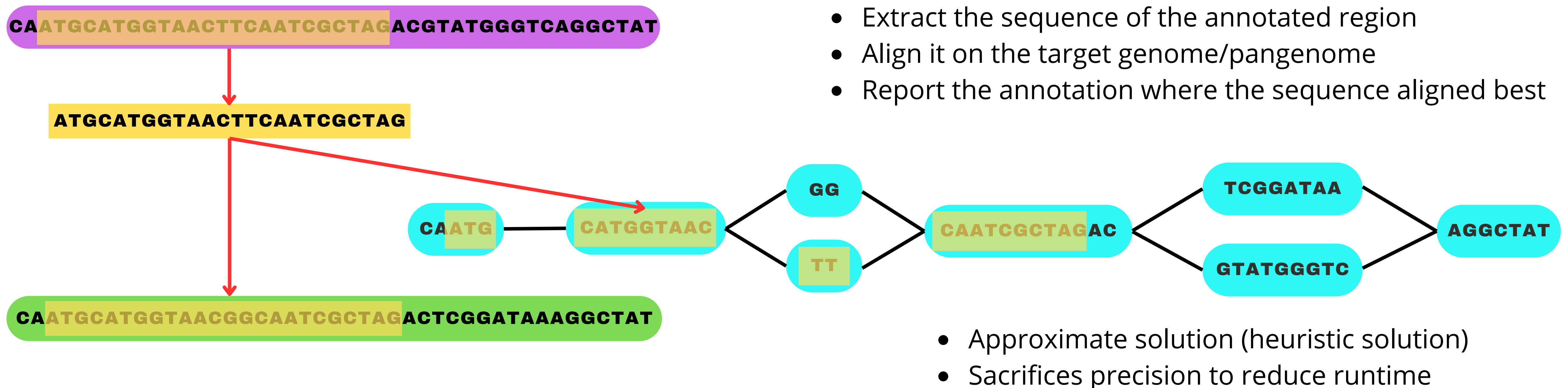


Annotation transfer usually consists in aligning the annotated sequences on the genome we want to transfer to. This approach can be applied to pangenome graphs, however it sacrifices precision to reduce runtime. Pangenome graphs allow another approach for annotation transfer that doesn't rely on alignment, since it simply converts the annotated region's coordinates to get their position in the graph.

