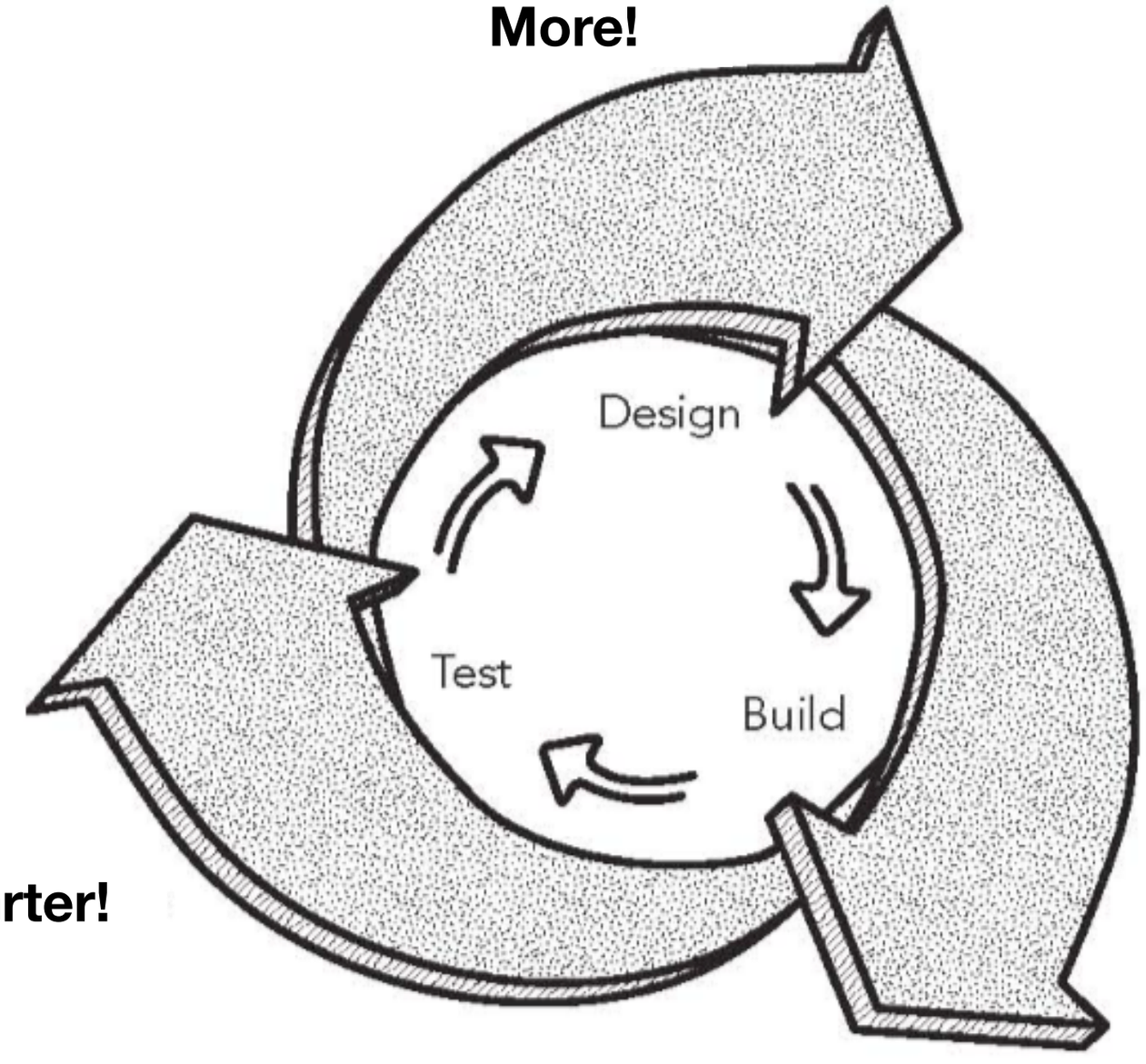
Design, build, & test week

(model) (make) (measure)

More!

