

FIG. 1A

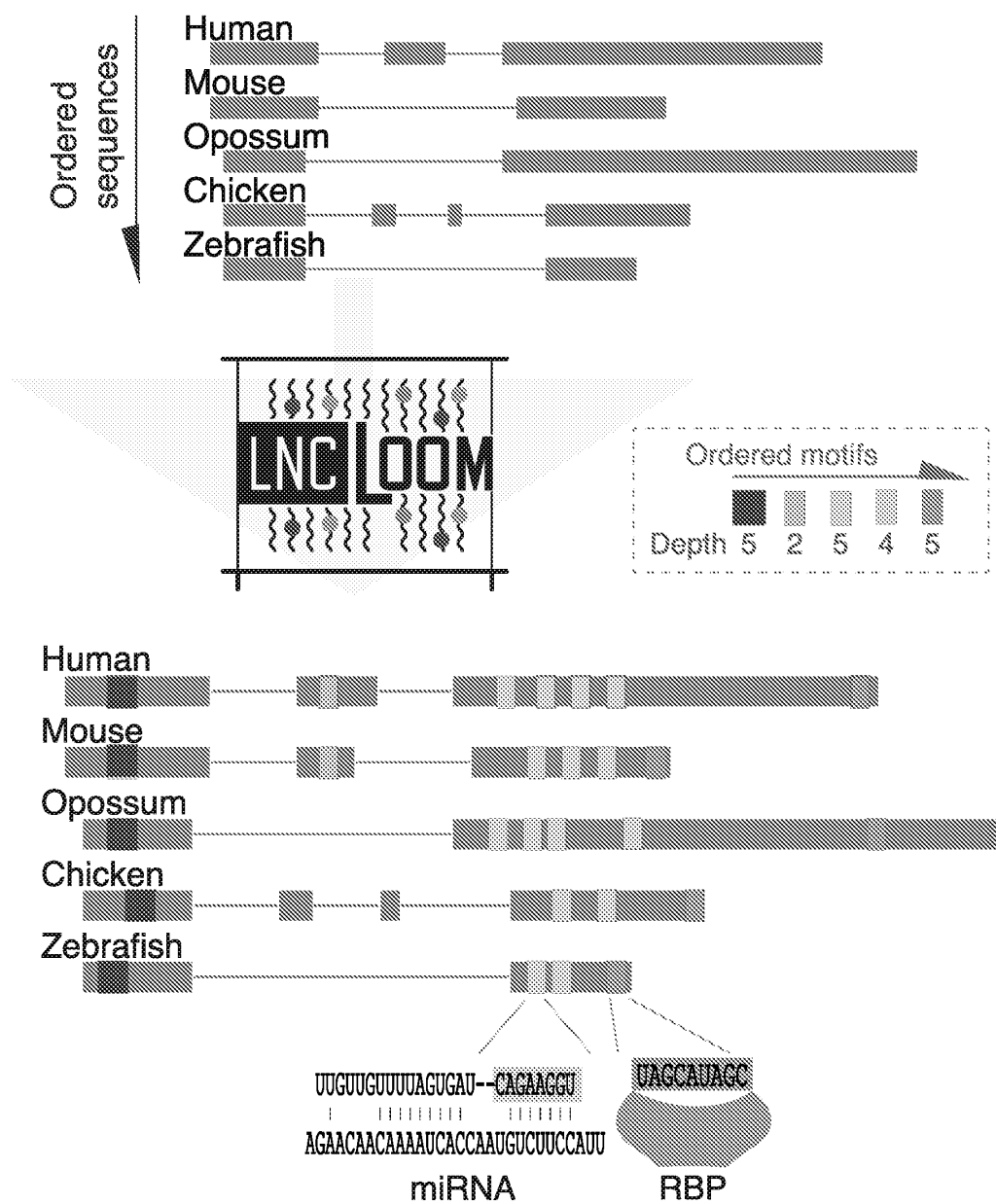
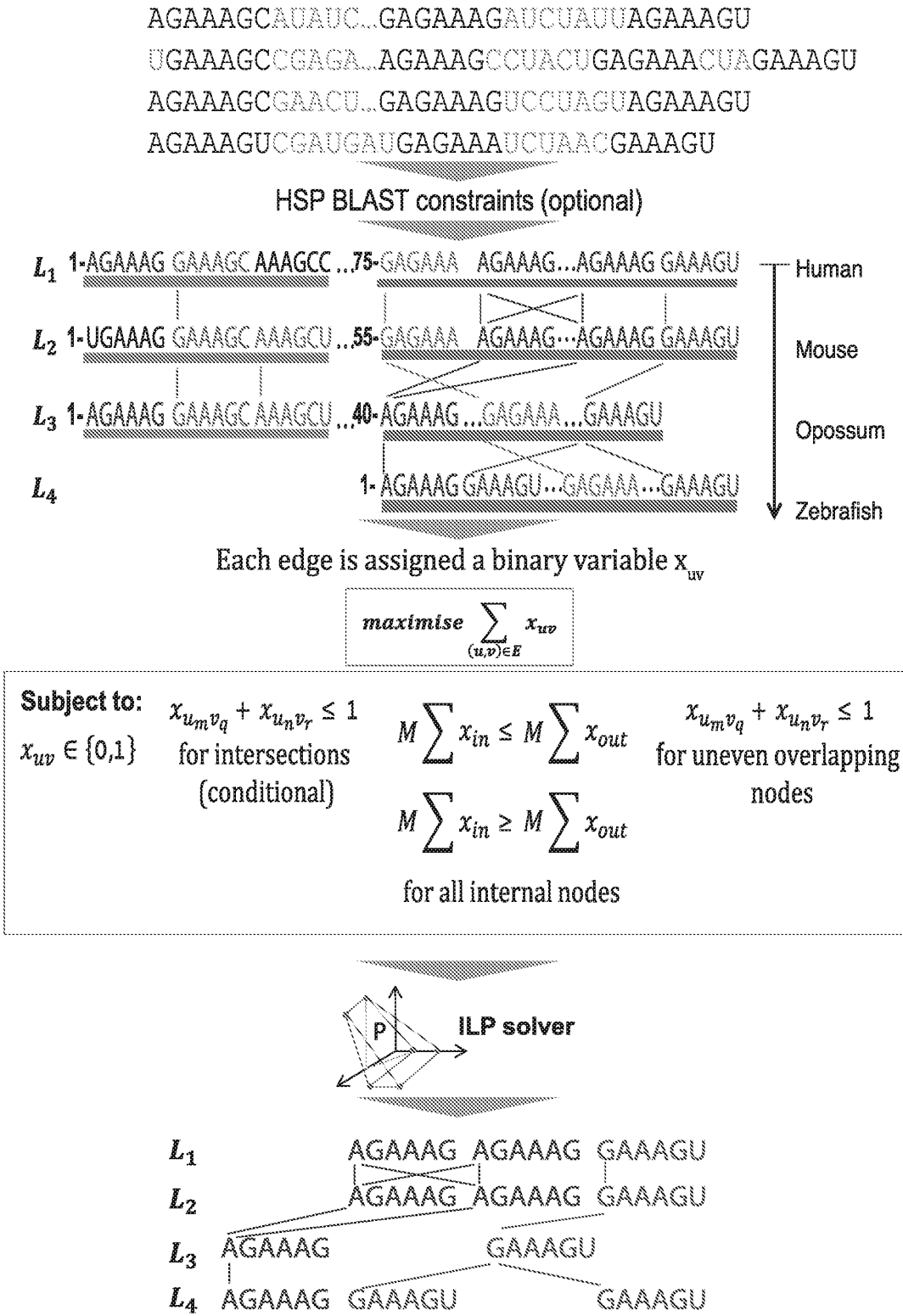


FIG. 1B



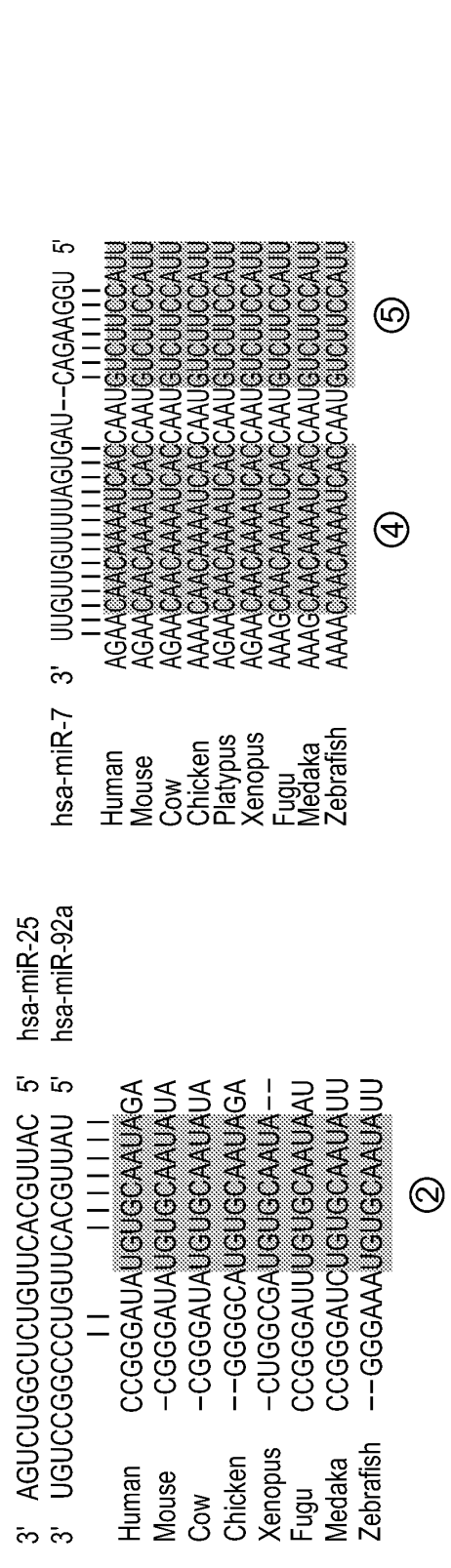
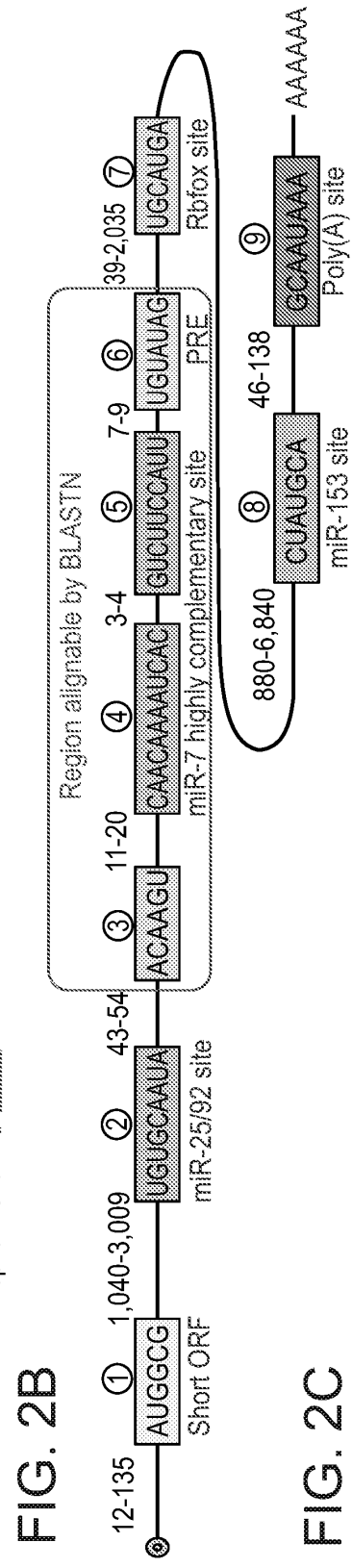
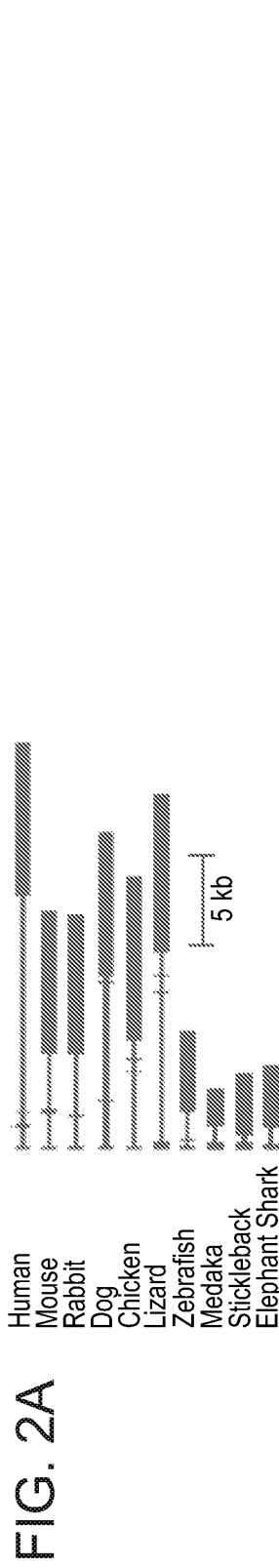


