

Supplementary F2

***In vivo* secondary structural analysis of Influenza A virus genomic RNA**

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Supplementary F2 material contains the influenza A virus (A/California/04/2009) vRNA secondary structures predictions from *in virio* and *in cellulo* experiments.

The structures were predicted using the same experimental data originating from chemical probing experiments with NAI (SHAPE reagent) and DMS, but with different folding algorithms. Minimum Free Energy (MFE structure) as well as Maximum Expected Accuracy (MEA structure) were calculated using RNAstructure software for vRNAs. Additionally, the structures obtained using aforementioned algorithms were predicted with 150 nt (local structure) and without (global structure) maximum allowed base-pairing distance constraints.

The information concerning base-pairing conservation across type A influenza is indicated on each structure using color-based code. The colors indicate percentage range of canonical base pairing preserved among IAV sequences of presented vRNA and are described in each figure legend. The conservation values of each predicted structure are included in Supplementary E2-E5 files.

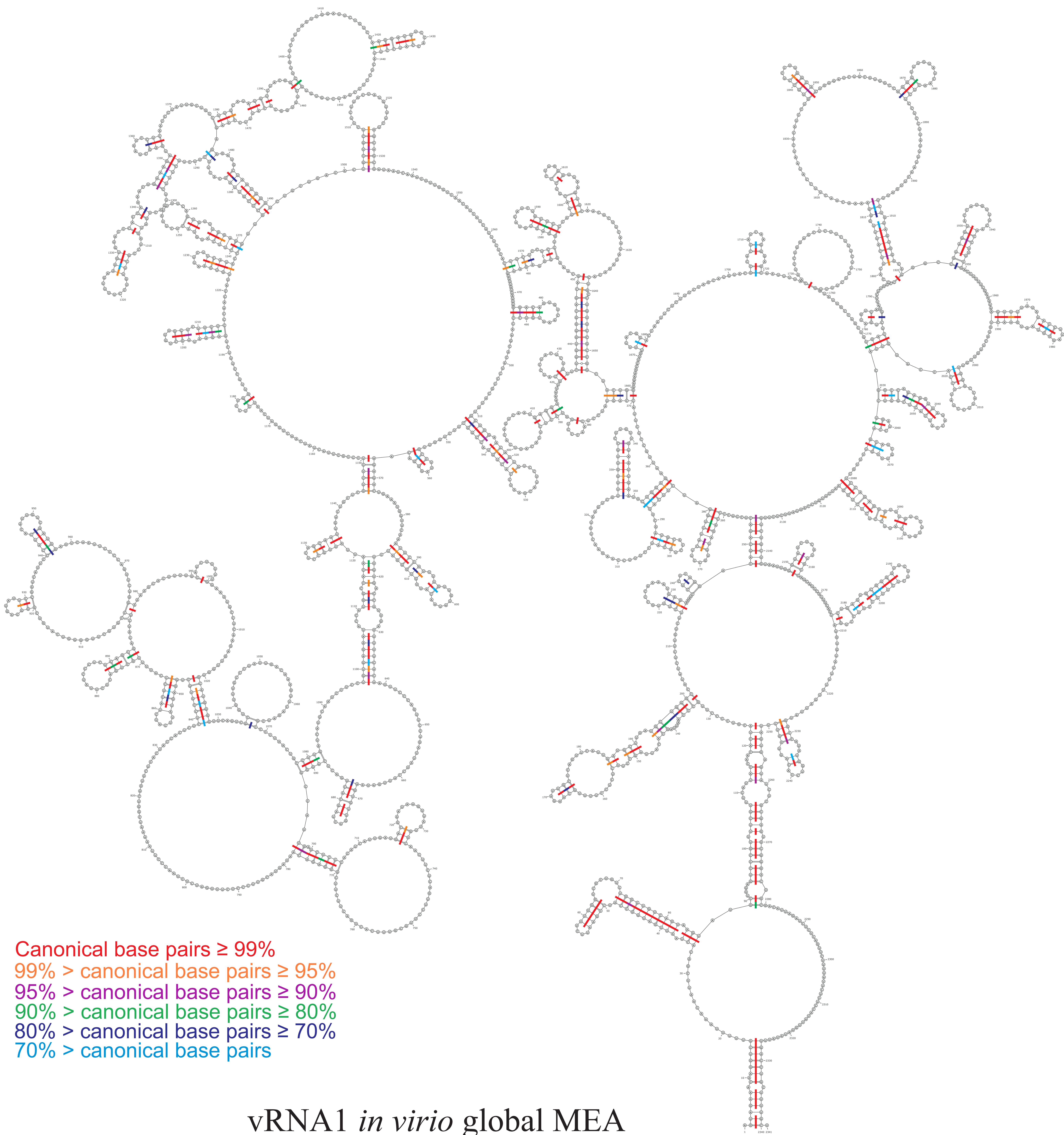
The vRNA structures are presented in the following order:

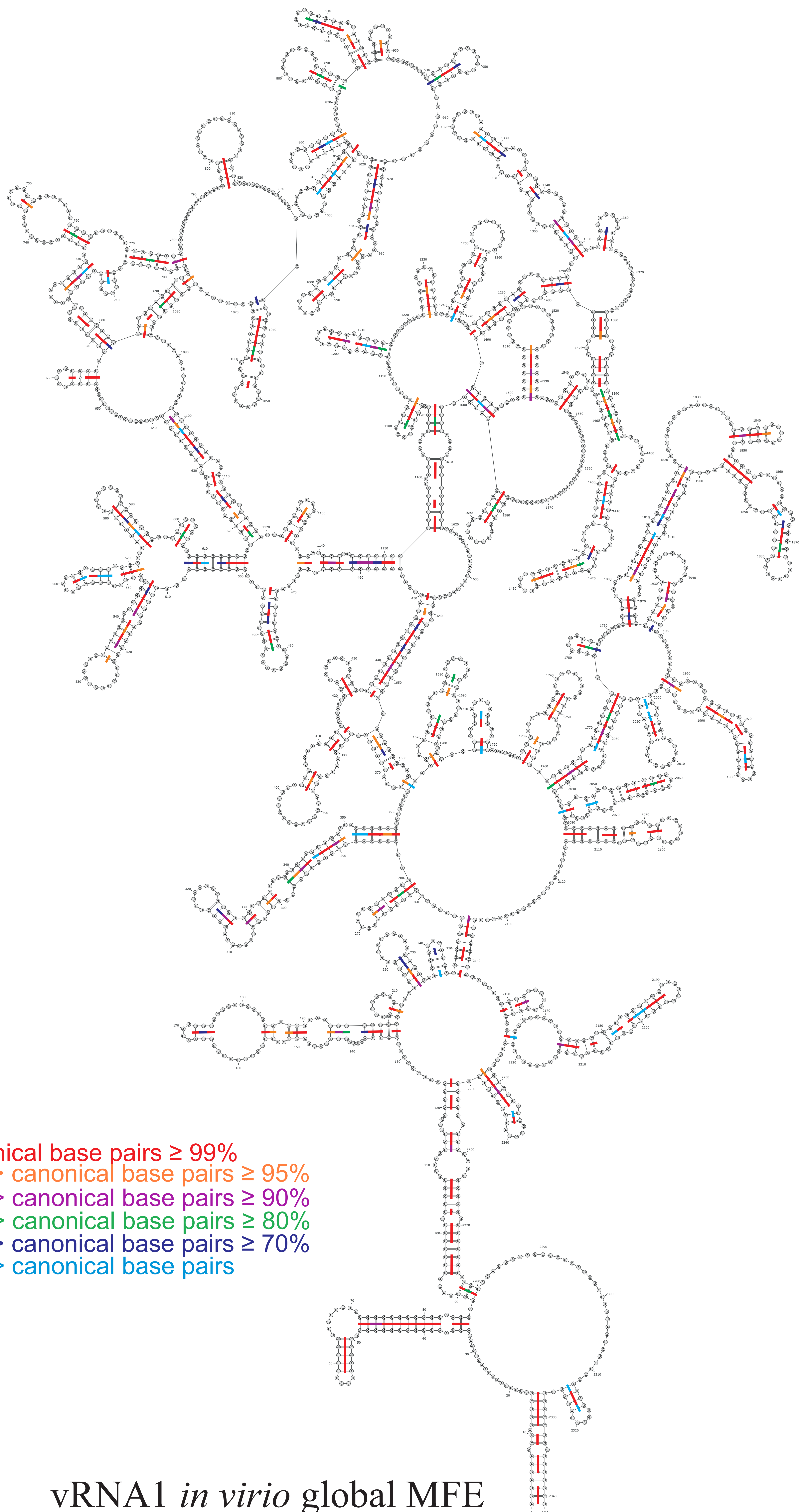
In virio vRNA structures

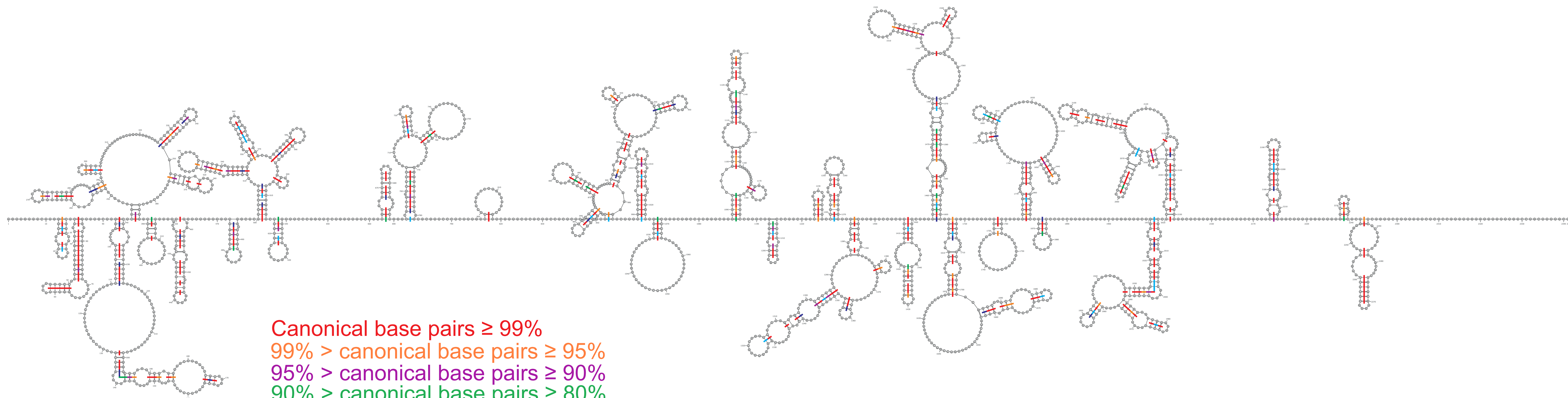
1. vRNA1 *in virio* MEA global structure
2. vRNA1 *in virio* MFE global structure
3. vRNA1 *in virio* MEA local structure
4. vRNA1 *in virio* MFE local structure
5. vRNA2 *in virio* MEA global structure
6. vRNA2 *in virio* MFE global structure
7. vRNA2 *in virio* MEA local structure
8. vRNA2 *in virio* MFE local structure
9. vRNA3 *in virio* MEA global structure
10. vRNA3 *in virio* MFE global structure
11. vRNA3 *in virio* MEA local structure
12. vRNA3 *in virio* MFE local structure
13. vRNA4 *in virio* MEA global structure
14. vRNA4 *in virio* MFE global structure
15. vRNA4 *in virio* MEA local structure
16. vRNA4 *in virio* MFE local structure
17. vRNA5 *in virio* MEA global structure
18. vRNA5 *in virio* MFE global structure
19. vRNA5 *in virio* MEA local structure
20. vRNA5 *in virio* MFE local structure
21. vRNA6 *in virio* MEA global structure
22. vRNA6 *in virio* MFE global structure
23. vRNA6 *in virio* MEA local structure
24. vRNA6 *in virio* MFE local structure
25. vRNA7 *in virio* MEA global structure
26. vRNA7 *in virio* MFE global structure
27. vRNA7 *in virio* MEA local structure
28. vRNA7 *in virio* MFE local structure
29. vRNA8 *in virio* MEA global structure
30. vRNA8 *in virio* MFE global structure
31. vRNA8 *in virio* MEA local structure
32. vRNA8 *in virio* MFE local structure

In cellulo vRNA structures

33. vRNA5 *in cellulo* global MEA structure
34. vRNA5 *in cellulo* global MFE structure
35. vRNA5 *in cellulo* local MEA structure
36. vRNA5 *in cellulo* local MFE structure
37. vRNA7 *in cellulo* global MEA structure
38. vRNA7 *in cellulo* global MFE structure
39. vRNA7 *in cellulo* local MEA structure
40. vRNA7 *in cellulo* local MFE structure
41. vRNA8 *in cellulo* global MEA structure
42. vRNA8 *in cellulo* global MFE structure
43. vRNA8 *in cellulo* local MEA structure
44. vRNA8 *in cellulo* local MFE structure

