

1 - Why are we here? (*ludic rhetorics*)

Tuesday afternoon

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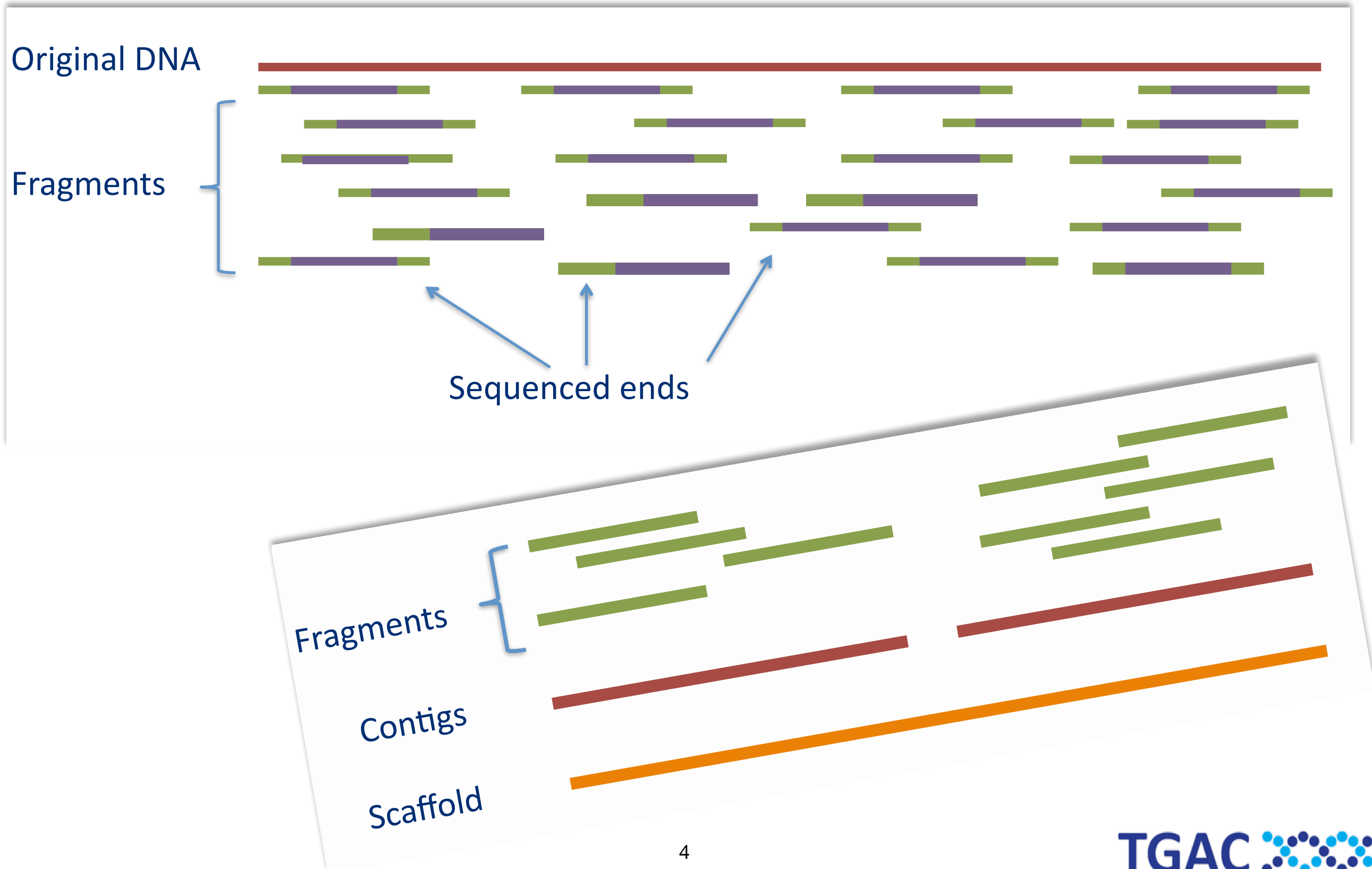


Welcome

Learn, (do,) review, understand, repeat.

- Tuesday:
 - What does “assembly” mean?
 - Sequencing technologies.
- Wednesday:
 - Running an assembly.
 - Planning an assembly experiment.
 - How do assemblers work? What do I need to put in?
- Thursday & Friday:
 - Starting right: first pass assembly / contig assemblies.
 - Further improvements: scaffolding / validation / longer range.