FIG. 2D

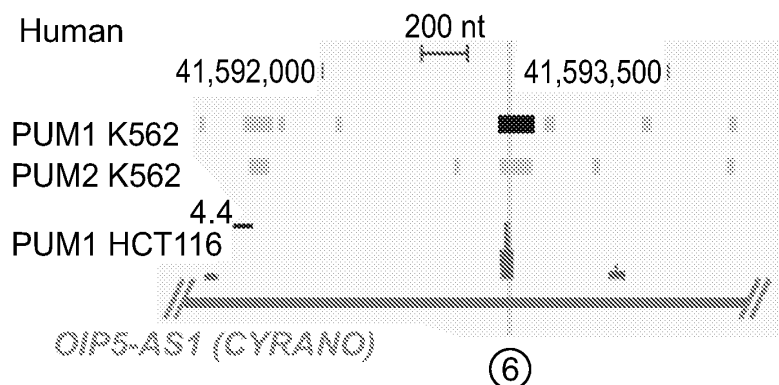


FIG. 2E

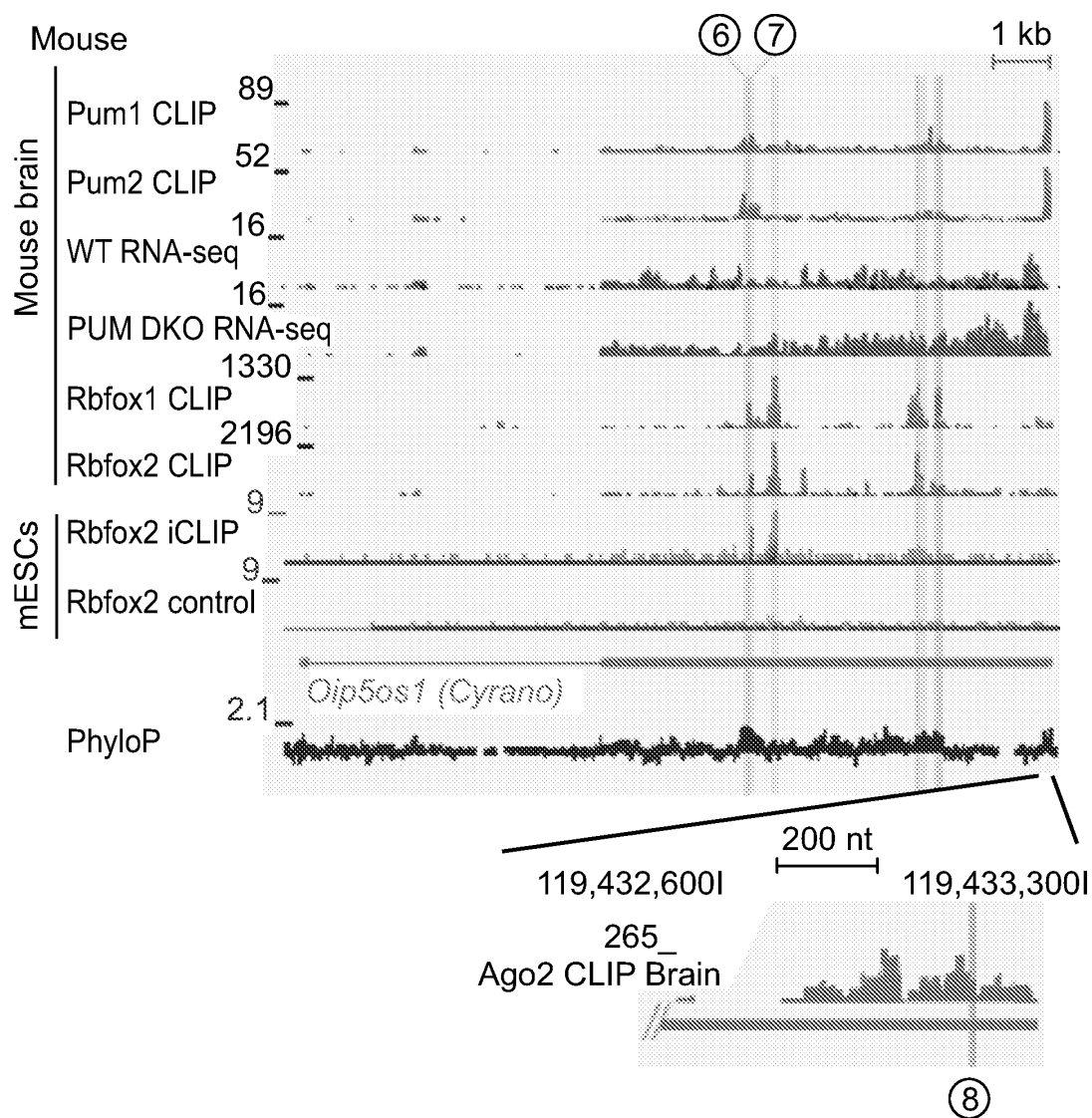


FIG. 2F

①

Human	GAAGCUGCGAAG	<u>AUGGCGGAGUAAGG</u>
Mouse	GAAGGAGCGAAG	<u>AUGGCGGAGUGAGG</u>
Rat	GAAGGAGCGAAG	<u>AUGGCGGAGUGAGG</u>
Rabbit	GAAGGAGCGAAG	<u>AUGGCGGAGUGAGG</u>
Cow	GAAAGAGCGAAG	<u>AUGGCGGAGUGAGG</u>
Horse	GAAGGAGCAAAG	<u>AUGGCGGAGUGAGG</u>
Dog	AAAAGAGCGAAG	<u>AUGGCGGAGUGAGA</u>
Elephant	GAAGGAGCGAAG	<u>AUGGCGGAGUGAGG</u>
Opossum	AAGGAAGAGAAG	<u>AUGGCGGCGUGAGG</u>
Chicken	AAGGAGGGGAAG	<u>AUGGCGGAGUGAGA</u>
Frog	AAAGGGUGGAAG	<u>AUGGCGGCGUGAAG</u>
Fugu	AGCAGAGCGAAA	<u>AUGGCGUAGAGCGA</u>
Tetraodon	AGCAGAACGAAA	<u>AUGGCGUAGAACGA</u>
Medaka	CGCGGAGCAAAG	<u>AUGGCGUAGAGCGG</u>
Zebrafish	CACGGGACCGAA	<u>AUGGCGUAACGCGC</u>