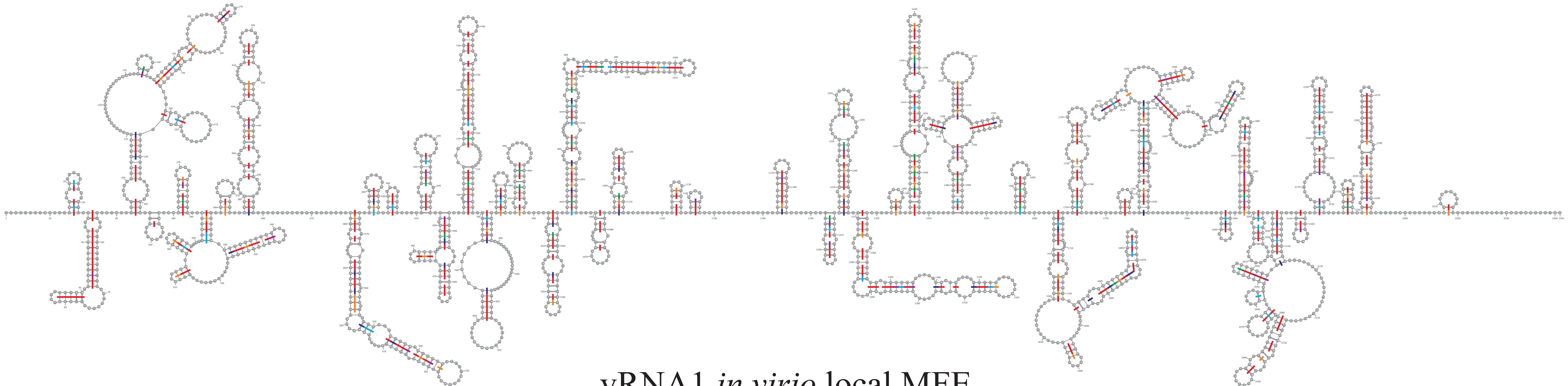


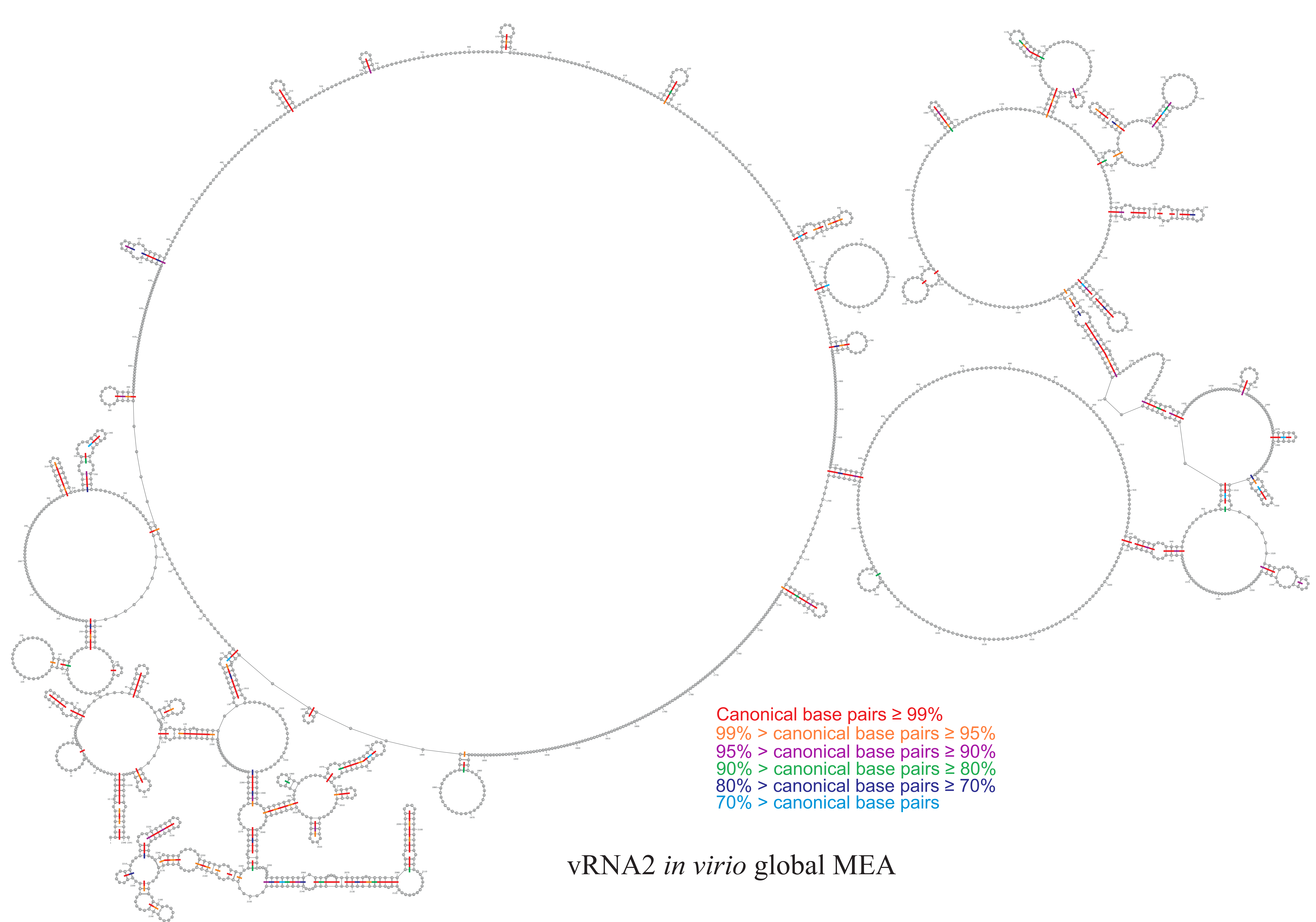




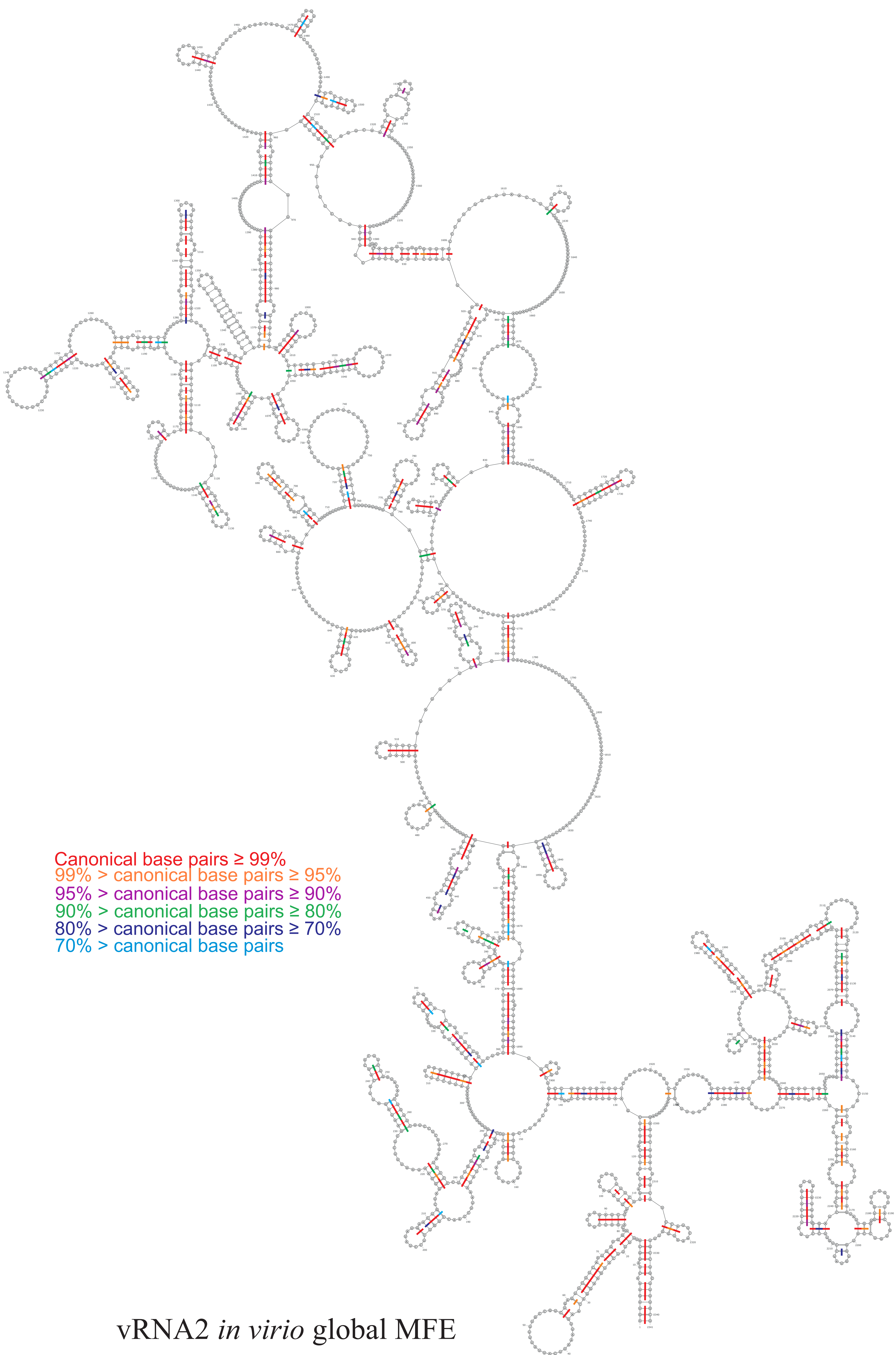
vRNA1 *in virio* local MEA

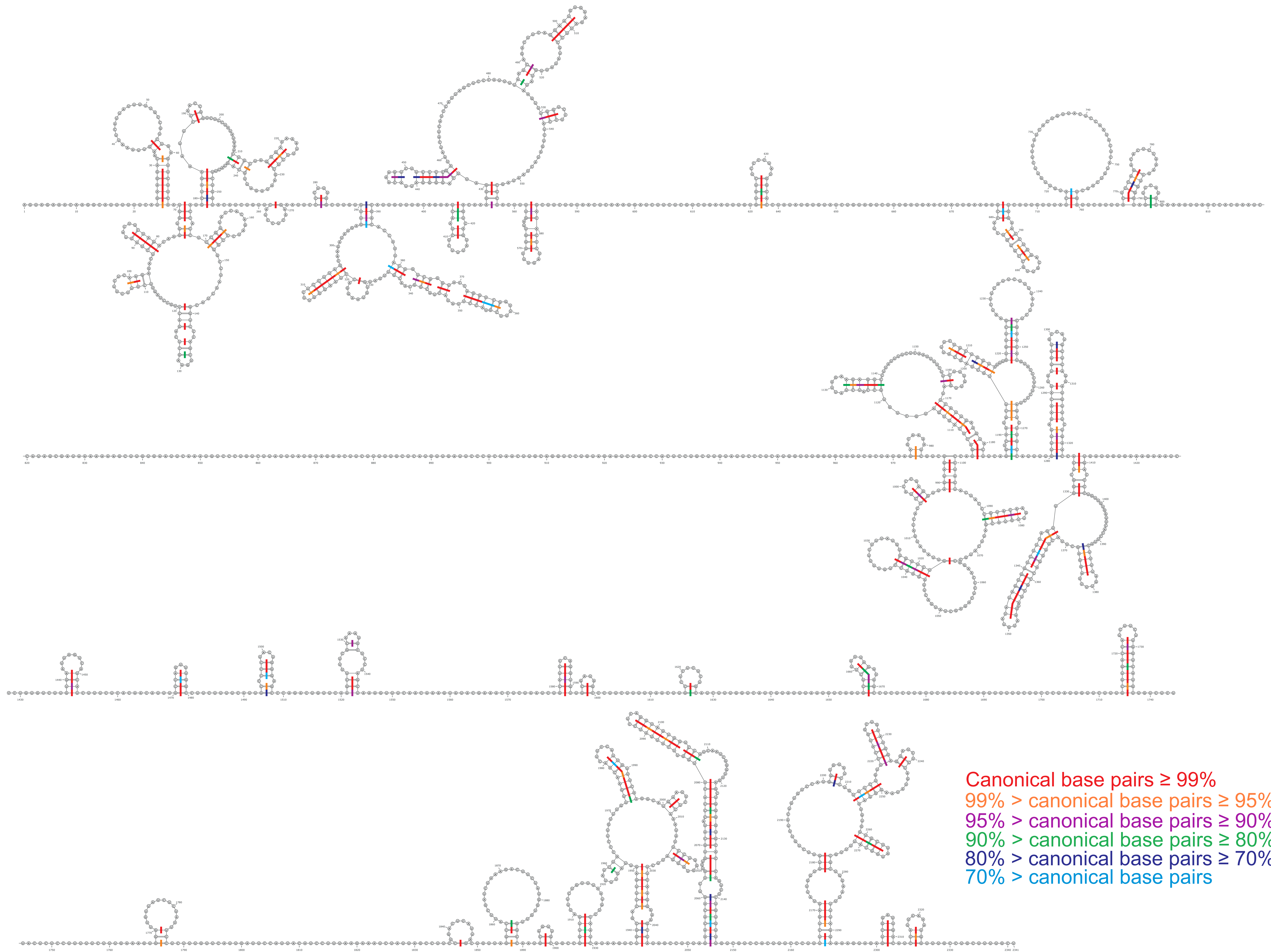
Canonical base pairs $\geq 99\%$
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80% > canonical base pairs $\geq 70\%$
70% > canonical base pairs





