reductionistic

♥ 11:32 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At [#JGIPlantSecondary](#) [@jo\\_microbe](#): Gilbert did field study of impact of Bc UW85 on root microbial communities (via culturing, physiology)

♥ 1 11:33 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: Gilbert did multivariate analysis on isolates & traits & found diffs. betw. soil, tx roots, untx roots

♡ 11:37 PM - Jul 24, 2017



 See Jonathan Eisen's other Tweets



Letter to the Editor



## Root Camouflage and Disease Control

Gregory S. Gilbert, Jo Handelsman, and Jennifer L. Parke

Department of Plant Pathology, University of Wisconsin-Madison.  
Current address of first author: Smithsonian Tropical Research Institute, P.O. Box 2072, Balboa, Panama.  
We thank E. King, R. Goodman, and two anonymous reviewers for helpful comments on the manuscript and L. Halverson for providing the *Bacillus cereus* strains.  
Accepted for publication 11 November 1993.



**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: this work led Gilbert to "camouflage hypothesis"  
[admin.apsnet.org/publications/p...](http://admin.apsnet.org/publications/p...)

♡ 3 11:39 PM - Jul 24, 2017

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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: when isolate Bcereus from field frequently came w/ coisolates "hitchhikers" (& not just bad microbiology)

♡ 11:42 PM - Jul 24, 2017



 See Jonathan Eisen's other Tweets







**Jonathan Eisen**  @phylogenomics · Jul 24, 2017



At #JGIPlantSecondary @jo\_microbe: this work led Gilbert to "camouflage hypothesis"  
[admin.apsnet.org/publications/p...](http://admin.apsnet.org/publications/p...)

Letter to the Editor

### Root Camouflage and Disease Control

Gregory S. Gilbert, Jo Handelsman, and Jennifer L. Parke

Department of Plant Pathology, University of Wisconsin-Madison.

Current address of first author: Smithsonian Tropical Research Institute, P.O. Box 2072, Balboa, Panama.

We thank E. King, R. Goodman, and two anonymous reviewers for helpful comments on the manuscript and L. Halverson for providing the *Bacillus cereus* strains.

Accepted for publication 11 November 1993.



**David Weston**

@David\_J\_Weston

Thanks for the #JGIPlantSecondary updates

♥ 11:42 PM - Jul 24, 2017



 [See David Weston's other Tweets](#)



**Jonathan Eisen** 

@phylogenomics



At #JGIPlantSecondary @jo\_microbe: keep seeing co-isolates showing up with *B. cereus* - & these would show up later after initial colonies

♥ 11:43 PM - Jul 24, 2017



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**Jonathan Eisen** 

@phylogenomics



At #JGIPlantSecondary @jo\_microbe: co-isolates were dominated by ones from CFB group which was different from regular root isolates

♥ 11:44 PM - Jul 24, 2017



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**Jonathan Eisen** 

@phylogenomics



At #JGIPlantSecondary @jo\_microbe: *B. cereus* enables Flavobacteria to grow on root exudate (suggested advantage to co-existence w/ *B. cereus*)

♥ 11:46 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: key to growth stimulation of Flavobacteria by Bcereus was peptidoglycan

♡ 1 11:47 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: started screening other hitchhikers for interactions & found some competitive interactions too

♡ 11:51 PM - Jul 24, 2017



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**Jonathan Eisen**  @phylogenomics · Jul 24, 2017



At #JGIPlantSecondary @jo\_microbe: co-isolates were dominated by ones from CFB group which was different from regular root isolates



**Mark O. Martin**  
@markowenmartin

Peptidoglycan surfers! I ADORE this story...

♡ 3 11:52 PM - Jul 24, 2017



 [See Mark O. Martin's other Tweets](#)



**Jonathan Eisen**  @phylogenomics · Jul 24, 2017



At #JGIPlantSecondary @jo\_microbe: co-isolates were dominated by ones from CFB group which was different from regular root isolates



**Mark O. Martin**  
@markowenmartin

And this is why predation can happen!

