

The promise and challenges of cyclic dinucleotides as molecular adjuvants for vaccine development

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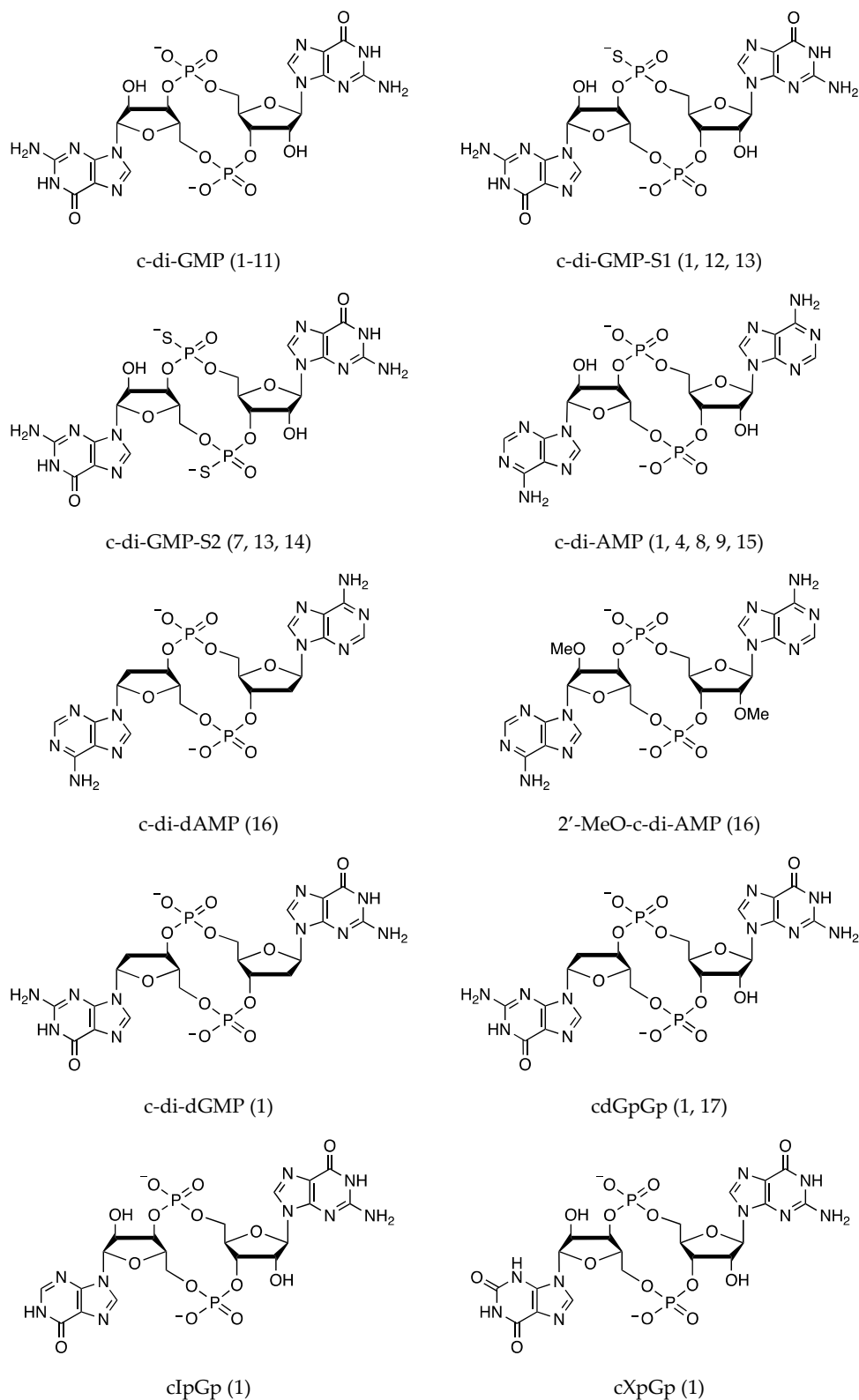
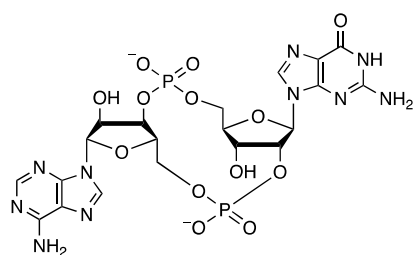
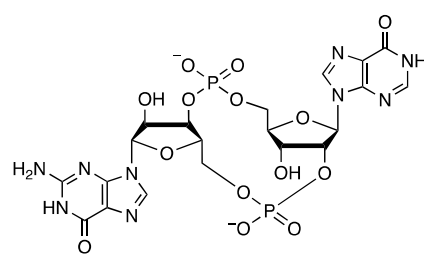