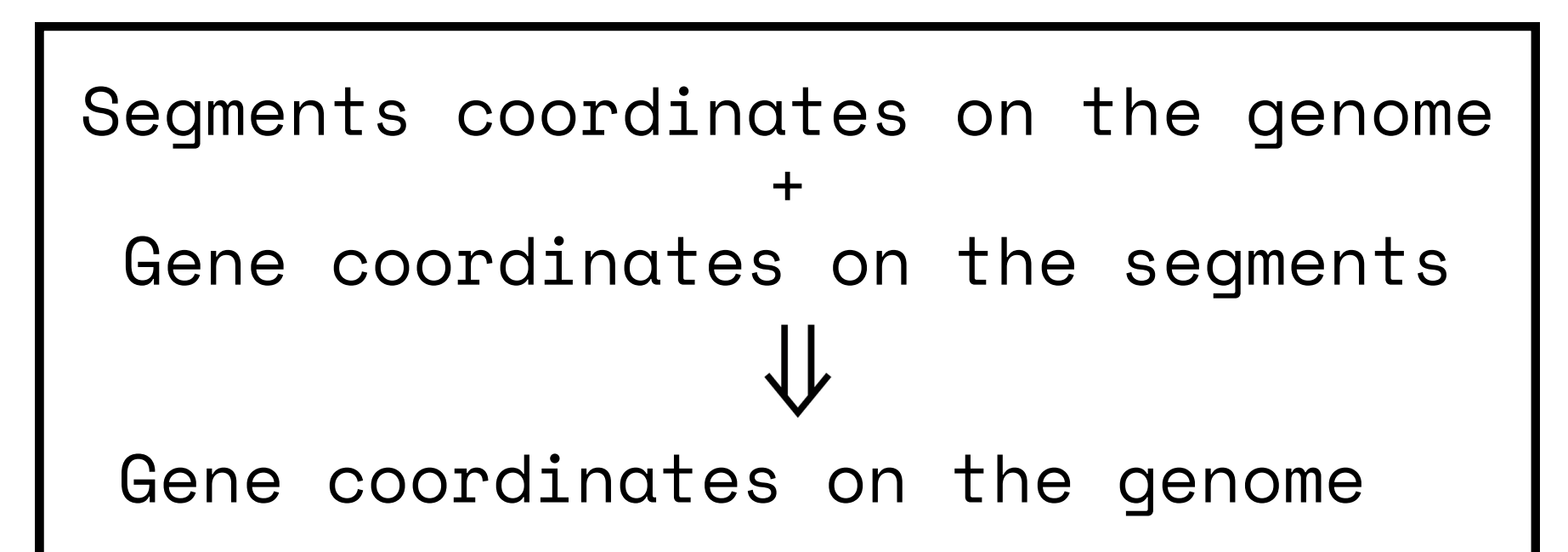
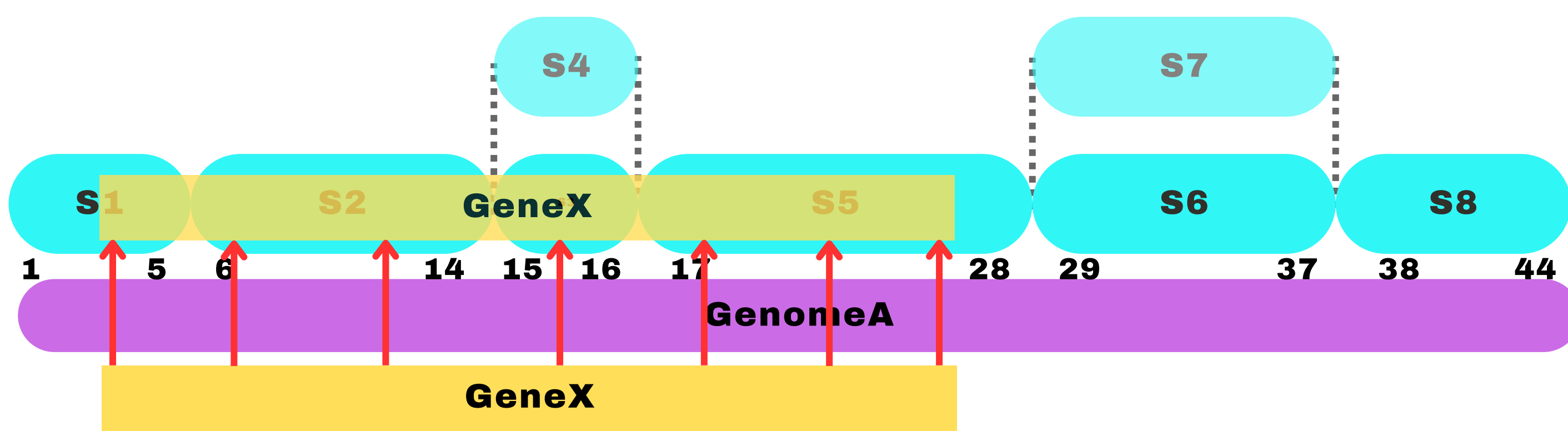
Traditional annotation transfer



