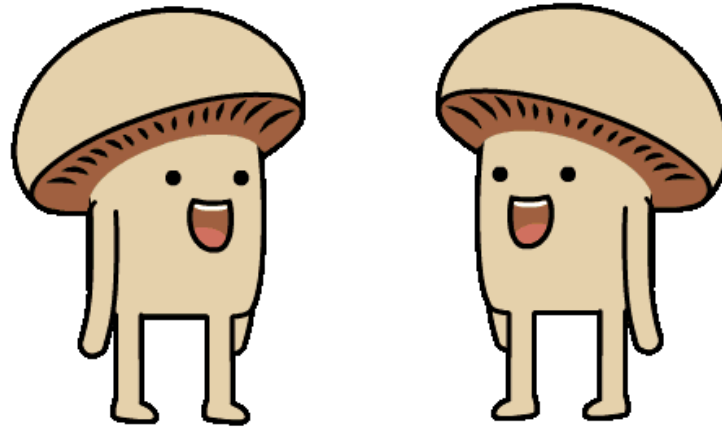
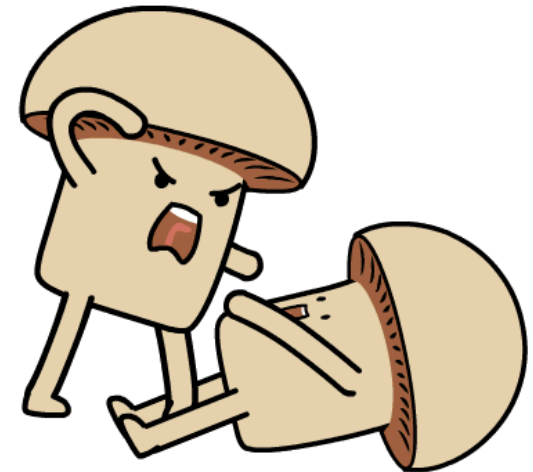


