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What is in your plate and where can you find it?
The representativity of the diet of plant eating bats on molecular databases

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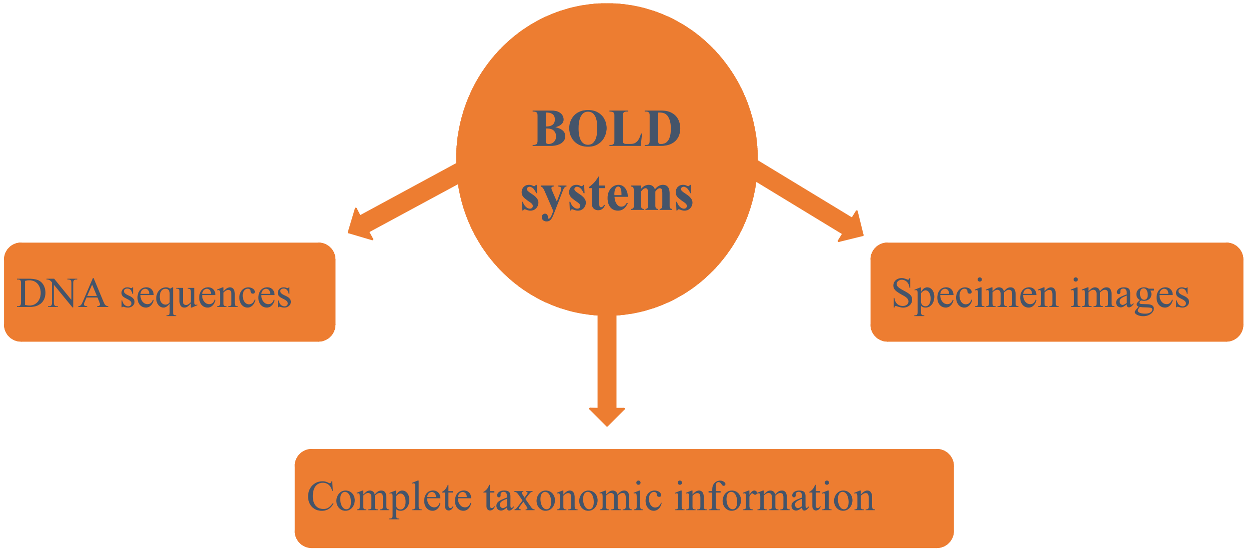
Abstract: DNA barcoding makes it possible to identify trophic relationships through traces of DNA present in animal faeces, allowing a more accurate description of mutualistic interactions, such as frugivory and pollination in tropical bats. However, success in this identification depends on the representativeness of the diet of these animal species in molecular data bases. Among the 21 existing bat families, a plant-based diet has evolved in only two of these families, Phyllostomidae (Neotropical) and Pteropodidae (Paleotropical), which represent about 28% of all bat species. Despite this, it is not known how much of the plant species present in their diet have sequences of different molecular markers described and stored in molecular databases, such as Bold Systems. Thus, our study aims to compile the available data on the diet of frugivorous and nectarivorous bats from these bat families and describe which molecular markers of plant species present in their diet have sequences stored in Bold Systems. In addition, we also intend to verify the countries of origin of these samples and the main depositary institutions. Therefore, our study will provide an important basis in order to support future studies about the diet of frugivorous tropical bats based on molecular data.

Keywords: Plantivorous bats; molecular data; flower; fruit; diet.

DNA Barcoding

- Molecular technique
- Makes it possible to identify trophic relationships through traces of DNA
- BOLD systems - Barcode of life data systems (http://www.barcodinglife.org)



BOLD systems

DNA sequences

Specimen images

Complete taxonomic information

Who are the frugivorous bats?

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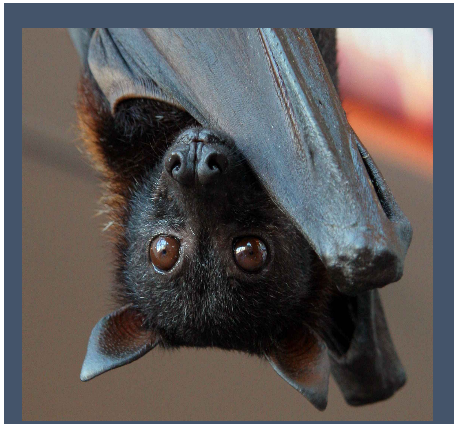
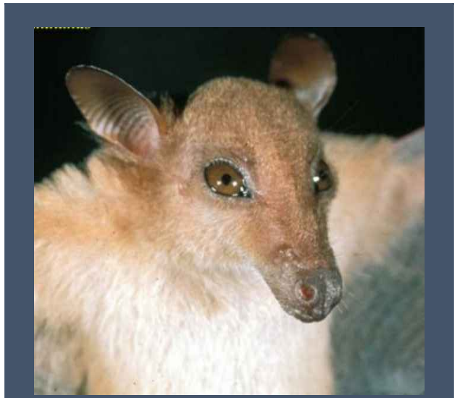
Pteropodidae



