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Find proteins of unknown function (PUF) using Plantannot - Protocol C

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Protocol status: In development

We are still developing and optimizing this protocol

Created: May 11, 2020

Last Modified: May 13, 2020

Protocol Integer ID: 36864



Entering application

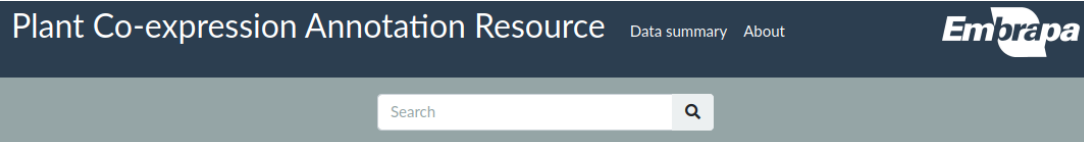
1s

- 1 Enter the Plantannot Result's page, with empty filters and text box search:

<https://www.machado.cnptia.embrapa.br/plantannot/find/?q=>

1s

Or you can enter the <https://www.machado.cnptia.embrapa.br/plantannot> initial page and click on the magnifying glass with the text box empty as well.



<https://www.machado.cnptia.embrapa.br/plantannot>

Filtering

1s

- 2 Visualize the "Filters" card on the left of the page from step1:

1s



Filters

Organism (53)

[apply](#)

- ☐ *Amaranthus hypochondriacus*
(69,156)
- ☐ *Amborella trichopoda* (80,538)
- ☐ *Ananas comosus* (81,072)
- ☐ *Aquilegia coerulea* (117,123)



Feature type

[apply](#)

- ☐ gene (1,862,010)
- ☐ mRNA (2,332,974)
- ☐ polypeptide (2,332,974)

Orthology

[apply](#)

- ☐ no orthology (4,636,180)
- ☐ orthology (1,891,778)

Coexpression

[apply](#)

- ☐ no co-expression groups
(6,381,557)
- ☐ co-expression groups (146,401)

Orthologs_coexpression

[apply](#)

- ☐ no co-expression (5,097,464)
- ☐ co-expression (1,430,494)

Analyses

[apply](#)

- ☐ diamond matches (2,209,087)
- ☐ interproscan matches (1,903,332)
- ☐ no diamond matches (4,318,871)
- ☐ no interproscan matches



(4,624,626)

Biomaterial apply

☐ Leaf (144,826)
☐ Rosette leaves (21,968)
☐ Seedling (26,971)

Treatment apply

☐ Dehydration (66,121)
☐ Drought (134,012)
☐ Heat stress (50,409)
☐ Osmotic stress (130,599)

<https://www.machado.cnptia.embrapa.br/plantannot/find/?q=>

- 2.1 In the "Organisms" filter, select any organisms (expand the organism's list using the green arrow) or select all by leaving all boxes empty. We will use *Oropetium tomaeum* as example. Click "apply" to execute the filter:

1s

**Organism (53)**

apply

- ☐ *Amaranthus hypochondriacus*
(69,156)
- ☐ *Amborella trichopoda* (80,538)
- ☐ *Ananas comosus* (81,072)
- ☐ *Aquilegia coerulea* (117,123)
- ☐ *Arabidopsis halleri* (78,830)
- ☐ *Arabidopsis lyrata* (97,337)
- ☐ *Arabidopsis thaliana* (98,188)
- ☐ *Boea hygrometrica* (143,334)
- ☐ *Boechera stricta* (87,040)
- ☐ *Brachypodium distachyon*
(140,254)
- ☐ *Brachypodium stacei* (102,612)
- ☐ *Brassica oleracea* (106,200)
- ☐ *Brassica rapa* (127,232)
- ☐ *Capsella grandiflora* (77,927)
- ☐ *Capsella rubella* (83,415)
- ☐ *Carica papaya* (83,355)
- ☐ *Citrus clementina* (92,391)
- ☐ *Citrus sinensis* (117,673)
- ☐ *Cucumis sativus* (82,231)
- ☐ *Daucus carota* (96,349)
- ☐ *Eucalyptus grandis* (128,909)
- ☐ *Eutrema salsugineum* (84,919)
- ☐ *Fragaria vesca* (98,493)
- ☐ *Glycine max* (233,338)
- ☐ *Gossypium raimondii* (192,039)
- ☐ *Kalanchoe fedtschenkoi* (121,344)
- ☐ *Kalanchoe laxiflora* (188,815)
- ☐ *Linum usitatissimum* (130,439)
- ☐ *Malus domestica* (190,548)
- ☐ *Manihot esculenta* (115,795)
- ☐ *Medicago truncatula* (175,532)
- ☐ *Mimulus guttatus* (95,286)
- ☐ *Musa acuminata* (109,584)
- ☒ *Oropetium thomaeum* (85,338)
- ☐ *Oryza sativa* (147,037)
- ☐ *Panicum hallii* (136,936)
- ☐ *Panicum virgatum* (348,885)
- ☐ *Phaseolus vulgaris* (101,423)
- ☐ *Populus trichocarpa* (187,361)
- ☐ *Prunus persica* (121,051)
- ☐ *Ricinus communis* (93,663)
- ☐ *Salix purpurea* (160,905)