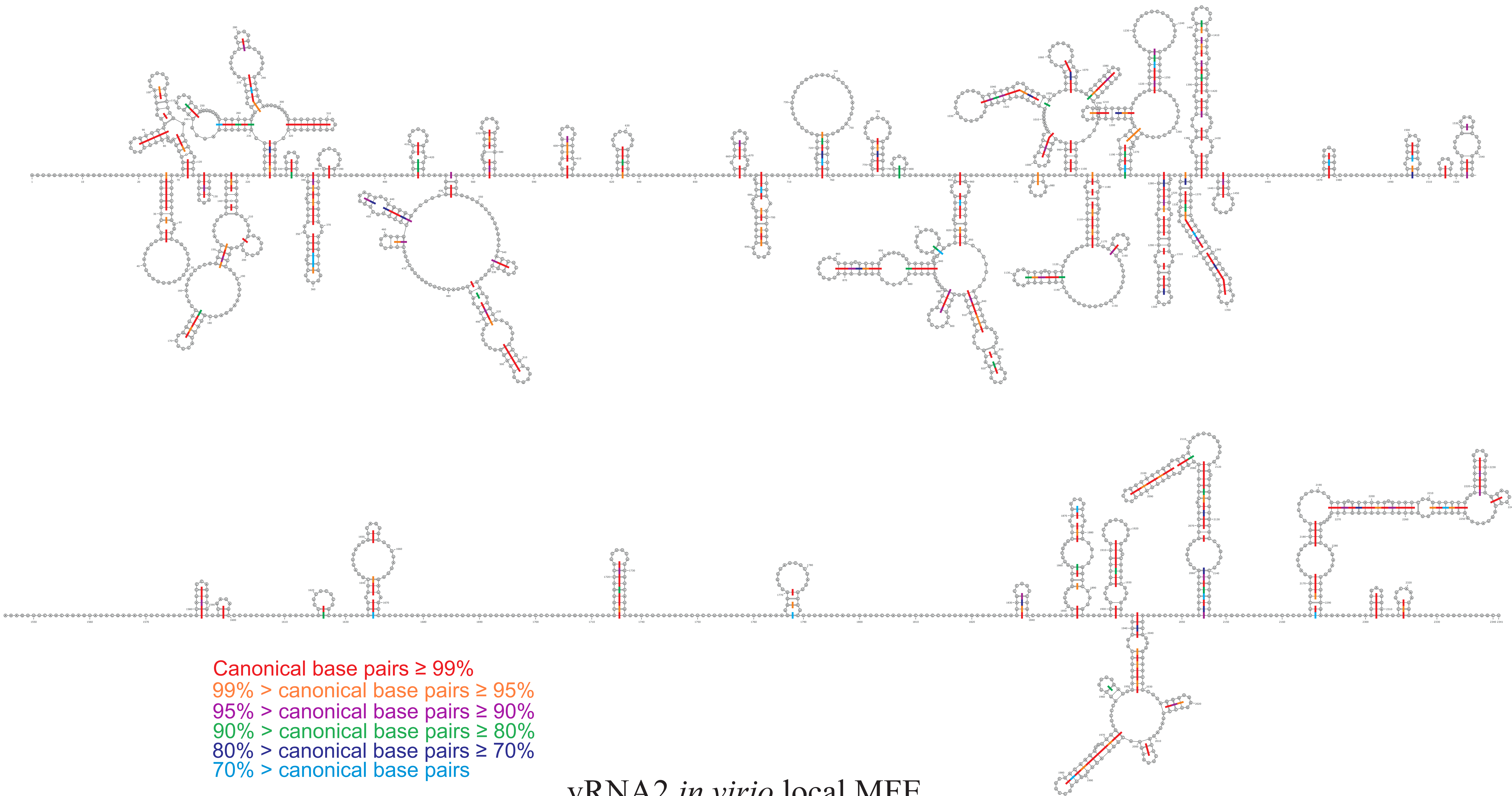
vRNA2 *in virio* global MEA

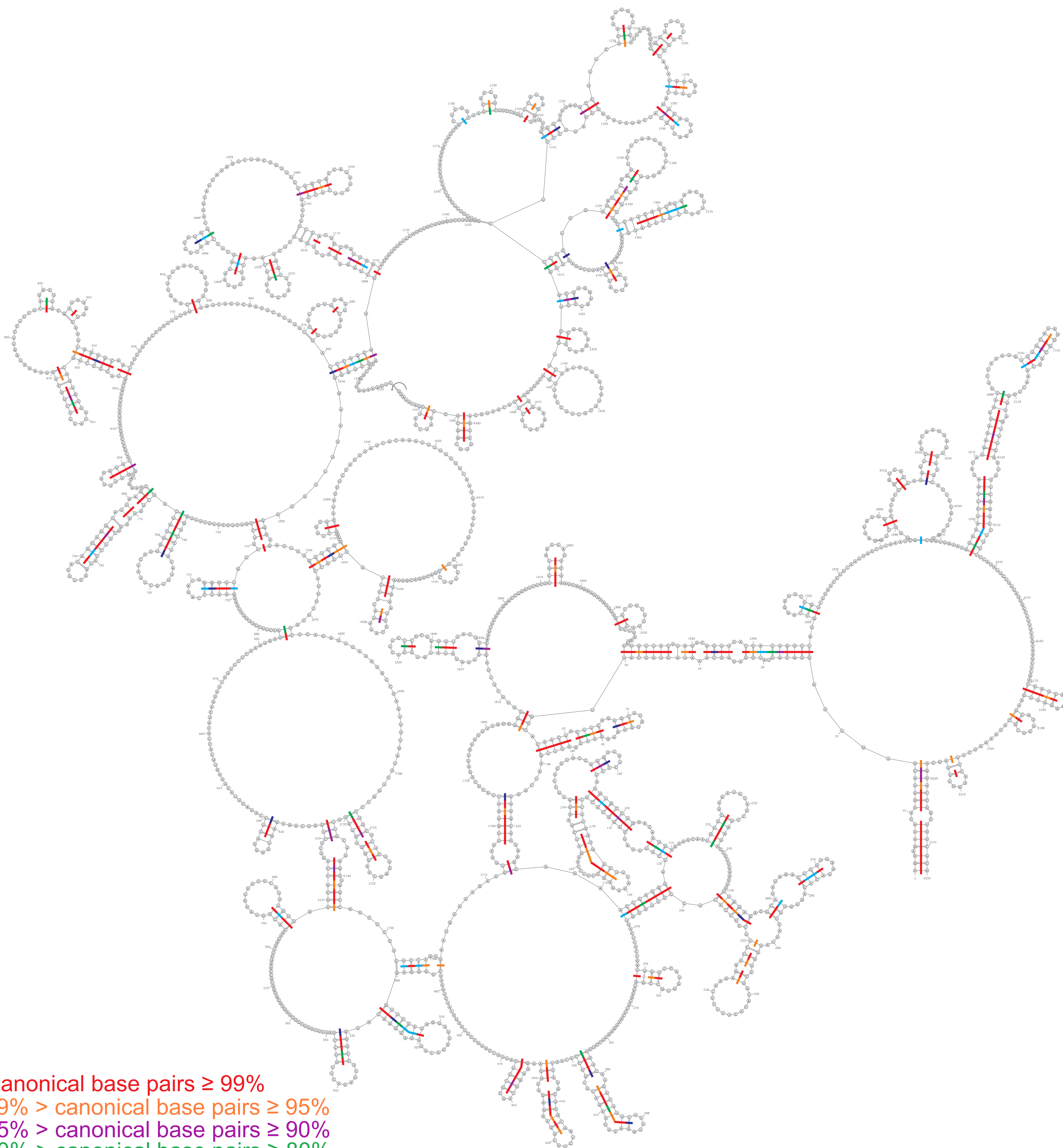




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vRNA2 *in virio* local MEA

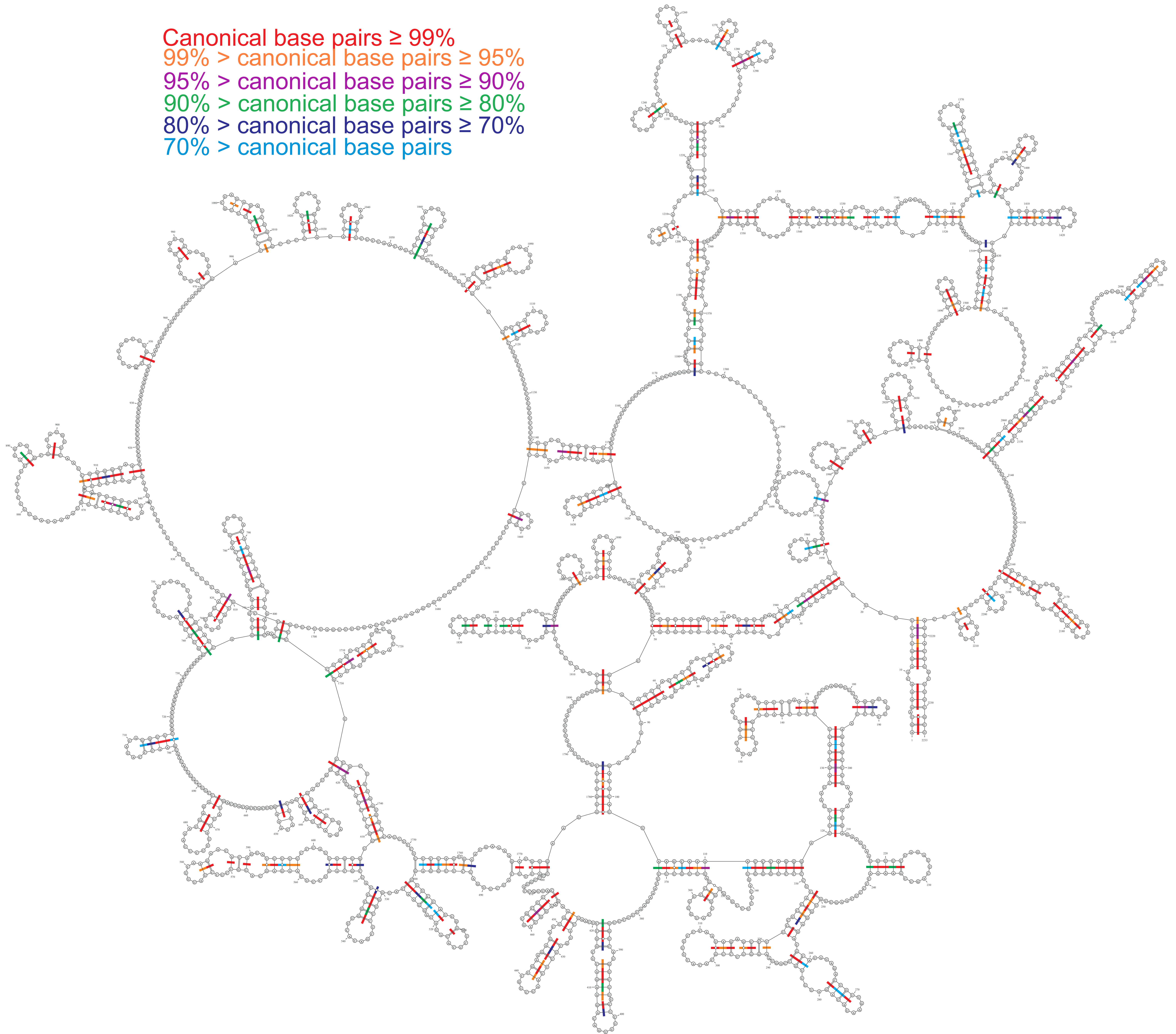




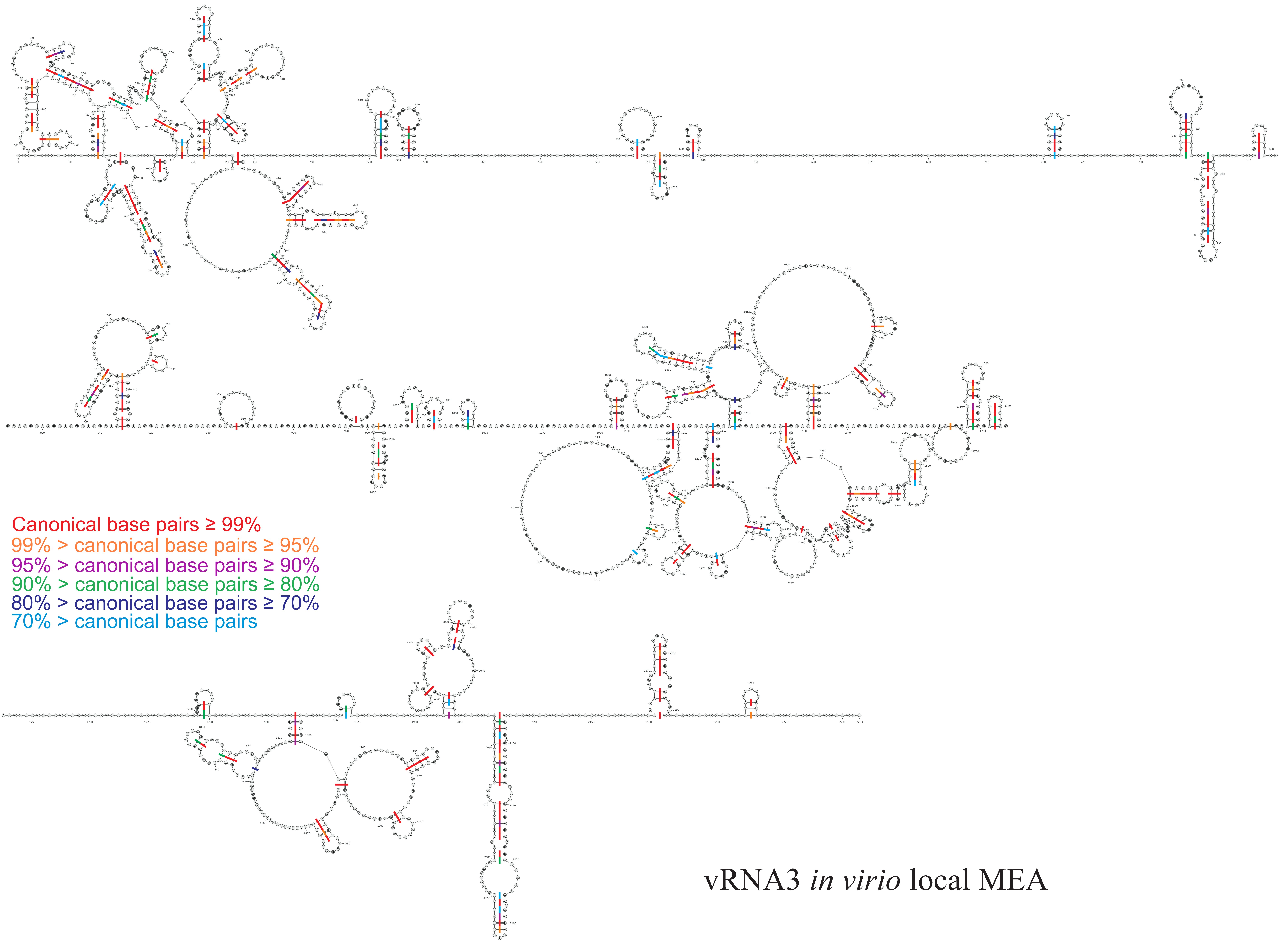
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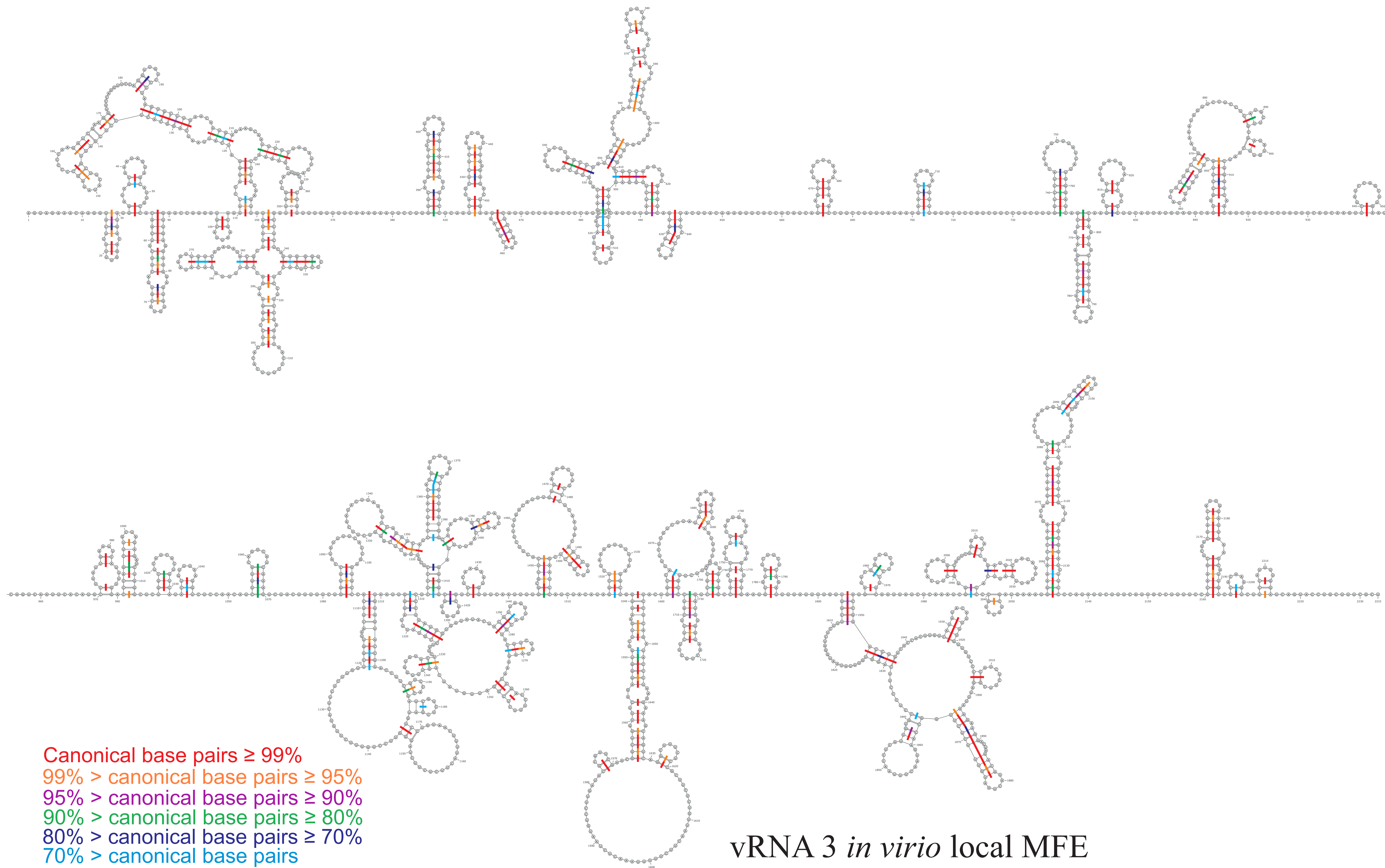
vRNA3 *in virio* global MEA

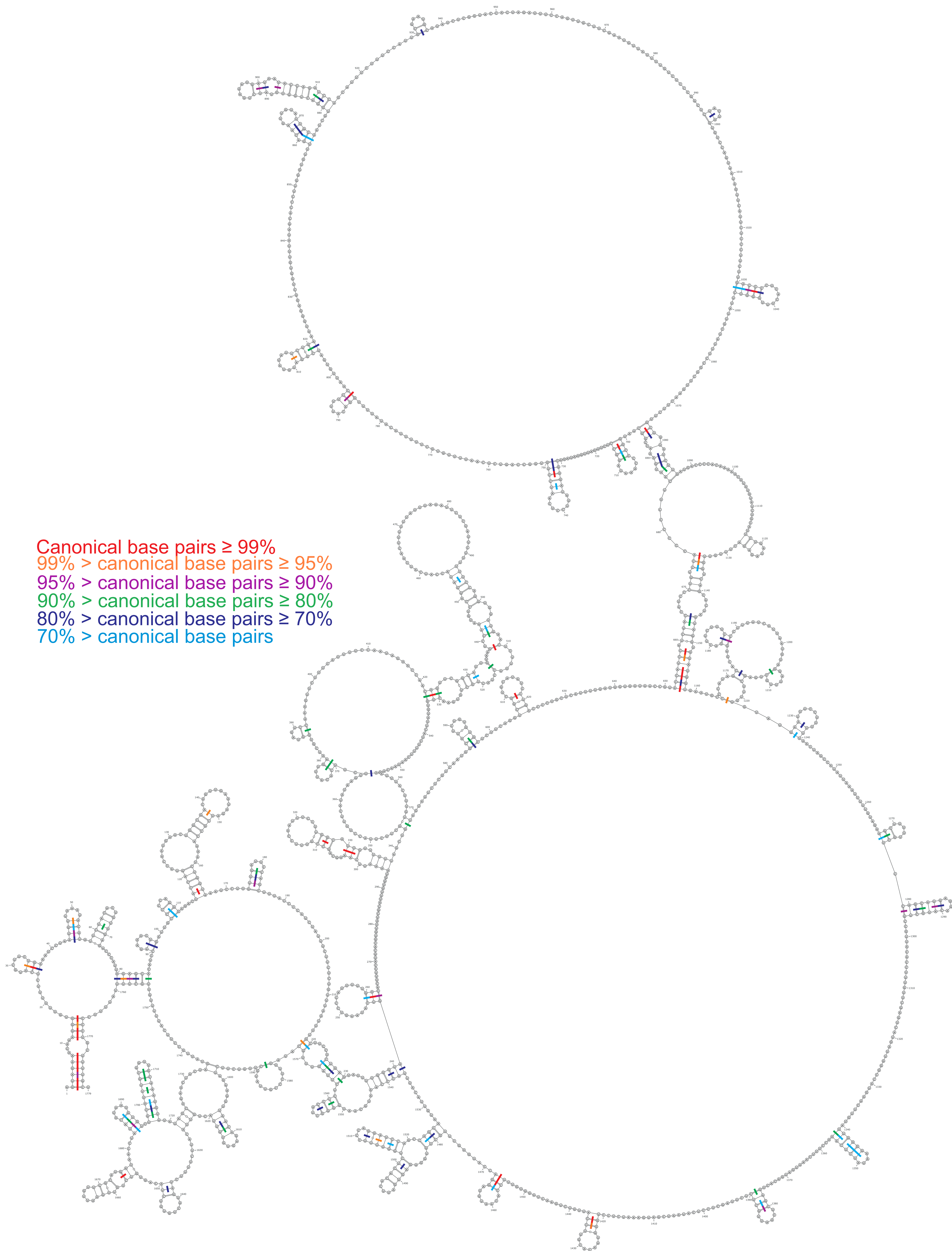
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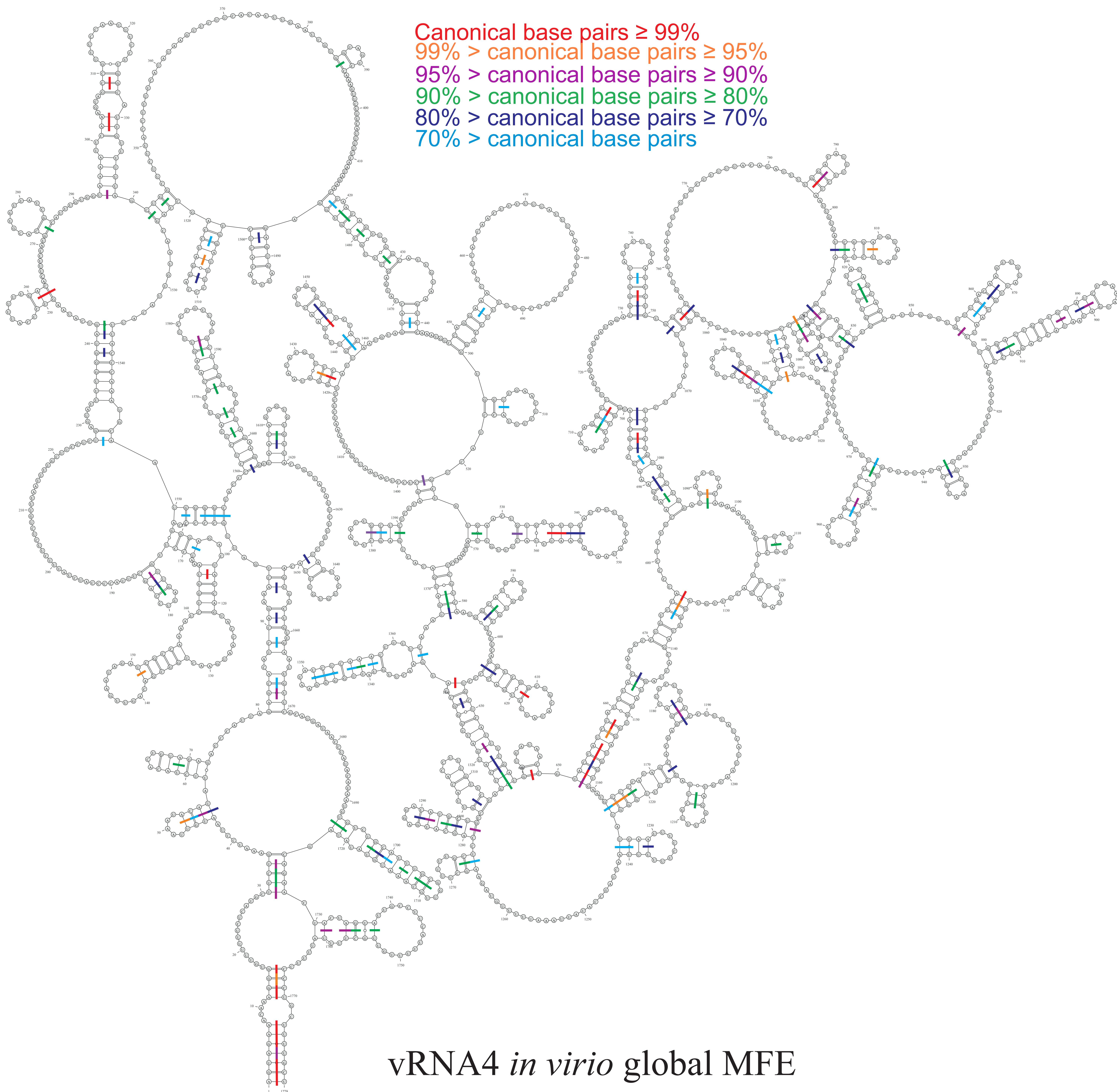
vRNA3 *in virio* global MFE