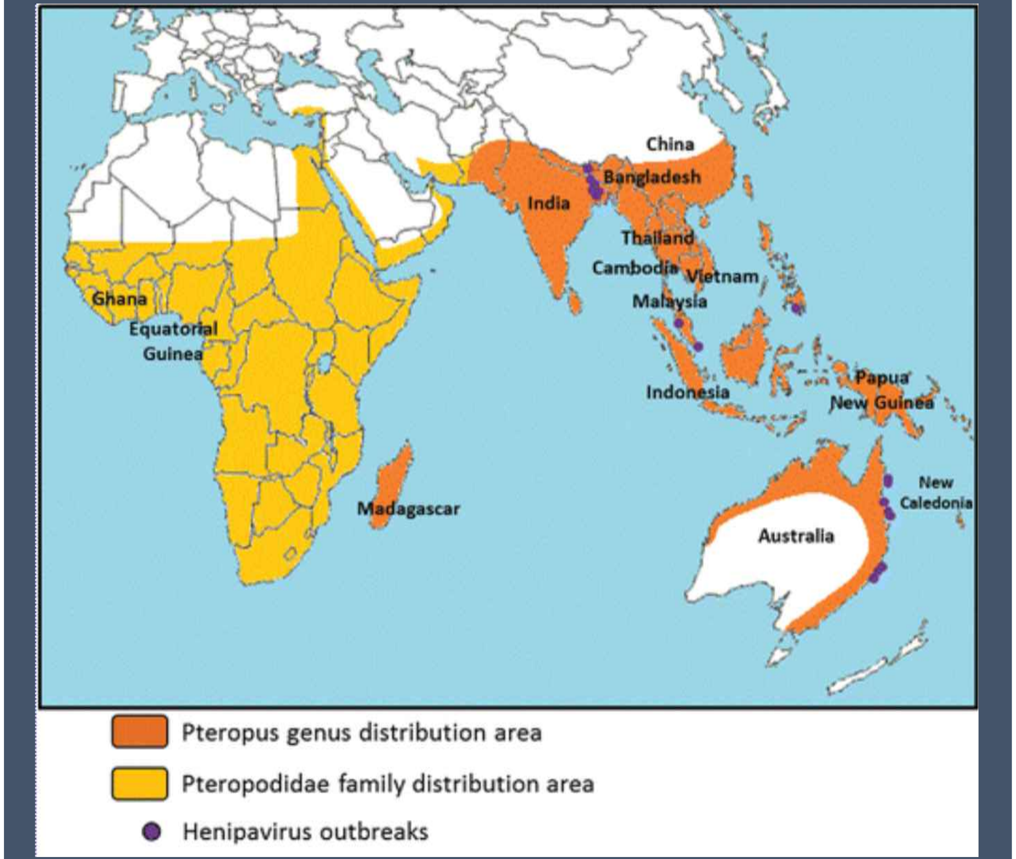
Pteropus livingstonii
(Gray, 1866)

(https://animalsoftheworld.info/mammals/comoro-flying-fox/)



Macroglossus minimus
(Geoffrey, 1810)

Francis, C M
(http://www.mammalogy.org/macroglossus-minimus-1426)



Distribution area of the Pteropodidae family in the world

Enchéry and Horvat, 2017

Phyllostomidae

Ectophylla alba
(Allen, 1892)

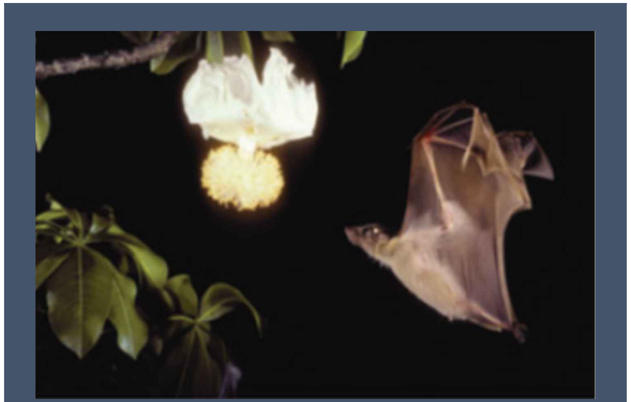
Lonchophylla dekeyseri
(Taddei, Vizotto & Sazima, 1983)