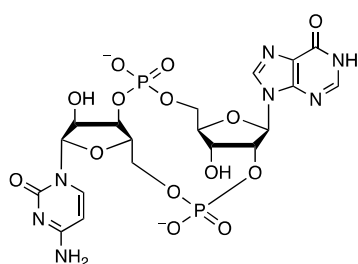
Figure S1. Selected CDNs containing 3'-5' internucleotide phosphate/phosphorothioate linkages reported in the literature.



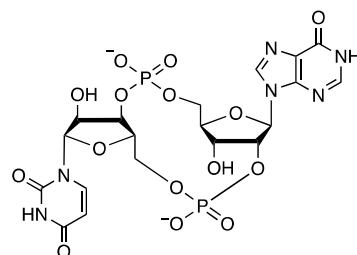
2'3'-cGAMP (24)



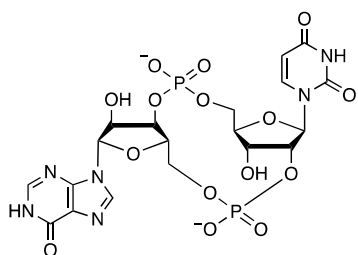
2'3'-cIGMP (20)



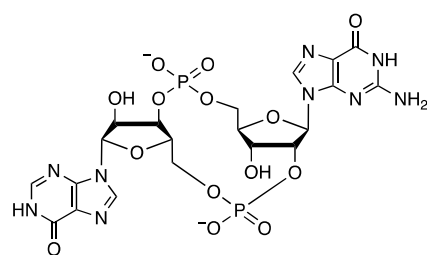
2'3'-cICMP (20)



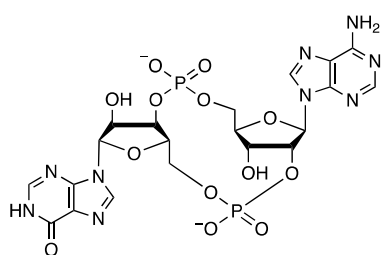
2'3'-cIUMP (20)



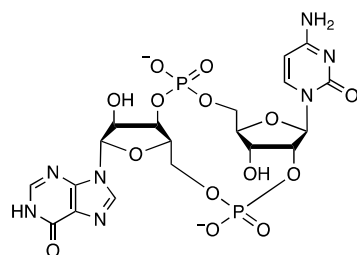
2'3'-cUIMP (20)



2'3'-cGIMP (20)



2'3'-cAIMP (19, 20)



2'3'-cCIMP (20)

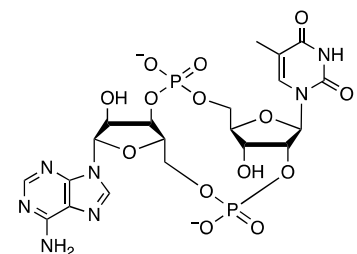
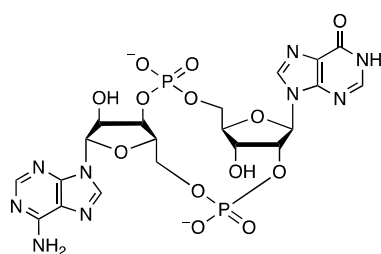
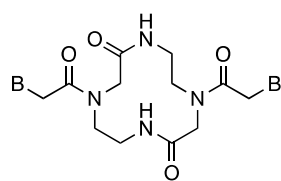
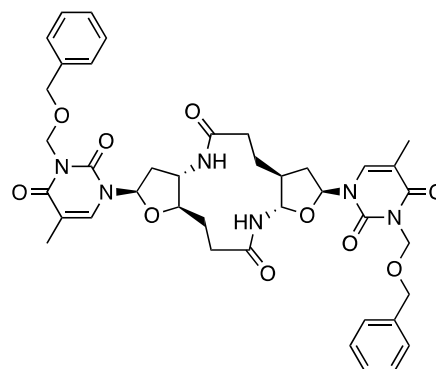


Figure S2. Selected CDNs containing 2'-5' and both 2'-5' and 3'-5' internucleotide phosphate/phosphorothioate linkages reported in the literature.