- ☐ *Setaria italica* (120,586)
- ☐ *Setaria viridis* (132,402)
- ☐ *Solanum lycopersicum* (104,175)
- ☐ *Solanum tuberosum* (151,458)
- ☐ *Sorghum bicolor* (128,371)
- ☐ *Spirodela polyrhiza* (58,869)
- ☐ *Theobroma cacao* (118,260)
- ☐ *Trifolium pratense* (122,552)
- ☐ *Vitis vinifera* (79,038)
- ☐ *Zea mays* (241,000)
- ☐ *Zostera marina* (61,350)

https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum

2.2 In the "Feature type" filter, select "polypeptide", and click "apply" to execute the filter:

1s

Feature type apply

☐ gene (1,862,010)
☐ mRNA (2,332,974)
☒ polypeptide (2,332,974)

https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolyp

2.3 In the Orthology filter, select "orthology", and click "apply" to execute the filter:

1s

Orthology apply remove

☐ no orthology (0)
☒ orthology (18,755)

https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolyp

- 2.4 In the "Orthologs_coexpression" filter, select "co-expression", and click "apply" to execute the filter:

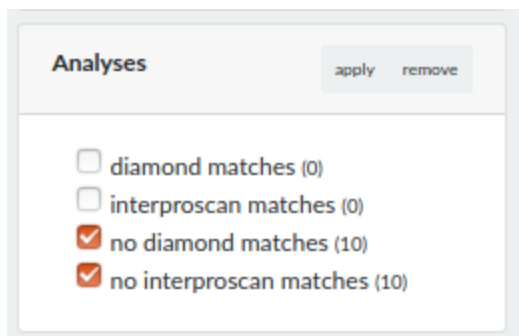
1s



https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolyp

- 2.5 In the "Analyses" filter, select both "no diamond matches" and "no interproscan matches", and click "apply" to execute the filter:

1s



https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolyp

- 2.6 Leave the "Coexpression" filter empty:

1s



Coexpression apply

☐ no co-expression groups
(18,755)

☐ co-expression groups (0)

https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolyp

2.7 Leave the "Biomaterial" and "Treatment" filters empty:

1s

Biomaterial apply

☐ Leaf (0)

☐ Rosette leaves (0)

☐ Seedling (0)

Treatment apply

☐ Dehydration (0)

☐ Drought (0)

☐ Heat stress (0)

☐ Osmotic stress (0)

https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolyp

3 After execution of all filters we will have the following list of filters:

1s



Selected filters

organism:*Oropetium thomaeum* ✕
so_term:polypeptide ✕
orthology ✕
coexpression in orthologs ✕
analyses:no diamond matches ✕
analyses:no interproscan matches ✕

https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolypeptide

Viewing results

1s

- 4 Visualize the "Results" card on the center-right of the screen, we will have the resulting list of *Oropetium*'s PUFs supposedly related to abiotic stress by using orthology and co-expression networks:

1s



Results



Organism	Feature Type	Feature ID	Relationship	Display	Orthologous Group	Coexpression Group
Oropetium thomaeum	polypeptide	Oropetium_20150105_03170A.v1.0	mRNA		plantannot17078	
Oropetium thomaeum	polypeptide	Oropetium_20150105_03347A.v1.0	mRNA		plantannot147988	
Oropetium thomaeum	polypeptide	Oropetium_20150105_06293A.v1.0	mRNA		plantannot22668	
Oropetium thomaeum	polypeptide	Oropetium_20150105_07187A.v1.0	mRNA		plantannot9539	
Oropetium thomaeum	polypeptide	Oropetium_20150105_08656A.v1.0	mRNA		plantannot147954	
Oropetium thomaeum	polypeptide	Oropetium_20150105_09096A.v1.0	mRNA	PTHR13020:SF36 - EXPRESSED PROTEIN (1 of 1)	plantannot7088	
Oropetium thomaeum	polypeptide	Oropetium_20150105_10231A.v1.0	mRNA		plantannot148250	
Oropetium thomaeum	polypeptide	Oropetium_20150105_14188A.v1.0	mRNA		plantannot26702	
Oropetium thomaeum	polypeptide	Oropetium_20150105_18142A.v1.0	mRNA		plantannot39098	
Oropetium thomaeum	polypeptide	Oropetium_20150105_24954A.v1.0	mRNA		plantannot21729	

https://www.machado.cnptia.embrapa.br/plantannot/find/?q=&selected_facets=organism%3AOropetium+thomaeum&selected_facets=so_term%3Apolyp