Oliveira, H.F.M
https://hfmoconservationandscience.weebly.com/

Distribution area of the Phyllostomidae family in the world

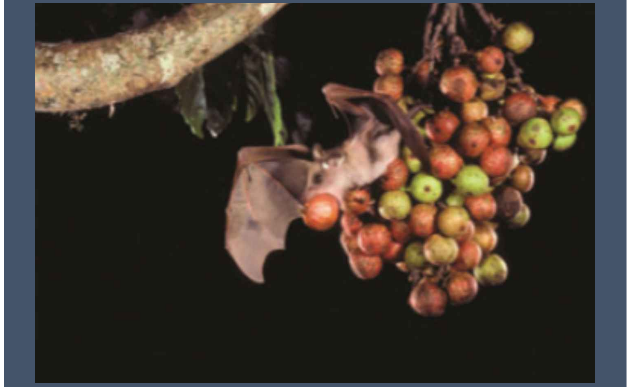
Villalobos and Arita, 2010

Why is it important to know the diets of Pteropodidae and Phyllostomidae bats?



Epomophorus wahlbergi
(Sundevall, 1846)

Leptonycteris curasoae
(Miller, 1900)



Epomophorus gambianus
(Bennett, 1836)

Artibeus jamaicensis
(Leach, 1821)

Kunz *et al.*, 2011

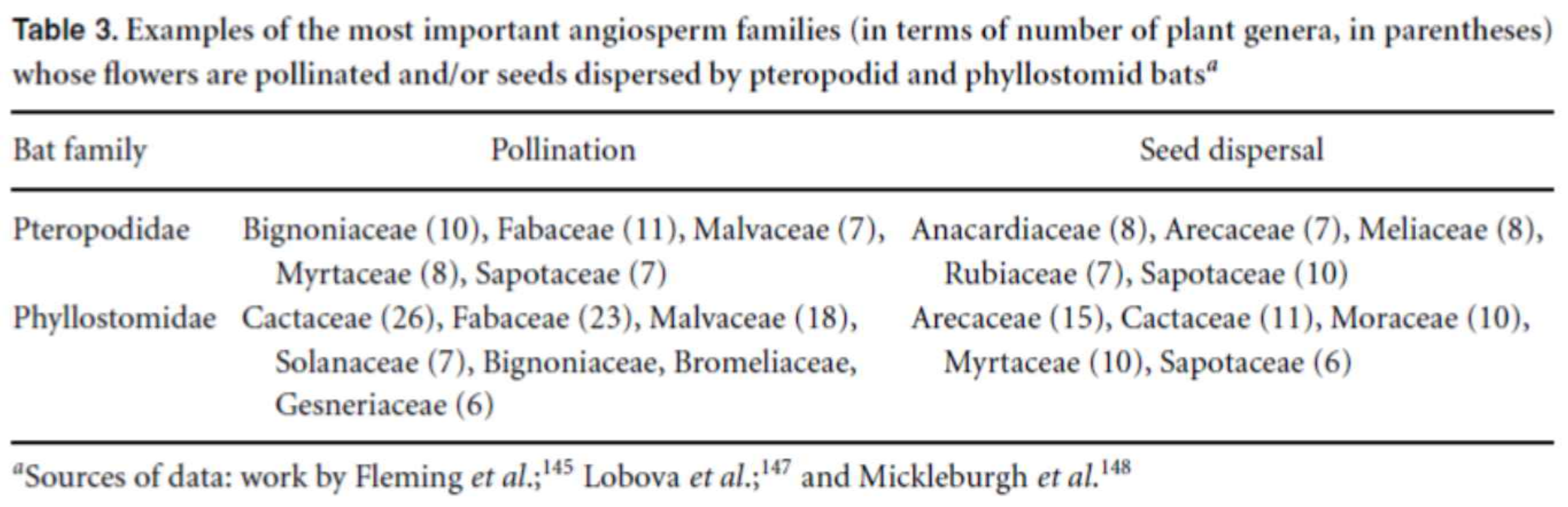


Table 3. Examples of the most important angiosperm families (in terms of number of plant genera, in parentheses) whose flowers are pollinated and/or seeds dispersed by pteropodid and phyllostomid bats[a]