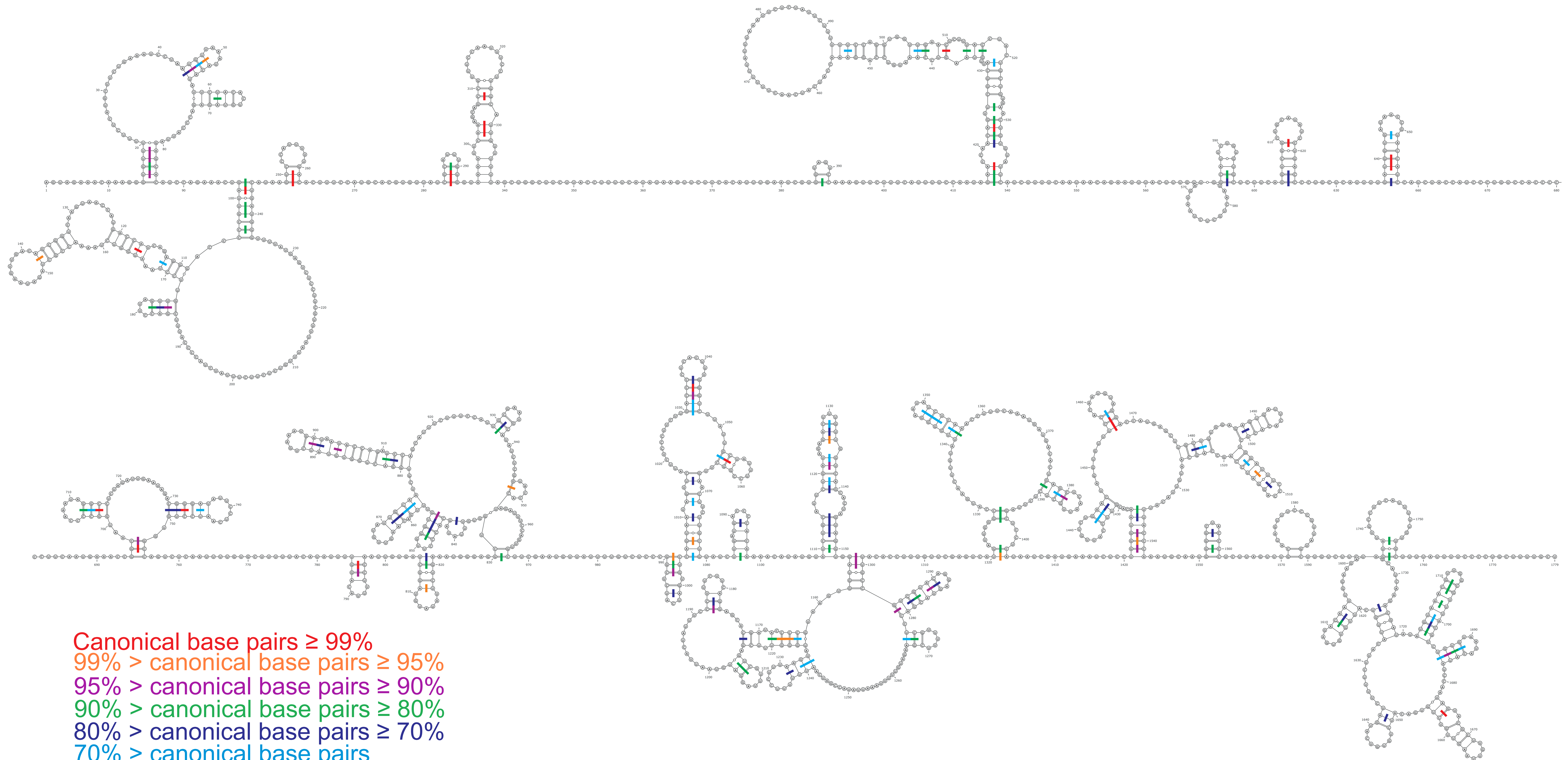




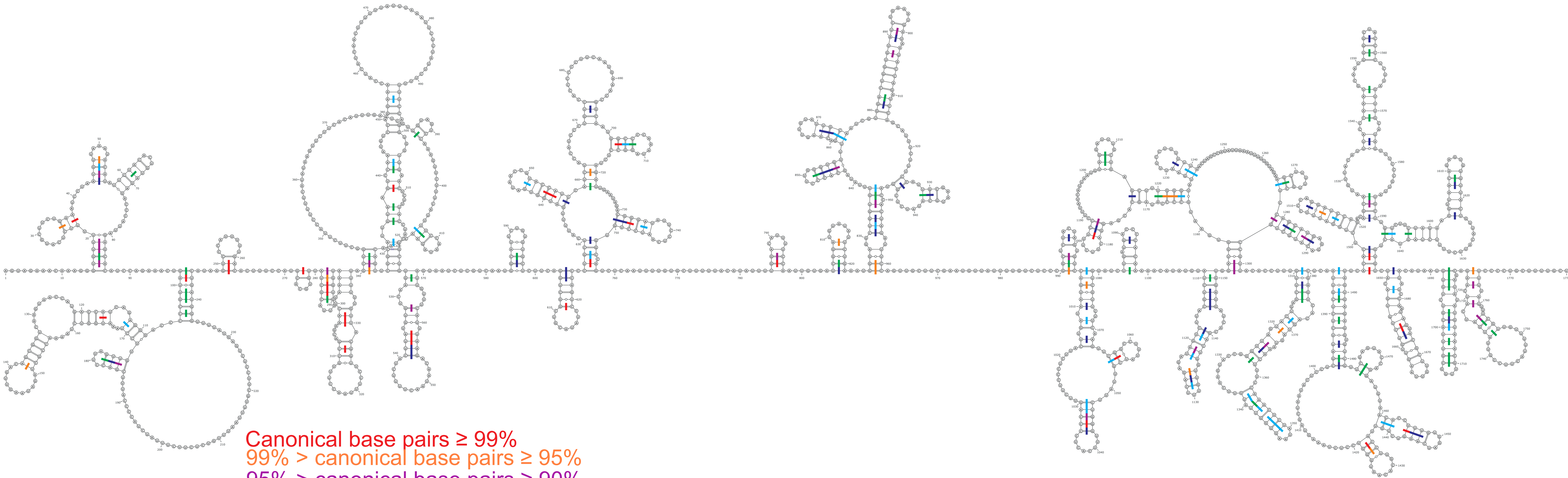


vRNA4 *in virio* global MEA



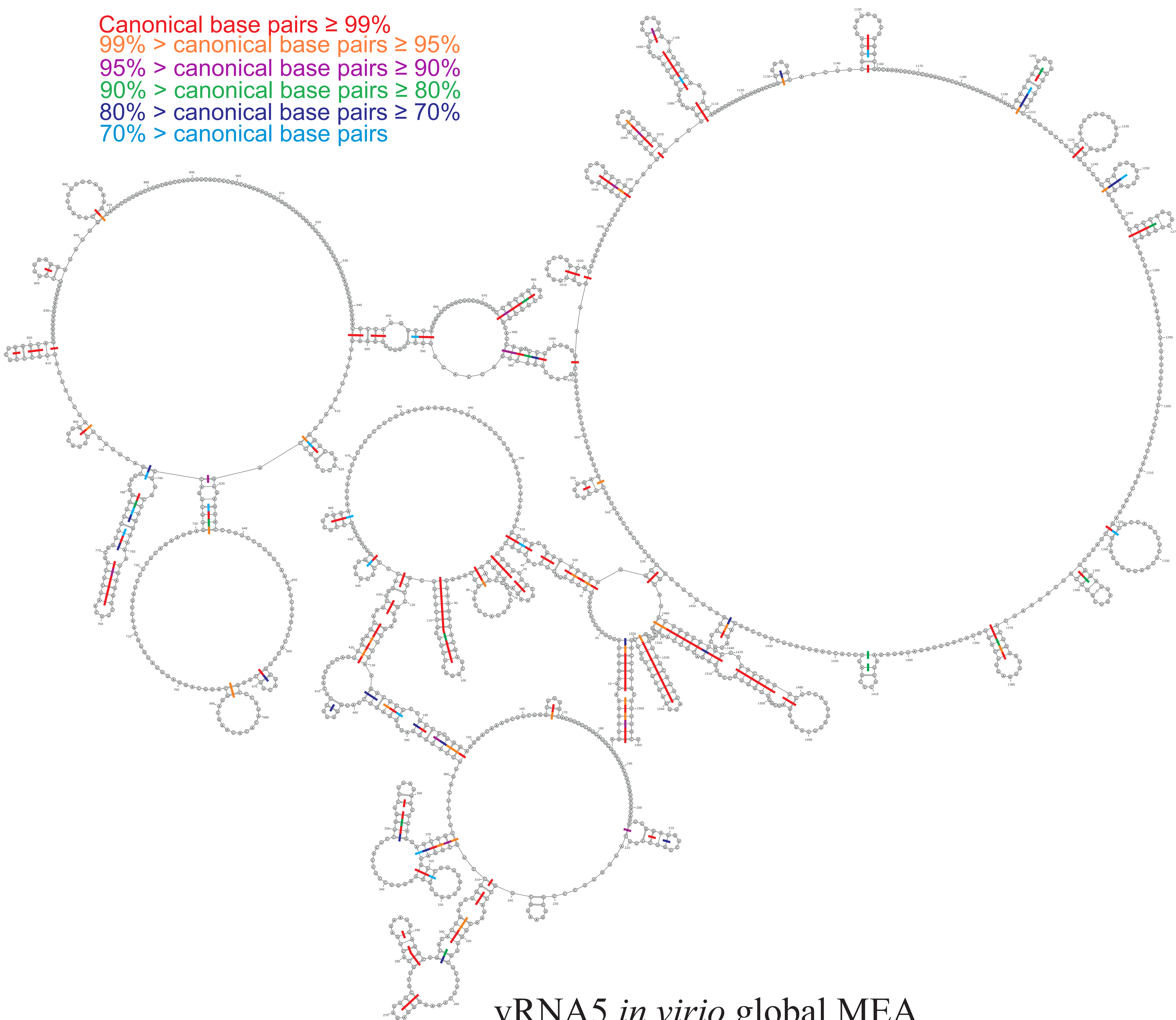


vRNA4 *in virio* local MEA

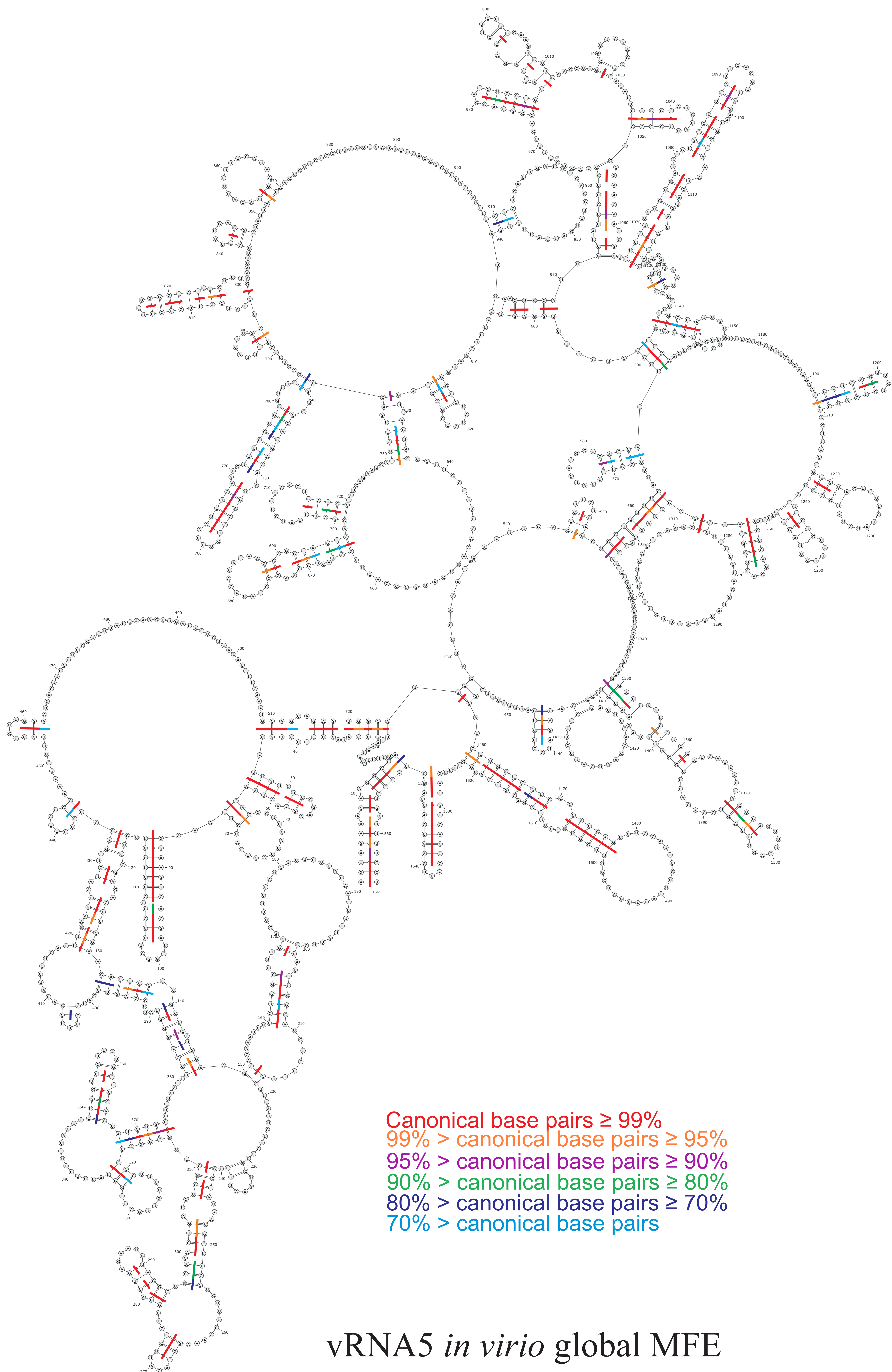


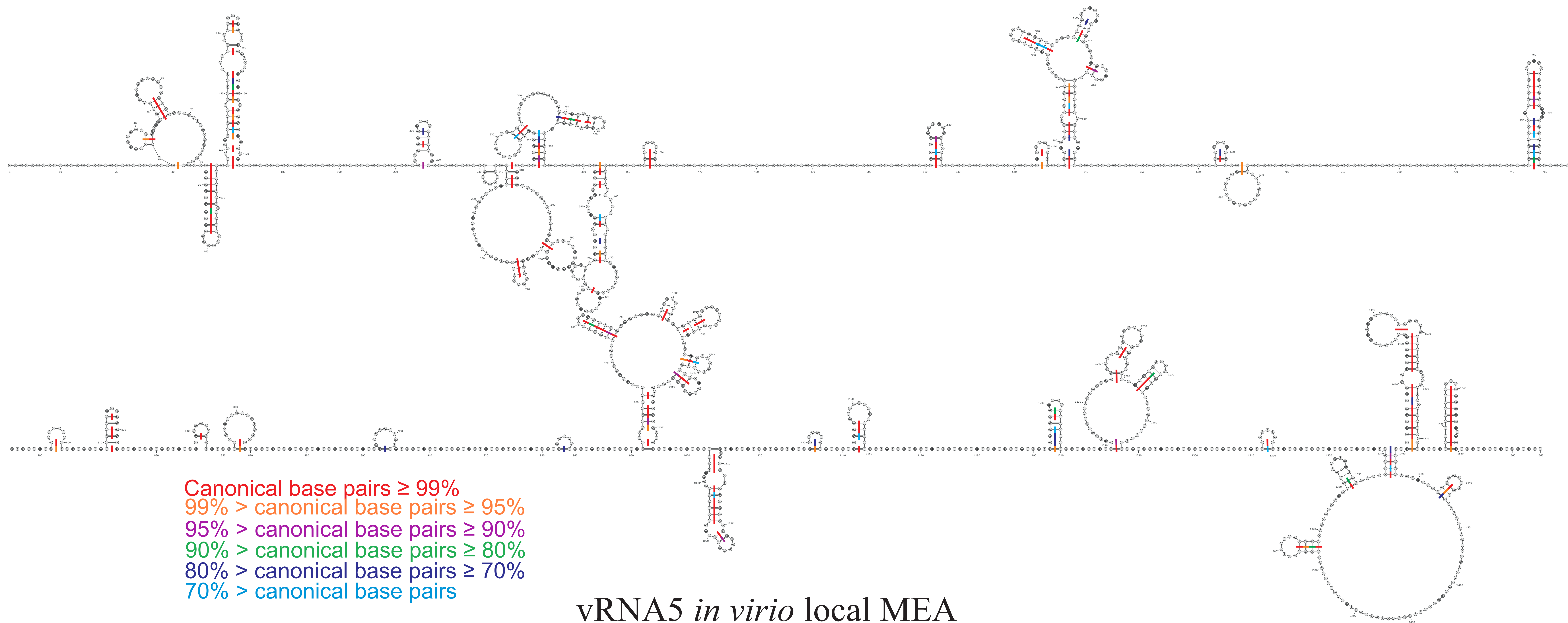
vRNA4 *in virio* local MFE

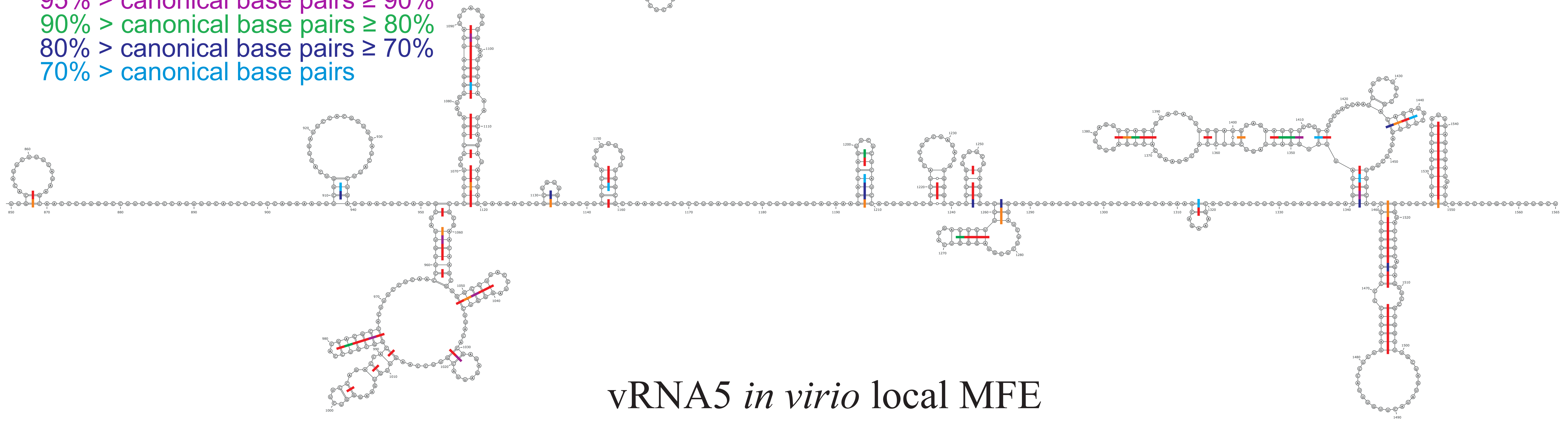
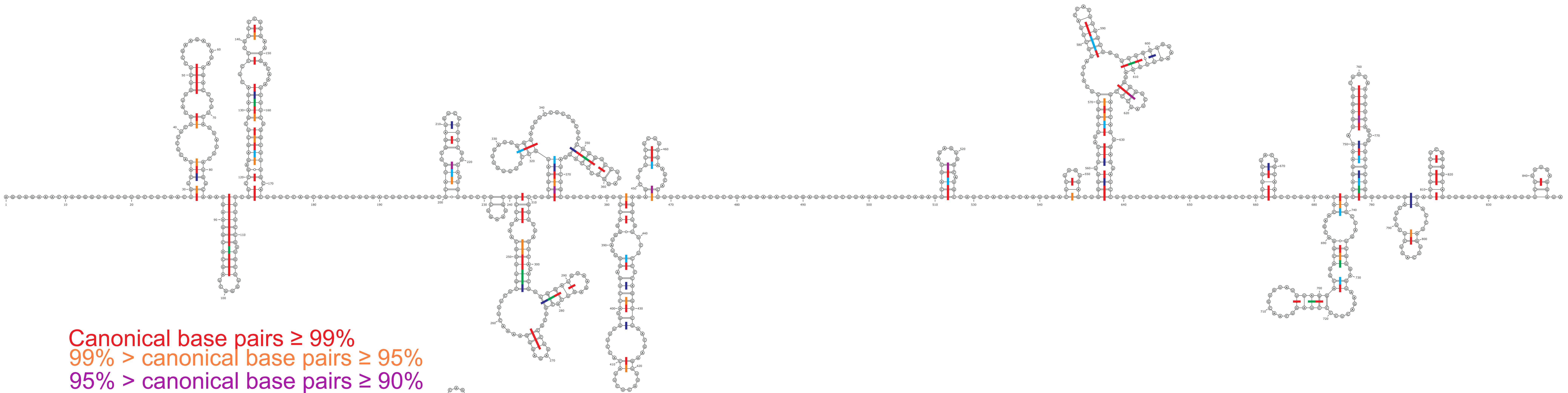
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70% > canonical base pairs