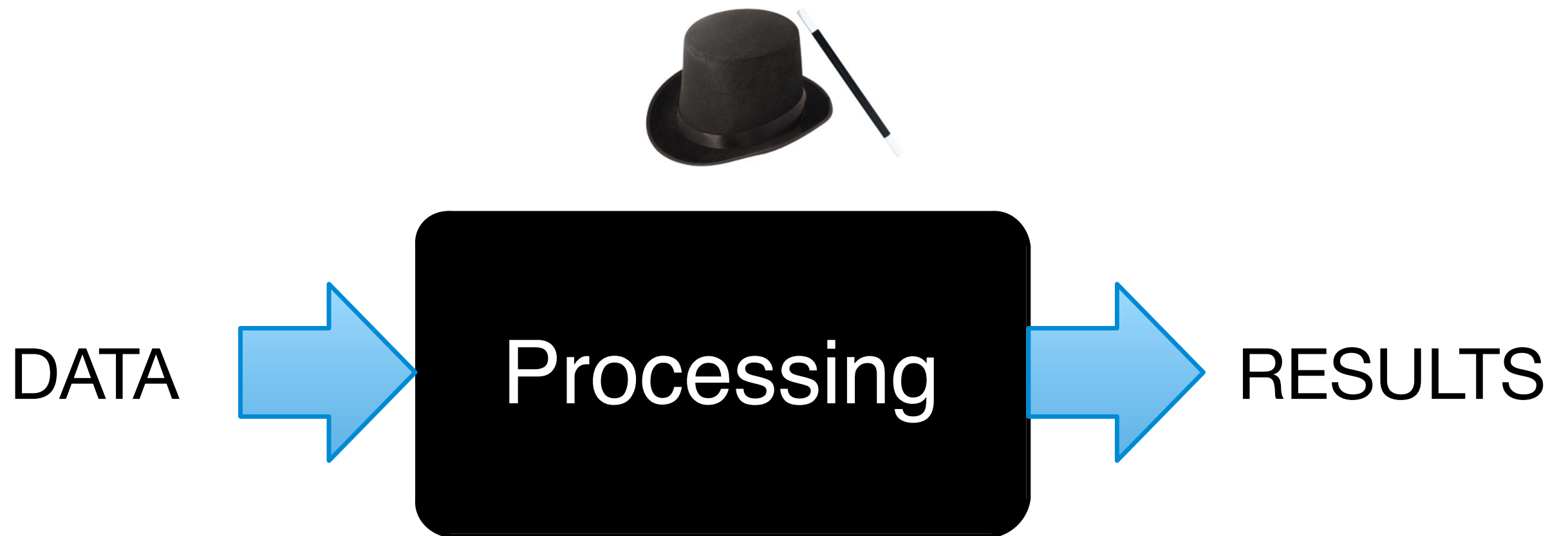
The genome assembly problem (WGS)



A correct assembly has:

The right *motifs*,
the correct number of times,
in correct order and position.

Black box processing



Heuristic processing: using shortcuts

heuristic | ,hju(ə)'rɪstɪk |

adjective

enabling a person to discover or learn something for themselves. *a 'hands-on' or interactive heuristic approach to learning.*

- Computing proceeding to a solution by trial and error or by rules that are only loosely defined.

noun

a heuristic process or method.

- (**heuristics**) [usu. treated as sing.] the study and use of heuristic techniques.

DERIVATIVES

heuristically adverb

ORIGIN early 19th cent.: formed irregularly from Greek *heuriskein* 'find'.

exhaustive | ɪg'zɔːstɪv, ɛg- |

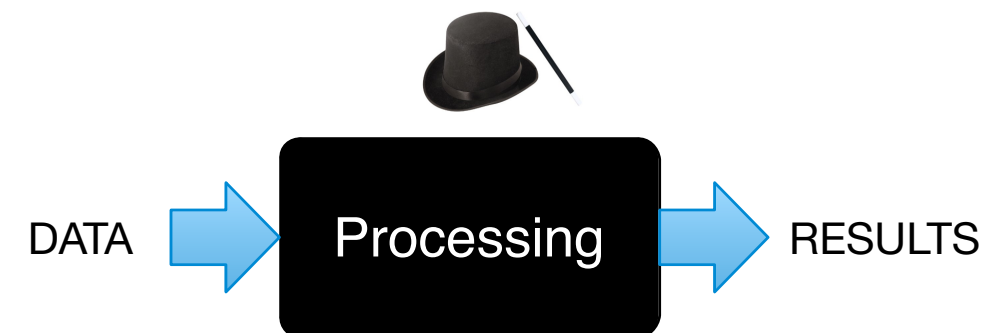
adjective

including or considering all elements or aspects; fully comprehensive: *the guide outlines every bus route in exhaustive detail.*