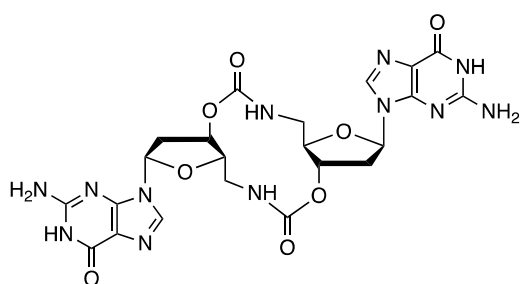


B = thymine, uracil, cytosine, adenine or guanine

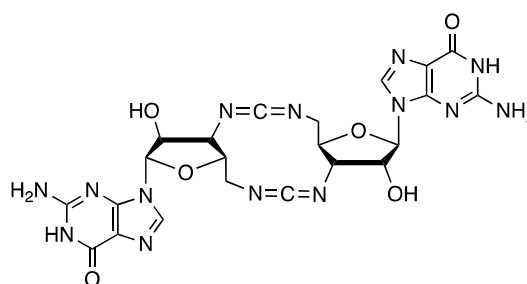
PNA backbone (27)



Amide backbone (28)

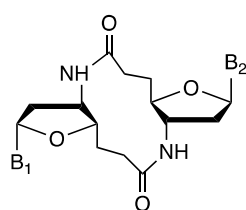


Carbamate backbone (29)



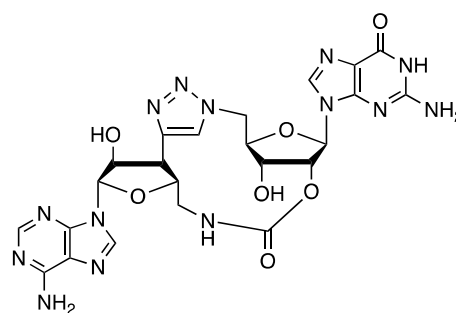
X = O, S, NH or NMe

Carbodiimide, urea, thiourea and guanidinium backbone (30)



B₁ = B₂ = cytosine
B₁ = B₂ = uracil
B₁ = B₂ = thymine

Amide backbone (31)



Triazolyl backbone (32)

Figure S3. Selected CDN analogs with internucleotide linkages that are not phosphorous based.

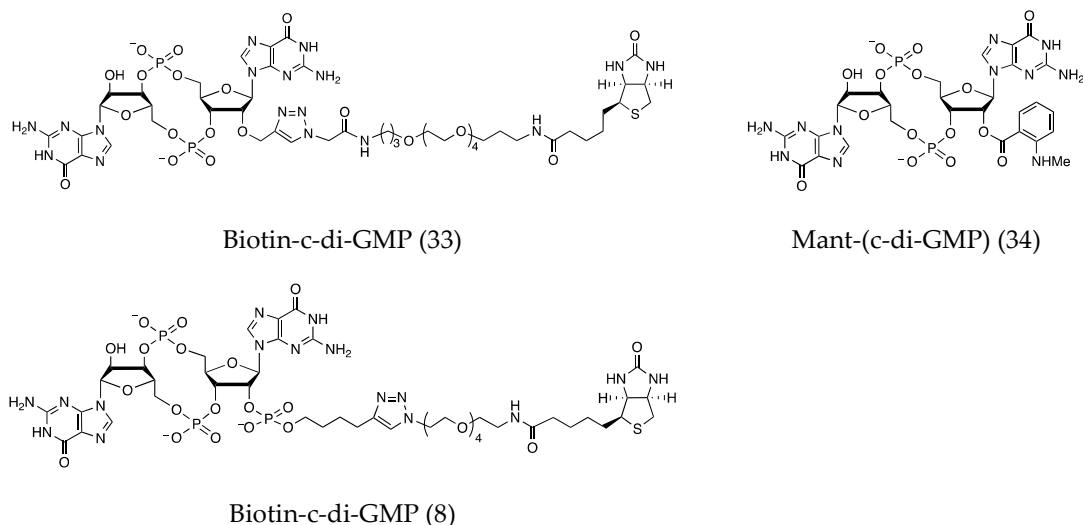


Figure S4. c-di-GMP conjugates reported.

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