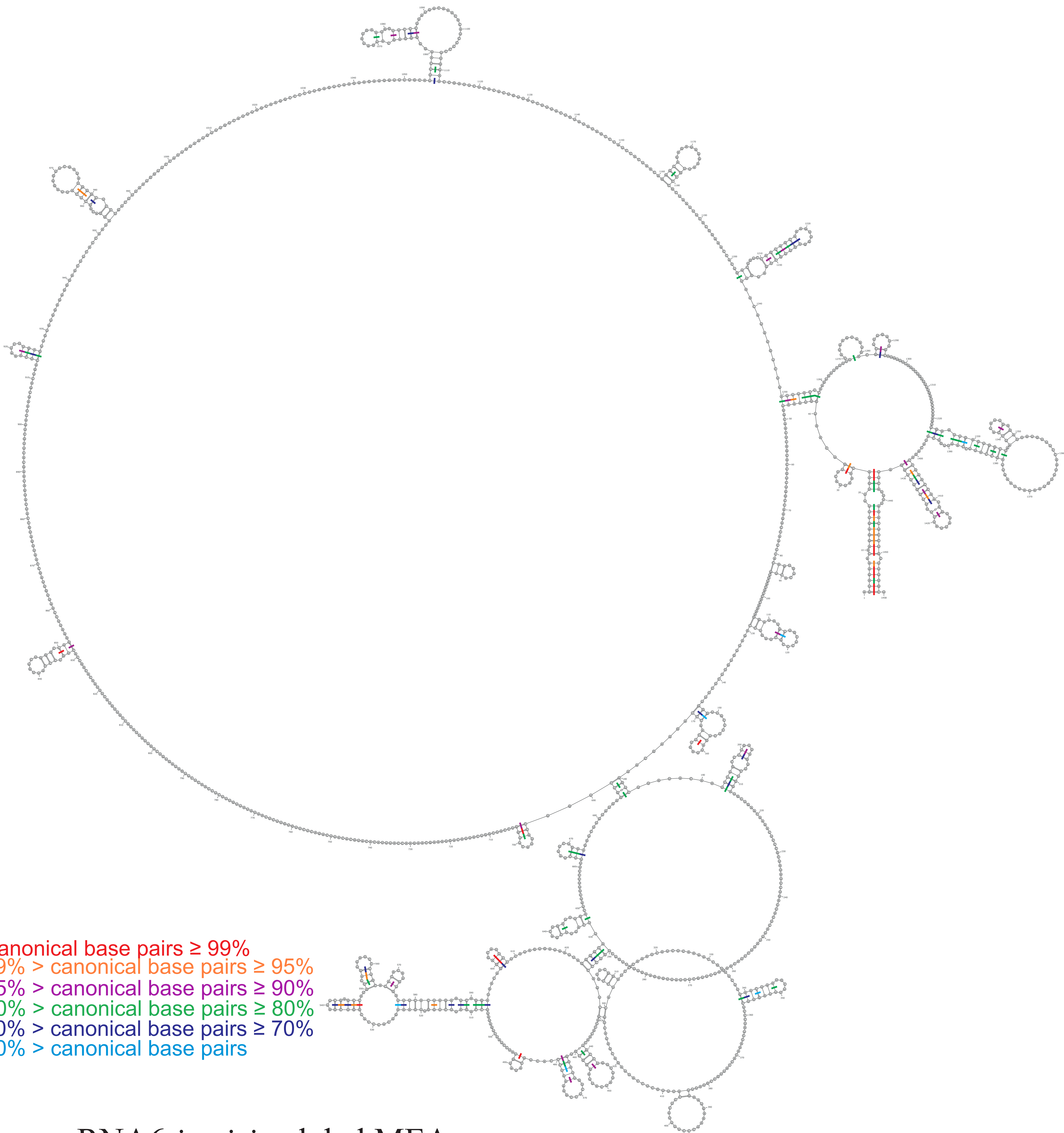
vRNA5 *in virio* global MEA



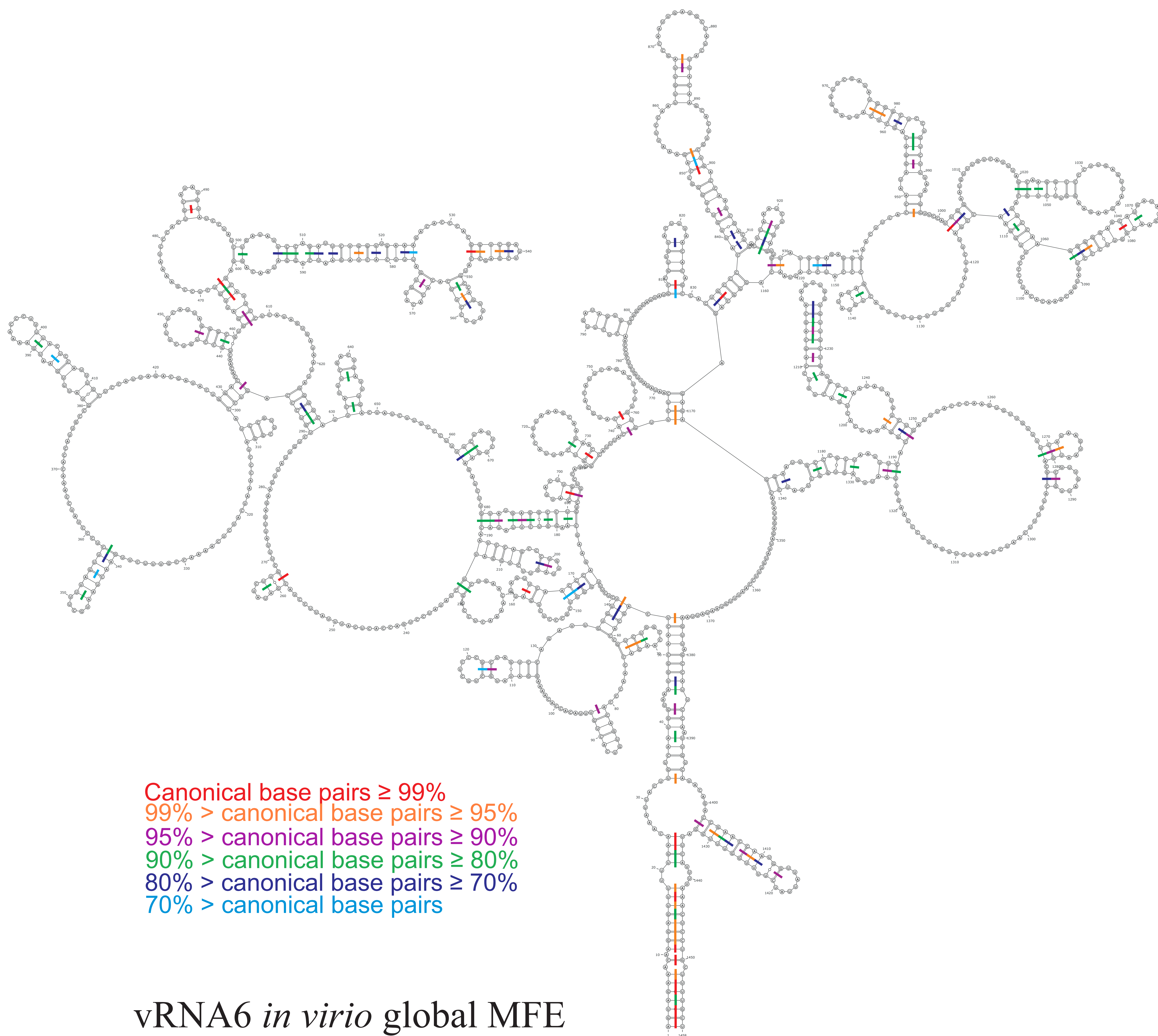


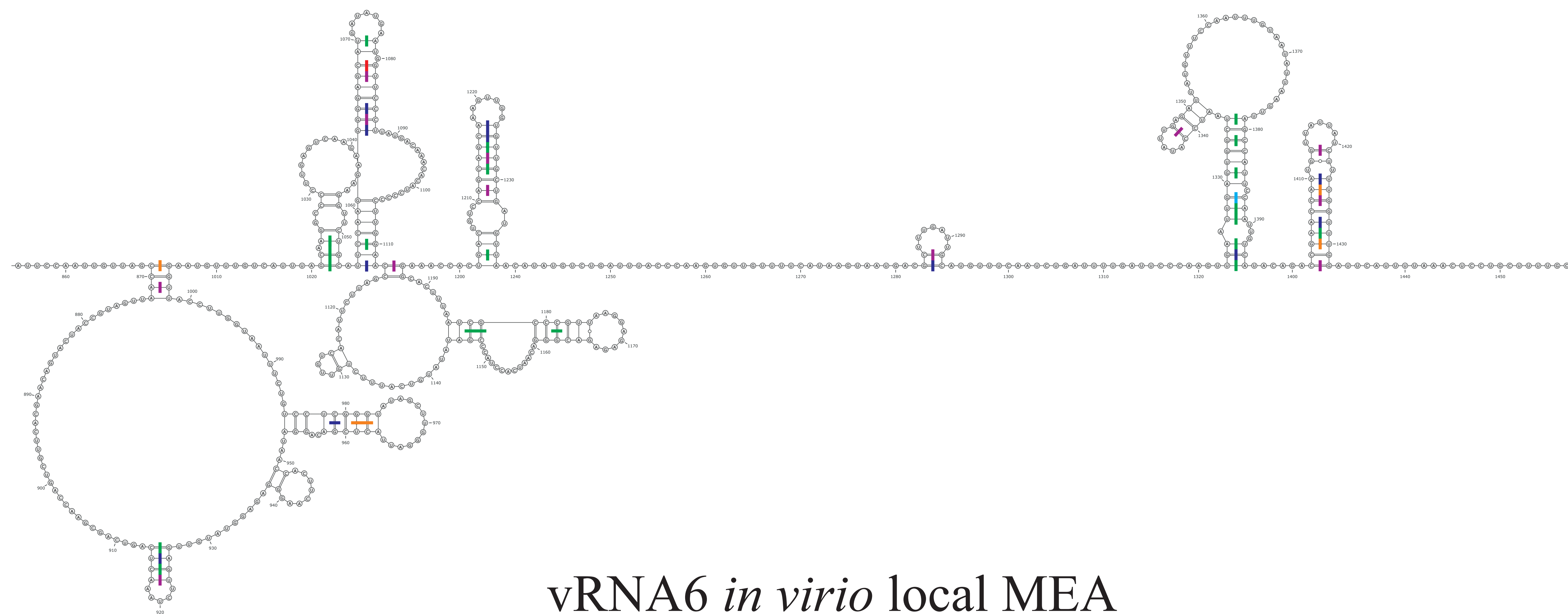
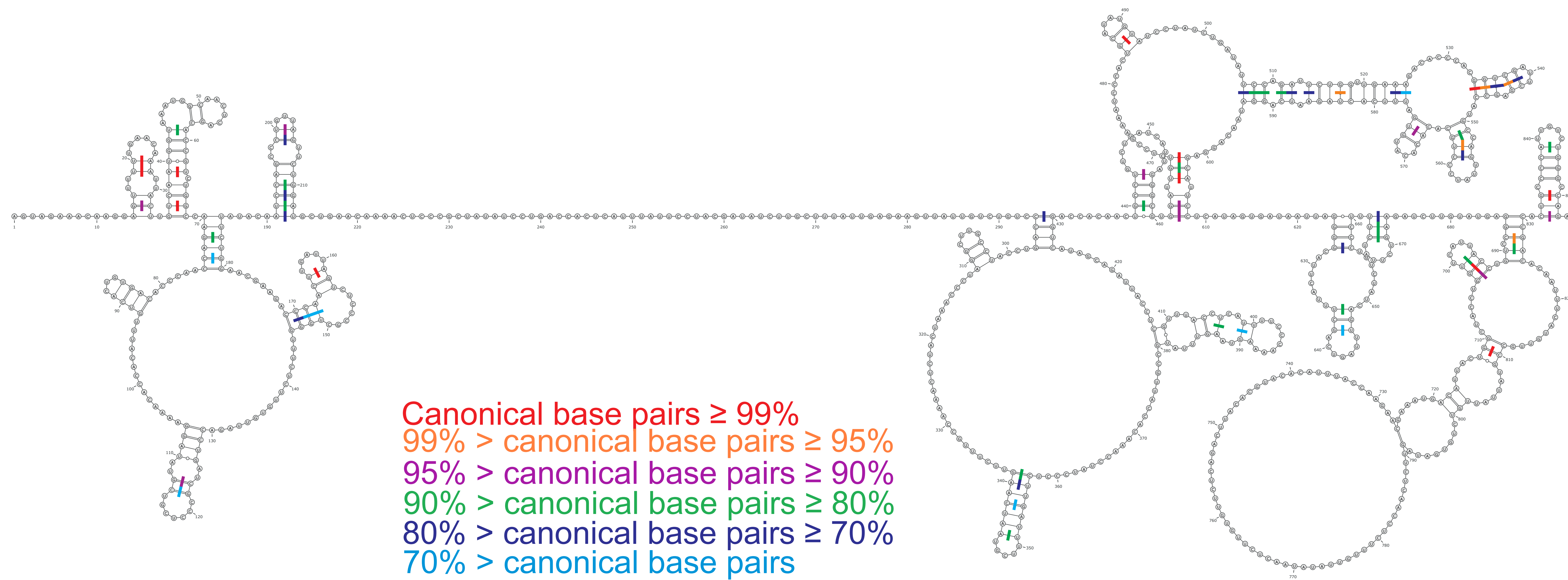


