FIRST AUTHOR NAME	Reader	DOI	Title	Year	Objective	Summary
Bornholt	All	10.1145/2872362.2872397	A DNA-Based Archival Storage System	2016	Propose a new encoding scheme that offers controllable redundancy, trading off reliability for density.	Demonstrate feasibility, random access, and robustness of the proposed encoding with wet lab experiments involving 151 kB of synthesized DNA and a 42 kB randomaccess subset.
Lin	Alma	10.1145/3470496.3527441	Managing Reliability Skew in DNA Storage	2022	Identify and propose solutions for predictable reliability skew in NAM based on location in strand	First to point out that the middle of a DNA strand is most susceptible to reliability errors. Proposes Gini, an error code encoding method that evenly spreads out error probability across spatial locality. Proposes DnaMapper, an application-aware method of distributing the *most important bits* or data to the *most reliable bases* in DNA
Zhirnov	Seojin	10.1038/nmat4594	Nucleic acid memory	2016	Exploration of NAM properties	Goes over general properties of NAM (densit
Mortuza	Wendy	10.1186/s12859-023-05264-6	**In-vitro validated methods for encoding digital data in deoxyribonucleic acid (DNA)**	2023	Review all validated methods fo	A literature review that covers: 9 different encodings, strategies of encoding, handling errors, storage & information capacity, random access, rewritability, and cost.
Anavy	Alma	10.1038/s41587-019-0240-x	Data storage in DNA with fewer synthesis cycles using composite DNA letters	2019	Increase logistical density of DNA storage (bits/base)	Develop a new method for making **compound letters**, which take advantage of oligo multiplicity to exceed 2bits/base. Increase density and cut costs for synthesis. Possibility for more improvements and combinations with other techniques
Erlich and Zielinski	Seojin	10.1126/science.aaj2038	DNA Fountain enables a robust and efficient storage architecture	2017	Develop a DNA storage strategy	Design a DNA storage system based on fount
Organick	Wendy	10.1038/nbt.4079	Random access in large-scale DNA data storage	2018	Address the need to access data	Design and validate a large library of primer
Wang	Alma	10.1007/s42514-022-00094-z	Mainstream encoding–decoding methods of DNA data storage	2022	Review of all methods of DNA da	Reviews four main methods. 3 in vitro (what
Blawat	Wendy	10.1016/j.procs.2016.05.398	Forward Error Correction for DNA Data Storage	2016	Develop an efficient and robust	Successfully store and retrieve error-free 22
Church	Seojin	10.1126/science.1226355	Next-Generation Digital Information Storage in DNA	2012	Develop a DNA encoding scheme using next-gen DNA synthesis and sequenci	
Appuswamy	Alma	10.1101/2022.10.06.511077	OligoArchive: Using DNA in the DBMS storage hierarchy	2019	Use DNA as the bottom tier of a	Proof of concept implementing DNA storage
N/A	Alma	Presentation	DNA storage with ADS Codex: the Adaptive Codec for Organic Molecular Archives	2021	*adaptive* codec for DNA bearir	Adapt to different oligo lengths, types of err
Sima	Wendy	10.48550/arXiv.2310.01729	**Error Correction for DNA Storage**	2023	Define the various ways error ap	Provides a brief introduction to some of the
Ding	Wendy	10.1093/nsr/nwad229	Improving error-correcting capability in DNA digital storage via soft-decision decoding	2024	demonstrate the effectiveness o	Derrick doubles the error-correcting capabil
Heinis	Seojin	10.1145/3626233	**Survey of Information Encoding Techniques for DNA**	2023	Review all significant advances in DNA storage to date, including initial explo	

Methodology	Read Speed	Write Speed	Info Density (bits/base)	Storage Capacity	Encoding	Error Rate	Redundancy	Cost ($)
Experiment	10s of hrs	10s of hrs?	0.88	151 KB	*XOR*, Huffman (triple)	1% per nucleotide	4	NA
Simulation with minimal wetlab validation			2 bits/base (max)	not discussed	Direct 4 base to 2 bit	~1% for NGS, ~12-15% for nanopore	uses Reed-Solomon ECCs	not discussed
Mathematical modeling, mostly	<100 μs per bit	<100 μs per bit	N/A	N/A	naive/unspecified ecc	N/A		3.6e15 - 9e16 bits/USD
Literature review	mentions of ranc	N/A	Refer to table 3.	Refer to table 3.	Lists 9 encoding methods	10^-9 to 10^-8 Repitition code, Hamming Code, RS, BCH, L (see Table 2 for error correction, error dete		depends on the efficiency In 2013, 12400 USD/MB (p In 2017, 3500 USD/MB In 2019, 1700 USB/MB
Experiment	N/A	N/A	Potentially 6.4 bits/cycle (not per base, but equivalent)	Approximately 20-30 PB/gram (The biggest file they encode is 6.42 MB)	Compound letter encodir	Depends on resolu	Reed-Solomon (DNA-le	supplementary table 2?
Experiment	N/A	N/A	1.57	215 PB/g	DNA Fountain	0%; used RS ECC	1.07	3500 USD/MB (synthesis)
Experiment	N/A	N/A	1.1	200.2 MB, potentially m	Bit-squence to base 3 Hu	0%; used RS	15% and 25%, depending on the file	
Mostly literature review. briefly mention a simulation experiment			see Table 1	see Table 1	Direct mapping, fountain	n/a	depends on method	not discussed
Experiment	N/A	N/A	0.89	22 MB or 5 PB/g	See encoding method 4 i	0%; used RS, BCH, (	32	N/A
Experiment	N/A	N/A	0.6		Church *et al.*	1.90E-06	1	
Experiment/proof of concept	N/A	N/A	not great, using Church 1	12KB database	Uses Goldman base 3 method, plus parity bit for EC (Reed Solomon for invitro operation)	N/A	N/A	0.1 to 0.01 cents per nucleotide
Experiment	N/A	N/A	Varying: quote says 0.99 I	32bits/strand	Adaptive bitpacking	n/a	erasure oligos	
Examples & Exploration	N/A	N/A	N/A	N/A	Explores a few options	N/A	Optimal redundancy de	N/A
Experiment/proof of concept	N/A	N/A	1.37 bits/pb or 1.56 bits/p	5.2 MB	Convert files into oligos,	; used RS + CRC	4x or 8x, depending on	N/A
Literature review	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Cost (energy)	Notes	Source code?
<10^-10 W per GB		No.
not discussed	nanopores?	
<10^-10 W per GB	estimated ~2,000-2,000,000 years retention?? holy shit?? also the paper also gets into quantum physics or something its wild	No.
<10^-10 W per GB	really cool!	N/A
not discussed	where is supplementary table 2	Yes (Python): - DNA Fountain C - Reed–Solomon - Analyses custor
N/A		WHAT THE HELL Yes (Python): - Everything: http
N/A	Dehydration is pretty neat	No (code is propr
not discussed	in vivo is cool! but at the moment not feasible. also Table 1 is very helpful for reference. and there are large figures explaining all the er	N/A
N/A		No.
		Yes (Python & Pe
N/A	helpful summary of sequencing + actually discussing monetary cost. Interesting angle: non application-agnostic encoding. Apparently people have tried to make DNA transistors before?? (page 4)	No.
	not the most thrilling presentation but promising encoding technique	https://github.com
N/A	incredibly helpful clarification of error methods + curent attempts to manage error	No.
N/A	sacrifices some computational resources.	Yes (C and Perl): - In silico tests: ht - Source code: ht
N/A		No.