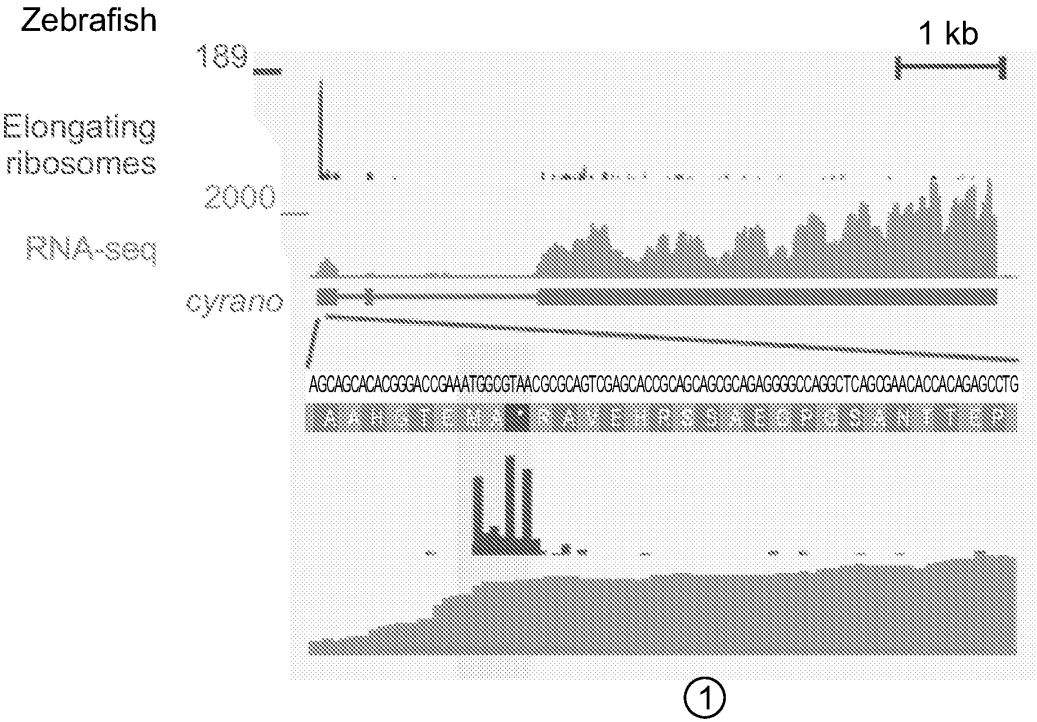


FIG. 2F continued

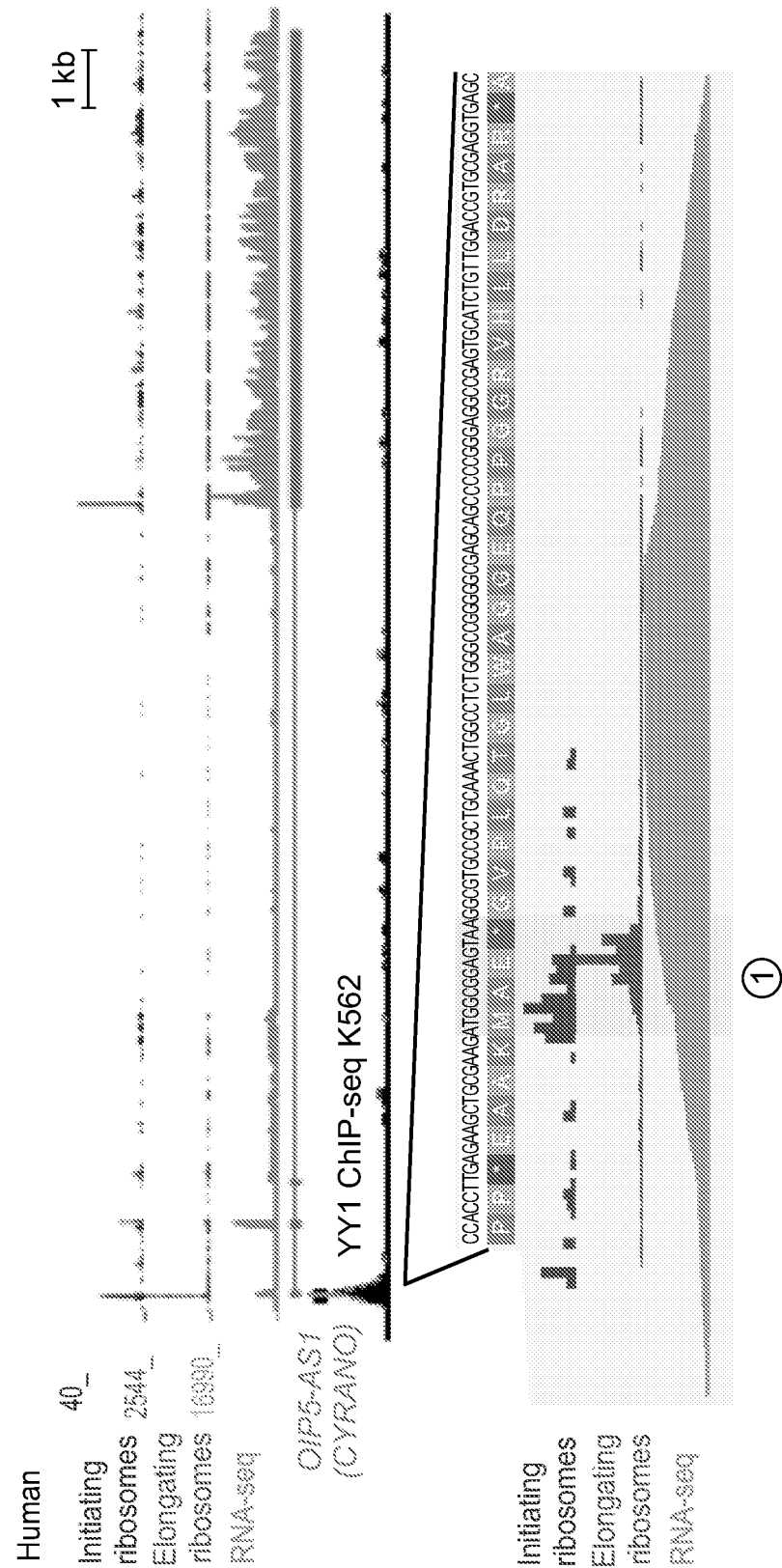
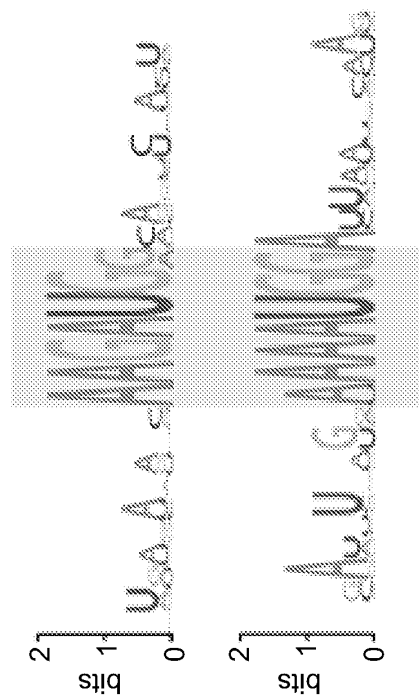
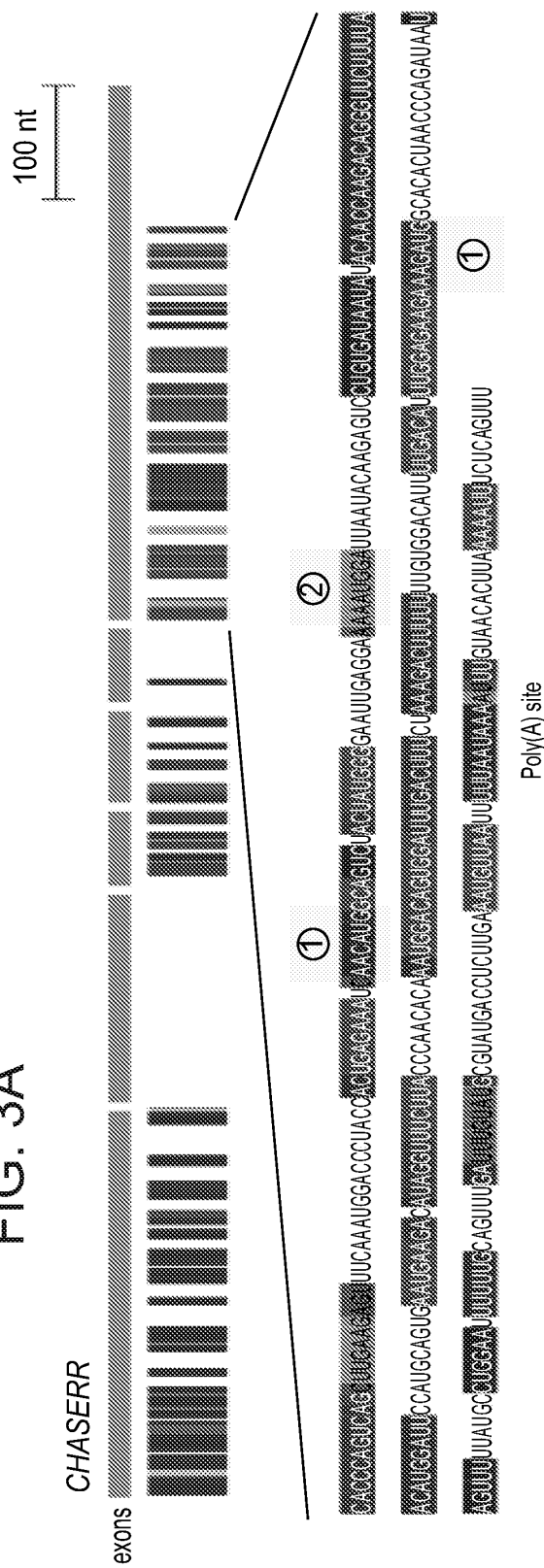
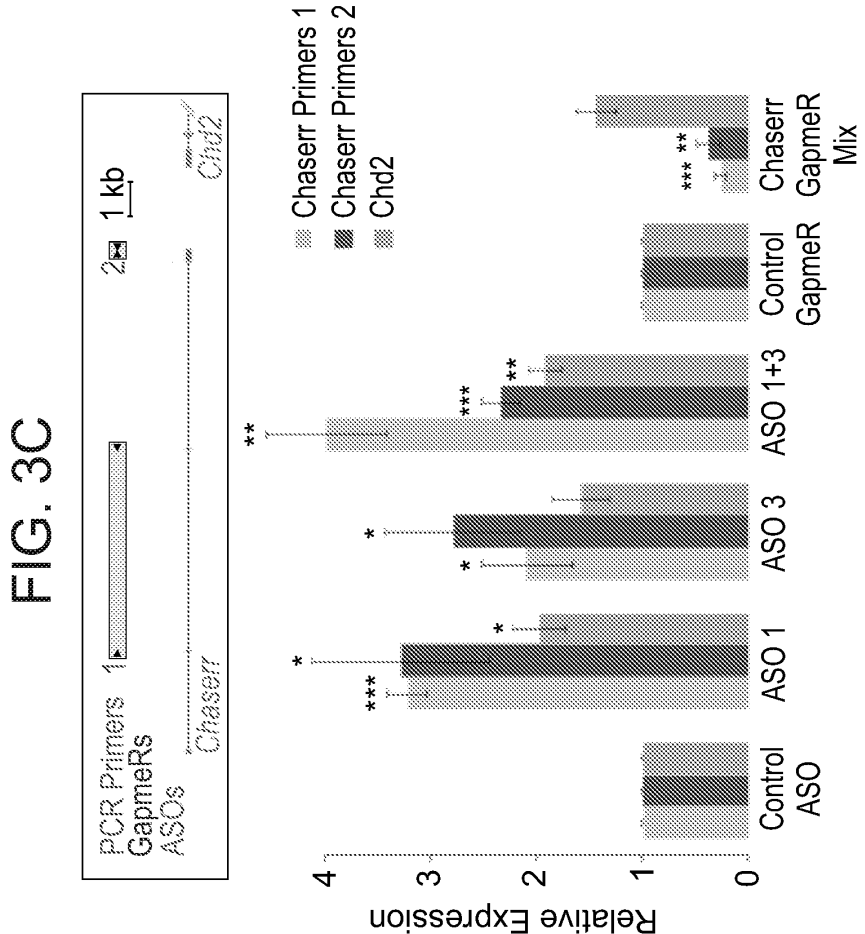
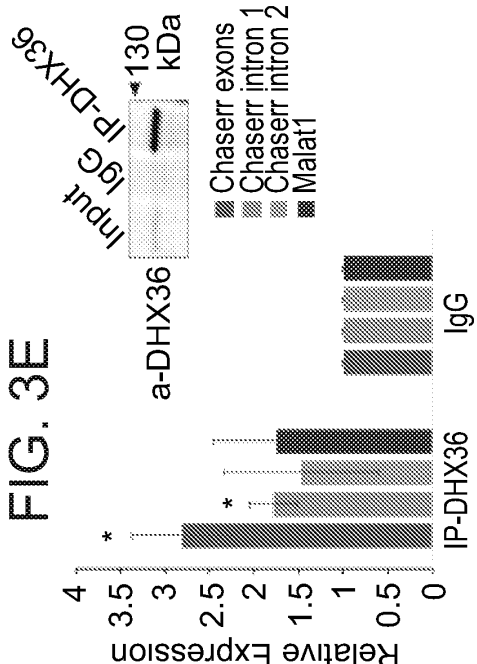
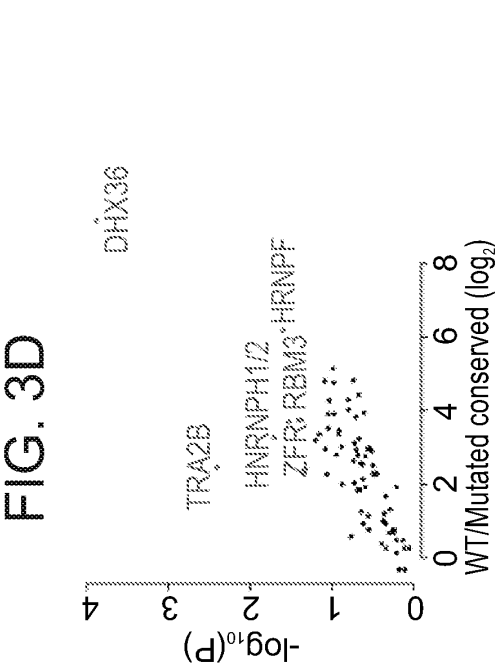


FIG. 3A





PUM1 3'UTR

[illegible]

PUM2 3'UTR

[illegible]

16

7

Depth of motif conservation (number of species)

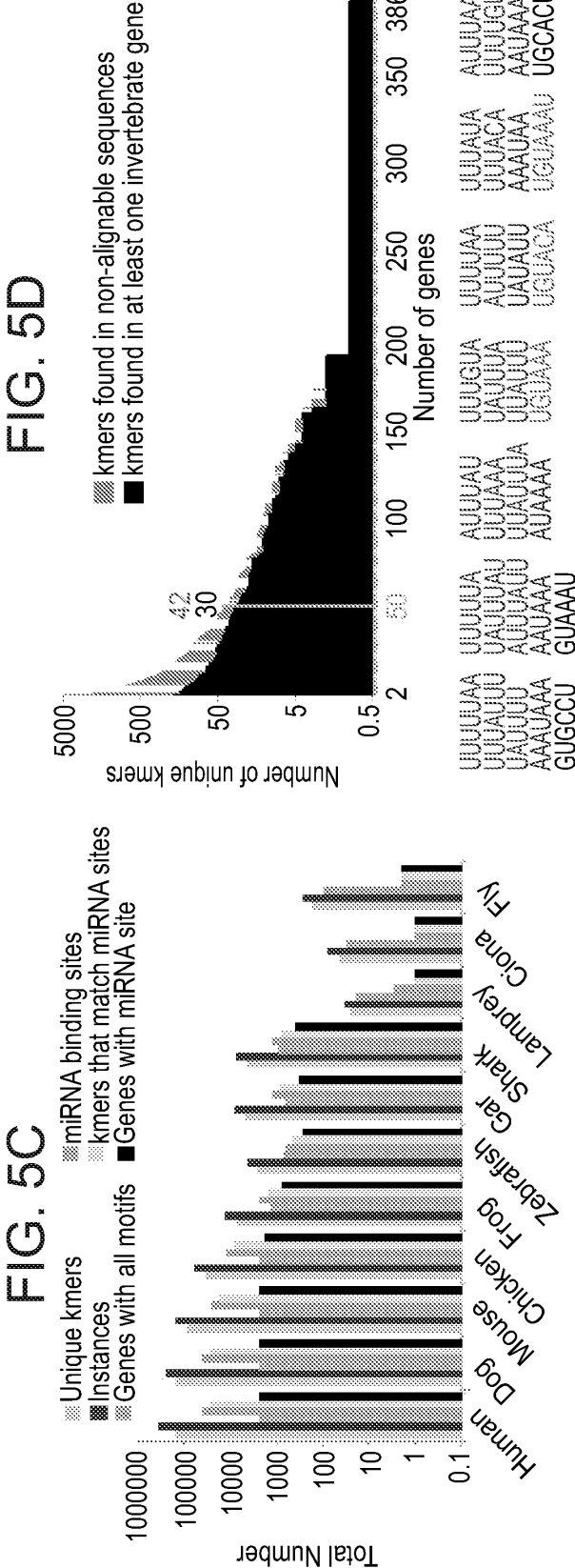
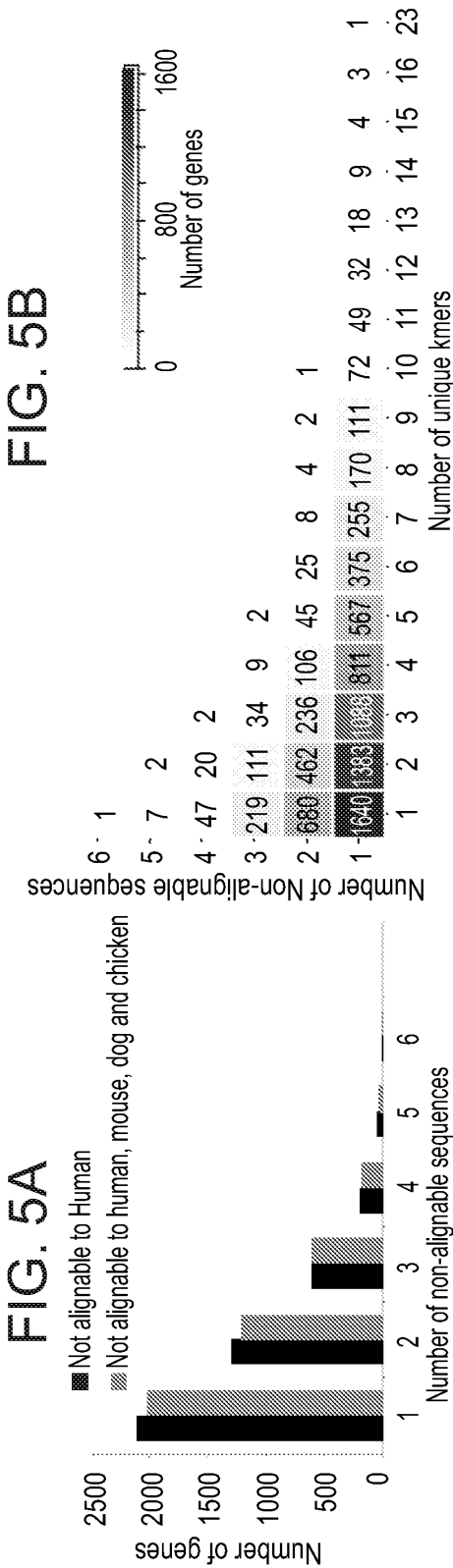


