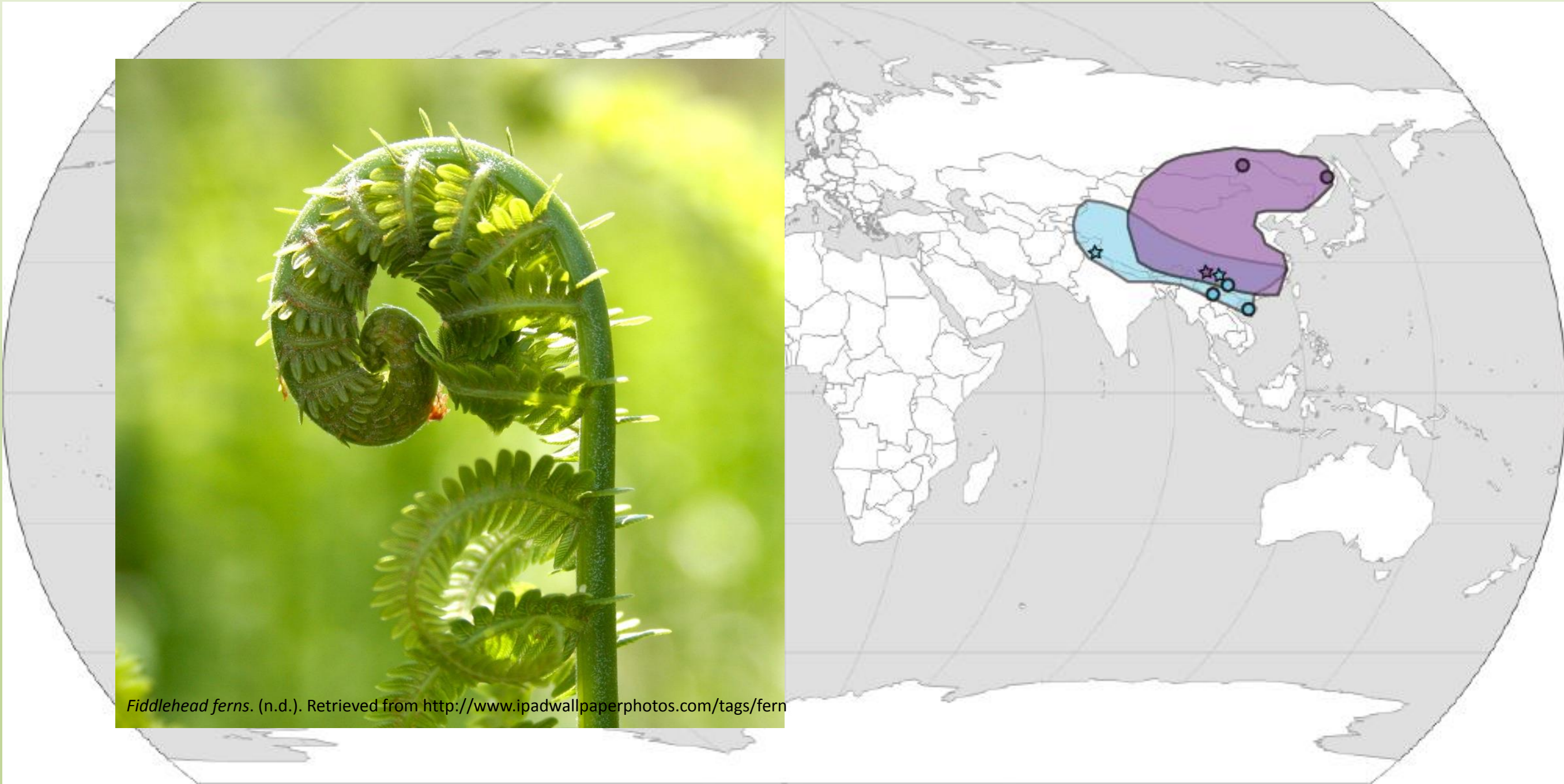


The study of speciation between *Cryptogramma brunoniana* and *Cryptogramma raddeana*