Bat family	Pollination	Seed dispersal
Pteropodidae	Bignoniaceae (10), Fabaceae (11), Malvaceae (7), Myrtaceae (8), Sapotaceae (7)	Anacardiaceae (8), Arecaceae (7), Meliaceae (8), Rubiaceae (7), Sapotaceae (10)
Phyllostomidae	Cactaceae (26), Fabaceae (23), Malvaceae (18), Solanaceae (7), Bignoniaceae, Bromeliaceae, Gesneriaceae (6)	Arecaceae (15), Cactaceae (11), Moraceae (10), Myrtaceae (10), Sapotaceae (6)

[a] Sources of data: work by Fleming *et al.*;[145] Lobova *et al.*;[147] and Mickleburgh *et al.*[148]

Kunz *et al.*, 2011

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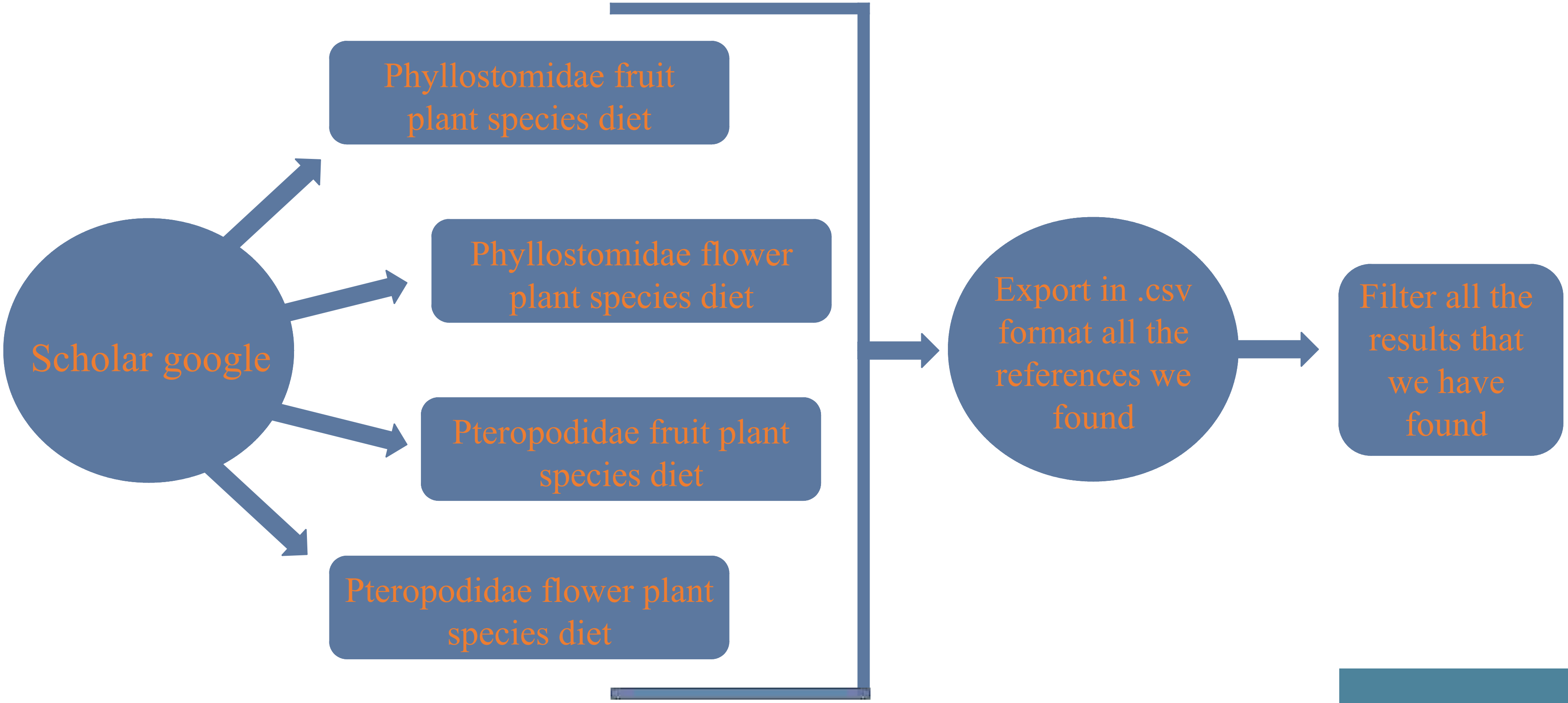
Compile available data



