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Background

*Guazuma* is a representative of the tribe Theobromeae within the family Malvaceae (Byttnerioideae).



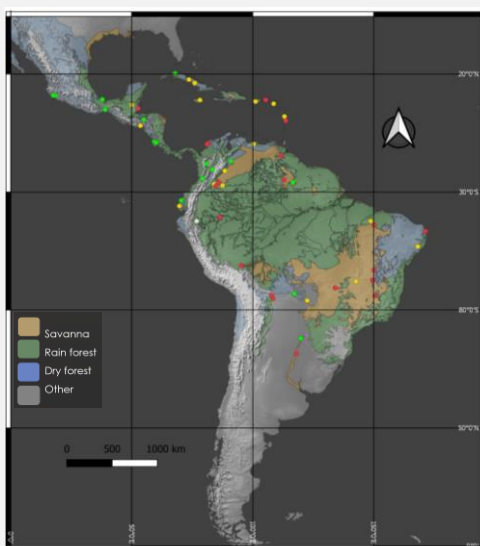
*Guazuma ulmifolia* is a widespread species

Plants that are widespread across biomes are able to adapt to different conditions

How to test this using *Guazuma ulmifolia* as a model?  
 Genetics + morphology + geography

There are two varieties within *Guazuma ulmifolia* and one intermediate morphotype occupying different biomes and displaying different morphologies

<i>Guazuma ulmifolia</i>	var. <i>ulmifolia</i>	Intermediate	var. <i>tomentella</i>
Morphotype	A	B	C
Biome	Dry forest	Dry forest, Rainforest and Savannas	Rainforest, Dry forest and Savannas
Leaf form	Obovate	Obovate to Oblong	Oblong
Leaf base	Cordate, asymmetric	Cordate, symmetric or asymmetric	Obtuse, symmetric
Margin	Teeth rounded, irregular	Teeth pointed, irregular, deep	Teeth pointed, regular, sometimes not deep
Thickness of leaves	Thick leaves	Thin leaves	Thin or thick (mostly thick) leaves
Pubescence	Leaves abaxially very pubescent and rough adaxially  Stem pubescent	Leaves abaxially slightly pubescent and smooth. Rough adaxially  Stem glabrous to slightly pubescent.	Leaves glabrous, shiny and smooth in both surfaces  Stems glabrous



Localities of the 55 accessions selected for this analysis

***Guazuma ulmifolia* is a widespread species that is able to survive both wet and dry environments: same as other tree species with the same broad ecology (for example *Ficus insipida* and *Ceiba pentandra*).**

This means that by being ecologically versatile and drought tolerant they were able to spread across xerophytic biomes (e.g dry forest and savannas).

This suggests that ecological barriers are not as restrictive for this species, and points towards drought tolerance as a means of geographic expansion (species level) and biome specialization (varietal level).

Methods

Sampling:  
Herbaria and Field

Bioinformatics  
Target selection: probe design for targeted enrichment (Hybrid capture)

Laboratory  
- DNA extraction  
- Library preparation  
- Target Enrichment: Hybrid capture

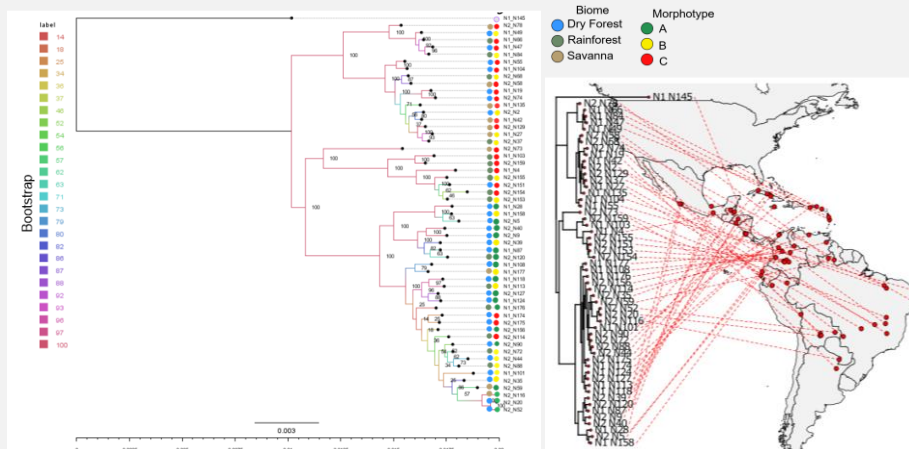
Analysis  
- Phylogenetics  
Maximum likelihood  
100 replicates Bootstrap



Conclusions

Results

*Guazuma ulmifolia* has moved and adapted to different environments multiple times



Outgroup is *Guazuma crinita* (N1\_N145)

Phylogenetic tree (100BS)

References

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