FIG. 5E

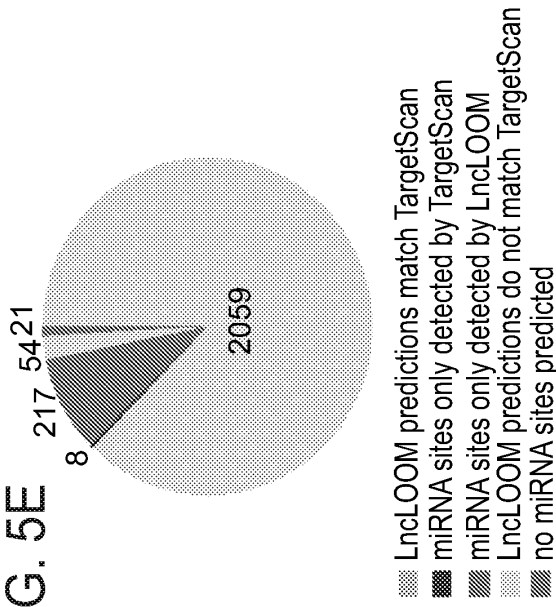


FIG. 5G

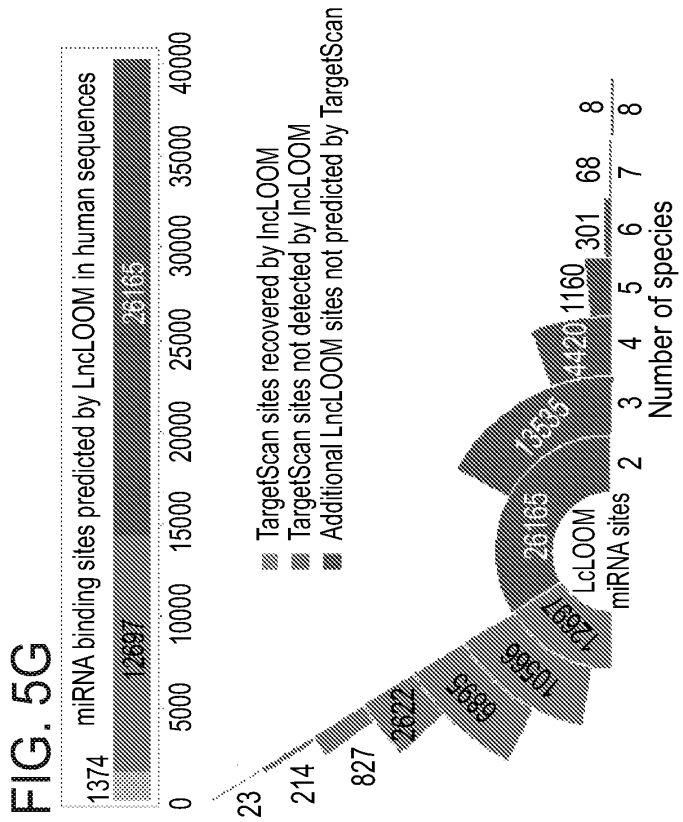


FIG. 5F

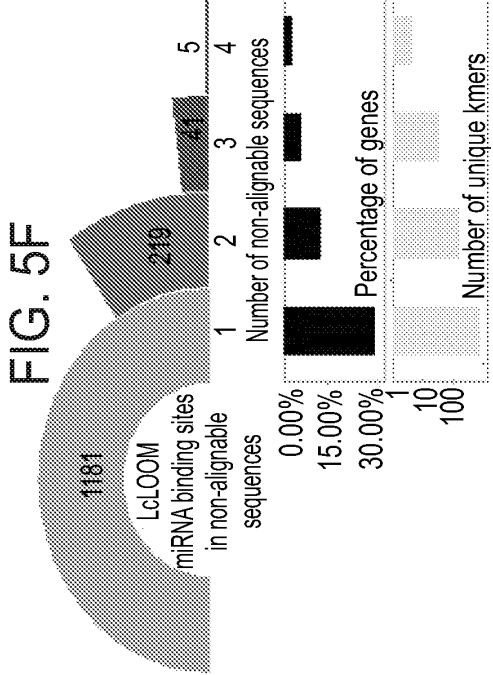


FIG. 5H

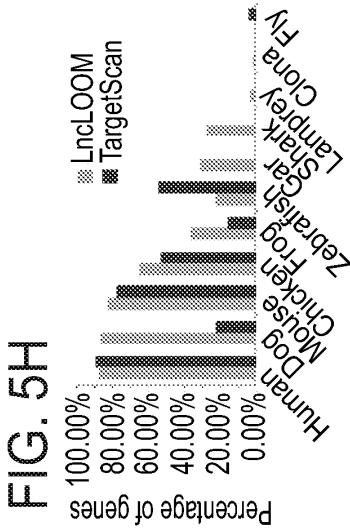
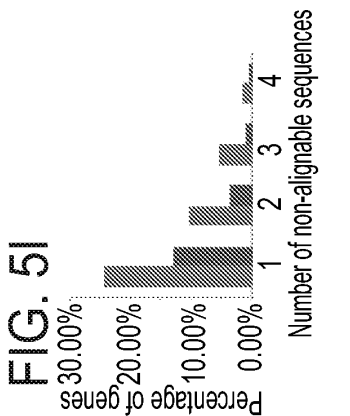


FIG. 5I



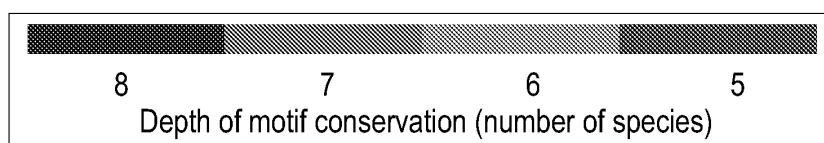
[illegible]

FIG. 7

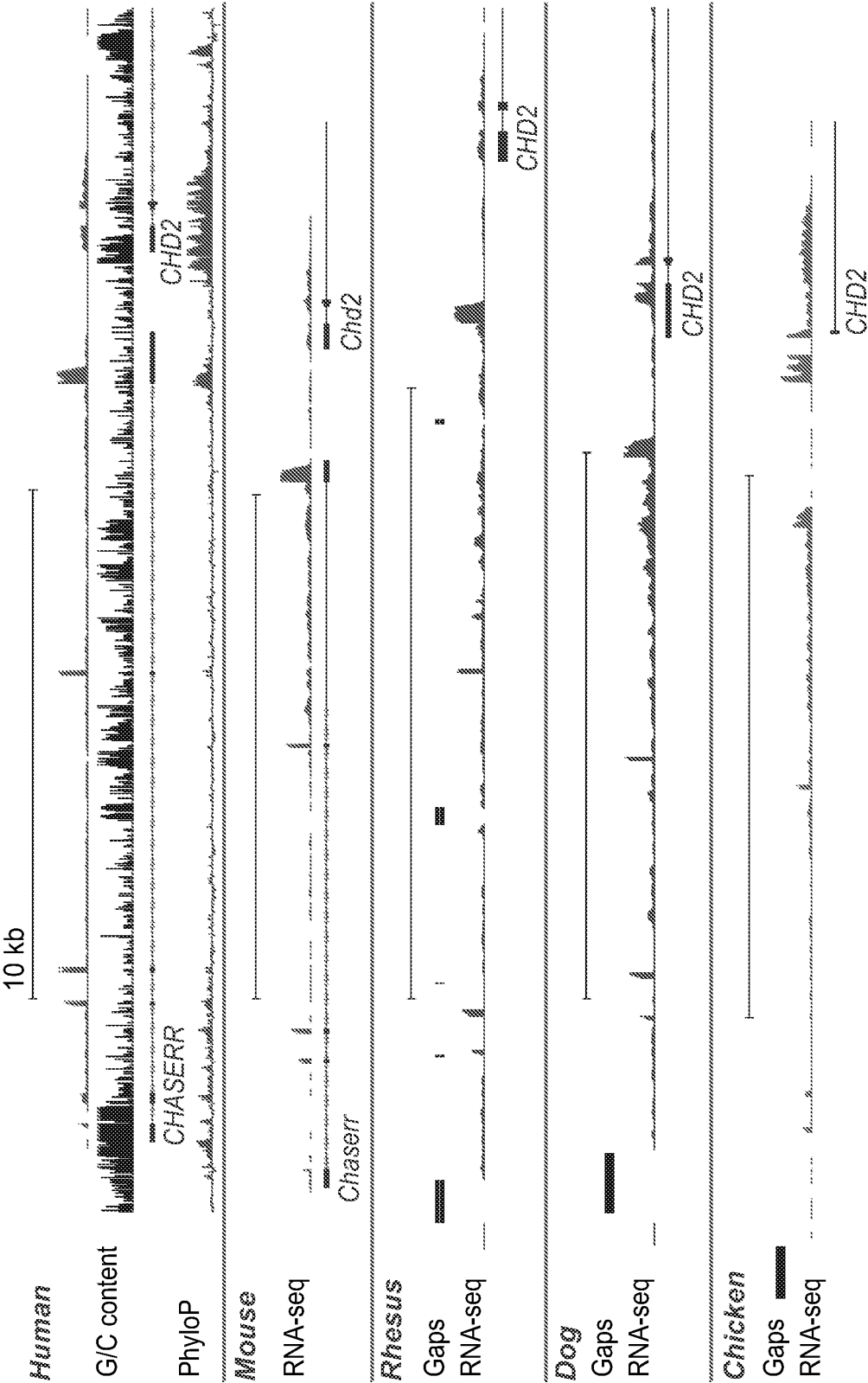


FIG. 8A

CACCCCGCUUGAAGAGUUUGAAAUUGGACUUUACCAUCUGAGAAAUCAAGAUUGGCAGCCCAUUAUGGGGAUUGAGGAAAUUGGAUUAUUGCAAGAAUGCUGUAAUUAU
UAUACAACCAACACAGGAUUCUUUAAUGUGGAUCCCAUGAAUUGAAUUCUUAACCAACACAAAUUGGACAGUGGAUUAACUCCUAAAGACUUGUUACAUGU
CAUGUACAUUUUUGACAUCUGGAGAAGACUCUACAAUUCUACAAUUGGUAGUUUGUAUCCUGGAAUUCUUGCAGUUUGAUCUGAAGUGACCUUAUGGAAUGUUUA
ACUUUUAUAAAAU