Scholar google

Phyllostomidae fruit plant species diet

Phyllostomidae flower plant species diet

Pteropodidae fruit plant species diet

Pteropodidae flower plant species diet

Export in .csv format all the references we found

Filter all the results that we have found

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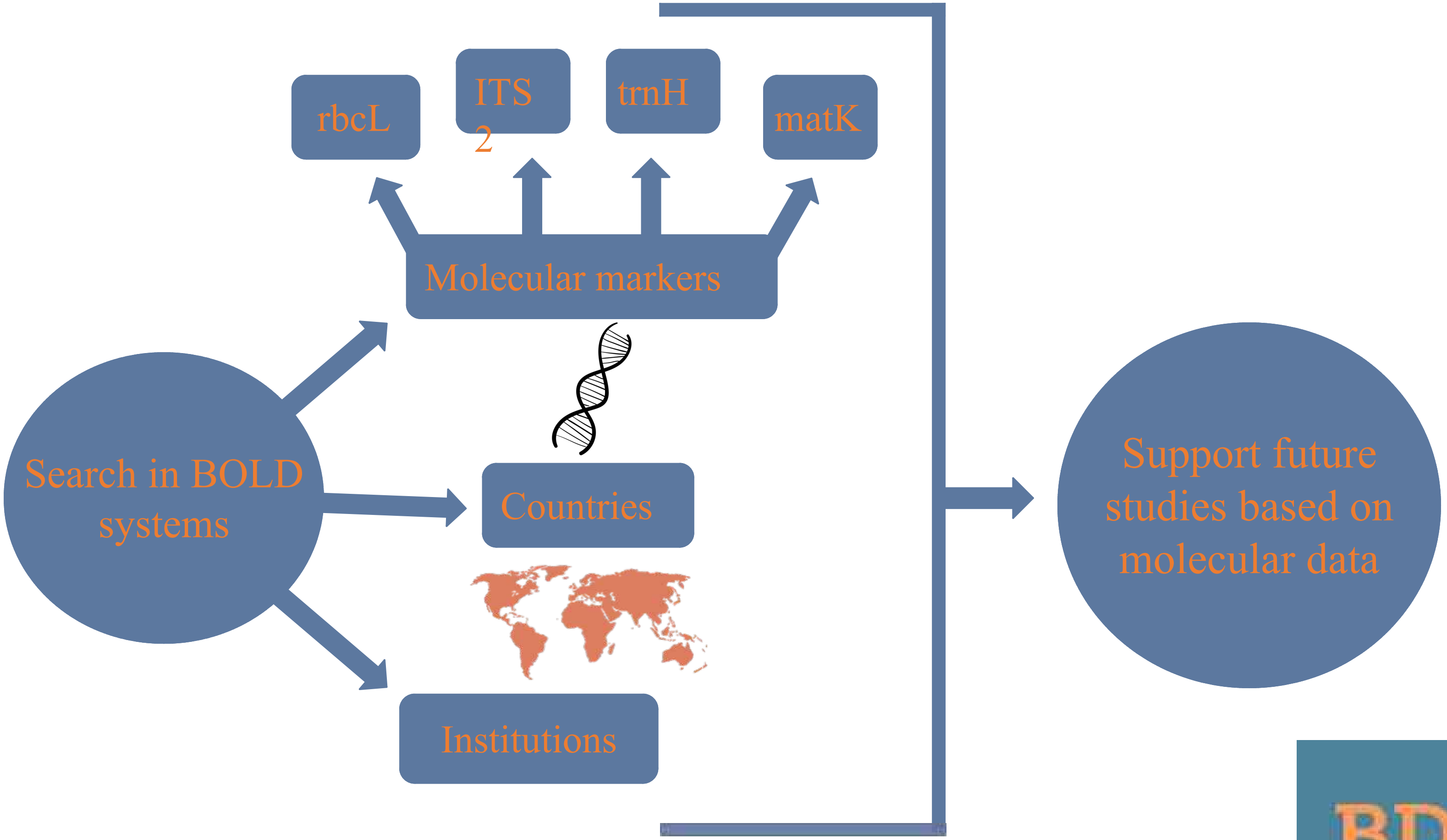
Next steps



Search in BOLD systems

Molecular markers

rbcL

ITS2

trnH

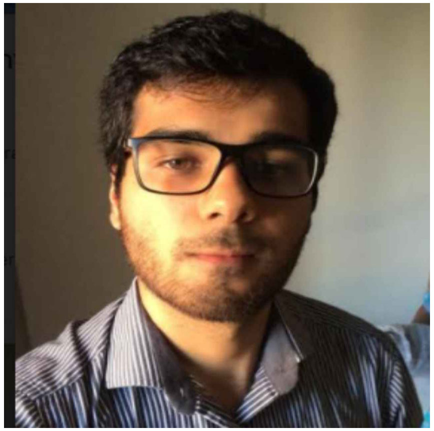
matK

Countries

Institutions

Support future studies based on molecular data

Acknowledgments



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