# Why fungi are the best friends\* you never knew you had



**\*and worst enemies**



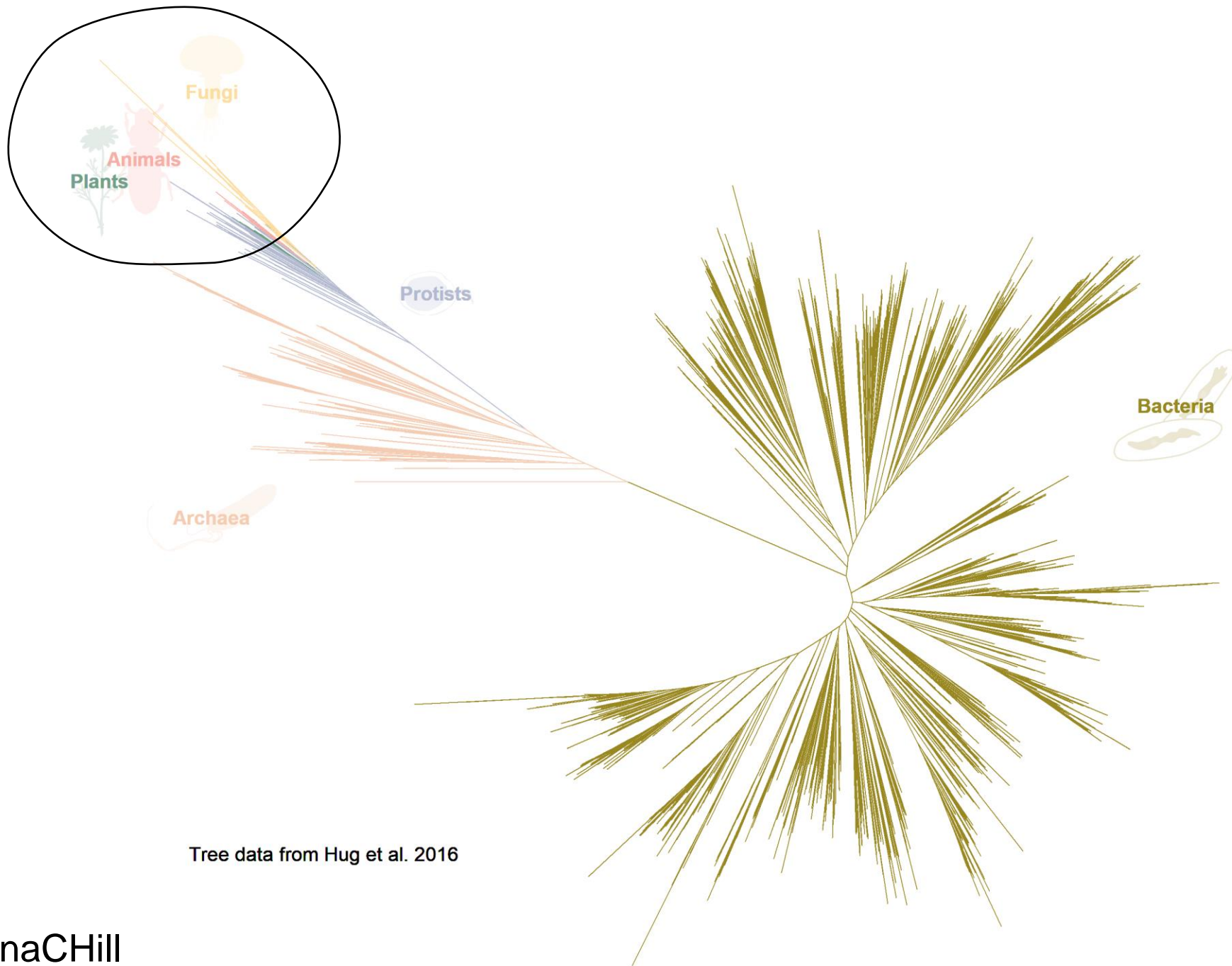
Royal Botanic Gardens  
**Kew**

Queen Mary  
University of London



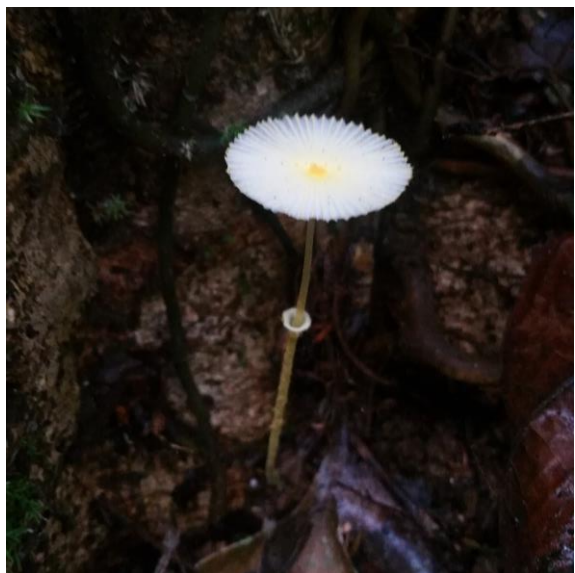
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# What are fungi?



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# They're so diverse

Total **described** diversity

■ = 100,000 species



Total **estimated** diversity



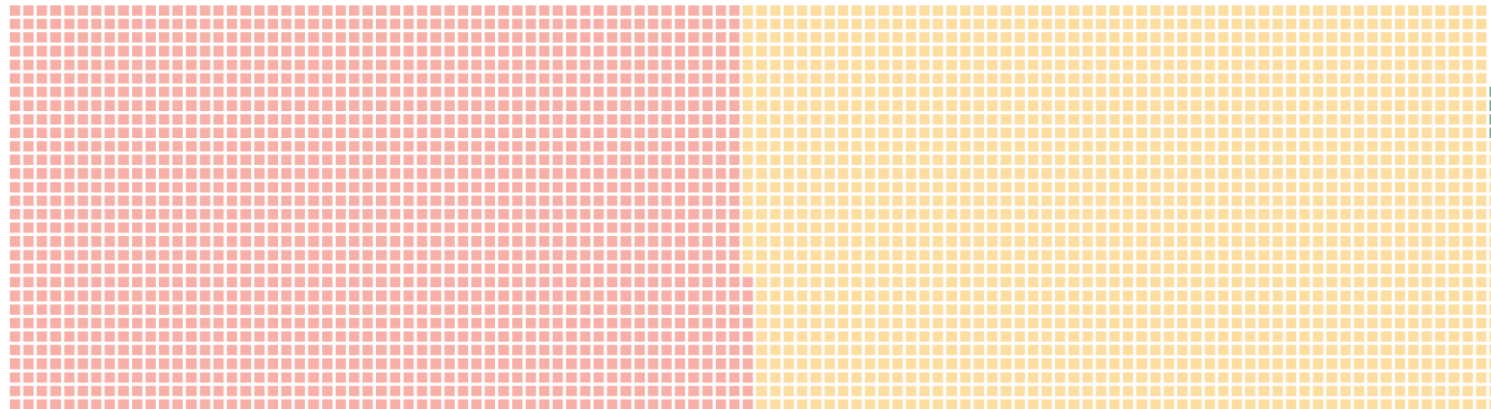
# They're so diverse

Total **described** diversity

■ = 100,000 species



Total **estimated** diversity



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Estimates from Larson et al. 2017