FIG. 8B

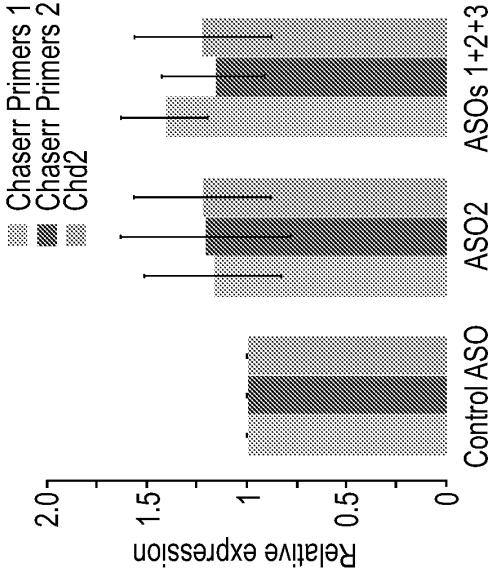


FIG. 8C

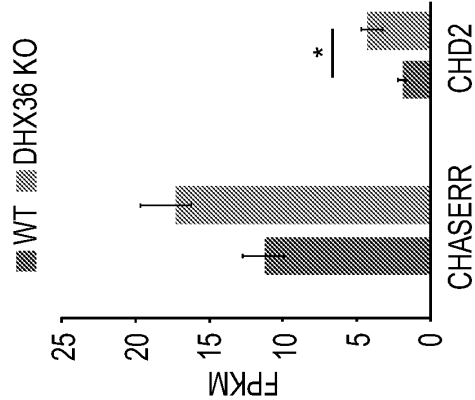
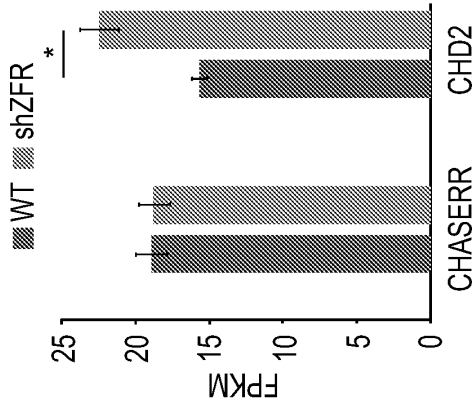


FIG. 8D



[illegible]

Depth of motif Conservation (number of species)

Conservation Level	Number of Species
8	8
10	10

FIG. 9 continued

FIG. 10A

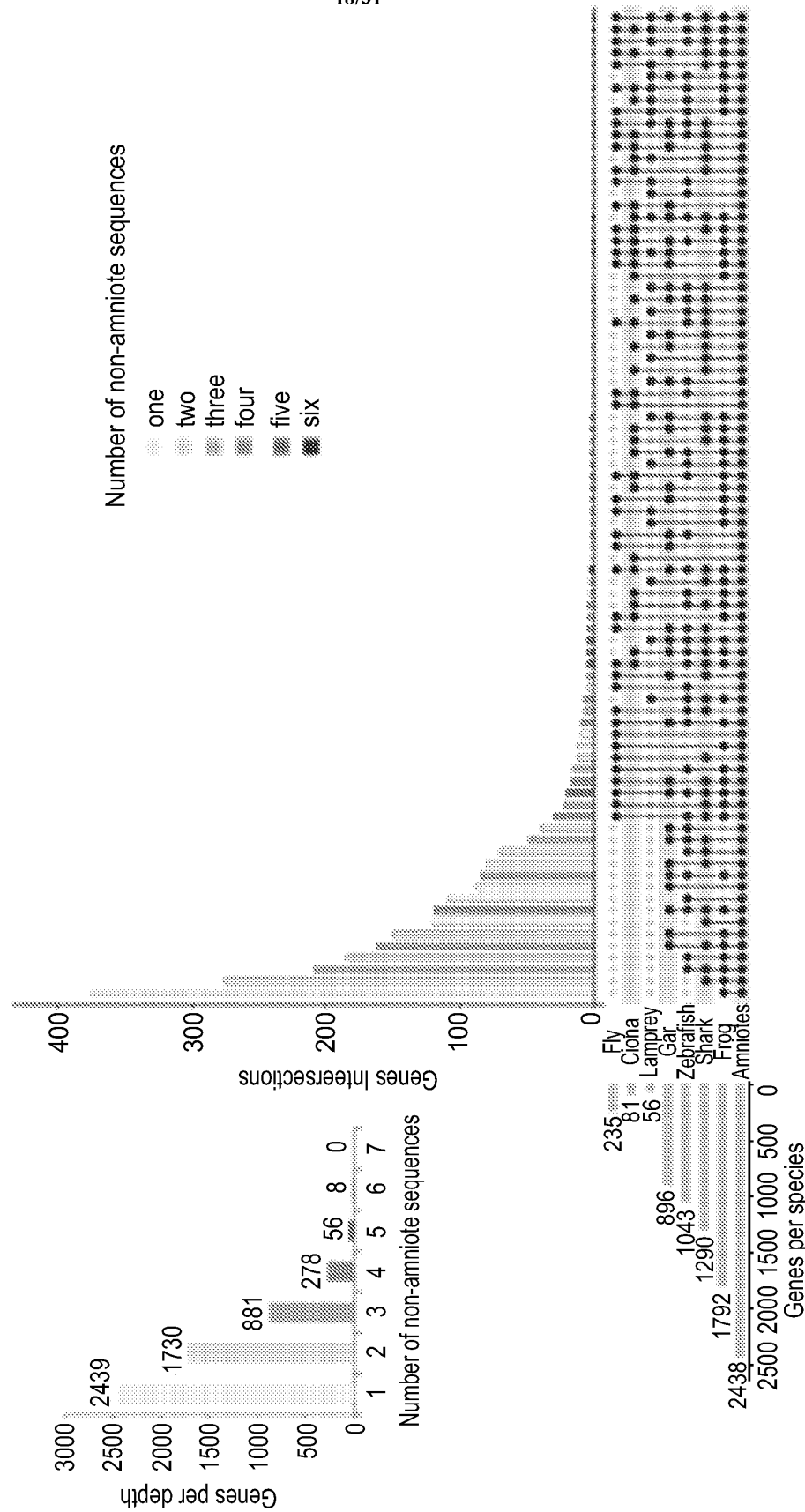


FIG. 10B

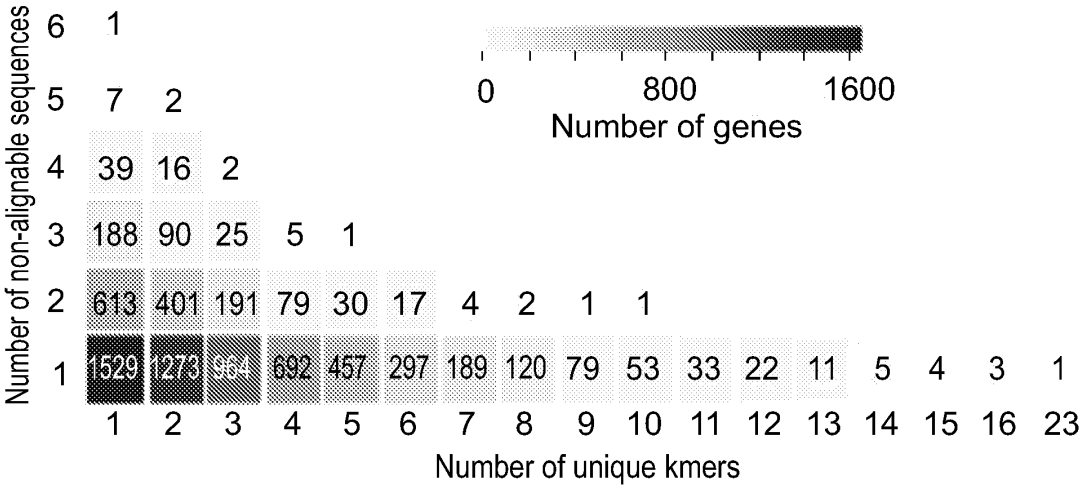


FIG. 10C

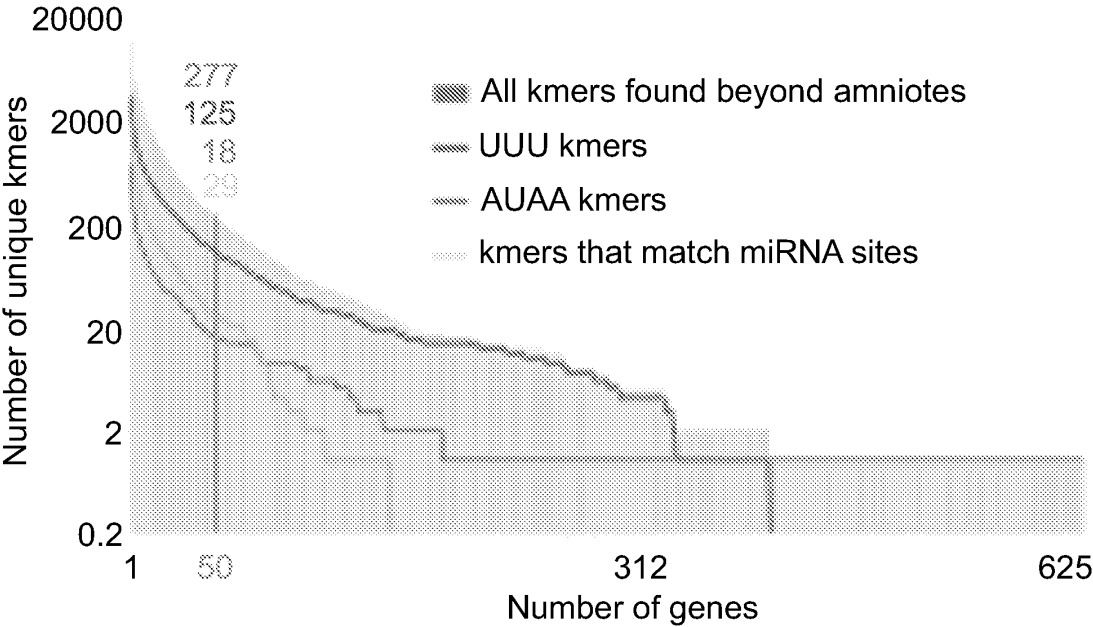
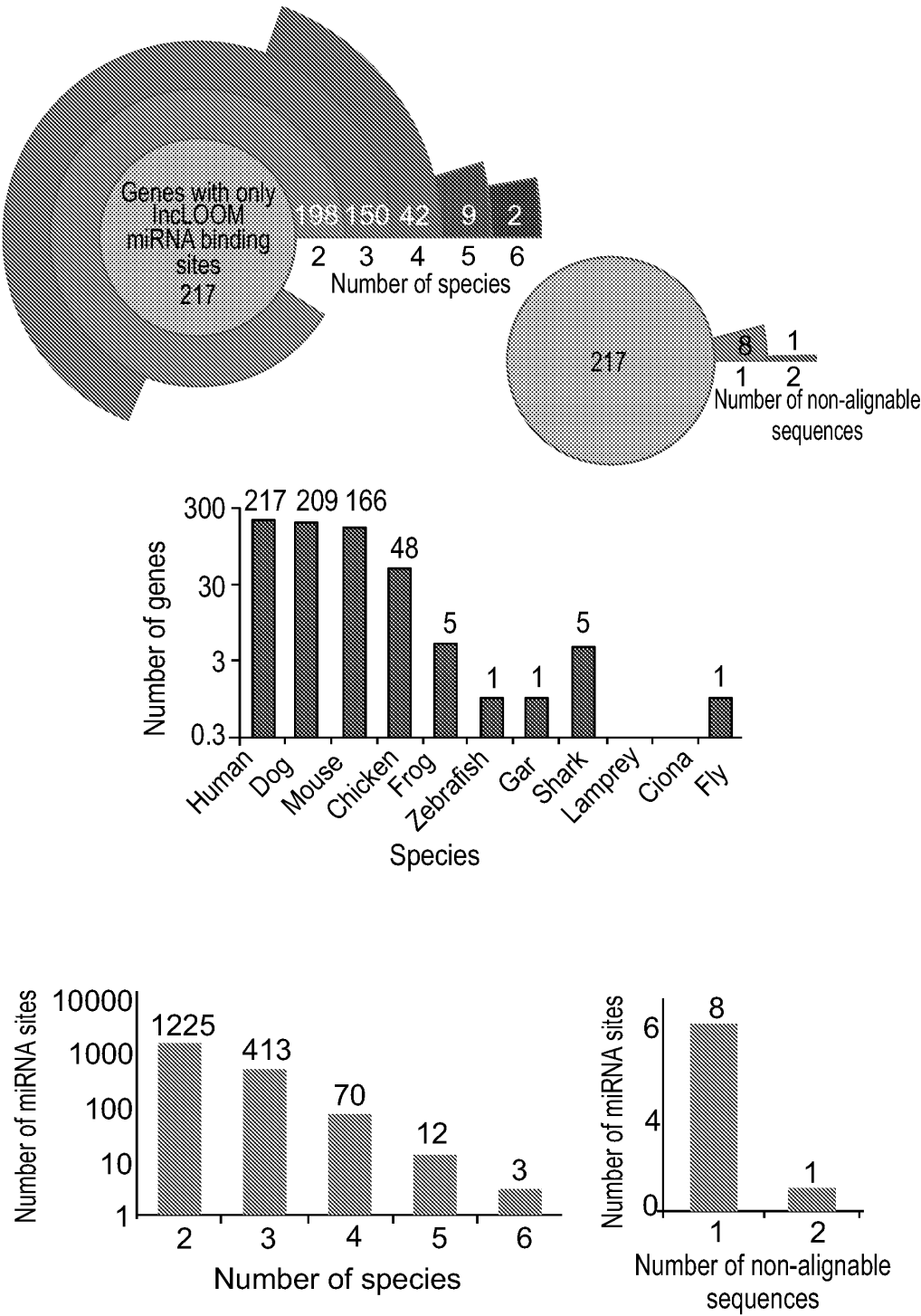


