

Example and template for search strategy/translation and logging exemplars

Credits

An expansion/elaboration on “[generic research log.doc](#)”, which has a more visual version of this template.

Adapted from handout at UMN Evidence Synthesis Institute:

<https://pressbooks.umn.edu/evidencesynthesisinstitute/>

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Most recent updates: January 31, 2025

Review Research question

Example

What is the evidence for trees using mycorrhizae to communicate (signal) with each other?

Yours

Seed/Gold standard articles

Examples

- Simard, S. W. (2018). Mycorrhizal networks facilitate tree communication, learning, and memory. In *Memory and learning in plants* (pp. 191-213). Springer, Cham. https://link.springer.com/chapter/10.1007/978-3-319-75596-0_10
- Barto, E. K., Weidenhamer, J. D., Cipollini, D., & Rillig, M. C. (2012). Fungal superhighways: Do common mycorrhizal networks enhance below ground communication? *Trends in Plant Science*, 17(11), 633–637. <https://doi.org/10.1016/j.tplants.2012.06.007>
- Gorzelak, M. A., Asay, A. K., Pickles, B. J., & Simard, S. W. (2015). Inter-plant communication through mycorrhizal networks mediates complex adaptive behaviour in plant communities. *AoB PLANTS*, 7, plv050. <https://doi.org/10.1093/aobpla/plv050>
- Yao, Y.-X., Lou, Y.-G., Zhang, Z.-Z., Jin, L., Li, C.-L., Su, F.-Y., Pei, X., Wu, Q.-S., & Yang, S.-K. (2016). Common mycelium network of mycorrhizas alters plant biomass and soil properties between trifoliate orange seedlings. *Emirates Journal of Food and Agriculture*, 28(4), 257–263. <https://doi.org/10.9755/ejfa.2015-09-731>

Check first individually to see if they are indexed in each database. Then, check to see how many, if any, of the seed articles show up in your final search strategy for each database.

Yours

Database searches

Search strategy for database 1

Database: Core Collection, Platform: Web of Science

Concepts, keywords and subject headings

Concepts	Your Keywords/Synonyms	Subject Headings / Controlled Vocabulary / Thesaurus Terms
Trees	Tree OR “root cell” OR seedlings OR forest OR inter-plant OR plants OR plantae OR arbuscular Arbuscular OR “forest ecology” OR “woody plant”	Not available in Web of Science
Mycorrhizae	Fungal root OR MN OR CMN OR Rhizosphere OR Microbiome OR microbial community OR mycorrhiza* OR ectomycorrhizal OR network OR microbiota OR endomycorrhizae	Not available in Web of Science
Signals	Interaction OR “underground communication” OR signaling OR interconnect OR linkage OR behavior OR collaboration OR neighbor OR cognition OR intelligence OR endosymbiosis OR communication	Not available in Web of Science

Search Draft (What corrections or additions would you make?)

Date of search: January 31, 2025

Notes: Exact Search On (Use Advanced Search, click “More options”)

Concepts	No.	Search String	Results
Trees	1	TS=(Tree OR “root cell” OR seedlings OR forest OR inter-plant OR plants OR plantae OR arbuscular Arbuscular OR “forest ecology” OR “woody plant”)	1,872,163
Mycorrhizae	2	TS=(“Fungal root*” OR CMN OR Rhizosphere* OR “microbial communit*” OR mycorrhizal OR mycorrhiza OR ectomycorrhiza* OR endomycorrhiza*)	177,518
Signals	3	TS =(Interaction OR “underground communication” OR signaling OR interconnect OR linkage OR behavior OR collaboration OR neighbor OR cognition OR intelligence OR endosymbiosis OR communication)	7,769,909
	4	TS=(signal* OR communicat* OR ((plant* OR tree*) NEAR/2 (interaction* OR network*)))	3,707,294
	5	#3 OR #4	9,460,610
Overall search	4	#1 AND #2 AND #5	12,816

Search strategy for database 2

Database: PubMedCentral, Platform: PubMed

Concepts, keywords and subject headings

Concepts	Keywords	Subject Headings/Controlled Vocabulary
Trees	Tree OR “root cell” OR seedlings OR forest OR inter-plant OR plants OR plantae OR arbuscular Arbuscular OR “forest ecology” OR “woody plant”	"Trees"[Mesh] OR "Forests"[Mesh]
Mycorrhizae	“Fungal root” OR MN OR CMN OR Rhizosphere OR Microbiome OR microbial community OR mycorrhiza* OR ectomycorrhizal OR network OR microbiota OR endomycorrhizae	"Soil Microbiology"[MeSH] OR "Mycorrhizae"[MeSH] OR "Symbiosis"[Mesh] OR "Endophytes"[Mesh]
Signals	Interaction OR “underground communication” OR signaling OR interconnect OR linkage OR behavior OR collaboration OR neighbor OR cognition OR intelligence OR endosymbiosis OR communication	"Cell Communication"[Mesh]

Search Draft (What corrections or additions would you make?)

Date of search: January 31, 2025

Concept	No.	Search String	Results
Trees	1	"Trees"[Mesh] OR "Forests"[Mesh]	46,503
	2	("Tree"[Title/Abstract] OR "root cell"[Title/Abstract] OR "seedlings"[Title/Abstract] OR "forest"[Title/Abstract] OR "inter-plant"[Title/Abstract] OR "plants"[Title/Abstract] OR "plantae"[Title/Abstract] OR ("Arbuscular"[All Fields] AND "Arbuscular"[Title/Abstract]) OR "forest ecology"[Title/Abstract] OR "woody plant"[Title/Abstract])	640,051
	3	#1 OR #2	651,271
Mycorrhizae	4	"Soil Microbiology"[MeSH] OR "Mycorrhizae"[MeSH] OR "Symbiosis"[Mesh] OR "Endophytes"[Mesh]	78,616
	5	"Fungal root"[Title/Abstract] OR MN[Title/Abstract] OR CMN[Title/Abstract] OR Rhizosphere[Title/Abstract] OR Microbiome[Title/Abstract] OR microbial community[Title/Abstract] OR mycorrhiza*[Title/Abstract] OR ectomycorrhizal[Title/Abstract] OR network[Title/Abstract] OR microbiota[Title/Abstract] OR endomycorrhizae[Title/Abstract]	934,943
	6	#4 OR #5	989,685
Signals	7	"Cell Communication"[Mesh]	57,478
	8	Interaction[Title/Abstract] OR "underground communication"[Title/Abstract] OR signaling[Title/Abstract] OR interconnect[Title/Abstract] OR linkage[Title/Abstract]	3,348,336

		OR behavior[Title/Abstract] OR collaboration[Title/Abstract] OR neighbor[Title/Abstract] OR cognition[Title/Abstract] OR intelligence[Title/Abstract] OR endosymbiosis[Title/Abstract] OR communication[Title/Abstract]	
	9	#7 OR #8	3,379,710
Full research question search	10	#3 AND #6 AND #9	13,399