# They're indispensable to us

Soy sauce and miso      Alcohol      Dairy

Edible fungi      **Food**

Breadmaking      Meat substitutes

Statins      **Medicine**

Psychedelics      Immunosuppressants

Antibiotics

Biofuels      Leather and cotton processing

**Manufacturing and industry**

Paper manufacturing      Plastics and biomaterials

Washing detergents

Bioremediation

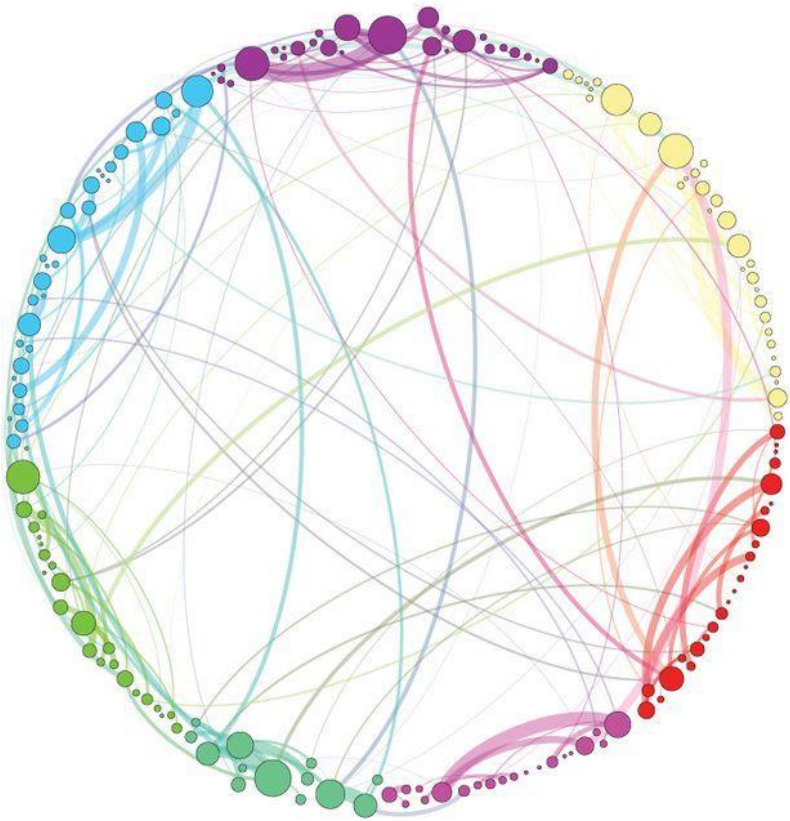
**Environmental management**

Agricultural biocontrol

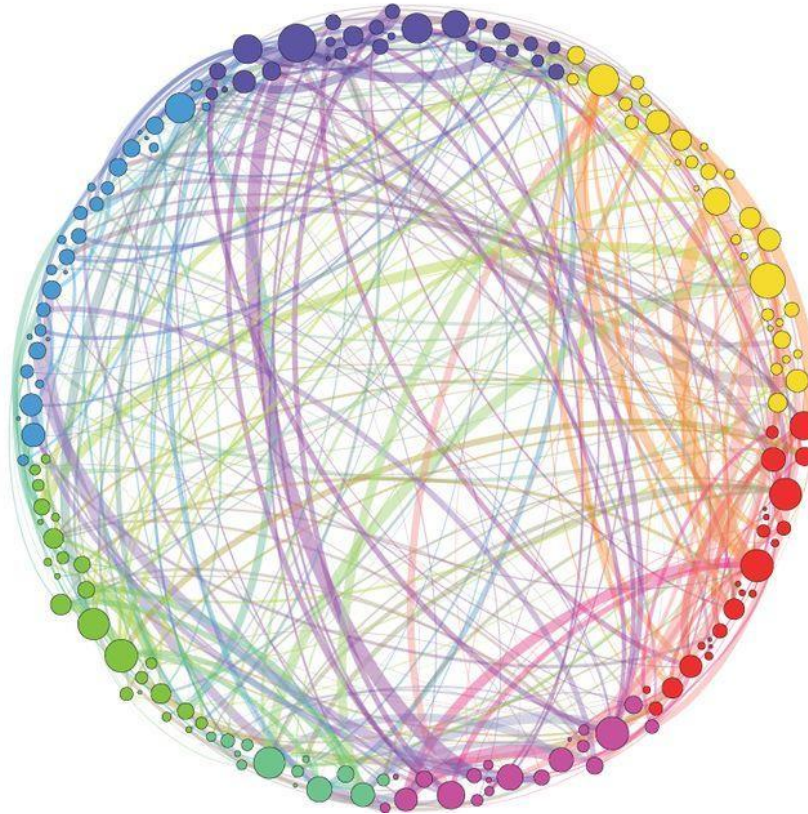
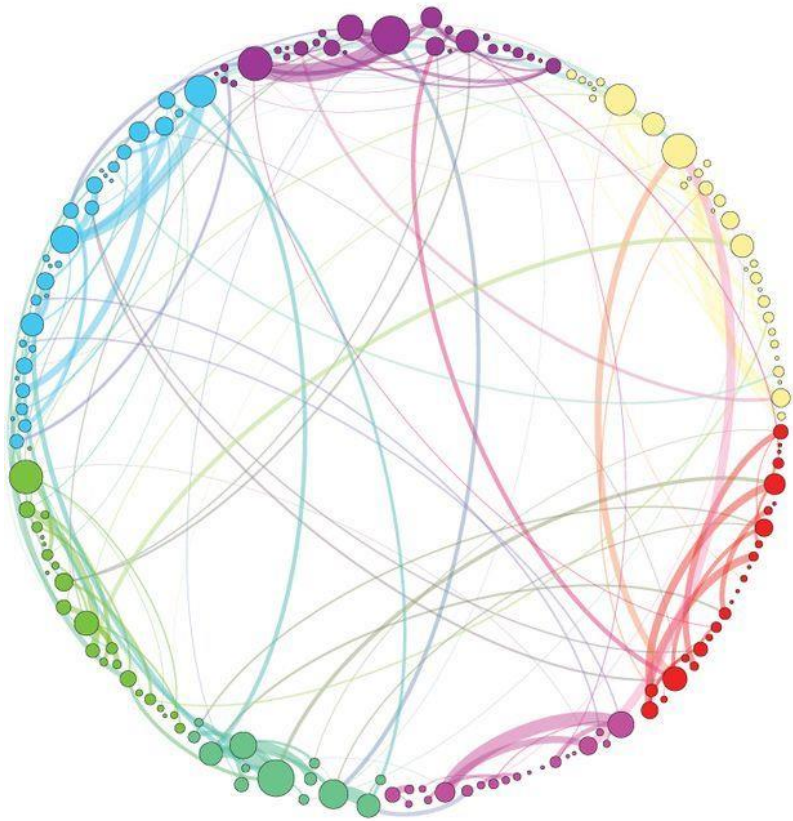




[Petri et al. 2014](#)

