neck oil three ways

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Method 1: binary > QR encoding

1. image
2. binary
3. QR code
4. text

unroll → square → scan → *"drink more neck oil"*
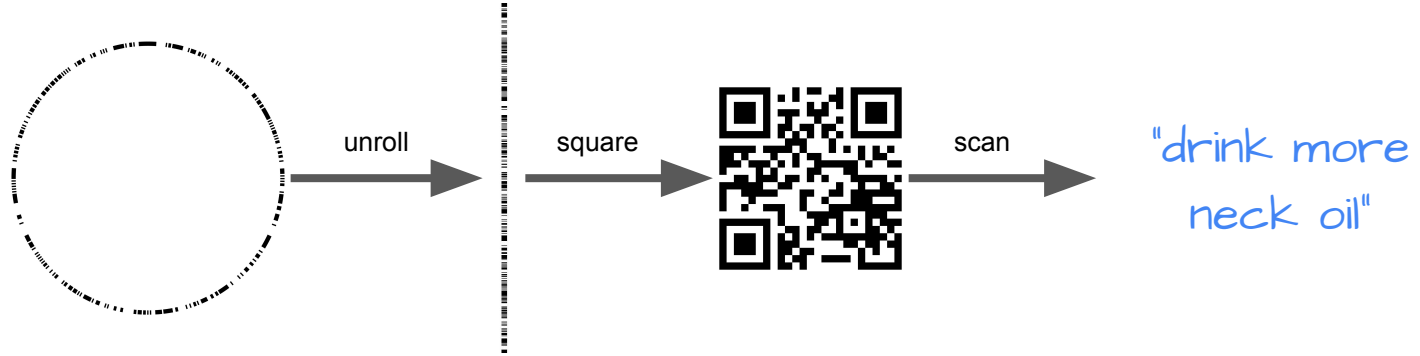
<u>Pros:</u>

- encode arbitrary text (URLs, etc.)
- decent information density
  - 25x25 QR code (625 bits): 36 chars
  - 57x57 QR code (3249 bits): 174 chars
- modest error tolerance
  - up to 30% of QR bits can be corrupted
- fairly obvious it's a puzzle

<u>Cons:</u>

- tortuous image > binary conversion
  - need to distinguish consecutive 1s/0s
  - hard to identify starting point
- (probably) doesn't use whole art
  - not really visually interesting by itself
  - a ring / spiral circumscribing actual sand art
- fairly obvious it's a puzzle

Method 2: radial semaphore

1. image
2. flags
3. text

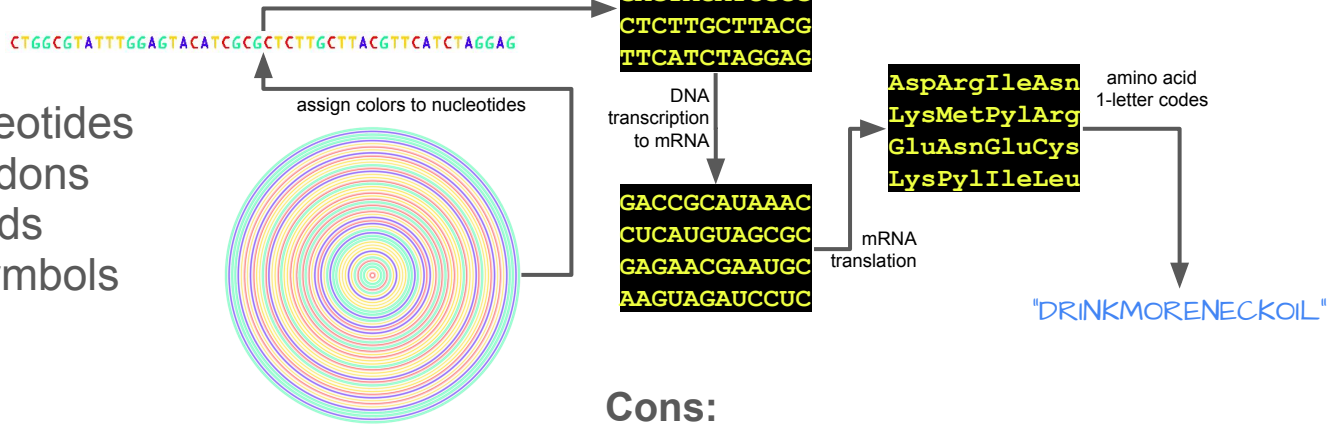match flag pairs → decode → "DRINK MORE NECK OIL"
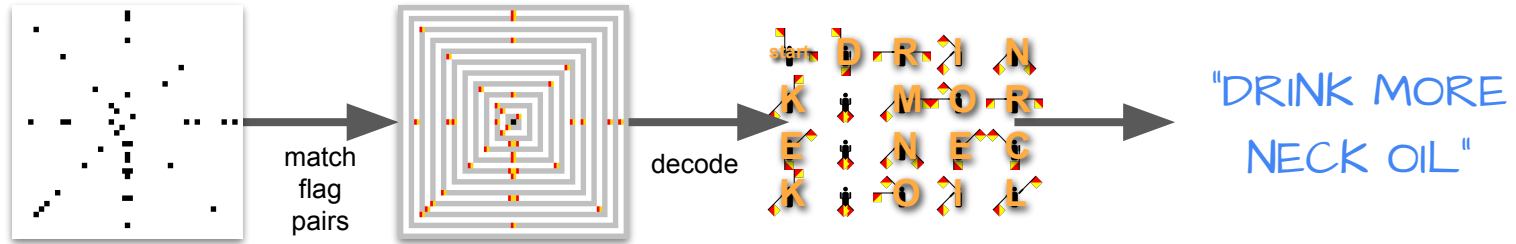
Pros:

- encode alphanumerics (A-Z, 0-9)
- 'flag' encoding is flexible
  - could range from extremely subtle to "obviously a puzzle"
  - room for artistic liberty

Cons:

- no capitalization / punctuation = no URLs
- somewhat simplistic
  - semaphore is obscure but it's not THAT obscure

Method 3: colo[u]rs > DNA codons

1. image
2. colo[u]rs
3. DNA nucleotides
4. mRNA codons
5. amino acids
6. 1-letter symbols

CTGGCGTATTTGGAGTACATCGCGCTCTTGCTTACGTTCATCTAGGAG

assign colors to nucleotides

CTGGCGTATTTG
GAGTACATCGCG
CTCTTGCTTACG
TTCATCTAGGAG

DNA transcription to mRNA

GACCGCAUAAAC
CUCAUGUAGCGC
GAGAACGAAUGC
AAGUAGAUCCUC

mRNA translation

AspArgIleAsn
LysMetPylArg
GluAsnGluCys
LysPylIleLeu

amino acid 1-letter codes

"DRINKMORENECKOIL"

Amino acid	3- and 1-letter symbols	
	3	1
Alanine	Ala	A
Arginine	Arg	R
Asparagine	Asn	N
Aspartate	Asp	D
Cysteine	Cys	C
Glutamine	Gln	Q
Glutamate	Glu	E
Glycine	Gly	G
Histidine	His	H
Isoleucine	Ile	I
Leucine	Leu	L
Lysine	Lys	K
Methionine	Met	M
Phenylalanine	Phe	F
Proline	Pro	P
Serine	Ser	S
Threonine	Thr	T
Tryptophan	Trp	W
Tyrosine	Tyr	Y
Valine	Val	V

Pros:

- colo[u]r usage: aesthetic?
- strong thematic identity
  - though idk if 'gene editing' is the vibe you're going for
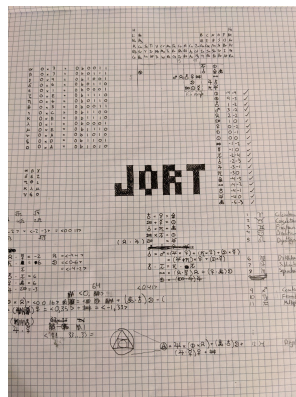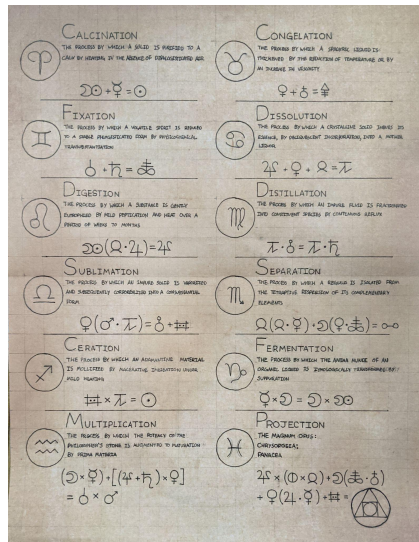- it's definitely tricksy

Cons:

- not just 'only letters', only *some* (20~22) letters
  - no 'B', 'J', 'X', 'Z'
  - 'U' & 'O' are nonstandard/esoteric
- requires four types of colo[u]red sand
- colo[u]r > nucleotide assignment is tricky
  - theoretically brute-forceable (only 24 possibilities)
- definitely requires hints / priming (no one will guess this)
- nerrrrrrrrrrrrrrrrrrrrrrrrrrrrrrd
  - i don't know what you expected asking a chemist to come up with 3 ciphers in a hurry

who am i

Dr. Jonathan "Jo" Melville is a Fellow at the Advanced Research Projects Agency-Energy (ARPA-E). At ARPA-E, Jo's technical interests lie within the realm of experimental next-generation technologies for deep decarbonization, focusing especially upon emissions reduction for industrial processes and novel chemistries for artificial fuel synthesis.
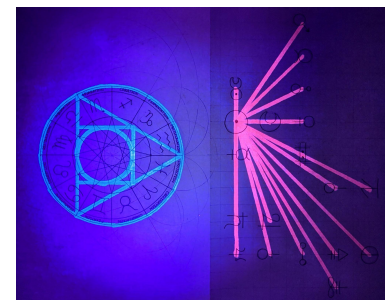
Jo earned his Ph.D. in inorganic chemistry from the Massachusetts Institute of Technology in 2021. His dissertation focused on the development of electrochemical methods such as molten-salt electrolysis for industrial decarbonization. Jo also holds a B.S. in chemistry from the University of California, Berkeley, where he studied porous materials for gas storage and separations.

half-baked ideas

- ## morse code
  - (too easy / obvious)

- ## pigpen cipher
  - (basic / not aesthetic)
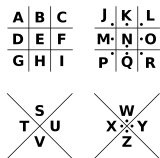
- ## something with spinors / quaternions
  - (way too mathy)