

MC-Cons

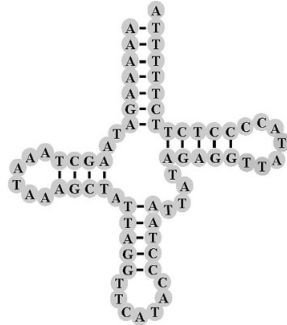
by
Gabriel Parent

outline

- background
- RNA consensus
- MC-Cons
- future work

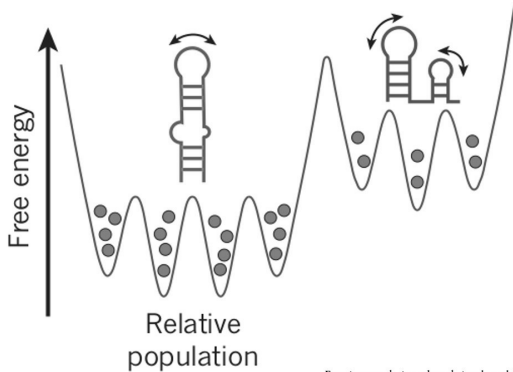
background

many representations



(((((((..(((.....))))),((((((.....))))),....((((((.....)))))))))))).

many structures



Function complexity and regulation through RNA dynamics
Dethoff EA et al., 2012, Nature

many suboptimals

>tRNA-ASN

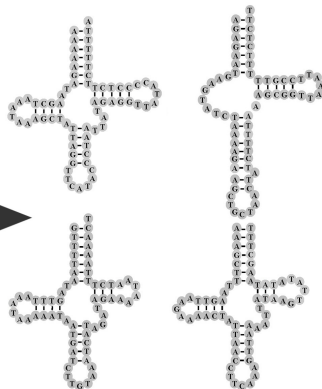
GACUCCAUGGCCAAGUUGGUUAAGGCGUGCGACUGUUAUUCGCAAGAUCGUGAGUUAACCCUCACUGGGGUCGCCA

.((((((((((((((...))))))))))((((((((((((((((((...))))))))((((((((((((((((((...)))))... -69.824
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.((((((((((((((((((...))))))))((((((((((((((((((...)))))((((((((((((((((((...)))))... -69.077
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.((((((((((((((((((...))))))))((((((((((((((((((...)))))((((((((((((((((((...)))))... -68.872
.((((((((((((((((((...))))))))((((((((((((((((((...)))))((((((((((((((((((...)))))... -68.843
((((((((((((((((((...))))))))((((((((((((((((((...)))))((((((((((((((((((...)))))... -68.804
.((((((((((((((((((...))))))))((((((((((((((((((...)))))((((((((((((((((((...)))))... -68.761
.((((((((((((((((((...))))))))((((((((((((((((((...)))))((((((((((((((((((...)))))... -68.736
.((((((((((((((((((...))))))))((((((((((((((((((...)))))((((((((((((((((((...)))))... -68.731

RNA consensus

[illegible]

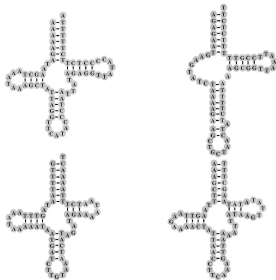
MC-CONS



Comparative Mitogenomics of the Assassin Bug Genus *Peirates* Reveal Conserved Mitochondrial Genome Organization of *P. atromaculatus*, *P. fulvipes* and *P. curtipis*,
Zhao G, Li H, Zhao P, Cai W. 2015, Plos One

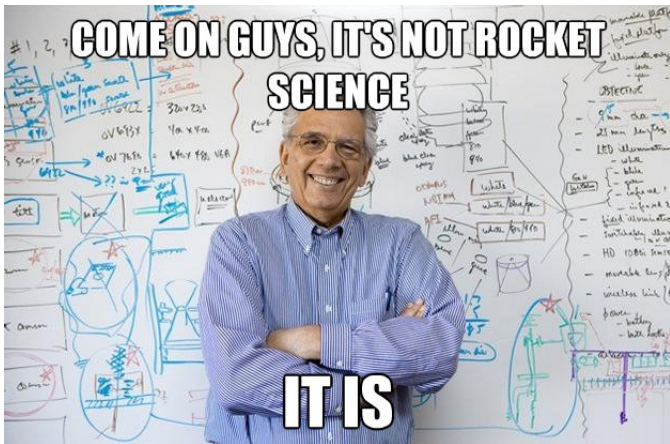
MC-Cons

the approach

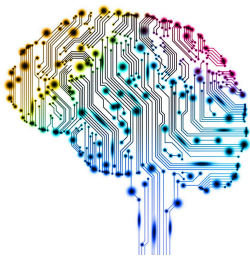


- ❖ find pertinent distance function(s)
- ❖ minimize the sum of pairwise distances

how hard is this?

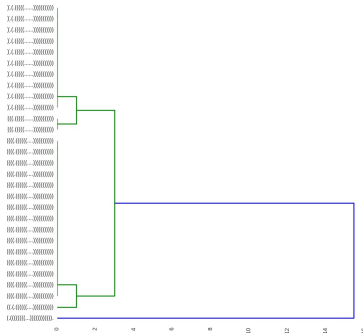


good enough



- ❖ genetic algorithm
- ❖ optional local search (steepest descent)

example: IREs



sometimes it works well!

example: microRNAs

future work

future work

- multi-objective
- improved distance functions
- parallelism
- user feedback

questions