FIG. 10D



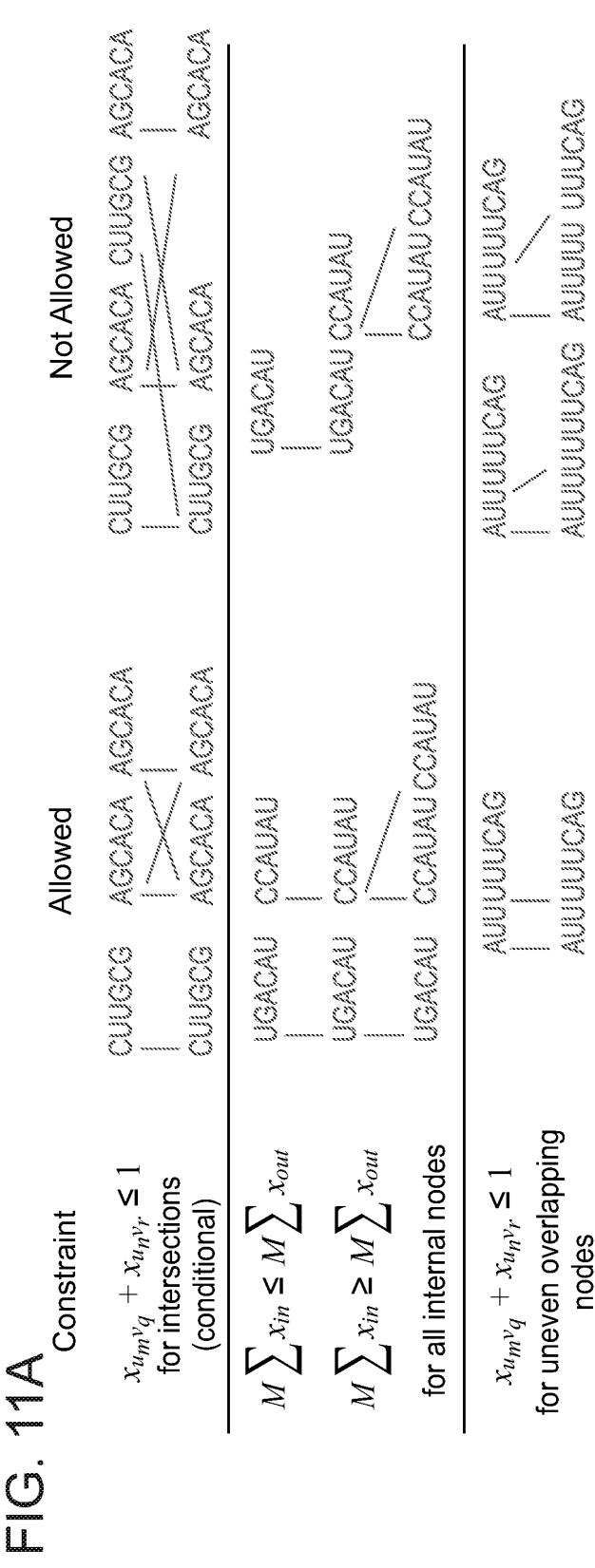
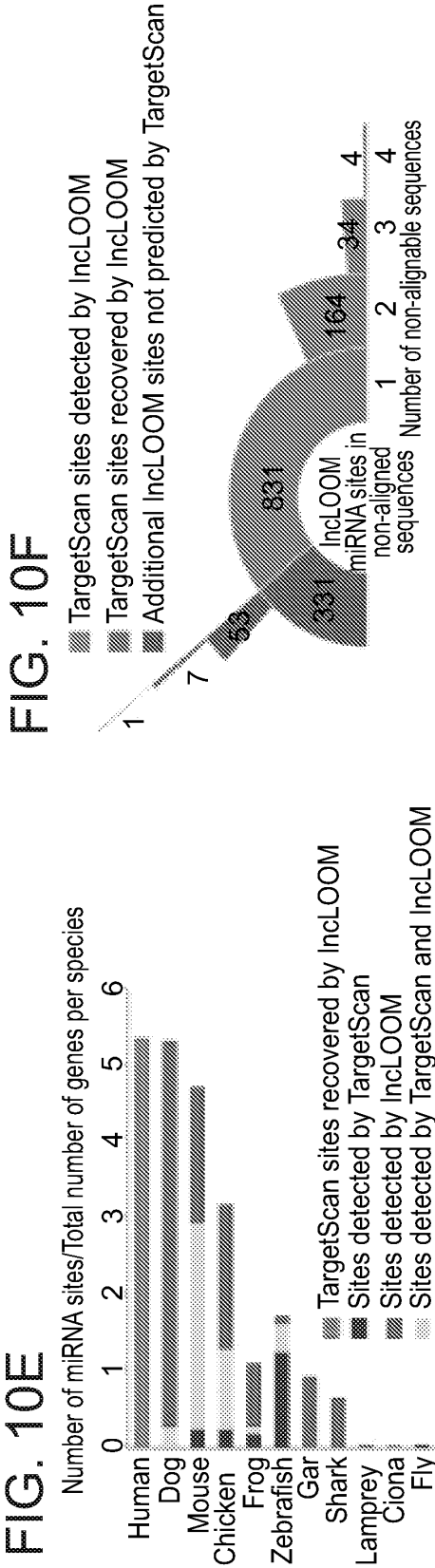


FIG. 11C

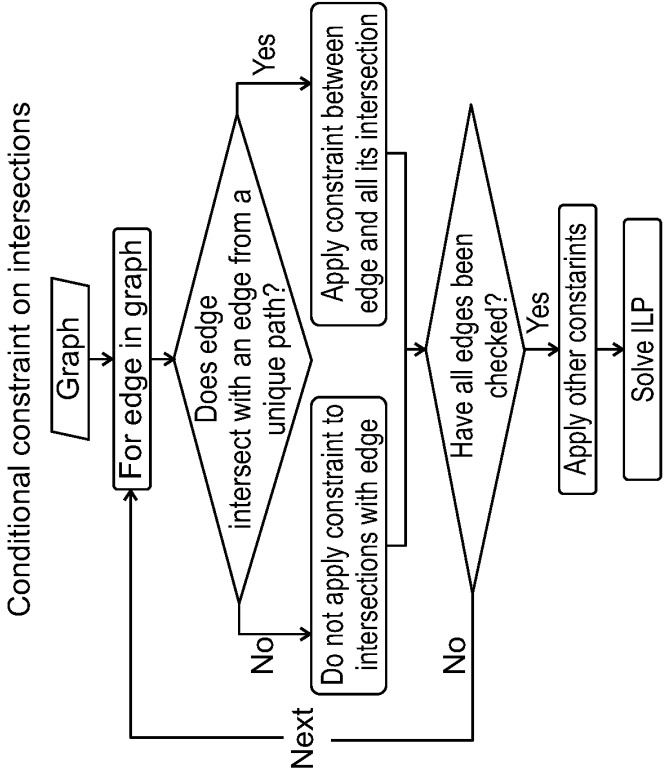


FIG. 11D

Example
Motif discovery $k=7$

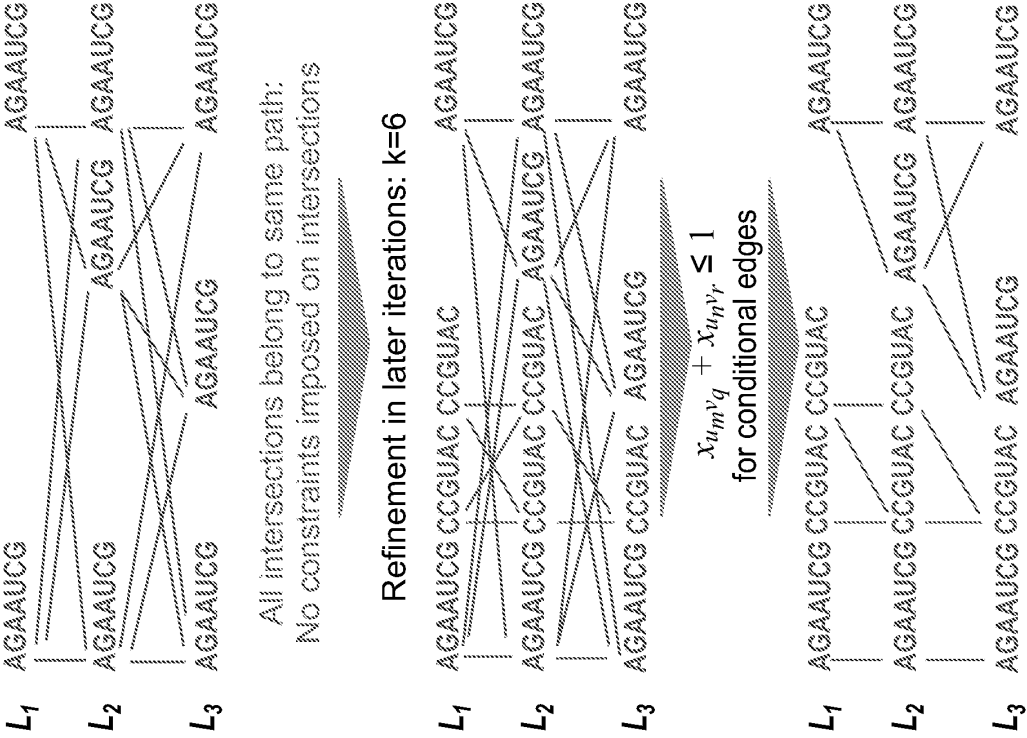
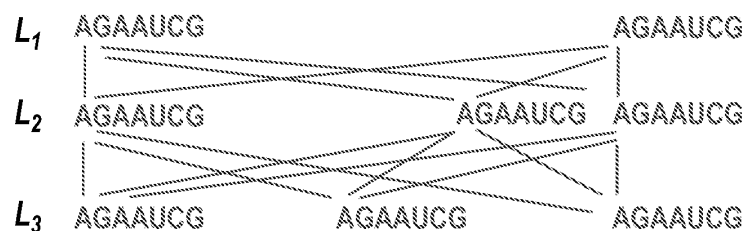