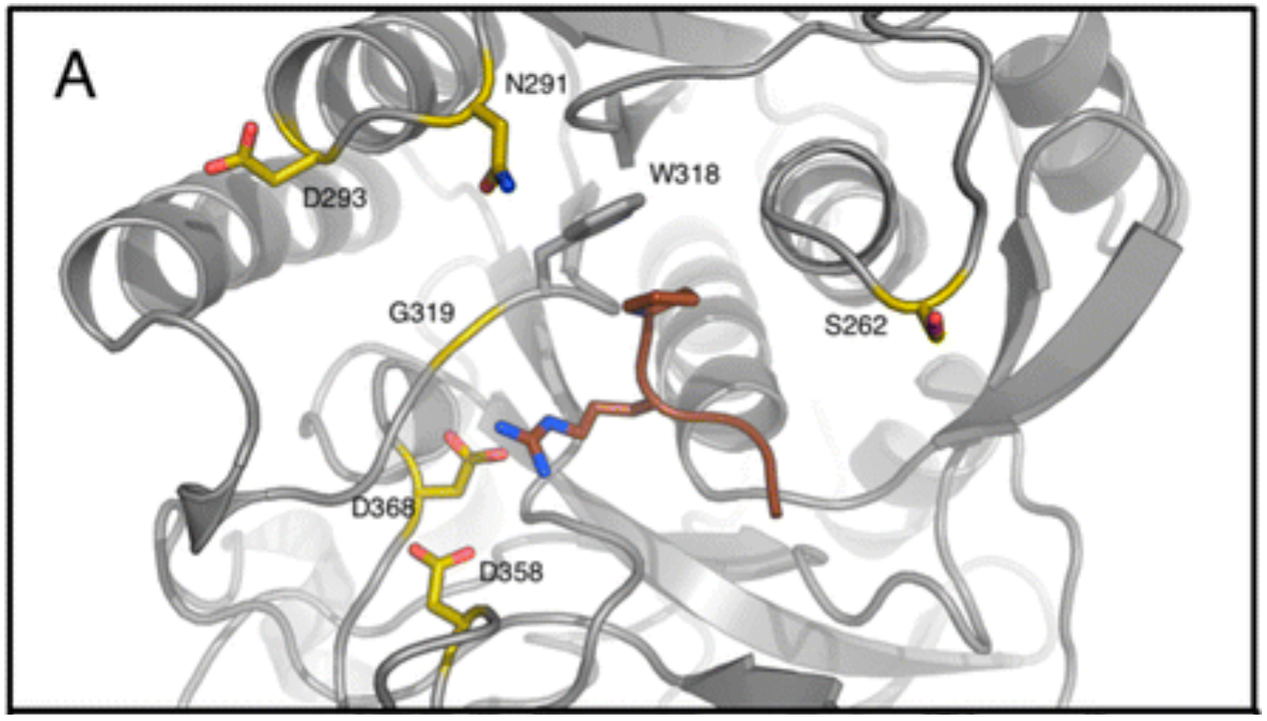


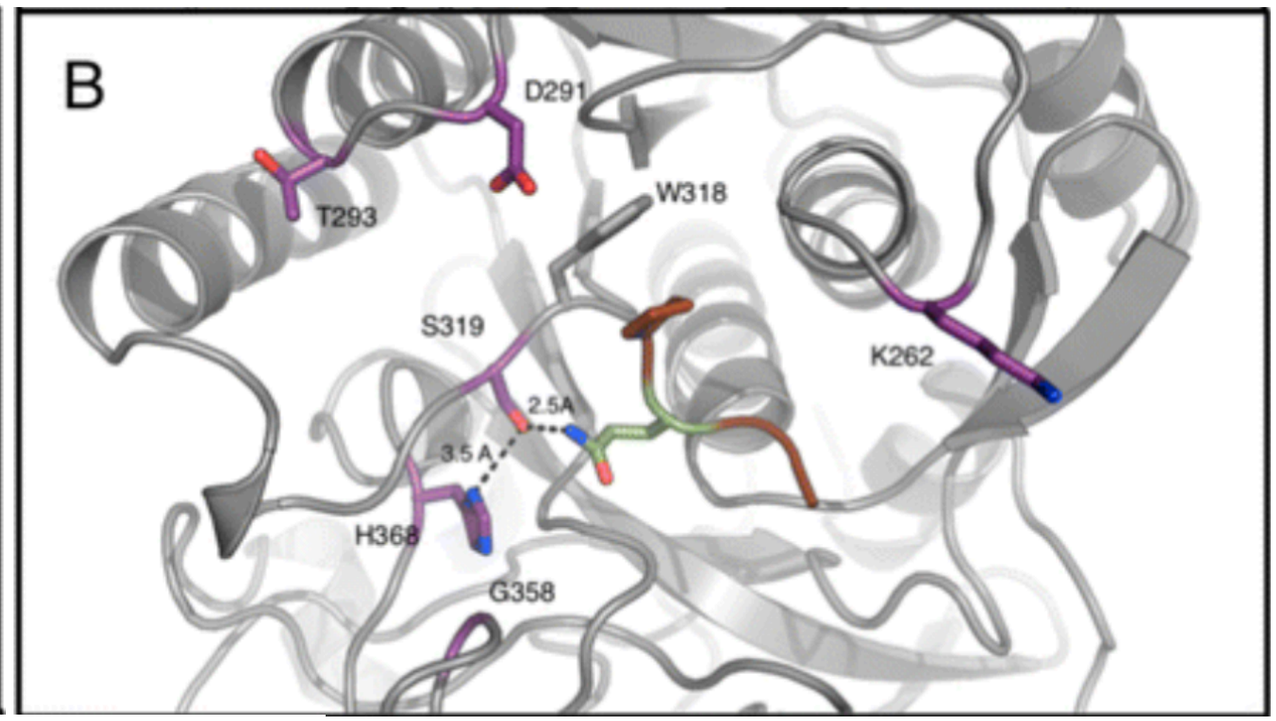
Faster!

Smarter!

Graphic adapted from "Synthetic Aesthetics" MIT Press (2014)

“Eats” collagen (PR) v. “Eats” gluten (PQ)





V119D, S262K, N291D, D293T, G319S, D358G, D368H

- V119D (not shown) I in propeptide domain, does not affect catalytic activity
- S262K (S73K) I Likely introduces interaction other residues outside catalytic site
- N291D (N102D)I Likely introduces interaction other residues outside catalytic site
- D293T (D104T) I Likely introduces interaction other residues outside catalytic site
- G319S (G130S) I New H bond w/ Q at P1 position
- D358G (D169G) I New H bond w/ Q at P1 position
- D368H (D179H) I New H bond w/ Q at P1 position

Gordon, Sydney R., et al. "Computational design of an α-gliadin peptidase."
***Journal of the American Chemical Society* 134.50 (2012): 20513-20520.**