♡ 11:53 PM - Jul 24, 2017



 [See Mark O. Martin's other Tweets](#)





**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: then did genetic studies of Pseudomonas to look for mutations that led to lack of inhibition of CFB

♡ 11:54 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: structurally the "koreenceine" they found were structurally similar to compounds from hemlock

♡ 2 11:55 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: colonies of B cereus have "tendrils wandering" influenced differentially by various hitchhikers

♡ 11:57 PM - Jul 24, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: proposing this exudate -Bcereus - Pseudomonas - Flavobacterium interactions as model system

♡ 12:01 AM - Jul 25, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: system fits all the criteria she outlined earlier as required for model plant microbiome system

♡ 1 12:03 AM - Jul 25, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: can now get at key  
??s such as "what genes mediate community  
establishment, maintenance, invasion?"

♡ 12:03 AM - Jul 25, 2017



 [See Jonathan Eisen's other Tweets](#)



**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: another ?? "what  
are the roles of 2ary metabolites in community  
processes"

♡ 5 12:04 AM - Jul 25, 2017



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**Jonathan Eisen**   
@phylogenomics



At #JGIPlantSecondary @jo\_microbe: Another ?? "Is root  
camouflage a mechanism of plant disease resistance"

♡ 1 12:04 AM - Jul 25, 2017



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**Jonathan Eisen**  @phylogenomics · Jul 25, 2017



At #JGIPlantSecondary @jo\_microbe: another ?? "what are  
the roles of 2ary metabolites in community processes"



**Aethusa cynapium**  
@Iteration23

Probably mostly coopted. But some (eg allelopathic  
metabolites) may be primarily evolved according to this  
purpose.

♡ 12:14 AM - Jul 25, 2017



 [See Aethusa cynapium's other Tweets](#)





**Jonathan Eisen** ✓ @phylogenomics · Jul 25, 2017



At #JGIPlantSecondary @jo\_microbe: another ?? "what are the roles of 2ary metabolites in community processes"