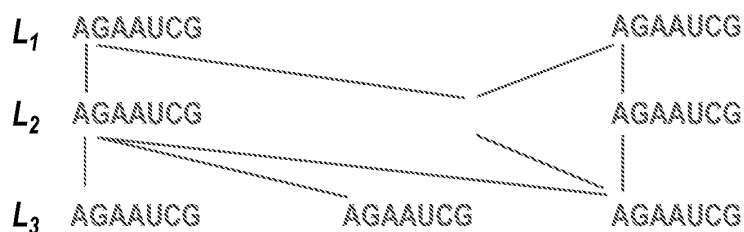
FIG. 11B

Suboptimal exclusion of tandem repeats in complex paths
Motif discovery $k=7$

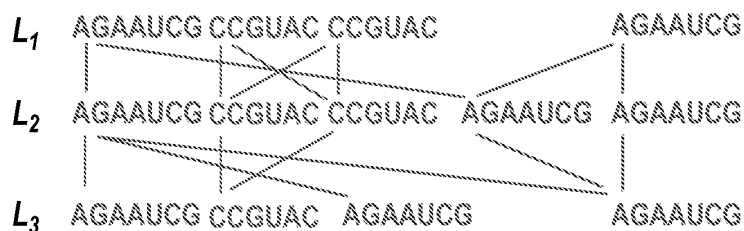


$$x_{um^vq} + x_{un^vr} \leq 1$$

for all intersections

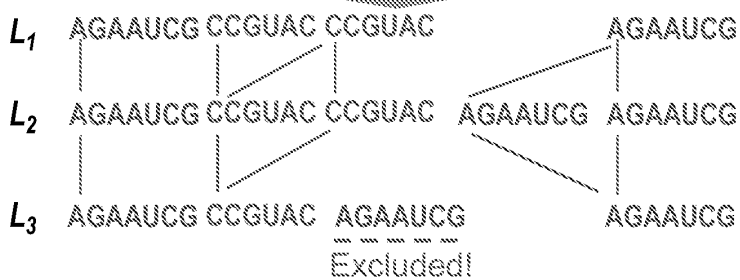


Refinement in later iterations: $k=6$



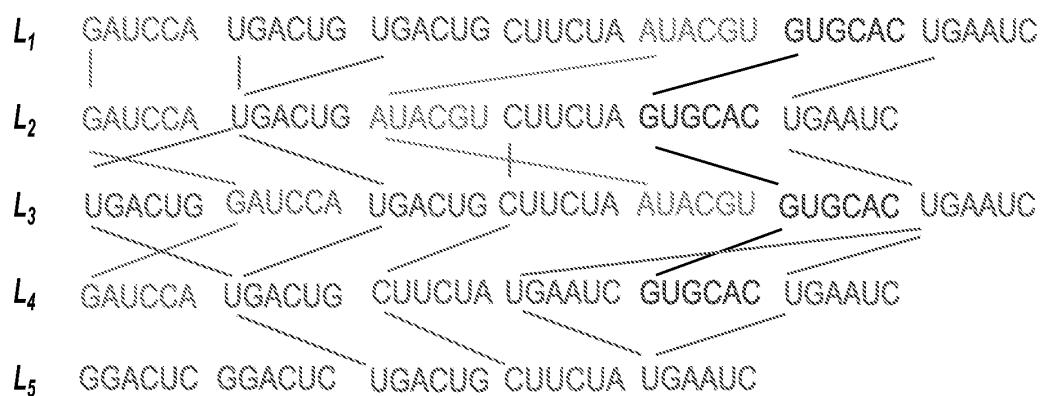
$$x_{um^vq} + x_{un^vr} \leq 1$$

for all intersections



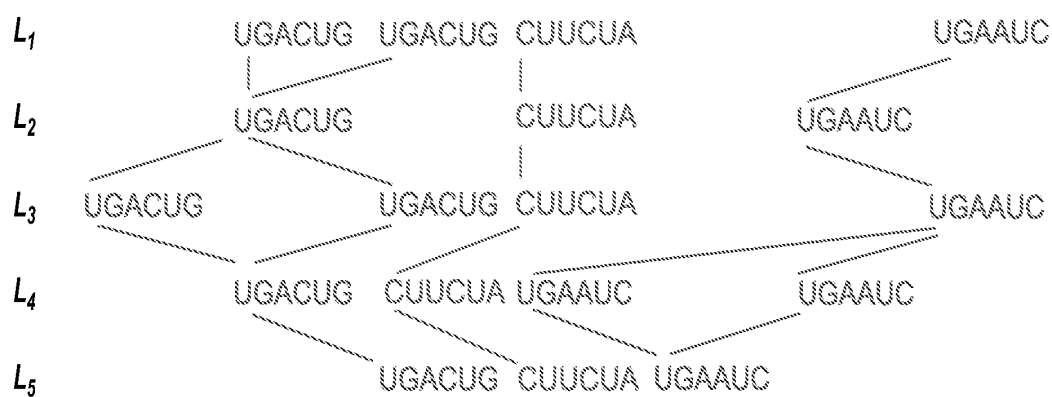
Graph partitioning and refinement of complex paths

Motif discovery $k=6$, layers=5
initial main graph



Solve ILP subject to constraints

Set S



Partition initial main graph on simple paths: CUUCUA
Eliminate last layer in each subgraph
Add complex paths to relative subgraphs: UGACUG and UGAAUC