Four score and seven years ago…

https://en.wikipedia.org/wiki/Gettysburg_Address

Four score and seven years ago…

1 2 3 4 5 6 7 8 9 101112 1314151617 1819202122 232425

C6P Y18B A20E

https://en.wikipedia.org/wiki/Gettysburg_Address

Four spore and seven beers ago

1 2 3 4 5 6 7 8 9 101112 1314151617 1819202122 232425

C6P Y18B A20E

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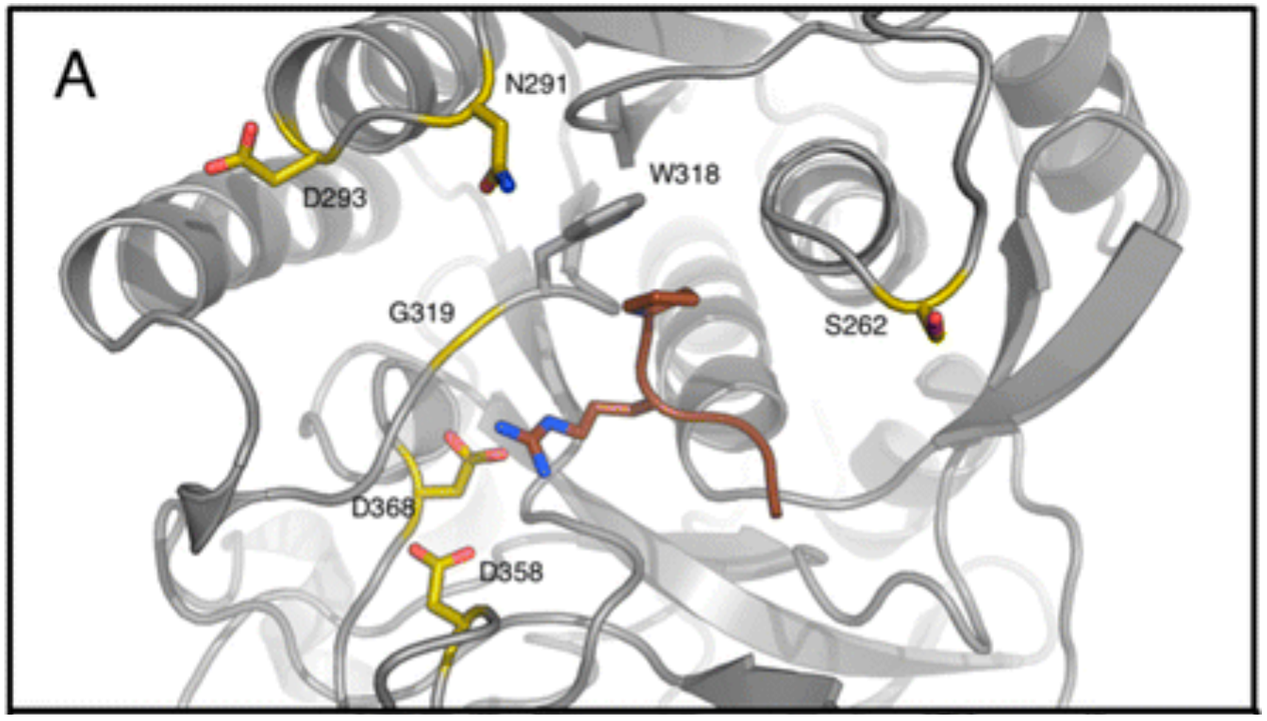