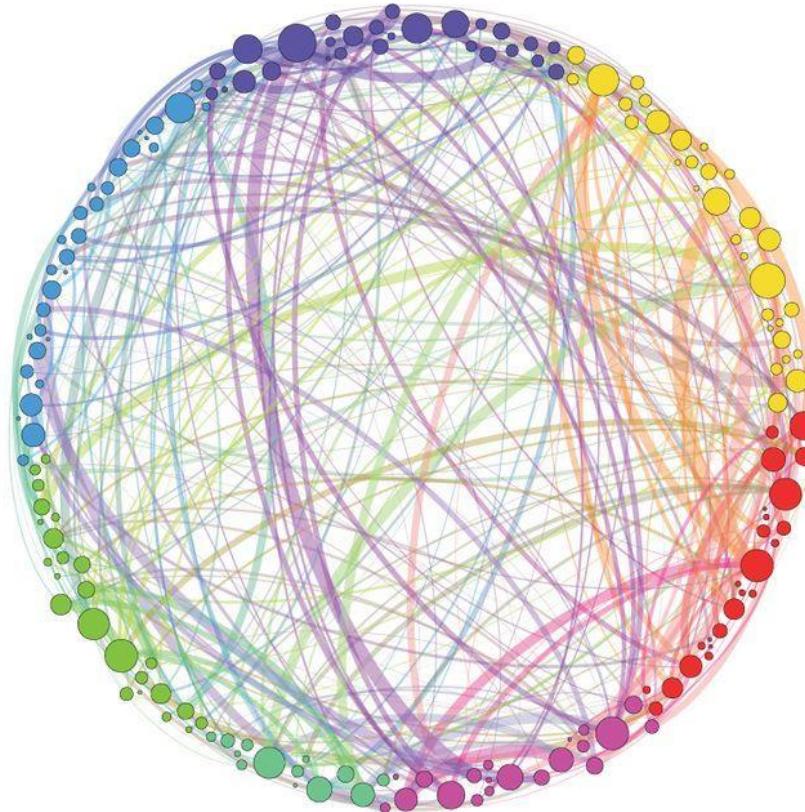
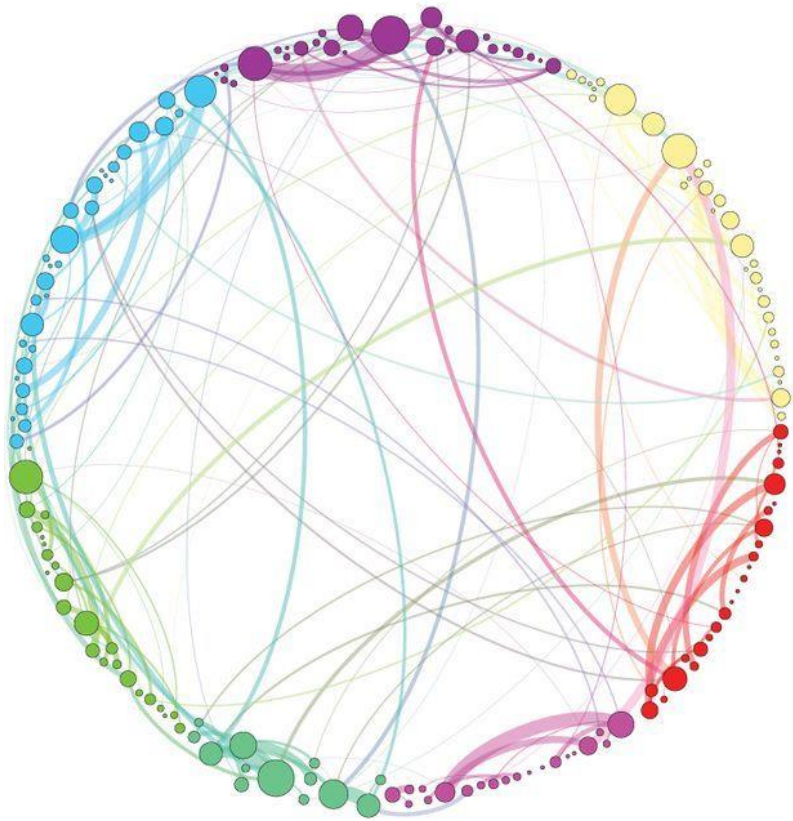


[Petri et al. 2014](#)





[Petri et al. 2014](#)