Annotation transfer using coordinate conversion

Annotation transfer from genome to graph

Annotation transfer from graph to genome

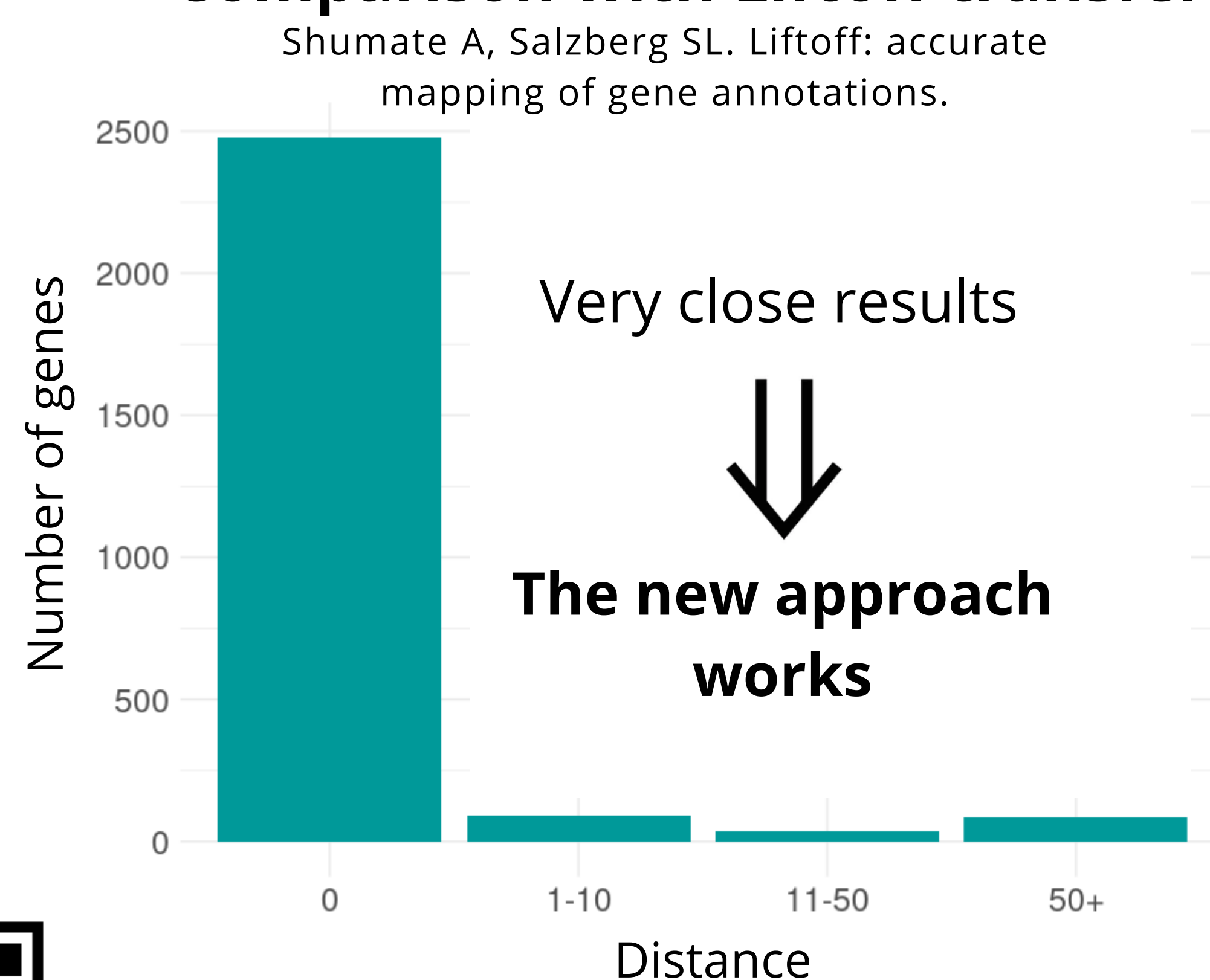


Segments coordinates on the genome
+
Gene coordinates on the genome
↓
Gene coordinates on the segments