DERIVATIVES

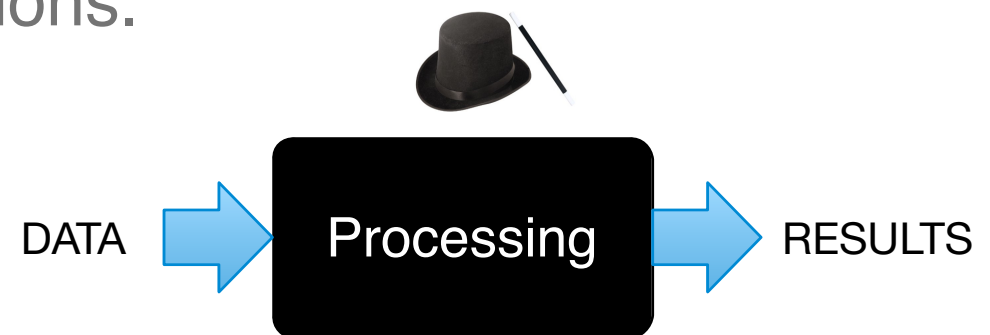
exhaustively adverb ,

exhaustiveness noun

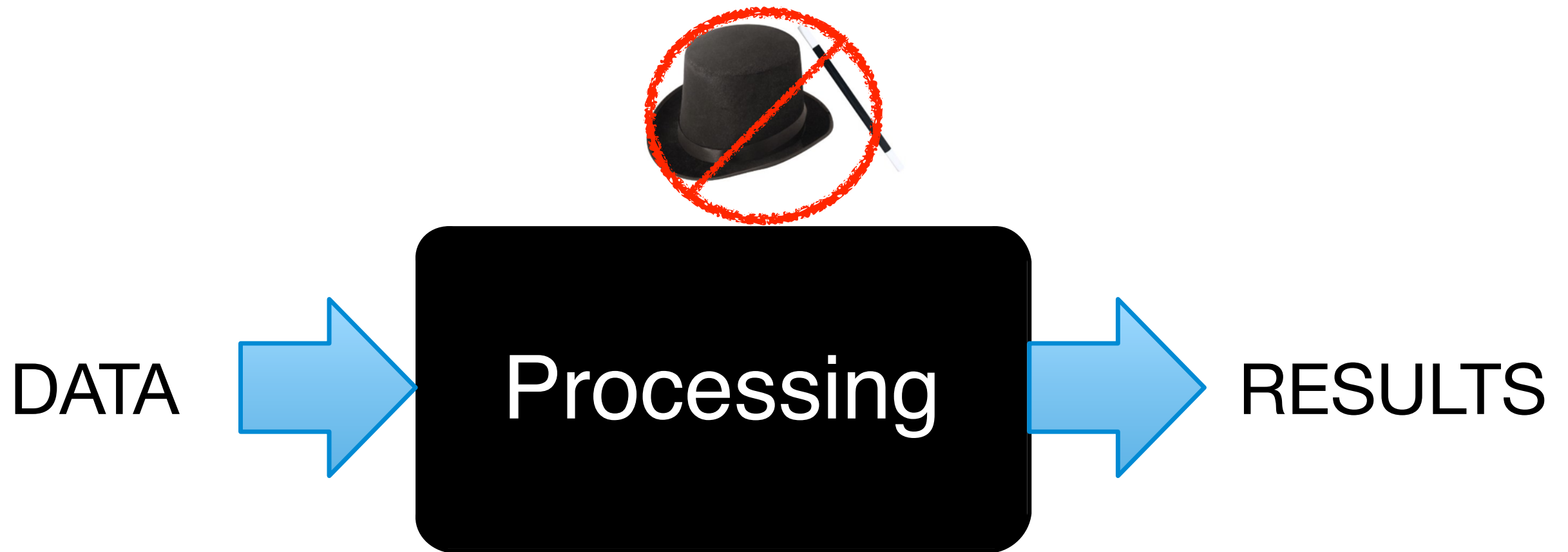


Why use heuristics for genome assembly?

- The problem is not completely defined.
- Exhaustive methods are:
 - Too limited, thus producing simple partial solutions.
 - Too slow, not scaling well.
- Data varies too much and no good models are available.
- It is so much faster and easier... and it works! (sometimes, anyway)



Black box processing done right



- Use good data, check its pre-conditions to be well processed.
- Know (roughly) how the processing works.
- Check soundness and sanity of results.

Assembly Games

Questions?