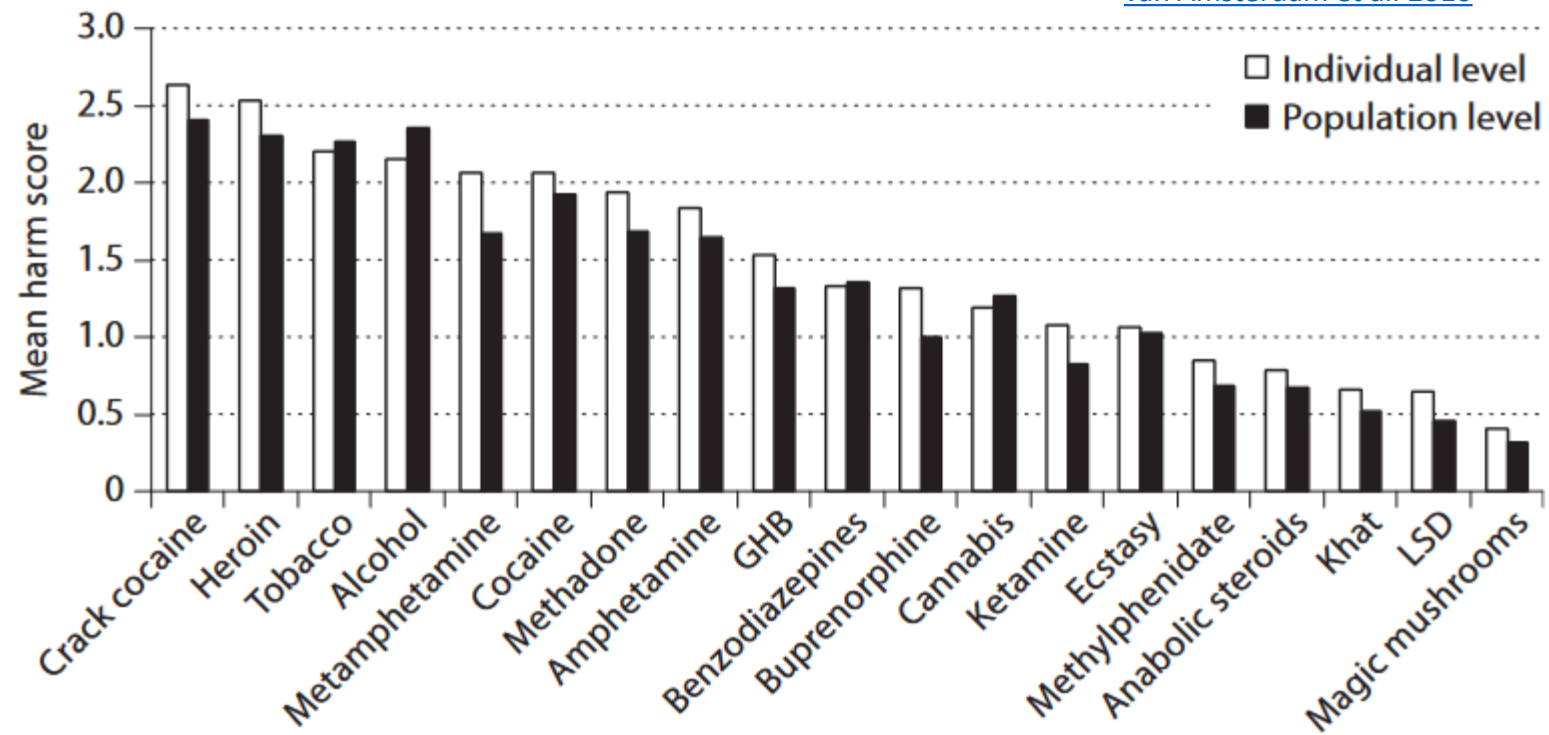
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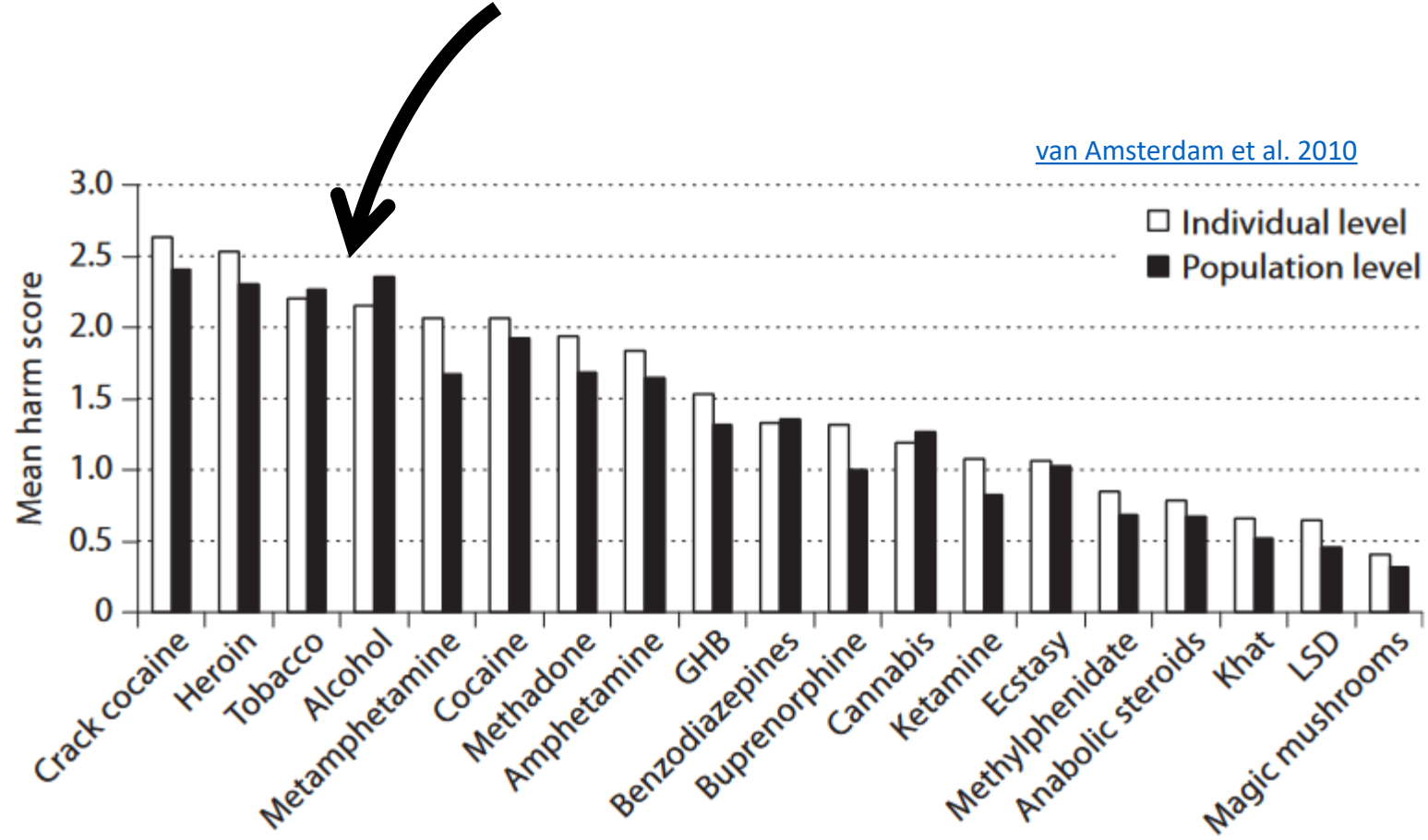
THE CENTRE FOR  
PSYCHEDELIC RESEARCH

