DNAmoreDB: a database of DNAzymes

Almudena Ponce-Salvatierra[1,*], Pietro Boccaletto[1], Janusz M. Bujnicki[1,*].
1. International Institute of Molecular and Cell Biology in Warsaw, Warsaw, Poland.
*corresponding authors: aponces@genesilico.pl, janusz@iimcb.gov.pl

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DNAmoreDB is freely accessible under genesilico.pl/DNAmoreDB/

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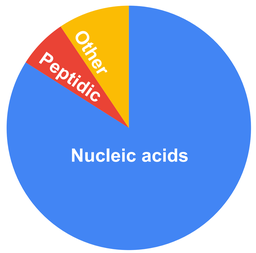
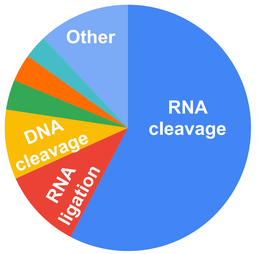
DNAzymes can be classified according to different criteria.

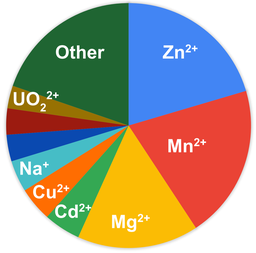


Substrates



Reactions

- Aa side-chain mod.
- DNA phosphorylation
- Amide hydrolysis

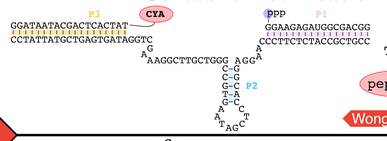


Cofactors

- M^{2+}-independent
- Not reported

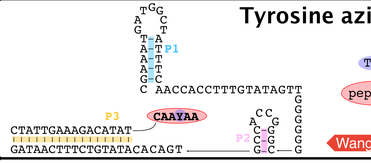
DNAzymes acting on peptidic substrates

Covalent modification of amino acid side chains — 11MN5



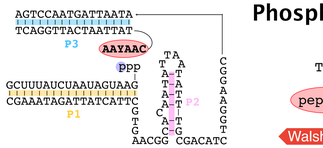
Wong et al. 2011 Biochemistry 50(21):4741-4749

Tyrosine azido-adenylation — DzAz1



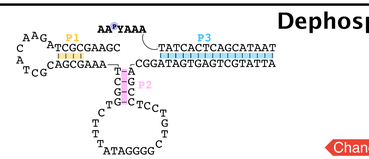
Wang et al. 2016 Angew Chem Int Ed Eng 55(34):10052-10056

Phosphorylation — TyrKinA1



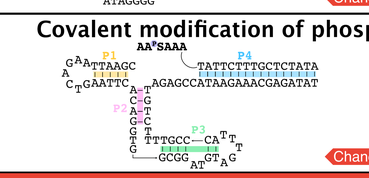
Walsh et al. 2015 J Mol Evol 81(0):218-224

Dephosphorylation — 14WM9



Chandrasekar et al. 2013 PNAS 110(14):5315-5320

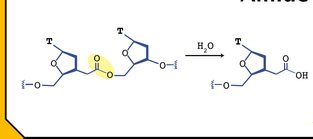
Covalent modification of phosphorylated amino acid side chains — DhaDz1



Chandrasekar et al. 2015 JACS 137(30):9575-9578

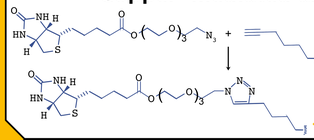
DNAzymes acting on other substrates

Amide and ester hydrolysis — 13ZB38



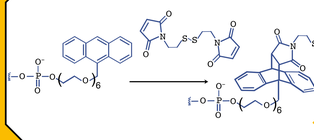
Brandsen et al. 2013 JACS 135(43):16014-16017

Copper-mediated azide-alkyne cycloaddition (CuAAC) — Click-17



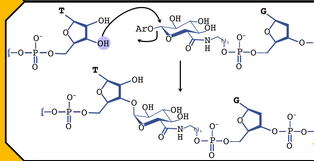
Liu et al. 2020 NAR 48(13):7356-7370

Diels-Alder — DAB22



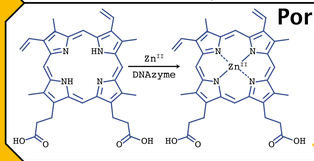
Chandra et al. 2008 JACS 130(10):2936-2937