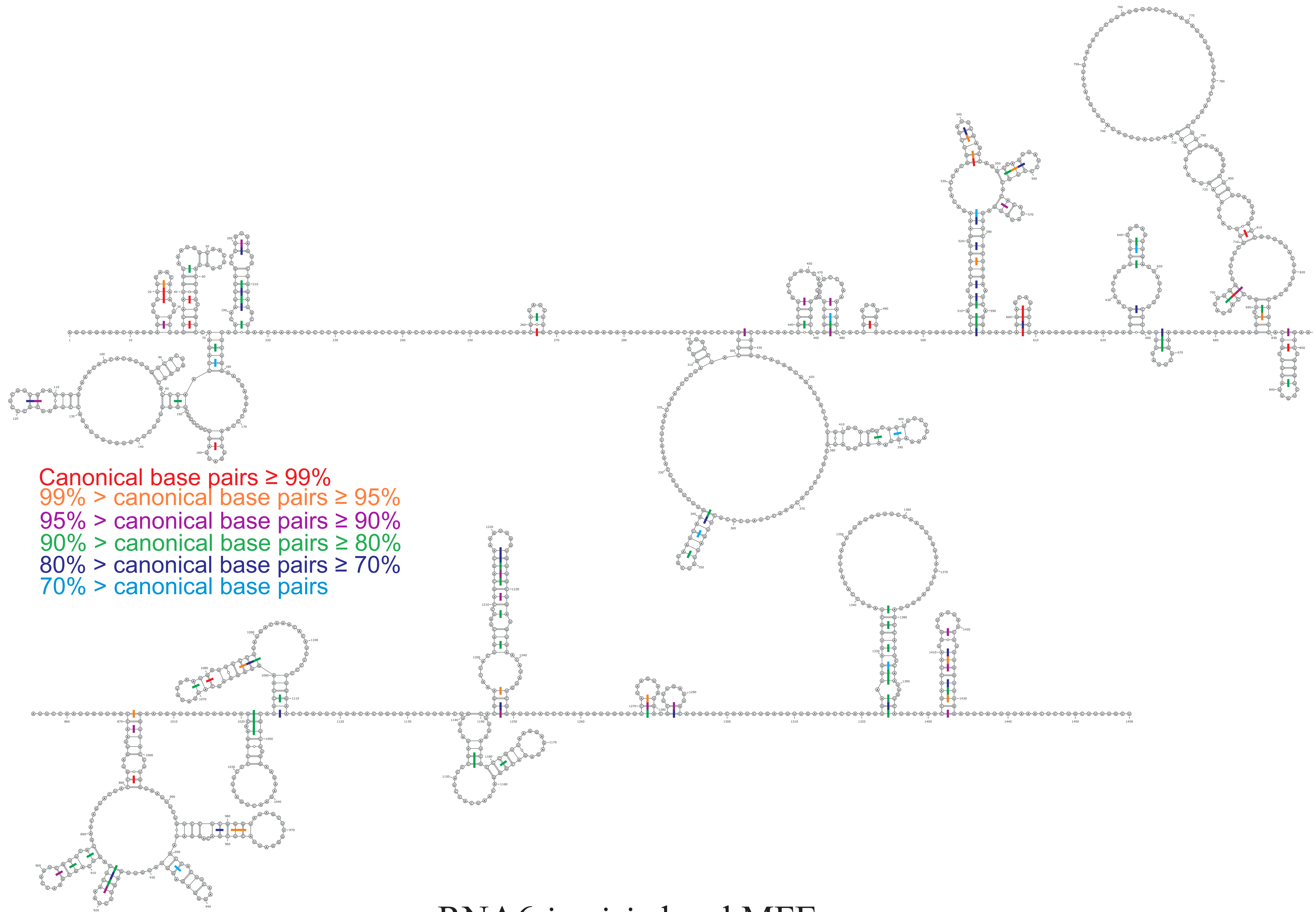
vRNA5 *in virio* local MFE



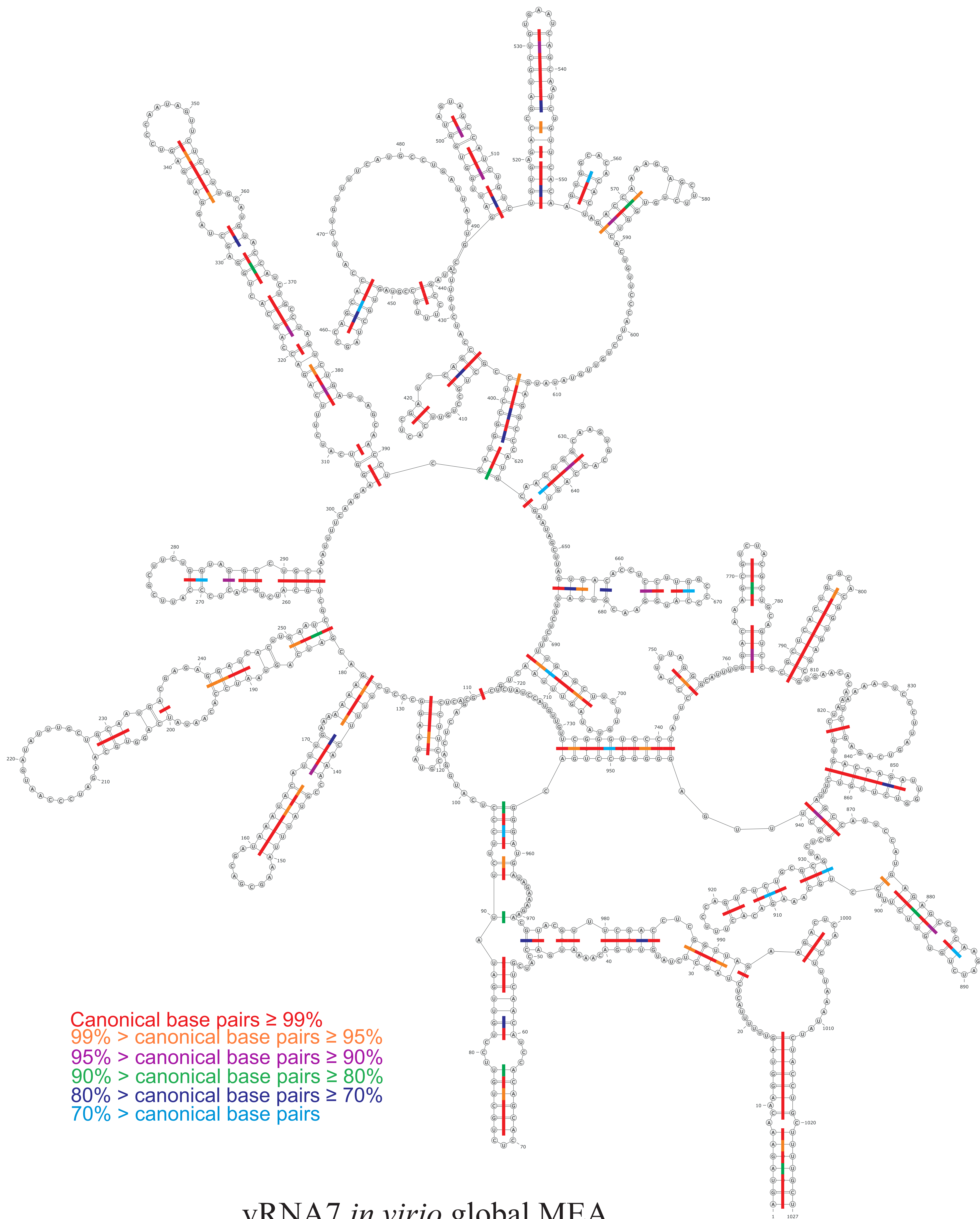
vRNA6 *in virio* global MEA





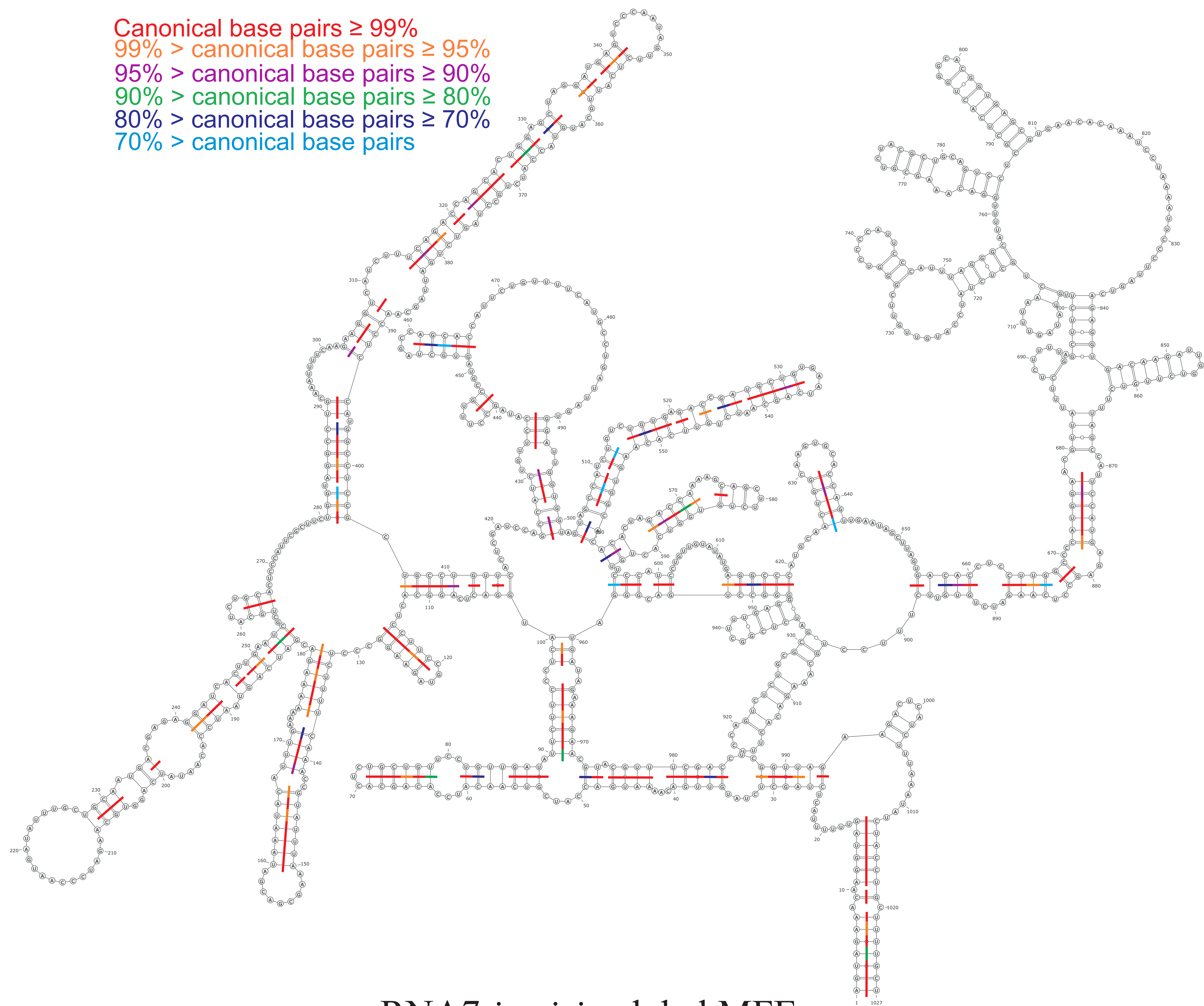


vRNA6 *in virio* local MFE



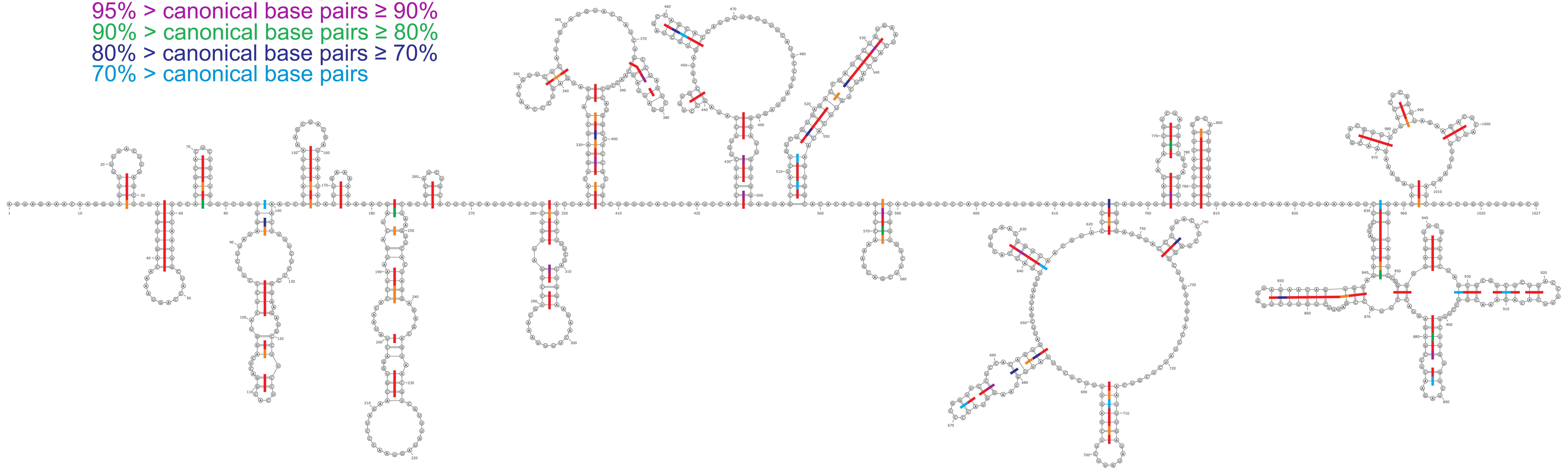
vRNA7 *in virio* global MEA

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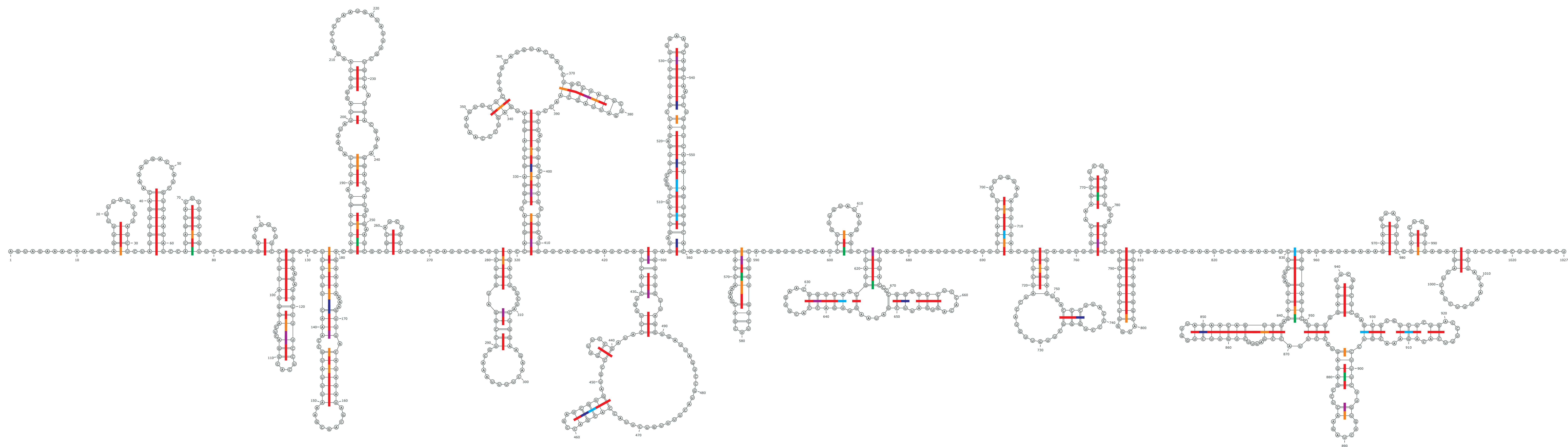


vRNA7 *in virio* global MFE

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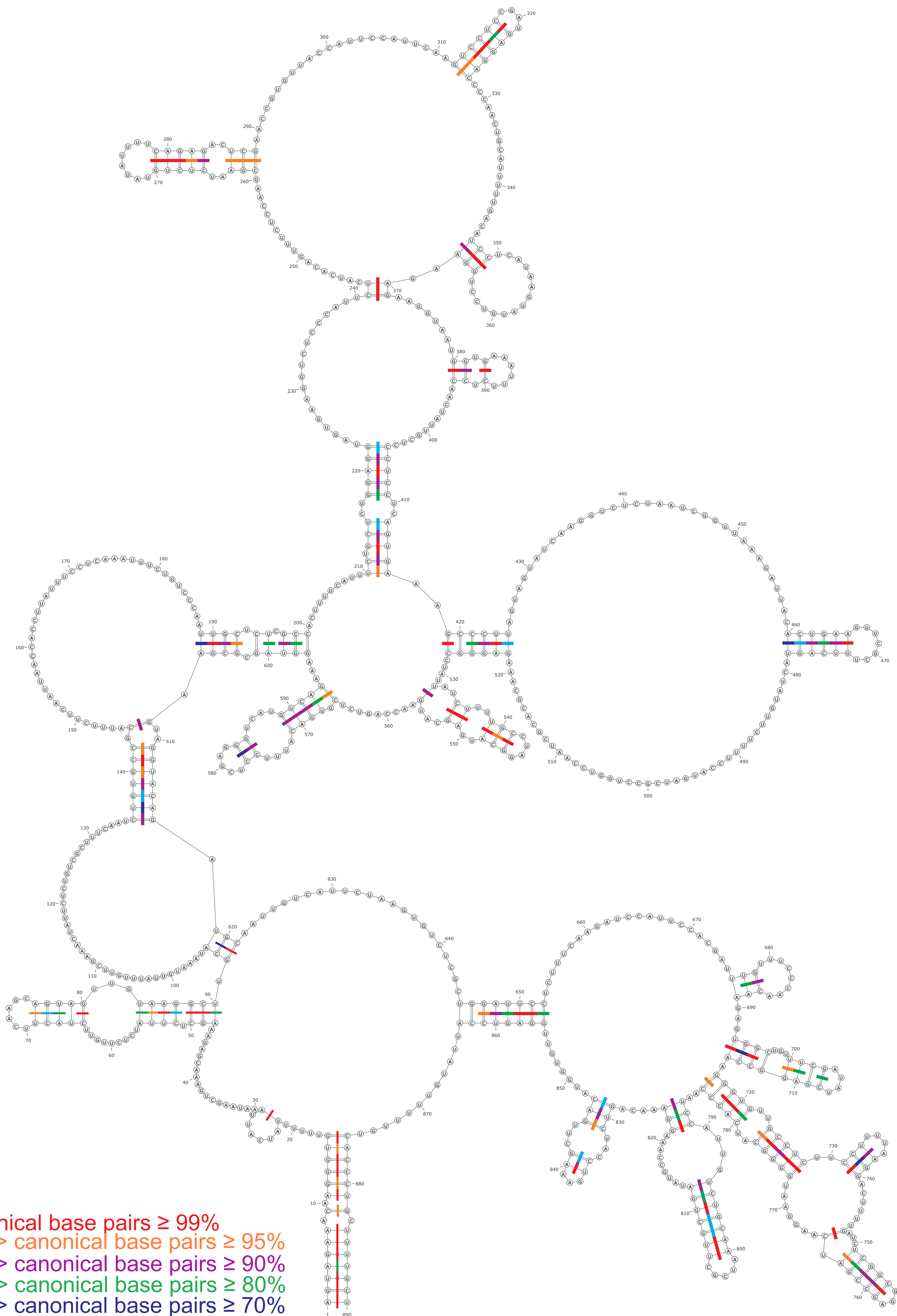


vRNA7 *in virio* local MEA

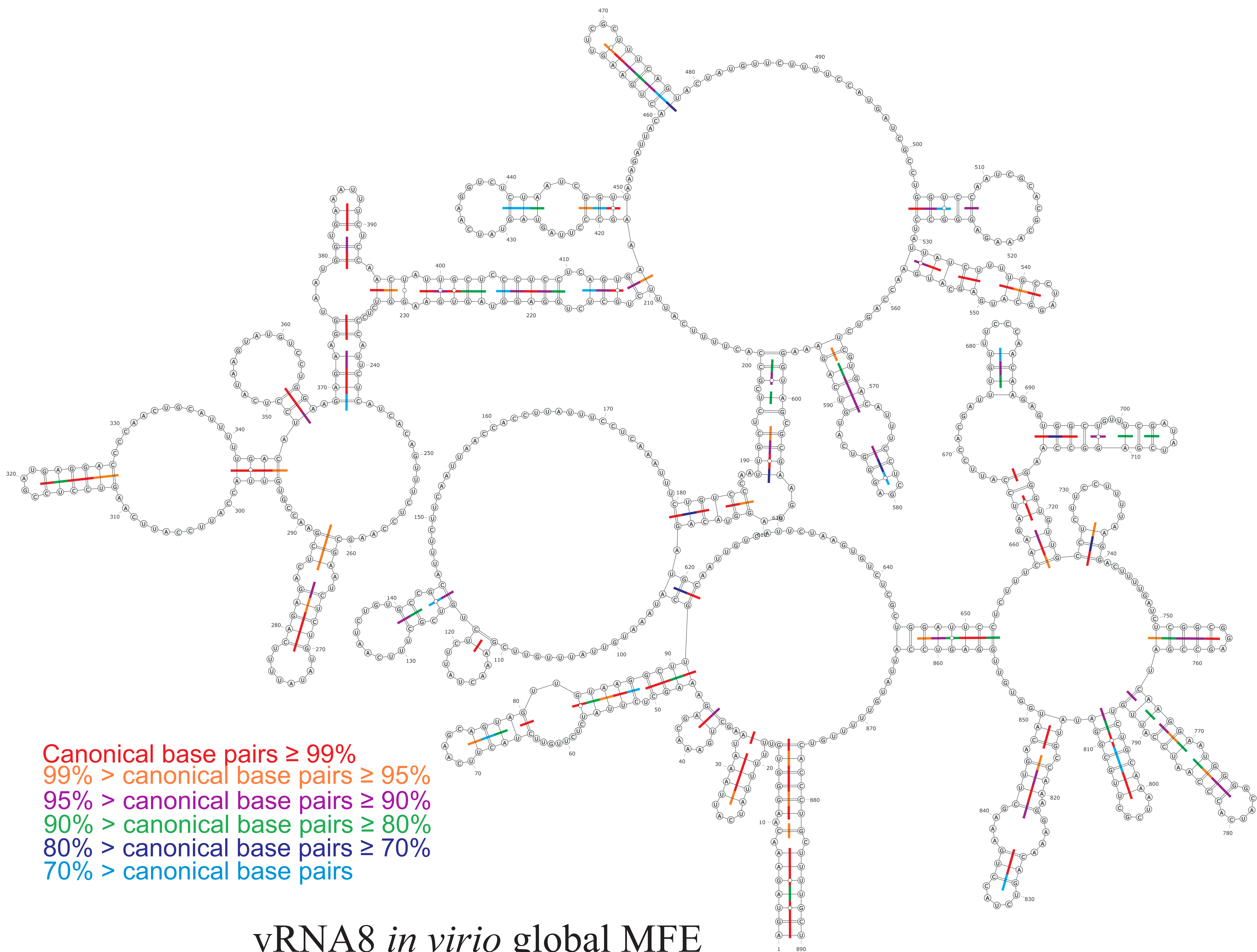


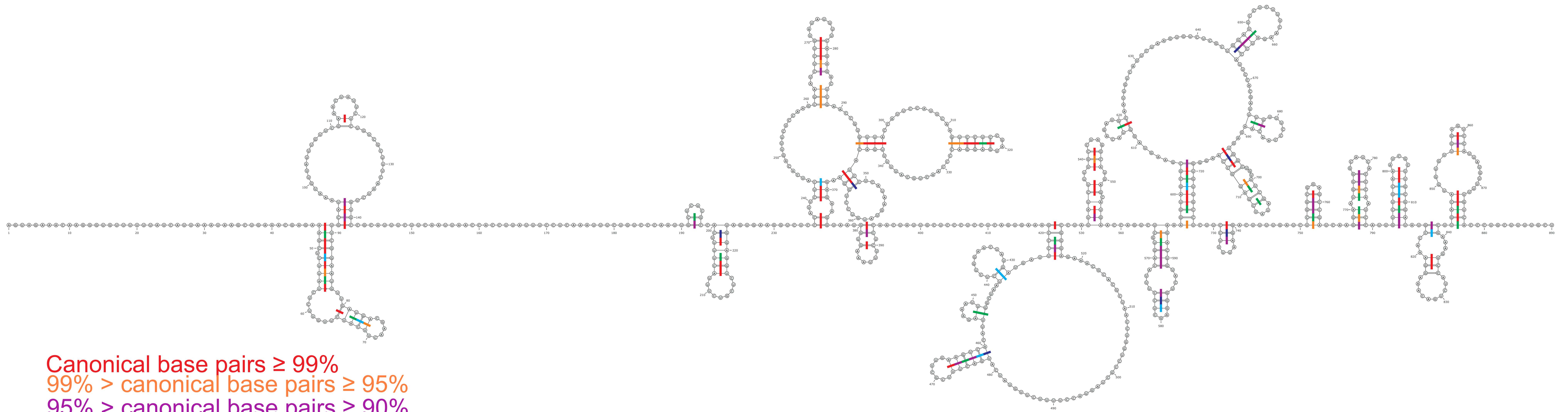
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 70% > canonical base pairs