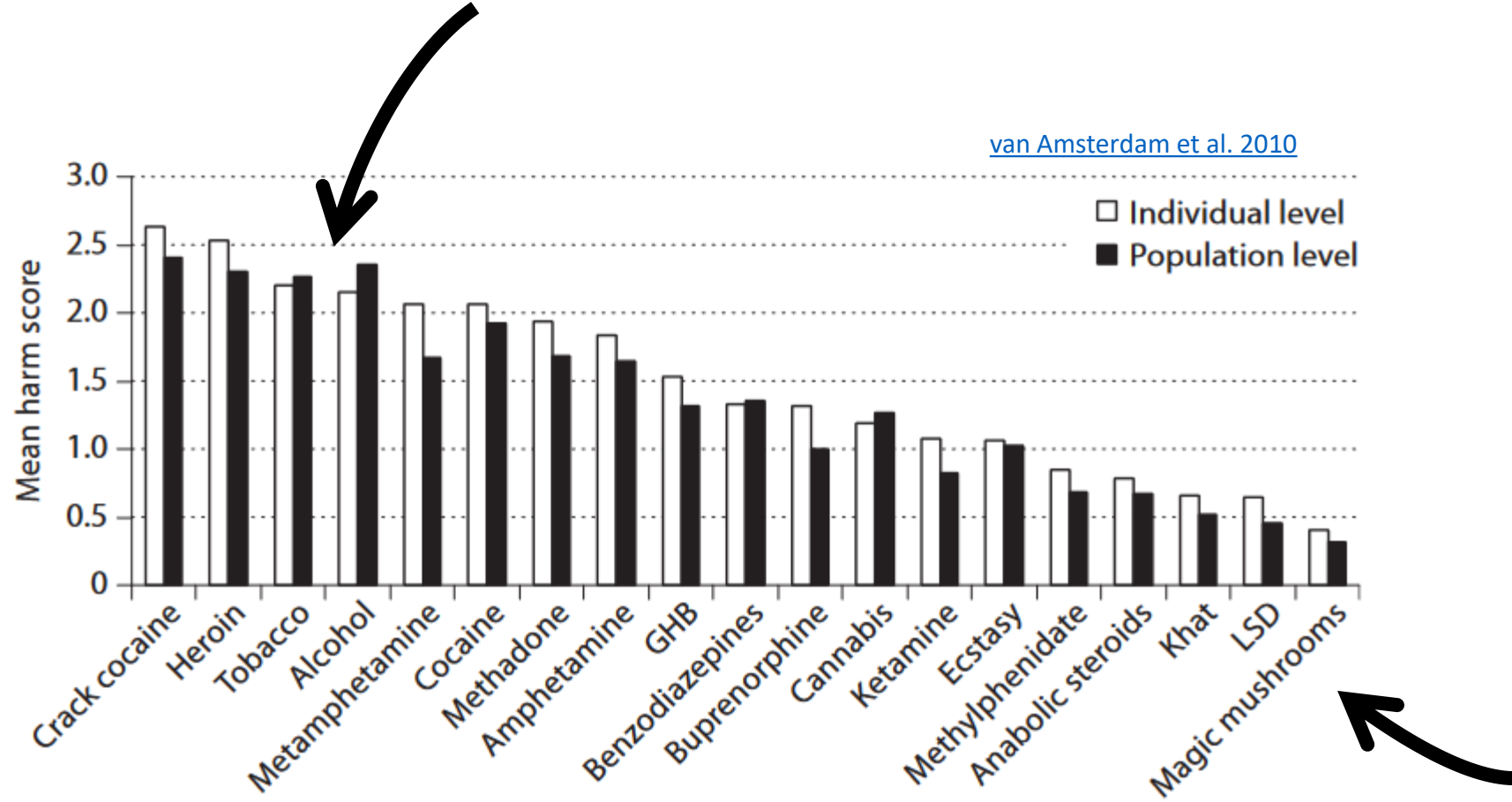
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[van Amsterdam et al. 2010](#)