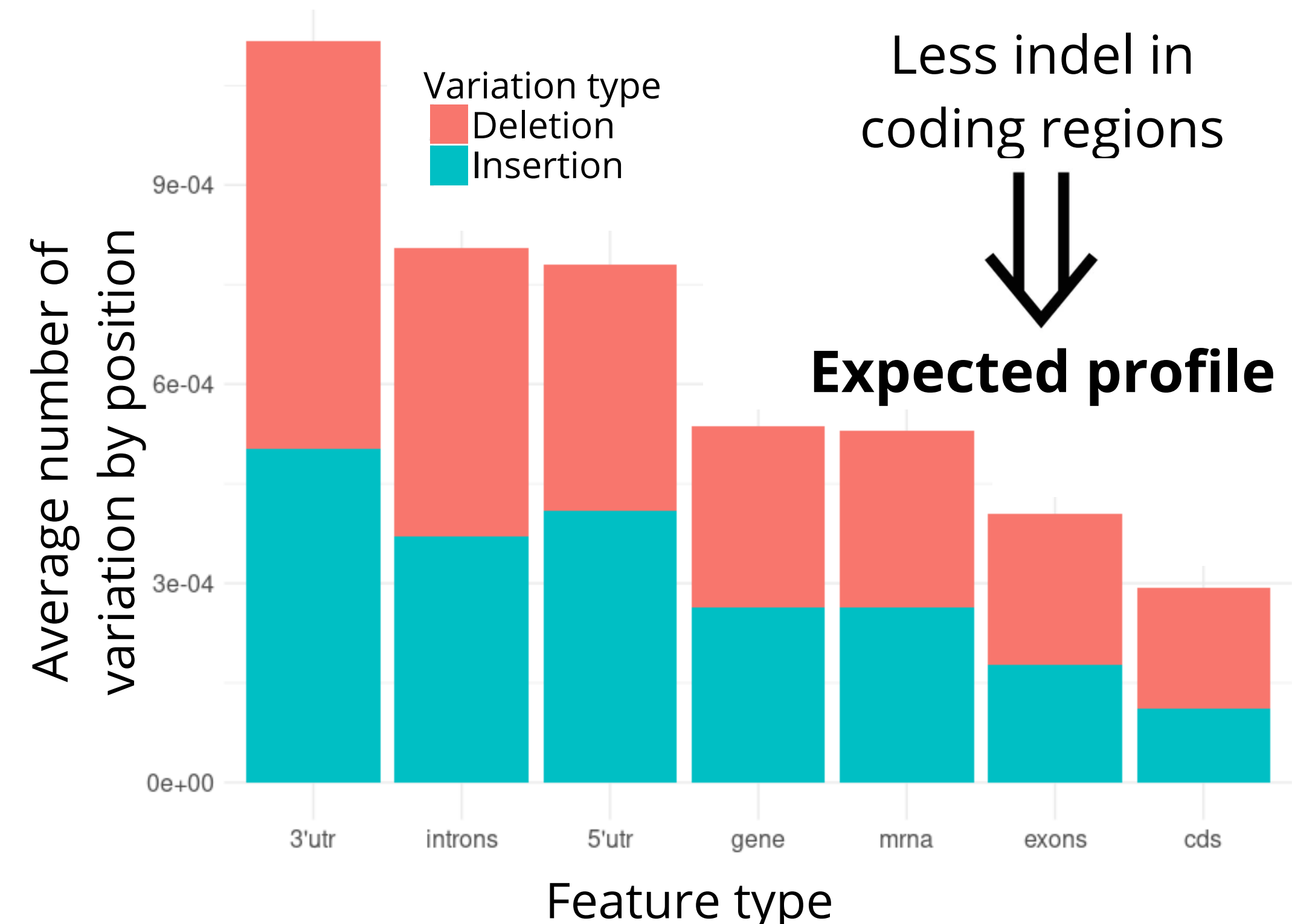
- High precision (exact solution)
- No sequence information needed
- Uses simple operations

- High precision (exact solution)
- Cannot miss a part of the gene
- Can detect modifications of the gene

Comparison with Liftoff transfer



Indel distribution in genes



This new approach provides an exact solution to annotation transfer. It should prove valuable to both genome and pangenome studies, and allow for a better harnessing of the information contained within the pangenomes.

Implemented in python
within GrAnnot

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