FIG. 12

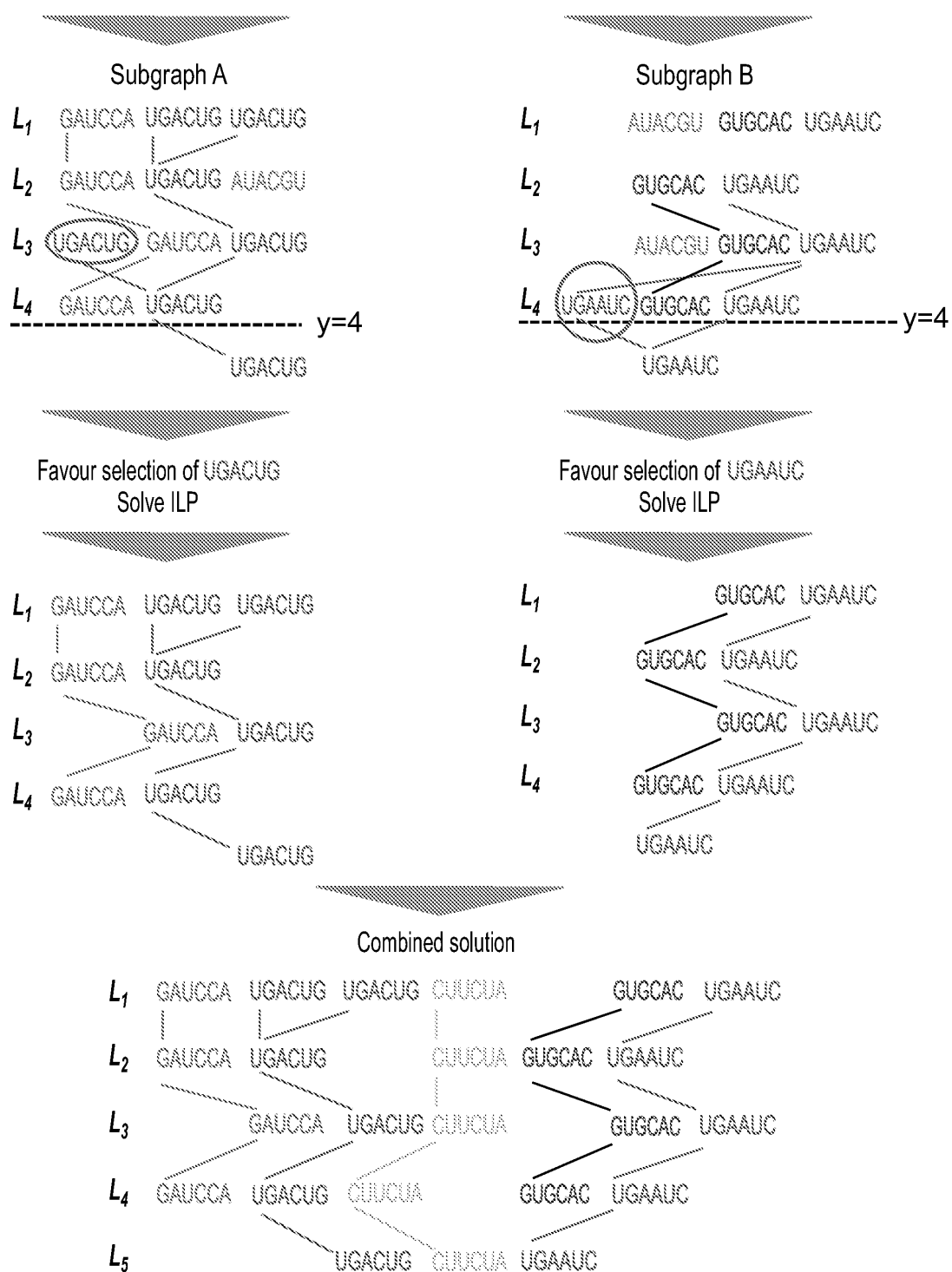


FIG. 12 continued

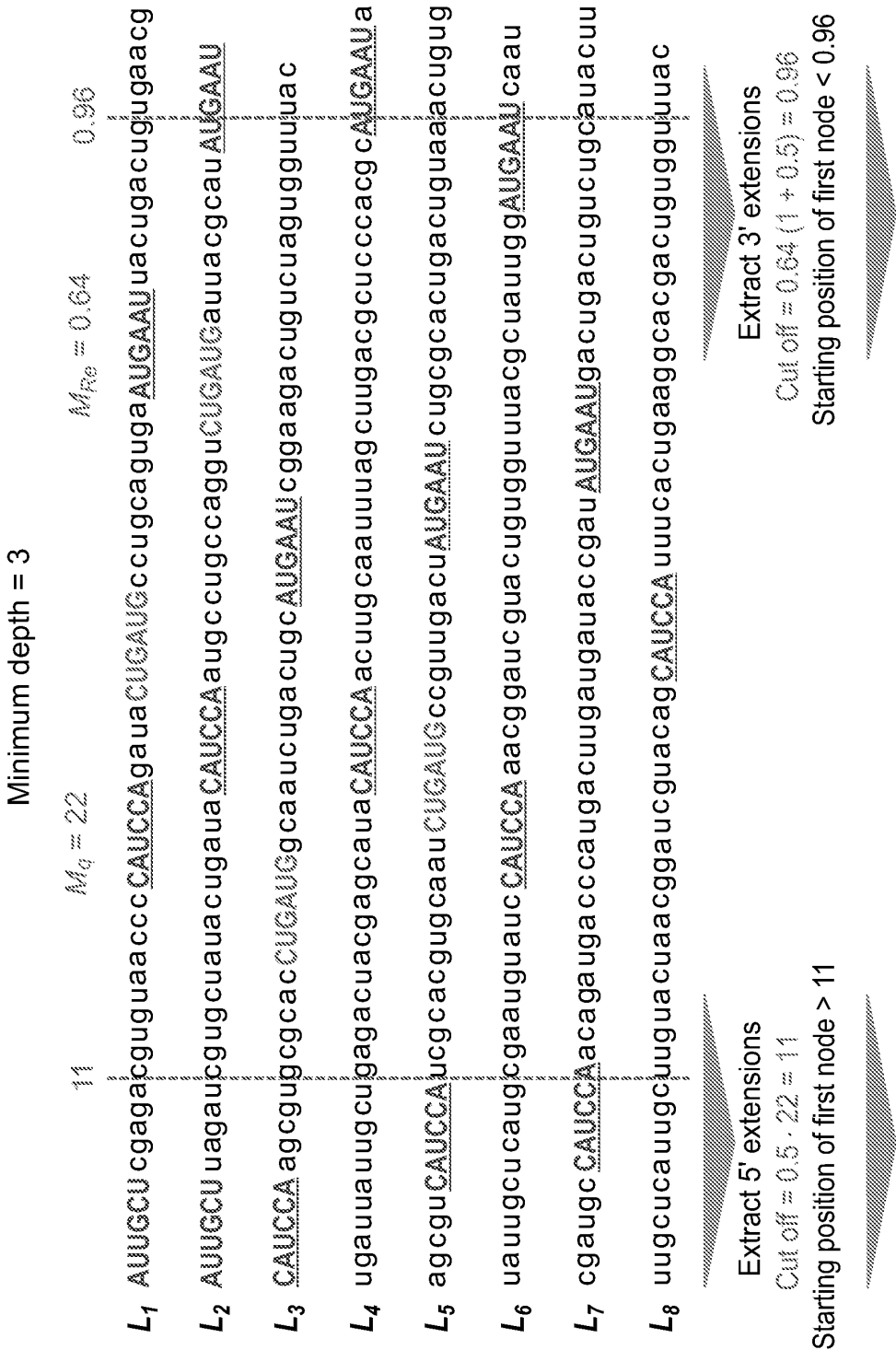


FIG. 13A



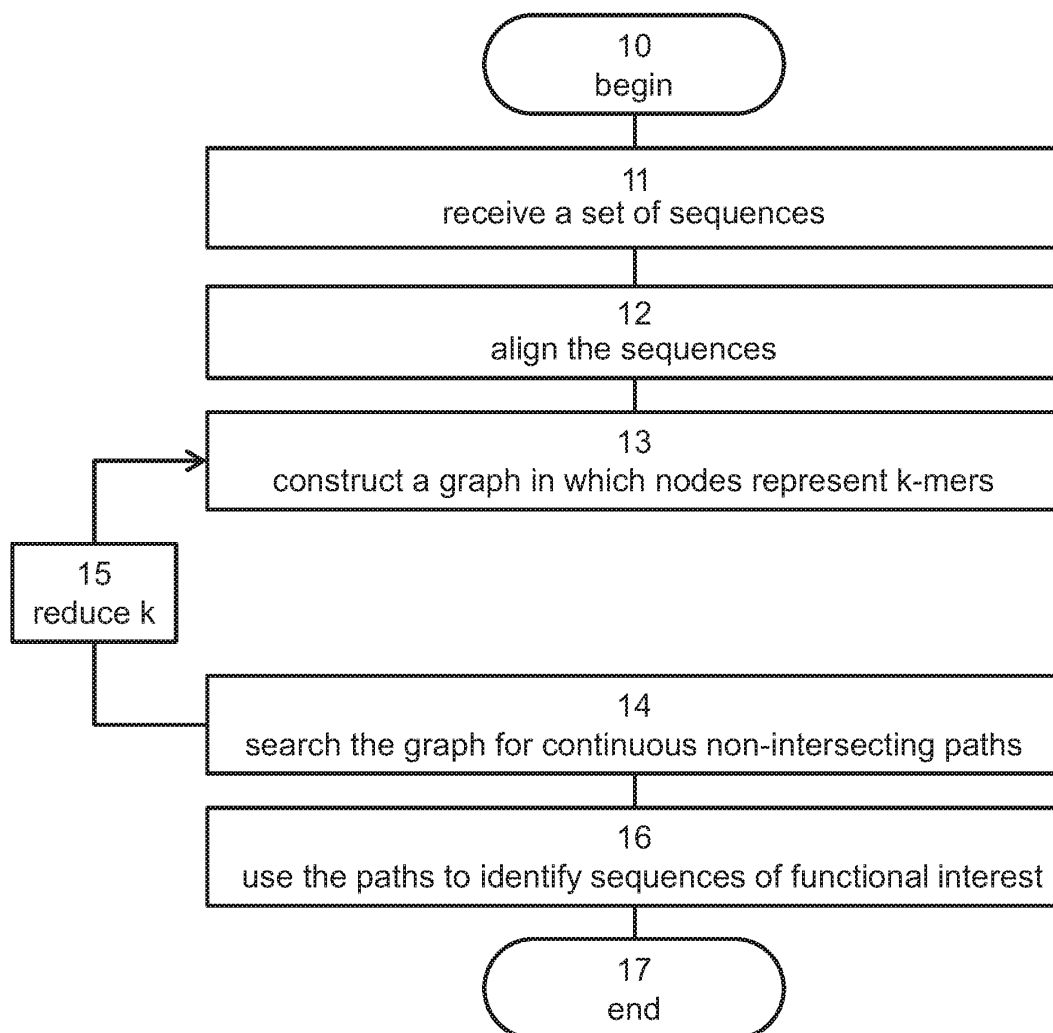


FIG. 14

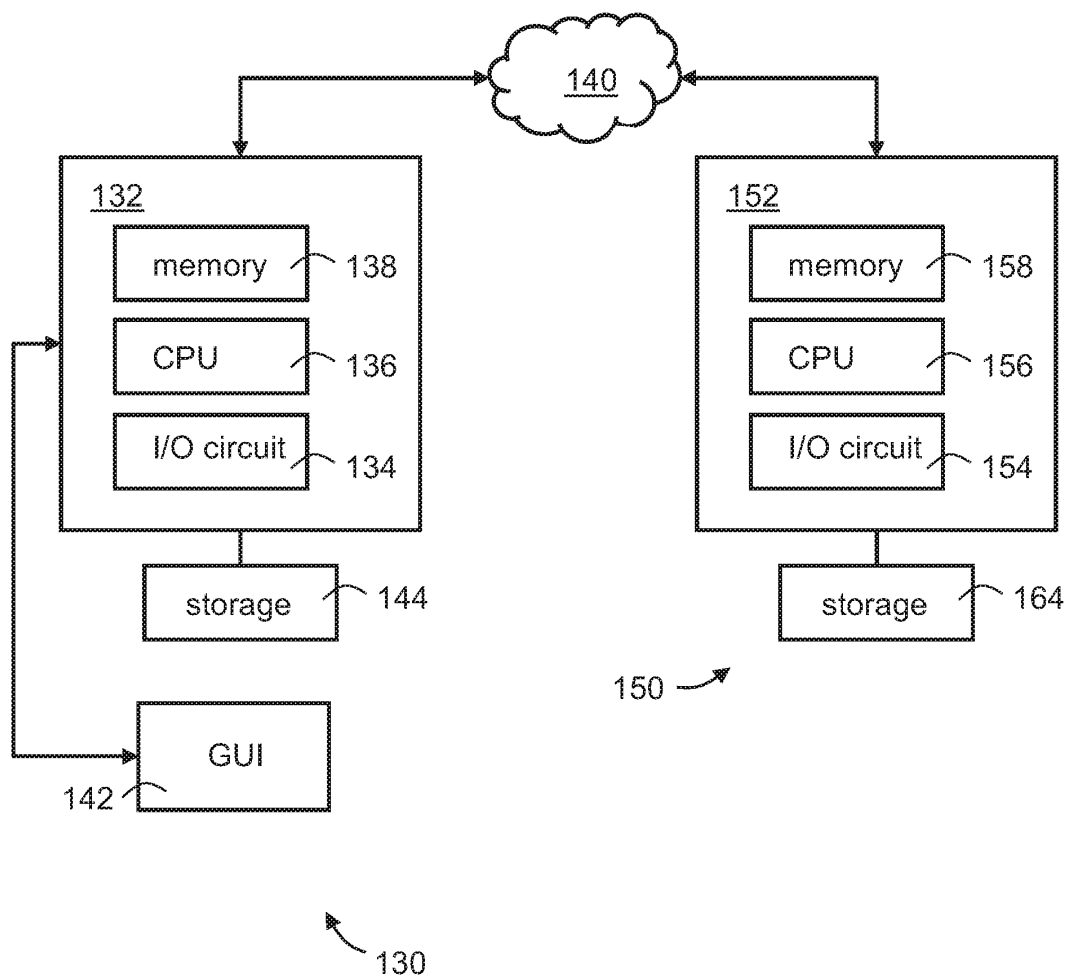


FIG. 15

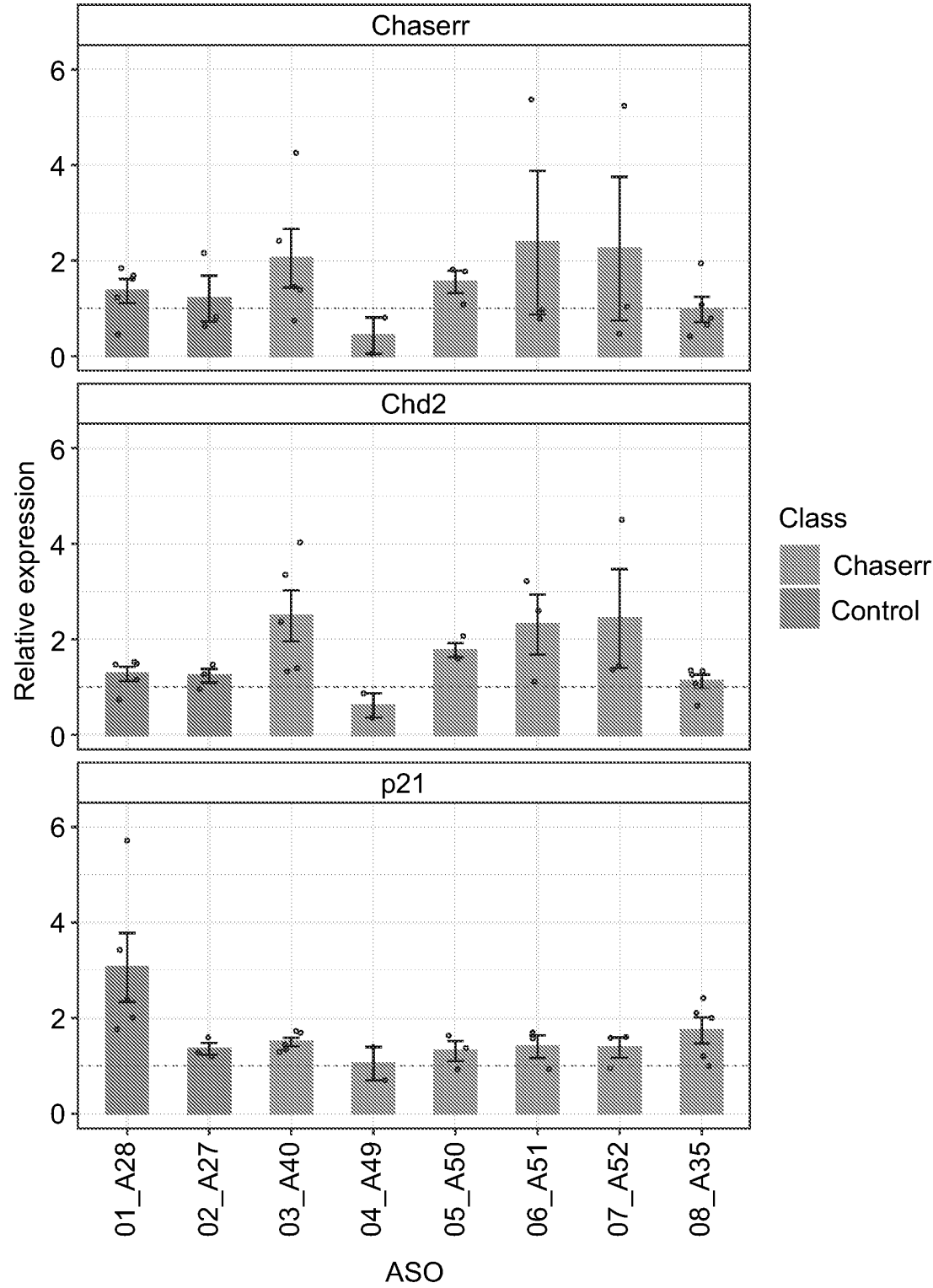


FIG. 16

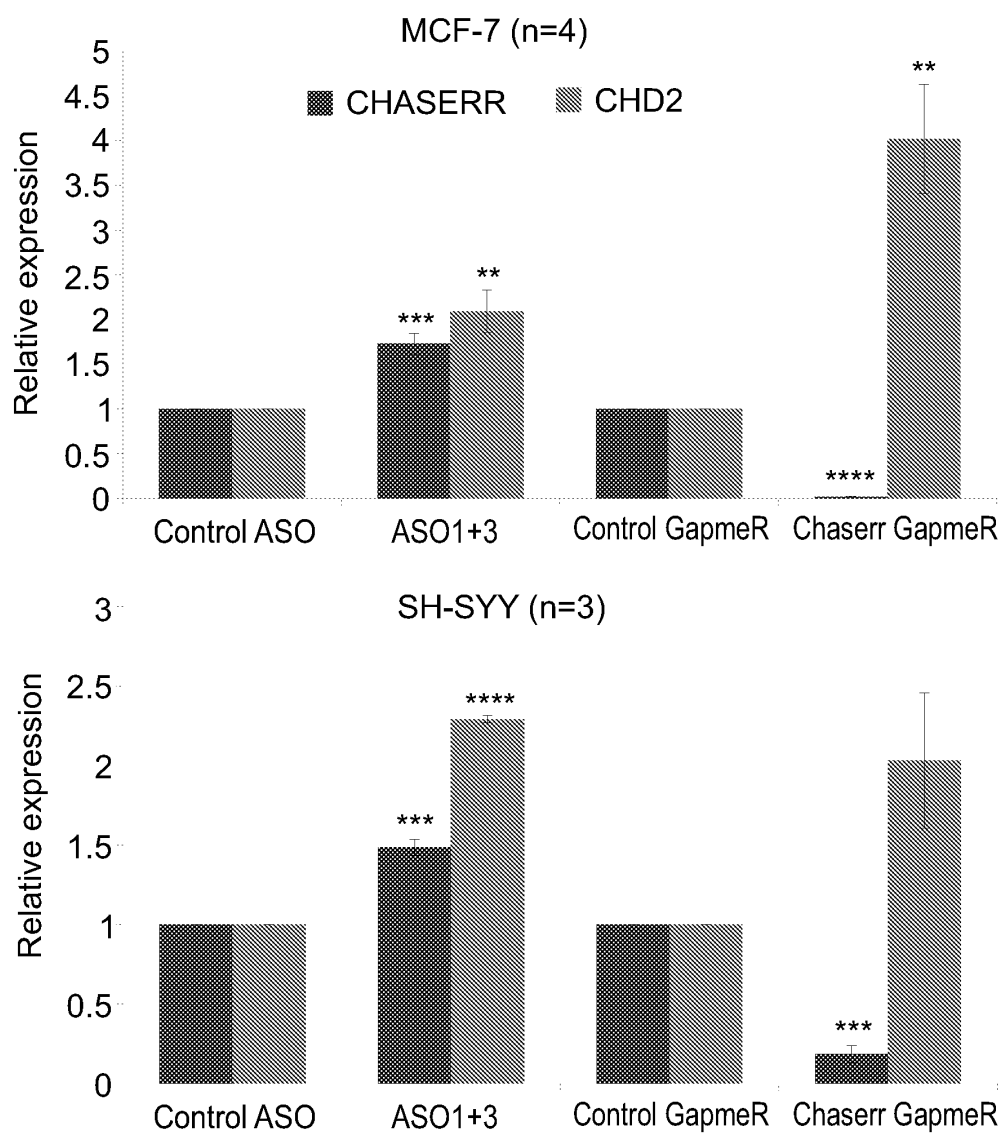


FIG. 17