Glycosylation — 16MJ132



Hesser et al. 2016 Chem Commun 52(59):9259-9262

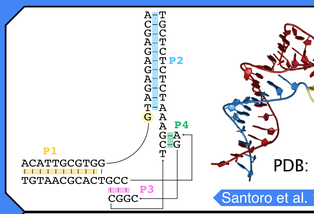
Porphyrin metalation — T30695



Peng et al. 2019 Anal Chem 91(17):11403-11408

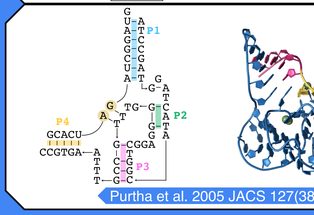
DNAzymes acting on RNA

RNA cleavage — 8-17



Santoro et al. 1997 PNAS 94(9):4262-4266, Liu et al. 2017 Nat Commun 8, 2006

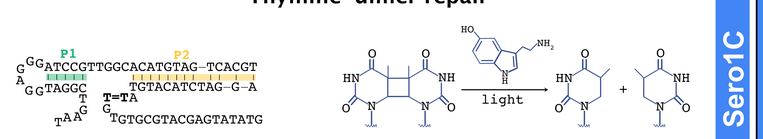
RNA ligation — 9DB1



Purtha et al. 2005 JACS 127(38):13124-13125, Ponce-Salvatierra et al. 2016 Nature 529, 231-234

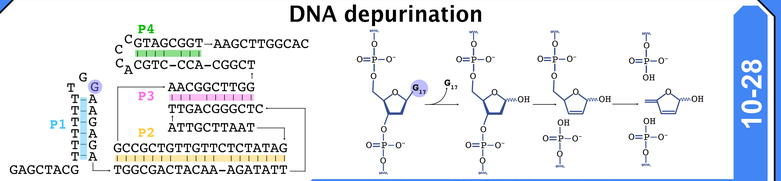
DNAzymes acting on DNA

Thymine-dimer repair — Sero1C



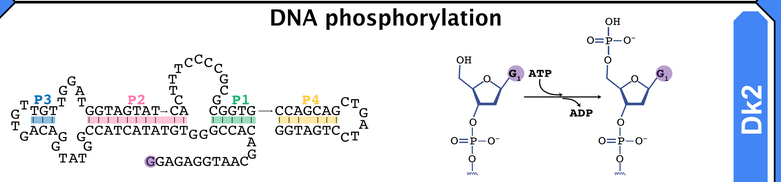
Thorne et al. 2009 JMB 388(1):21-29

DNA depurination — 10-28



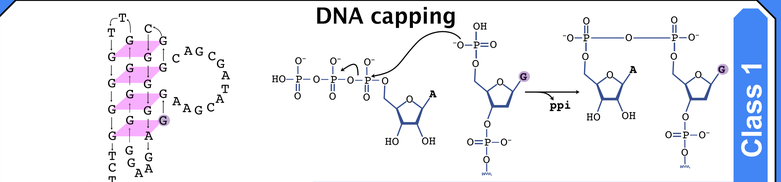
Sheppard et al. 2000 PNAS 97(14):7802-7807

DNA phosphorylation — Dk2



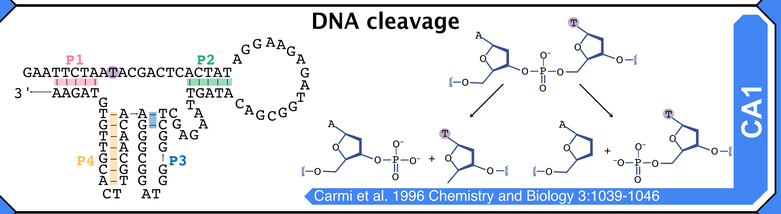
Wang et al. 2002 Chemistry and Biology 9:507-517

DNA capping — Class 1



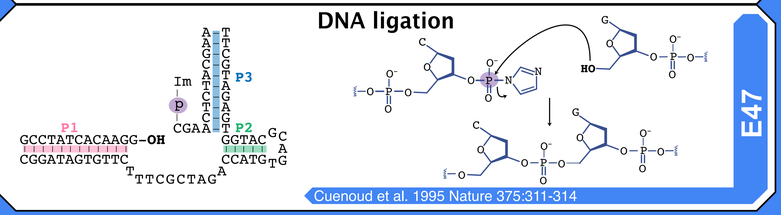
Li et al. 2000 Biochemistry 39(11):3106-3114

DNA cleavage — CA1



Carmi et al. 1996 Chemistry and Biology 3:1039-1046

DNA ligation — E47



Cuenoud et al. 1995 Nature 375:311-314