**Aethusa cynapium**

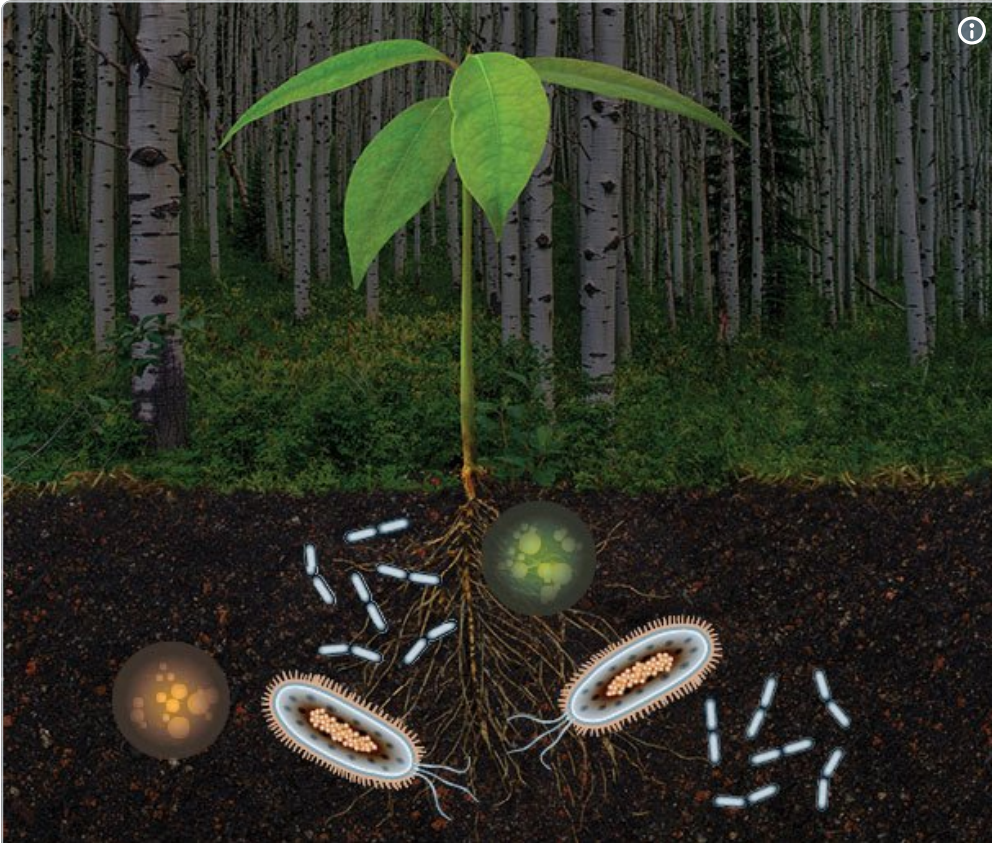
@literation23

In Apiaceae, 2ary metabol oils may be mostly germination inhibitors/delayers; in Lamiaceae, maybe mostly adult-plant defense.

♡ 1 12:18 AM - Jul 25, 2017



[See Aethusa cynapium's other Tweets](#)



**Jo Handelsman**

@jo44atWID



At @JGI Microbial & Plant Sec. Metabolites mtg. Introduced "microbial hitchhikers", coined by Mark Martin. Thx, Mark! @Jo\_Microbe

♡ 19 4:32 PM - Jul 25, 2017

[See Jo Handelsman's other Tweets](#)



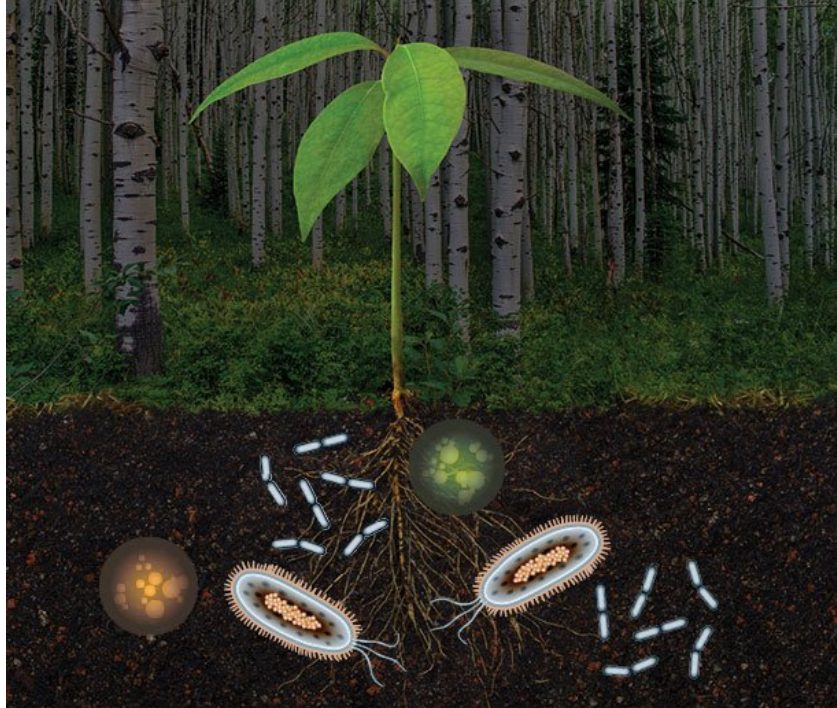




**Jo Handelsman** @jo44atWID · Jul 25, 2017



At @JGI Microbial & Plant Sec. Metabolites mtg. Introduced “microbial hitchhikers”, coined by Mark Martin. Thx, Mark!  
[@Jo\\_Microbe](#)



**Mark O. Martin**  
@markowenmartin

Kind of you, Jo. I still say "Peptidoglycan Surfers" sounds like a punk rock group. Plus, I suspect this is how predation evolves!

♡ 1 4:33 PM - Jul 25, 2017



[See Mark O. Martin's other Tweets](#)