vRNA7 *in virio* local MFE



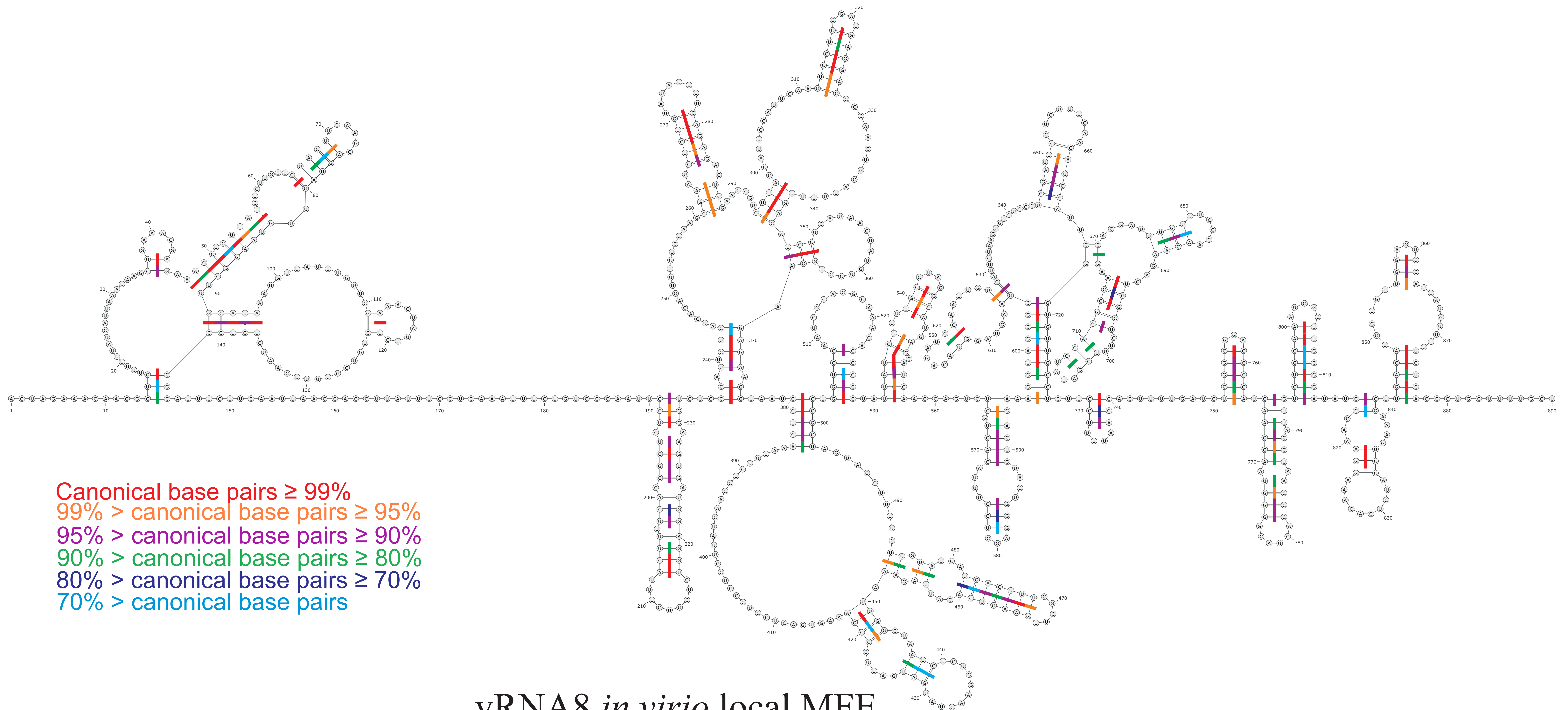
vRNA8 *in virio* global MEA

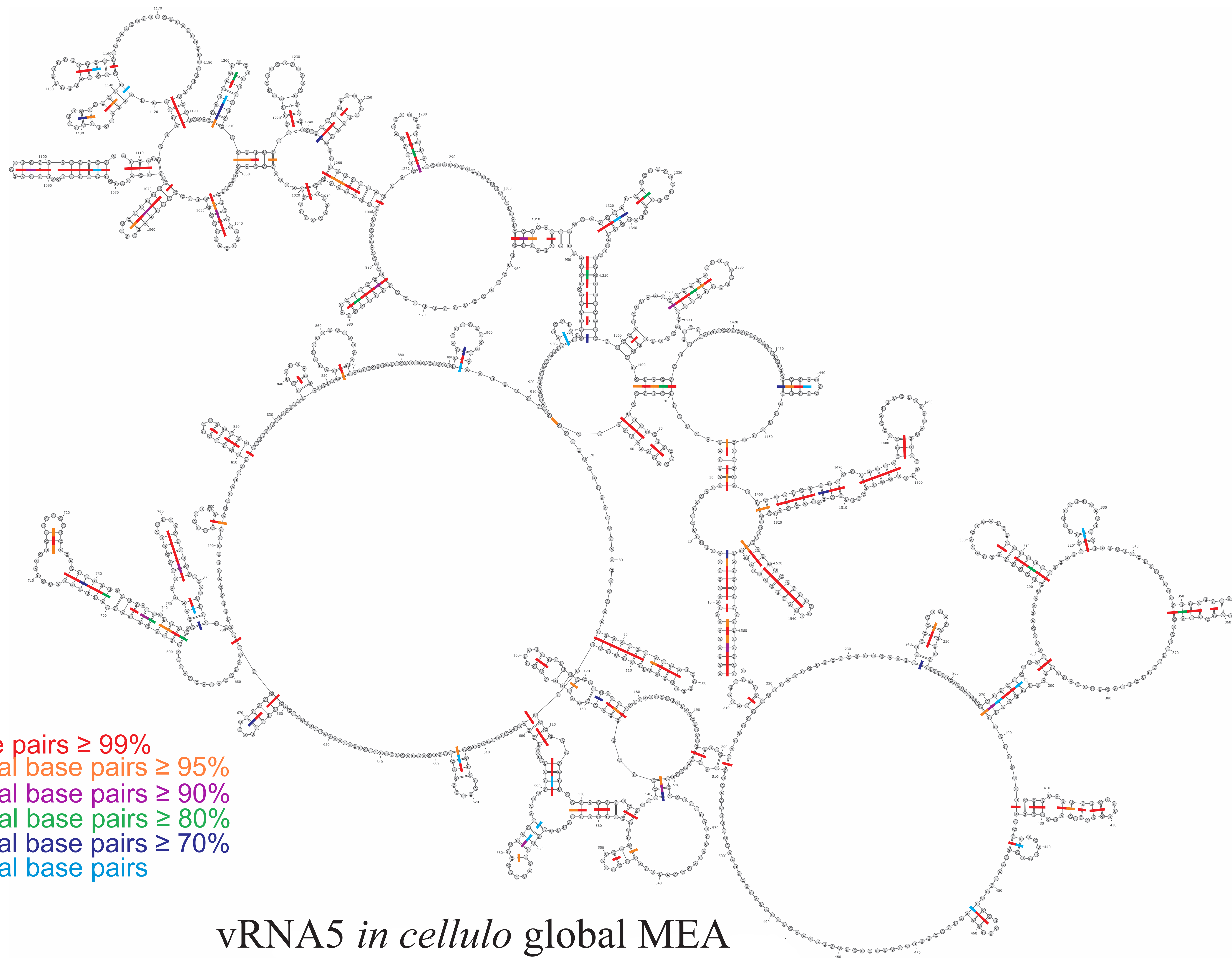




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vRNA8 *in virio* local MEA

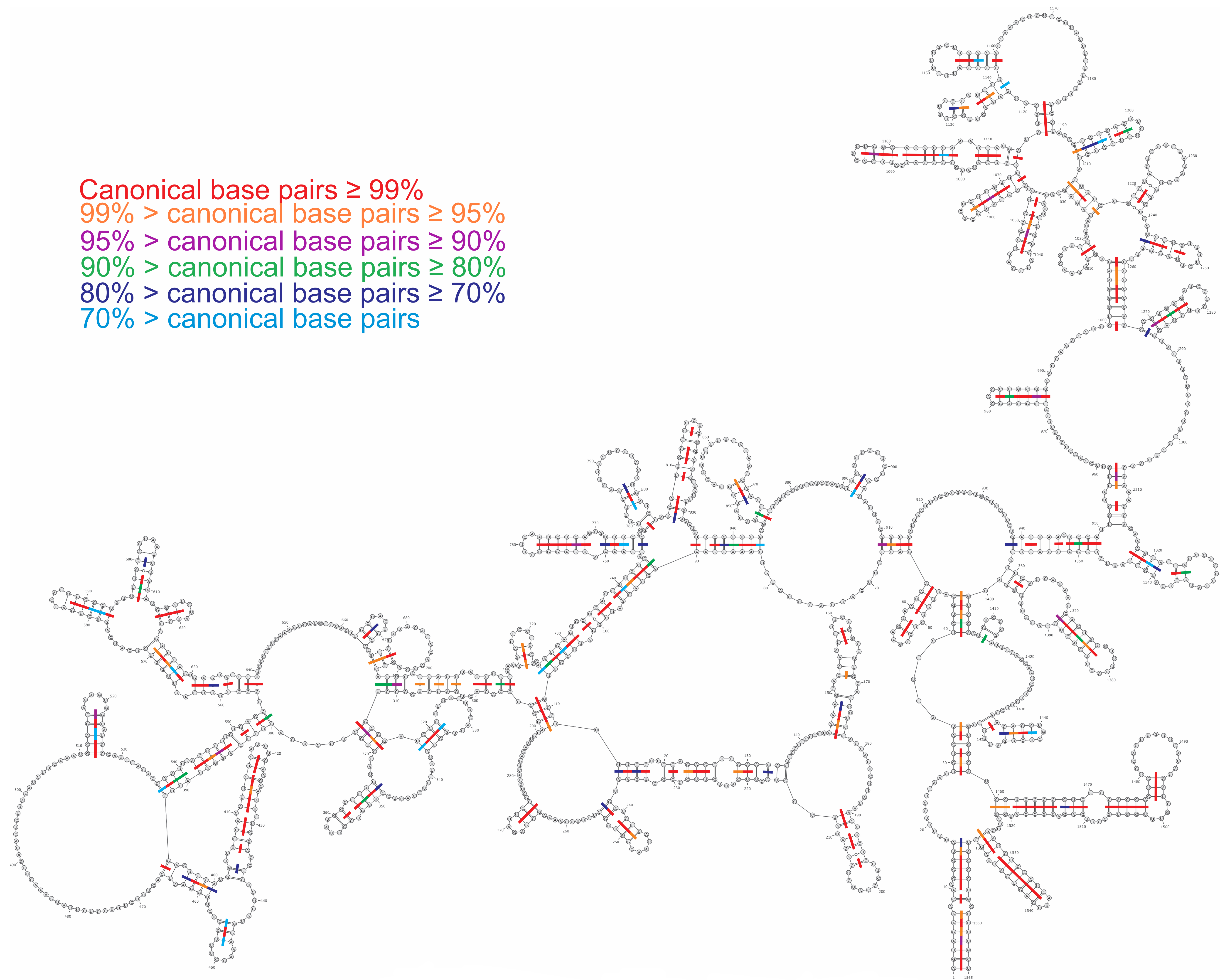




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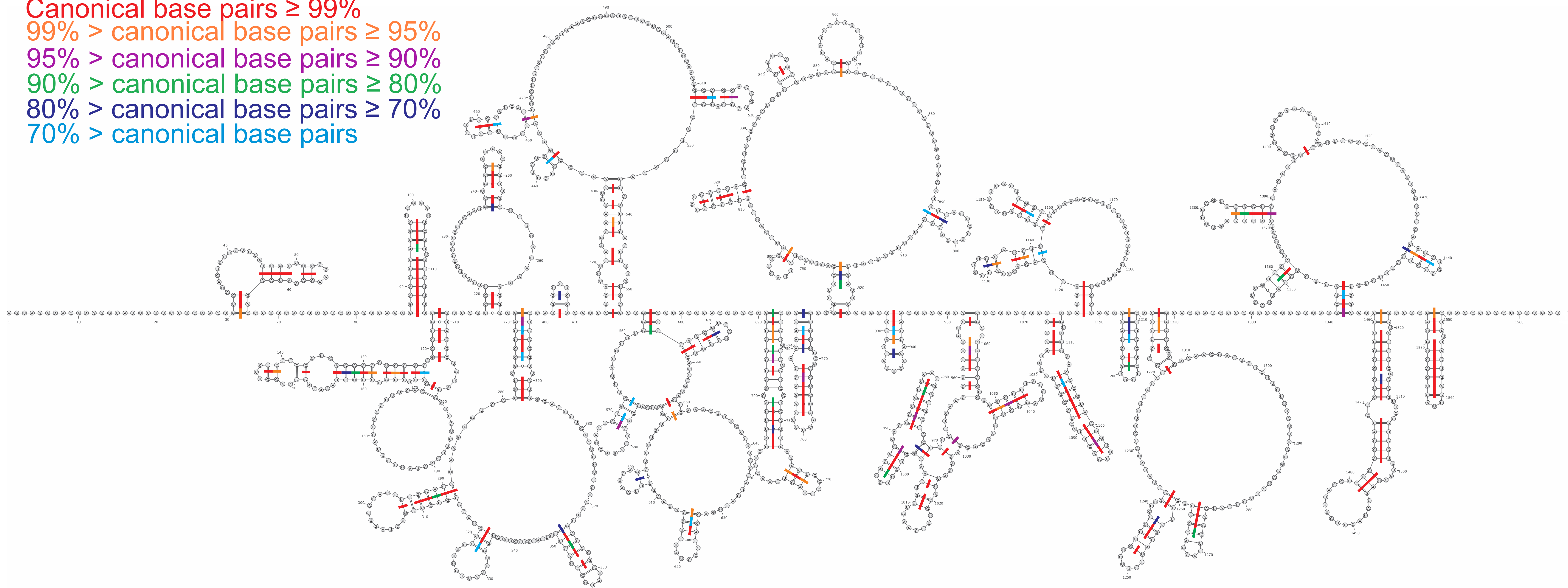
vRNA5 *in cellulose* global MEA

Canonical base pairs $\geq 99\%$
 99% > canonical base pairs $\geq 95\%$
 95% > canonical base pairs $\geq 90\%$
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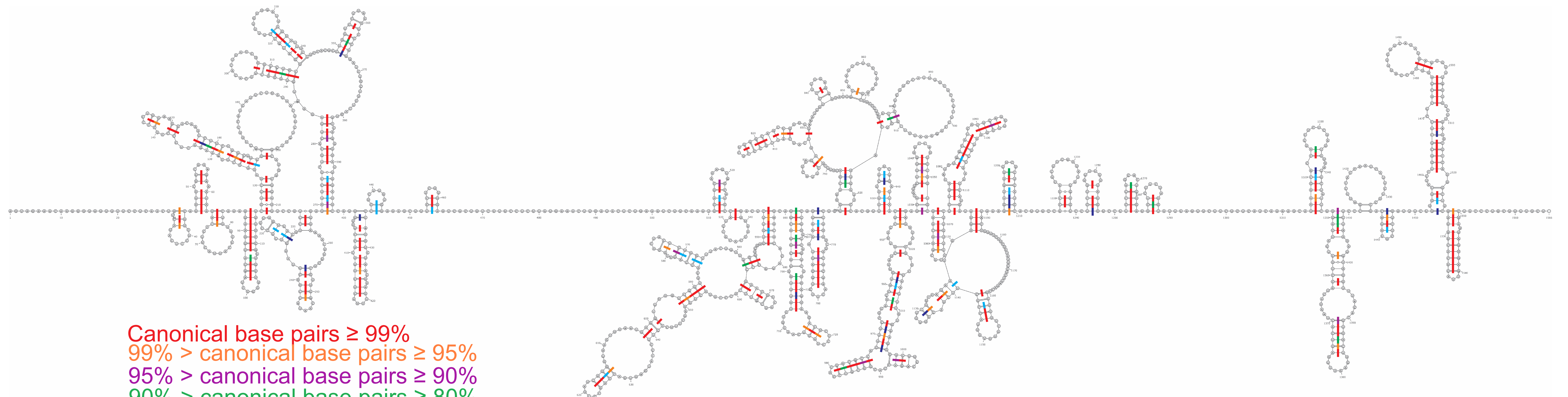


vRNA5 in cellulose global MFE

Canonical base pairs $\geq 99\%$
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 70% > canonical base pairs

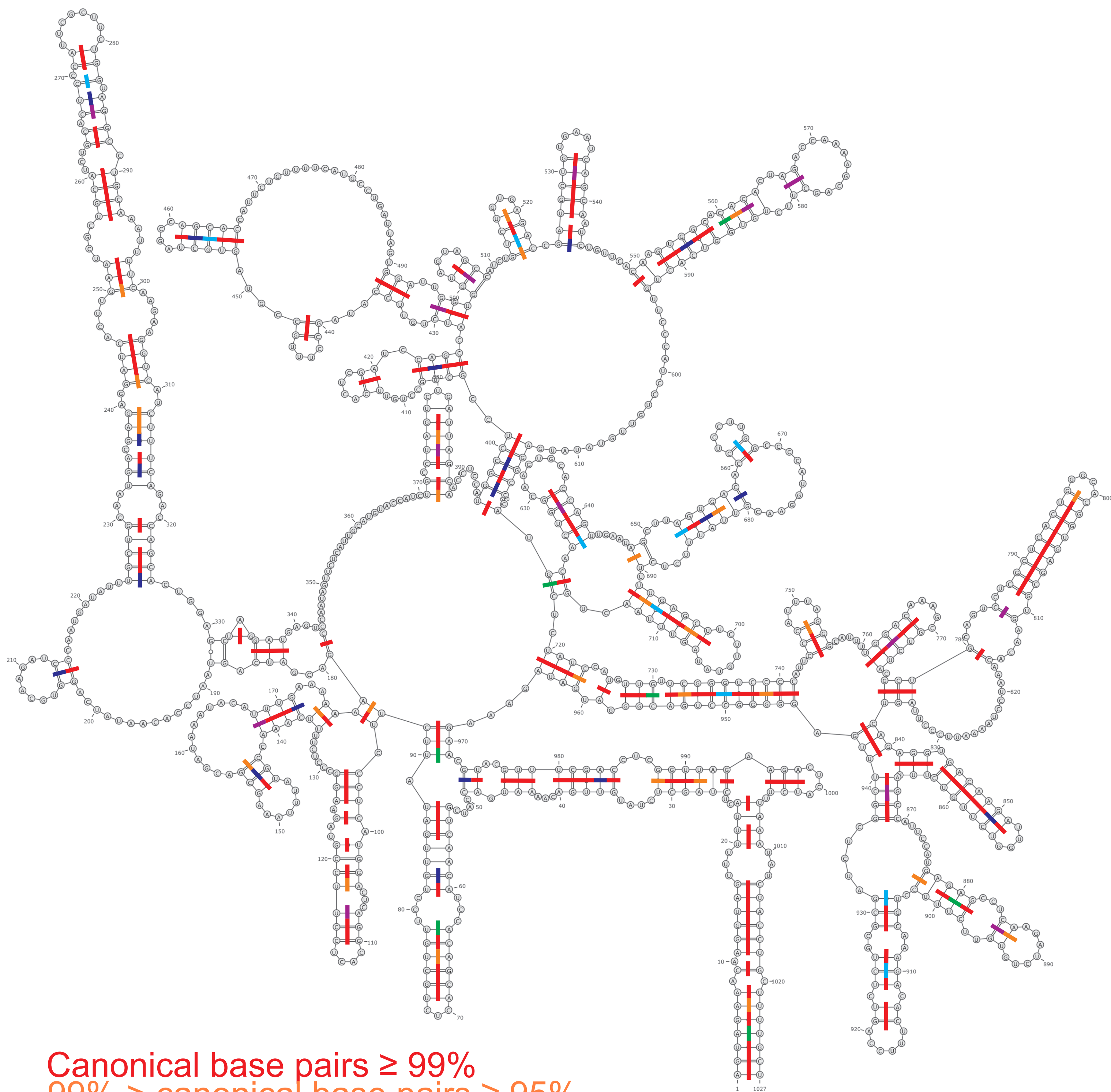


vRNA5 *in cellulose* local MEA



Canonical base pairs $\geq 99\%$
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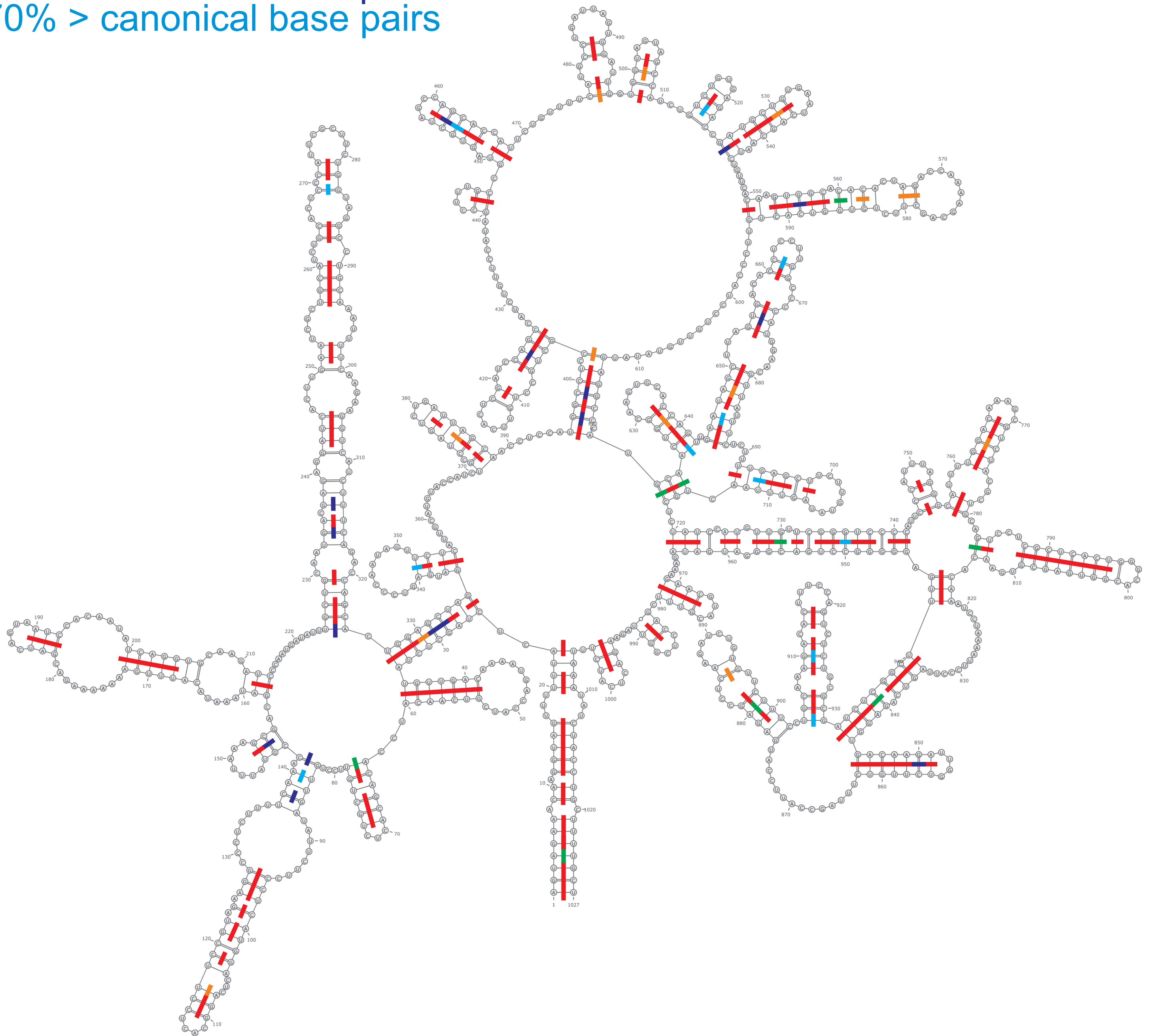
vRNA5 *in cellulo* local MFE