**They're everywhere and interact with everything**

**Plants**

**Water**

**Animals**

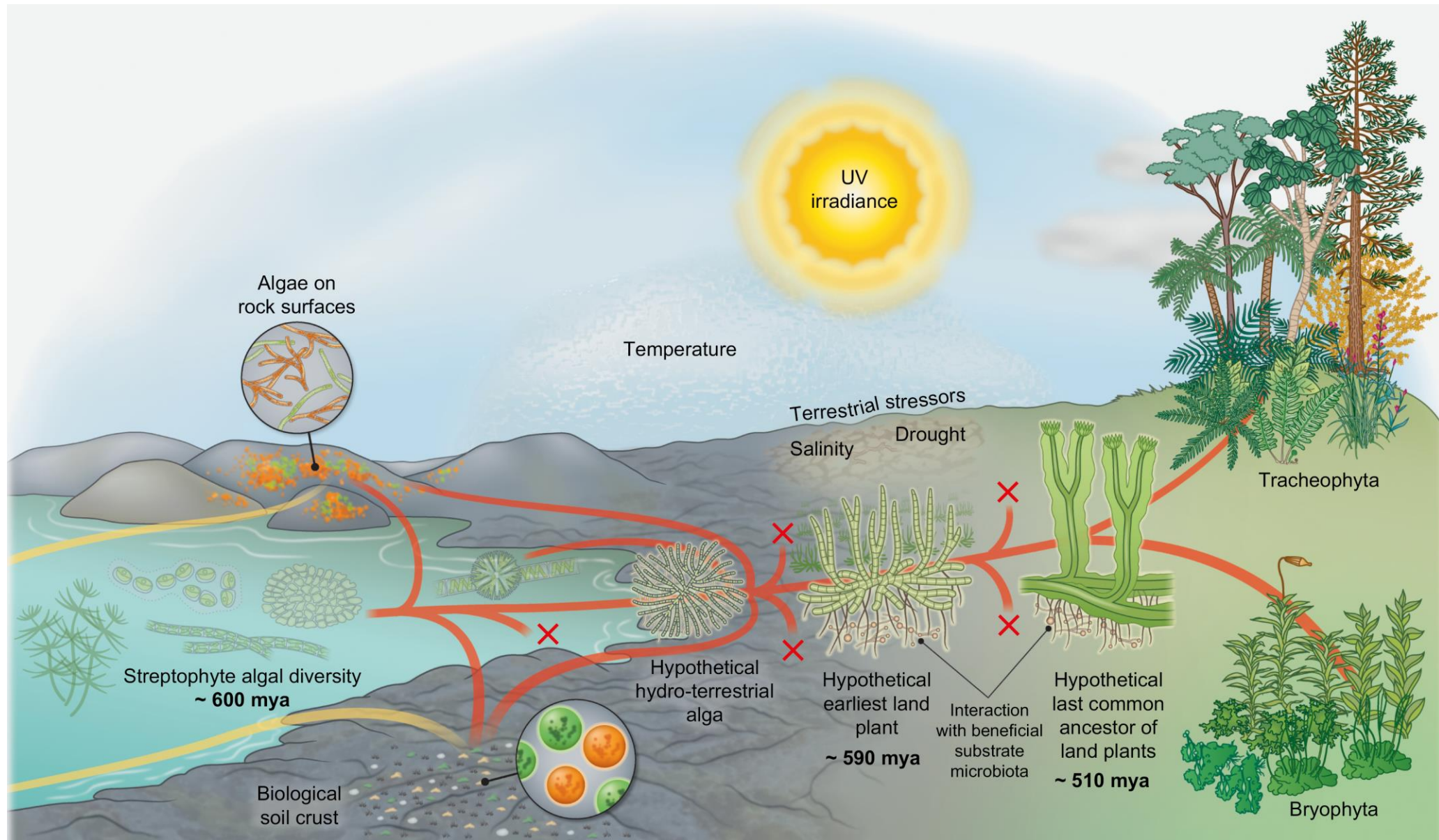
**Permafrost**

**Soil**

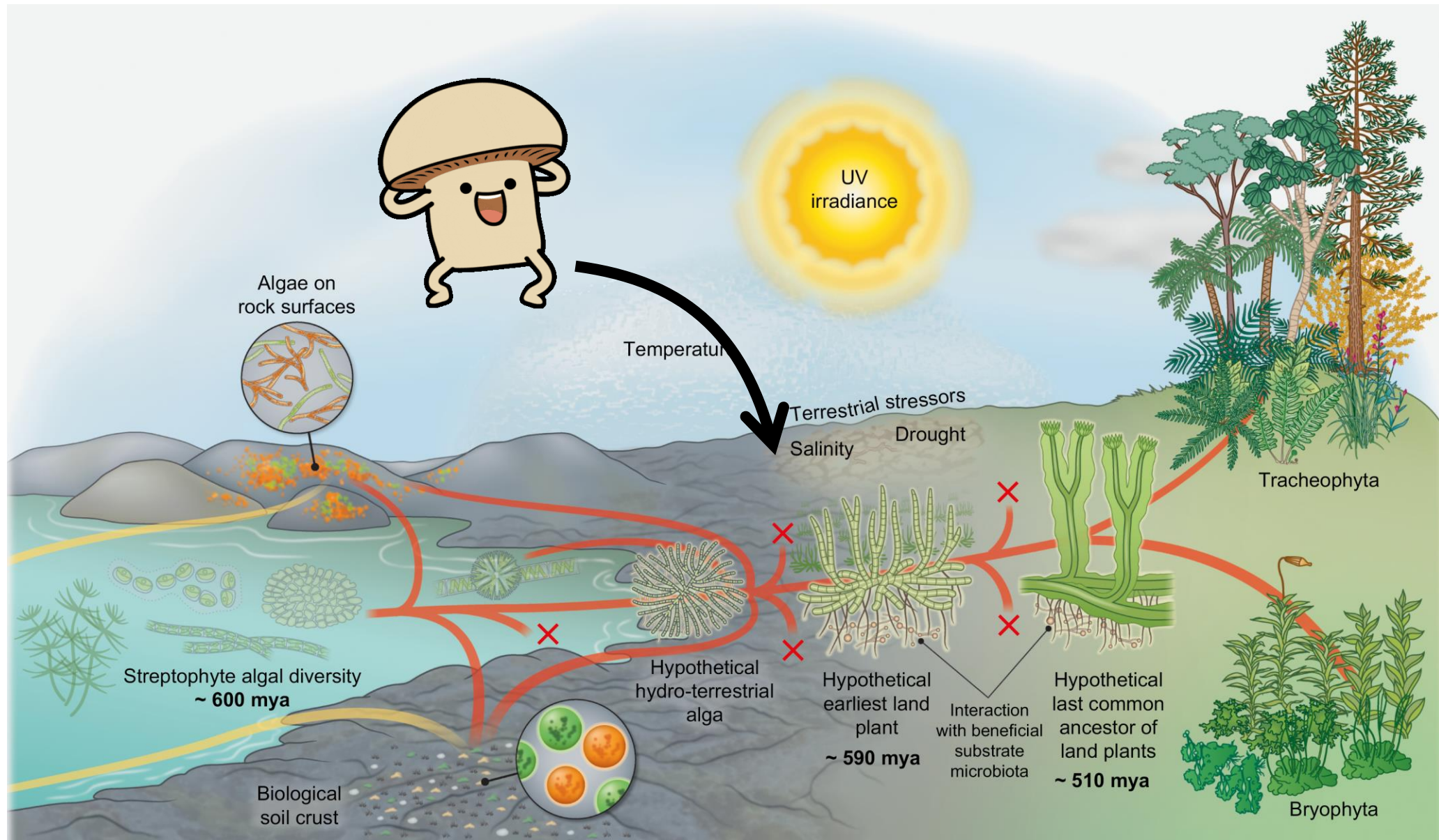
**Rocks**

**Air**





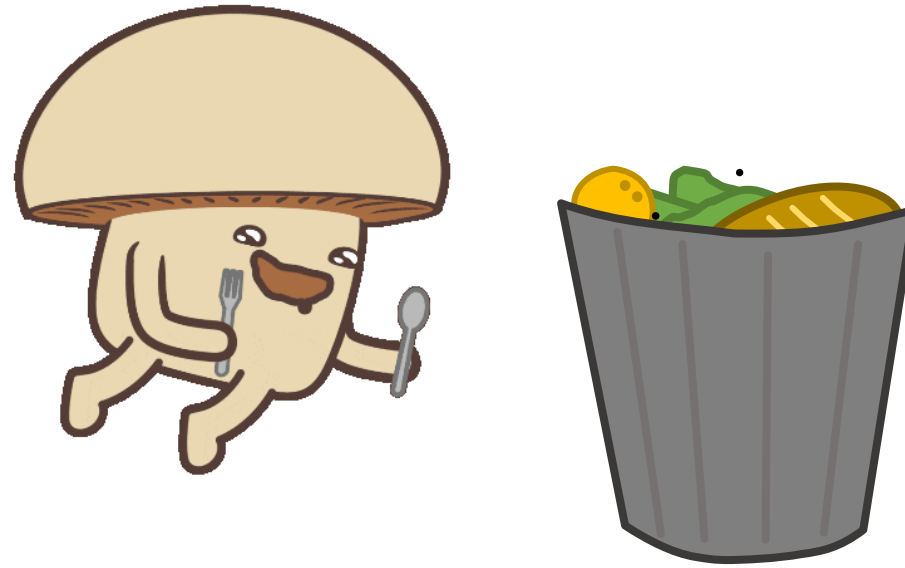




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[Füerst-Jansen et al. \(2020\)](#)





[Clemmensen et al. \(2013\)](#)

“...most of the stored carbon in boreal forested islands in Sweden is in fact derived from mycorrhizal mycelium rather than from plant litter.”