Angela Bagoyo

Introduction

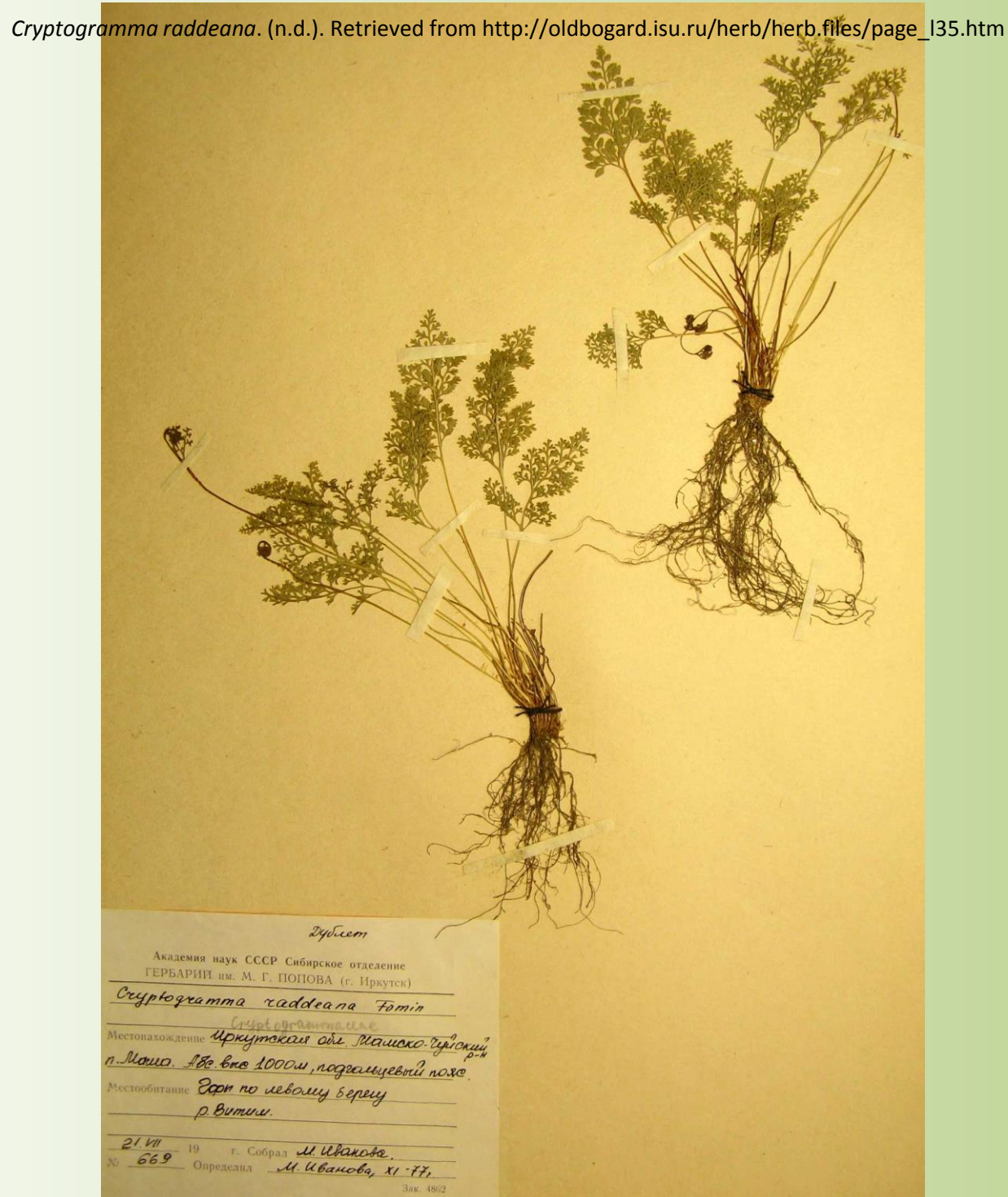
- Ferns
 - Land plants
 - Reproduce using spores
 - Mostly found in rainforests
 - 30 feet long to 1 inch in size
- Cryptogramma*
 - Grows on acidic rocks
 - Looks like parsley
 - Dimorphic leaves (sterile and fertile)
- Brown’s parsley fern and Radde’s parsley fern
 - Occurs in Eastern Asia (China and Russia)
 - Grows on acidic rocks in high elevations



Research Question

- Are *C. brunoniana* and *C. raddeana* two different species?

Cryptogramma raddeana



Cryptogramma brunoniana



Materials and Methods

- DNA extractions
 - Qiagen Kit
- Polymerase Chain Reaction (PCR)
 - Denature (94°C)
 - The splitting of the double helix into two separate strands
 - Anneal (50°C)
 - Application of the primers to the desired gene area
 - Extension (72°C)
 - Thermus Aquaticus (Taq) applies the dNTPs onto the separated single strands
 - Repeat 35X
- Gel
 - 1% agarose gel quantifies the plant DNA
- Sequencing
 - PCR templates and primers were sent to High Throughput Genomics Center in Washington University for sequencing.
 - Sequences of each strands were put together for quality control.
- Phylogeny
 - Analyzed with Maximum Parsimony and Bayesian and put together to create Figure 1.