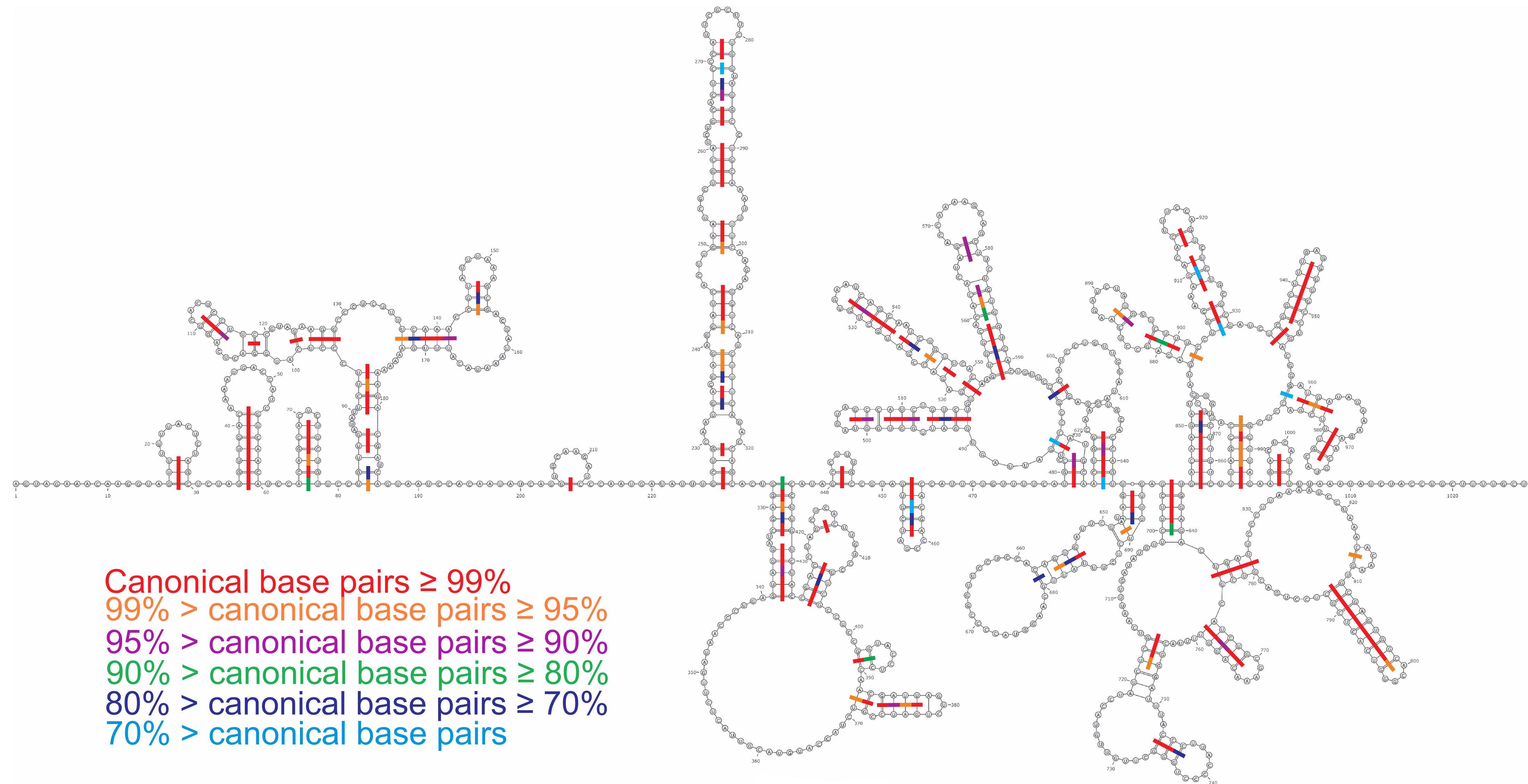
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vRNA7 in cellulose global MEA

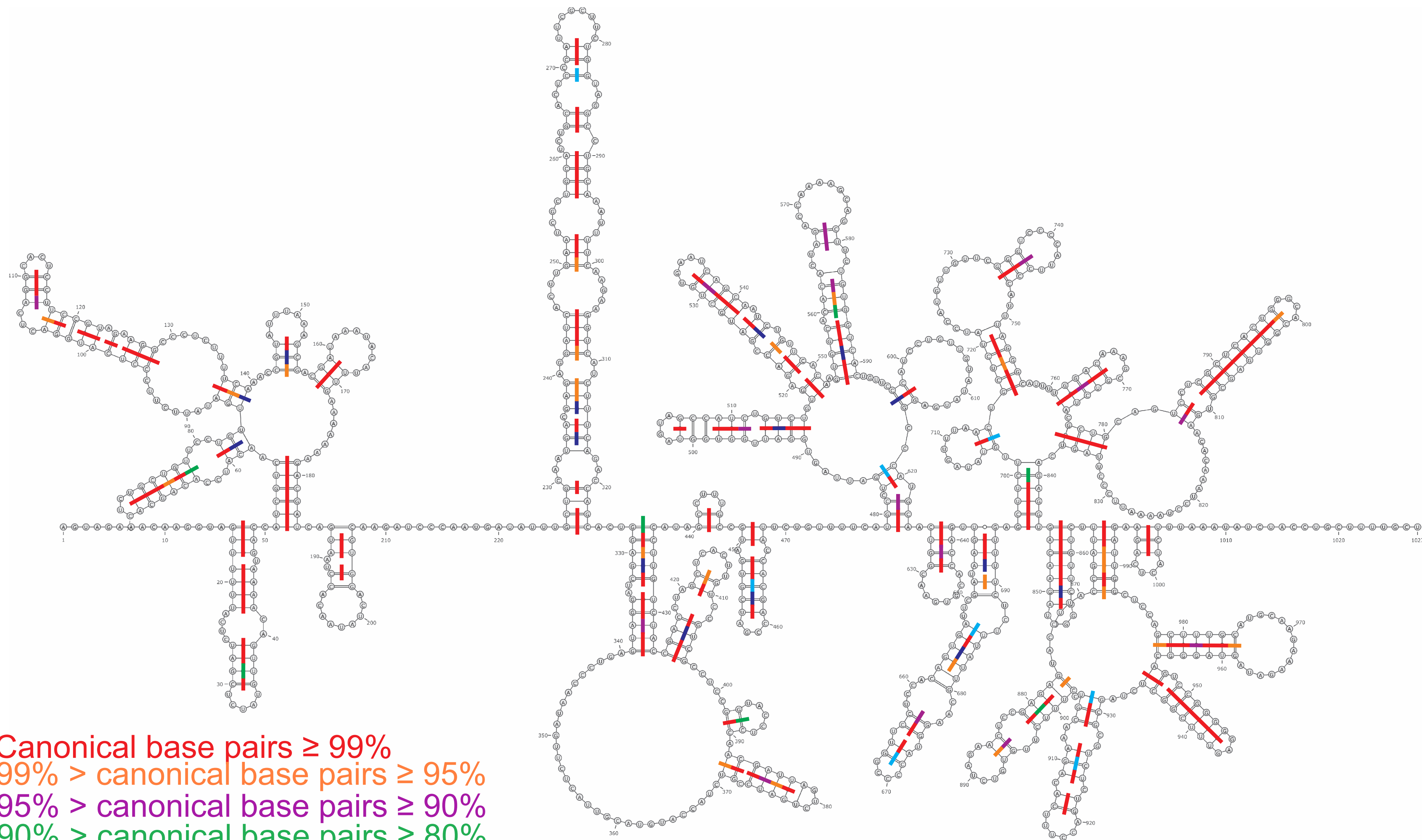
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vRNA7 in cellulose global MFE

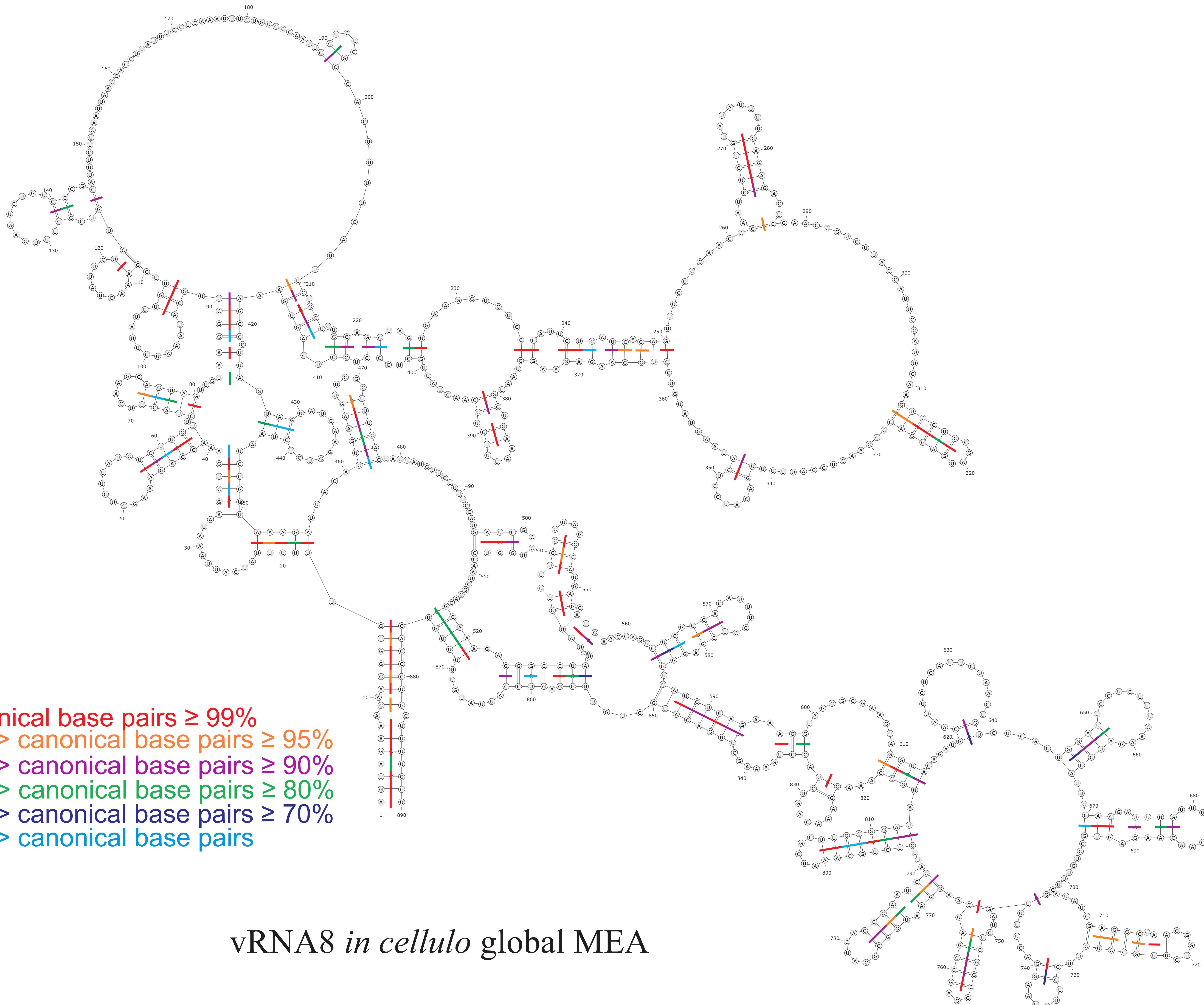


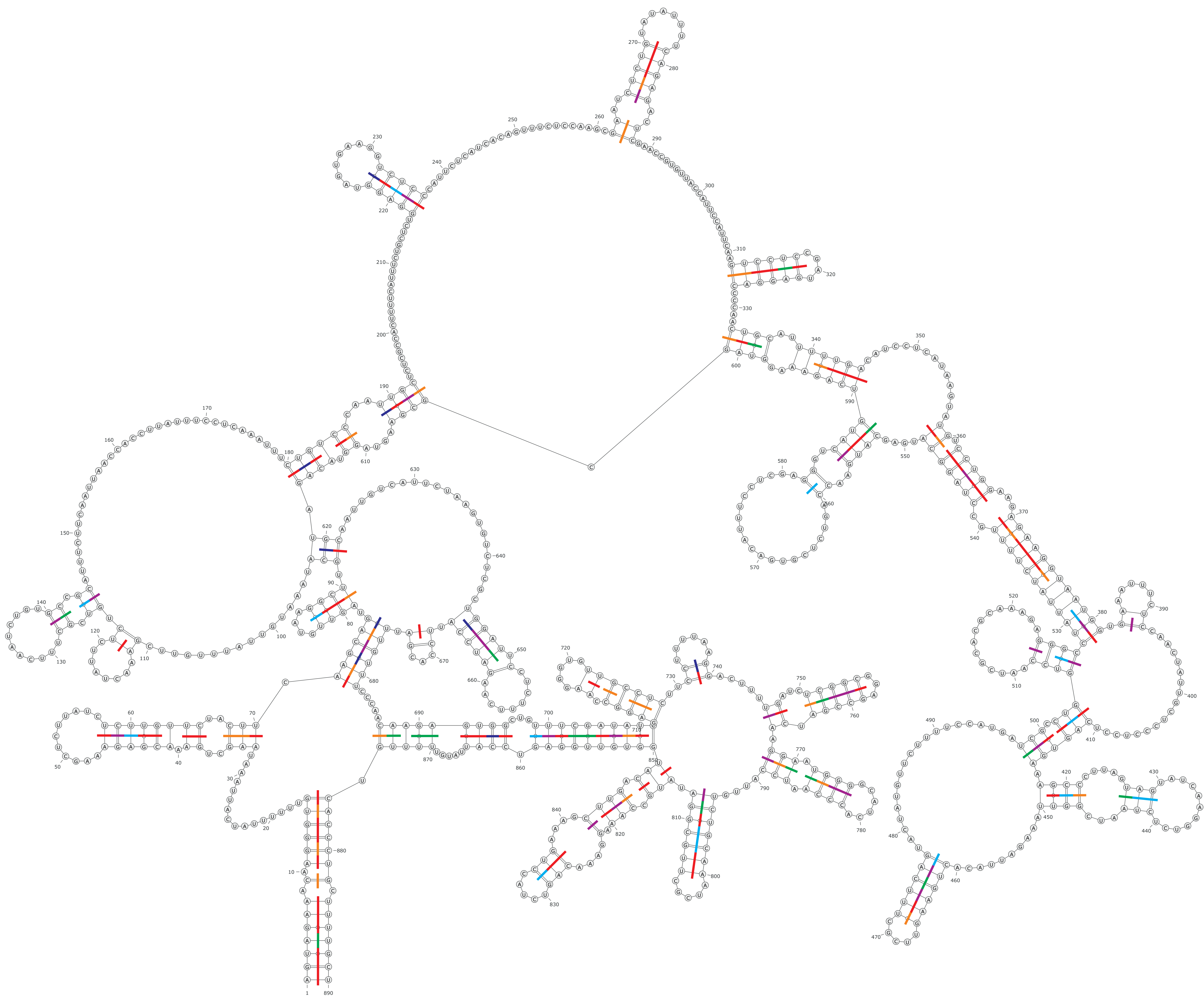
vRNA7 in cellulo local MFE



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 70% > canonical base pairs

vRNA7 *in cellulo* local MEA

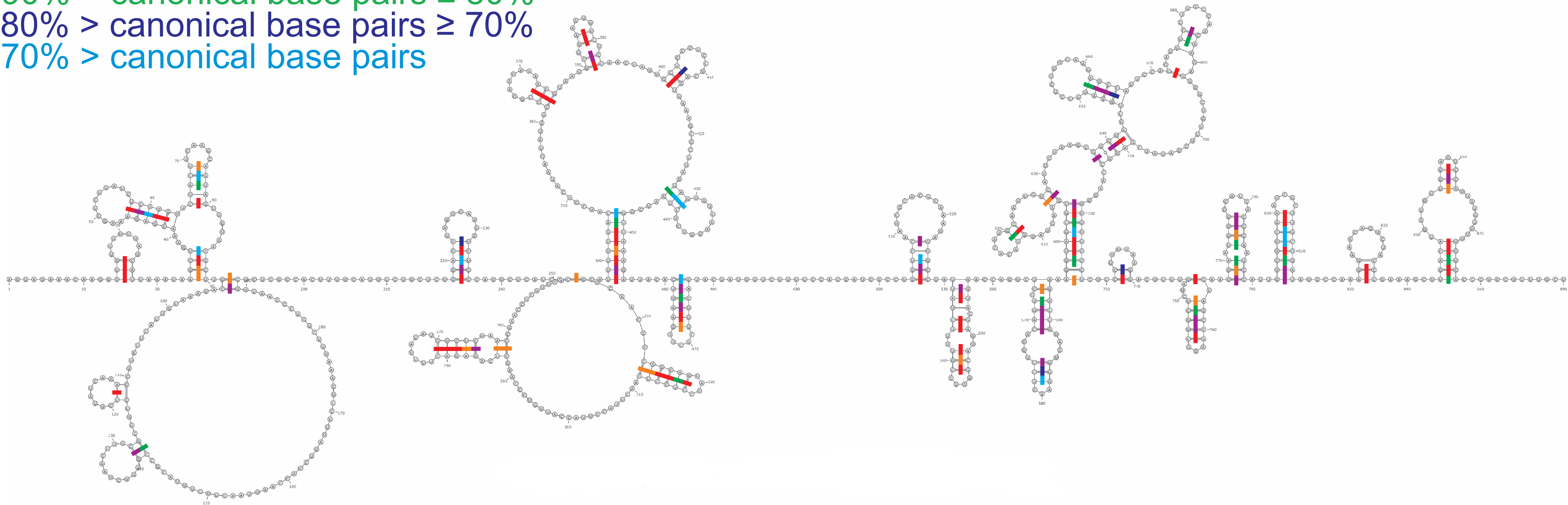




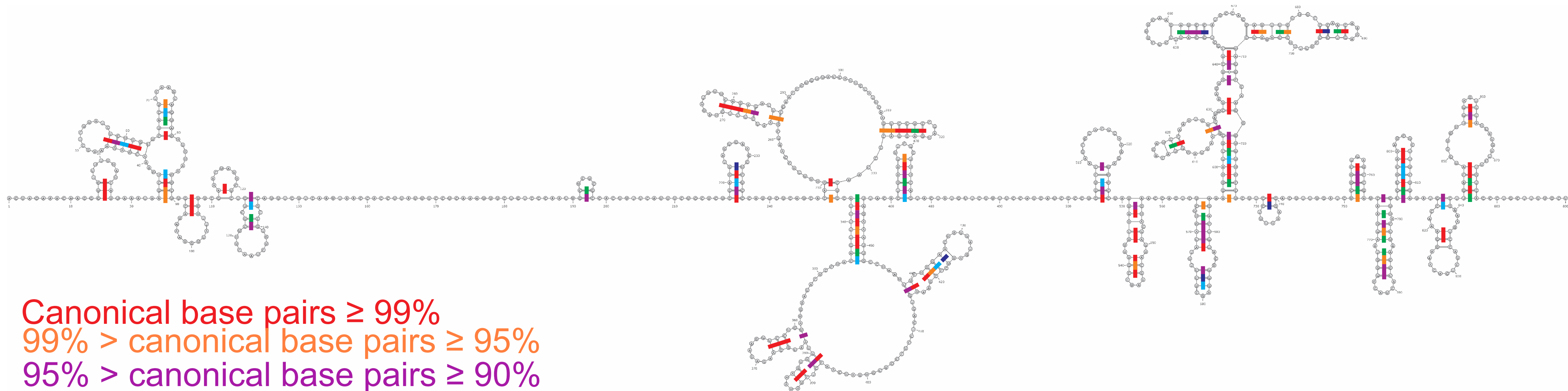
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 70% > canonical base pairs

vRNA8 *in cellulo* global MFE

Canonical base pairs $\geq 99\%$
99% > canonical base pairs $\geq 95\%$
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70% > canonical base pairs



vRNA8 *in cellulo* local MEA



Canonical base pairs $\geq 99\%$
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vRNA8 *in cellulose* local MFE