# If we want to talk about a battle...



[Fisher et al. \(2012\)](#)



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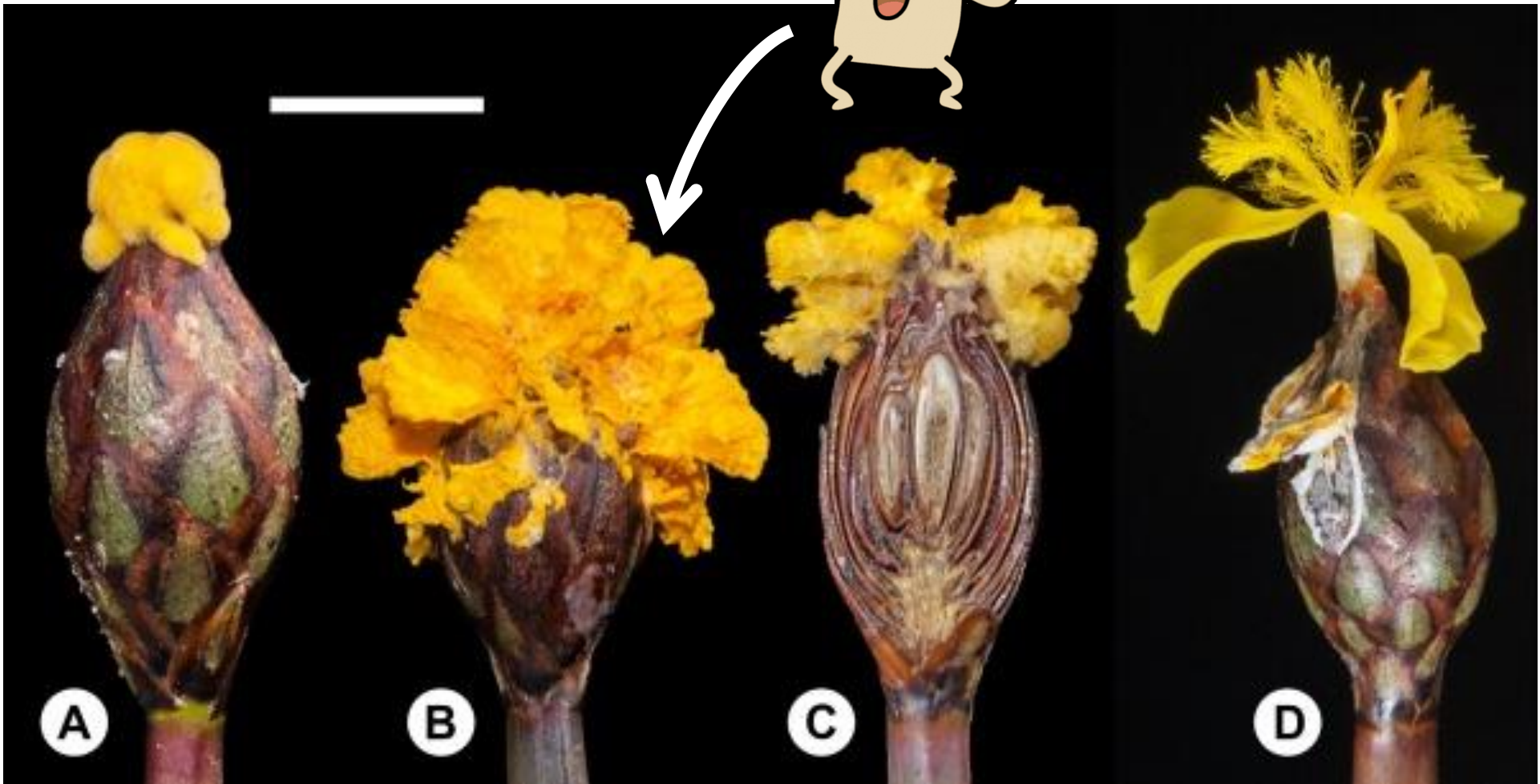
[Laraba et al. \(2020\)](#)



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[Laraba et al. \(2020\)](#)



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***In the Wake of India's Covid Crisis, a  
'Black Fungus' Epidemic Follows***





***In the Wake of India's Covid Crisis, a  
'Black Fungus' Epidemic Follows***

***'White fungus': Drug-resistant fungal  
infections pose threat to India  
patients***



*In the Wake of India's Covid Crisis, a  
'Black Fungus' Epidemic Follows*

**Covid 'perfect storm' as more patients  
hit by fungal infections**

**'Whi...gus': Drug-resistant fungal  
infections pose threat to India  
patients**



*In the Wake of India's Covid Crisis, a  
'Black Fungus' Epidemic Follows*

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hit by fungal infections**

**'Whi...gus': Drug-resistant fungal  
infections pose threat to India  
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## To summarise:

They are hyperdiverse, weird and cool

They are delicious (willing to disagree on this) and useful (non-negotiable!)

They literally helped plants become plants (and maybe mammals become mammals)

They are the ultimate recyclers

They also kick some serious plant and animal butt (sorry plants and animals)



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 [github.com/Rowena-h/Presentations](https://github.com/Rowena-h/Presentations)

 [@RowenaCHill](https://twitter.com/RowenaCHill)

**Thanks for listening!**

[@mushroommovieee](#) for all the superlative gifs!



[stateoftheworldsfungi.org](https://stateoftheworldsfungi.org)