Results

- PCR

DNA extract #	species	Voucher	Locality	trnP-petG	rps4-trnS	atpB-rbcL			
455	Cr. raddeana	Boufford 2692	China	RAH100-1					
456	Cr. raddeana	Boufford 3218	China	RAH100-2					
490	Cr. brunoniana	Boufford 3713	China	RAH100-3					
583	Cr. brunoniana	5J-3779	India	RAH105-4	RAH105-12	RAH102-6			

Table 1

- trnP-petG will be the main gene that we will be using.

- Phylogenetic tree

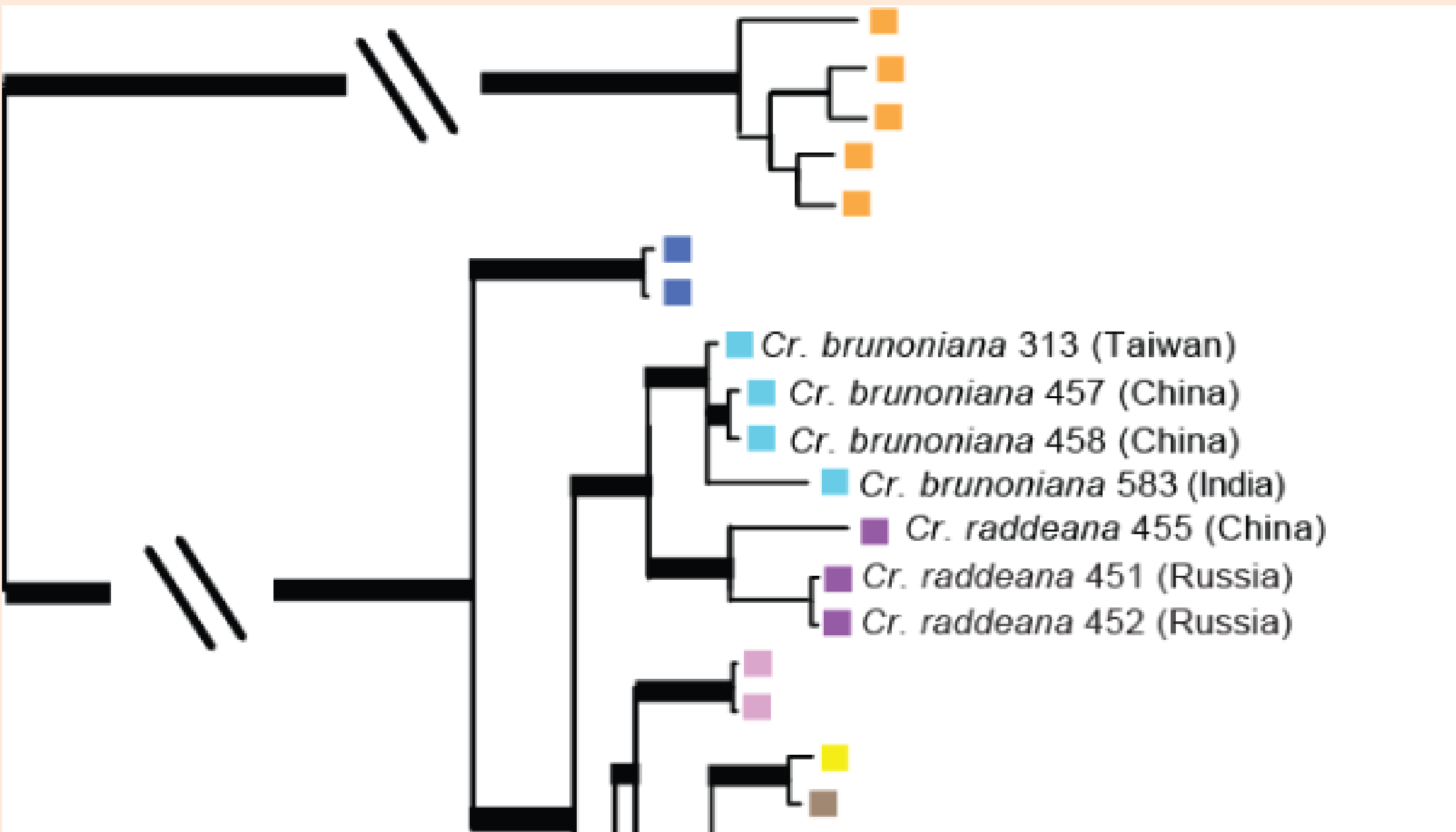


Figure 1

- The closeness of relationships between two species is represented by the thickness of the branch. The length of the branch represents the evolutionary changes in the species.

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Citations

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