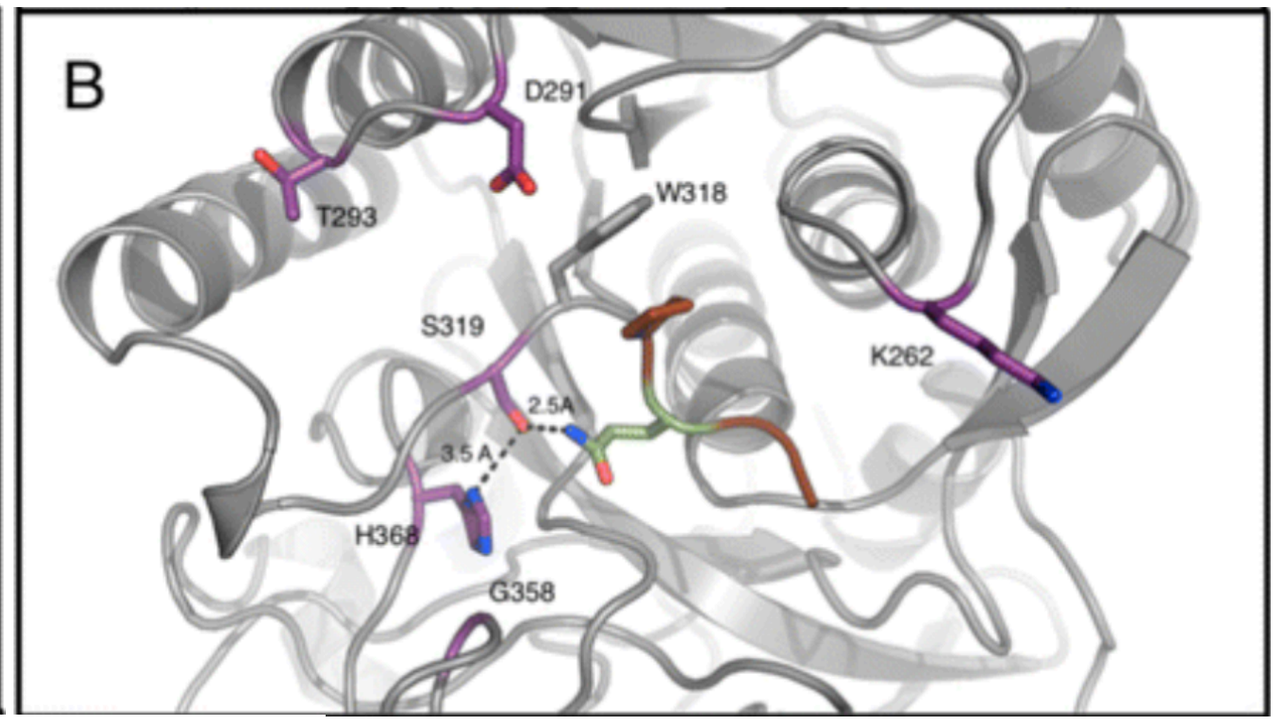

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***Journal of the American Chemical Society* 134.50 (2012): 20513-20520.**

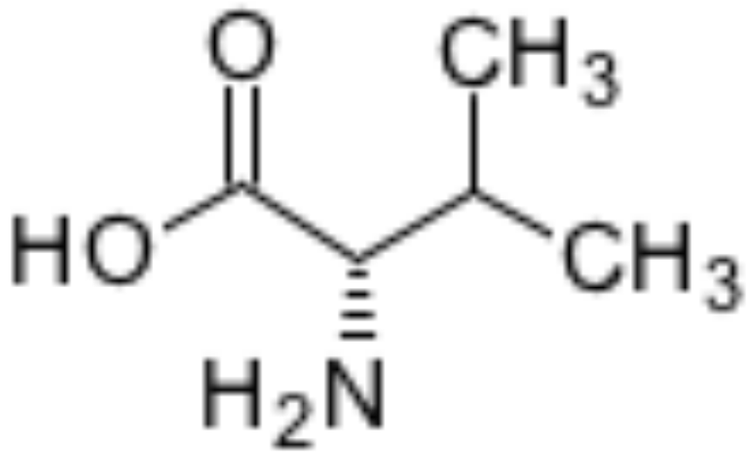
For example,V119D

>KumaWT
MSDMEKPWKEGEEARA VLQGHARAQAPQA VDKGPV AGDERMA VTVVLRRQRAGELAAHVERQAAIAP (67)
HAREHLKREAFAASHGASLDDFAELRRFADAHGLALDRANVAAGTAVLSGP**V**DAINRAFGVELRHFDHPD (137)
GSYRSYLGEVTVPASIAPMIEAVLGLDTRPVARPHFRMQRRAEGGFEARSQAAAPTAYTPLDVAQAYQFPE (208)
GLDGQGQCIAIIELGGGYDEASLAQYFASLGVPAPQVVSVSVDGASNQPTGDPSGPDGEVELDIEVAGALA
PGAKFAVYFAPNTDAGFLDAITTAIHDPTLKPSVVSISWGGPEDSWTSAAIAAMNRAFLDAAALGVTVLAA
AGDSGSTDGEQDGLYHVDFPAASPYVLACGGTRLVASGGRIAQETVWNDGPDGGATGGGVSRIFPLPAW
QEHANVPPSANPGASSGRGVPDLAGNADPATGYEVVIDGEATVIGGTSAVAPLFAALVARINQKLGKAVG
YLNPTL YQLP ADVFHDITEGNNDIANRAQIYQAGPGWDPCTGLGSPIGVRLLQALLPSASQPQPGSTENL YF
QSGALEHHHHHH

>KumaMax
MSDMEKPWKEGEEARA VLQGHARAQAPQA VDKGPV AGDERMA VTVVLRRQRAGELAAHVERQAAIAP
HAREHLKREAFAASHGASLDDFAELRRFADAHGLALDRANVAAGTAVLSGP**D**DAINRAFGVELRHFDHPD
GSYRSYLGEVTVPASIAPMIEAVLGLDTRPVARPHFRMQRRAEGGFEARSQAAAPTAYTPLDVAQAYQFPE
GLDGQGQCIAIIELGGGYDEASLAQYFASLGVPAPQVVSVSVDGASNQPTGDPKGPDGEVELDIEVAGALA
PGAKFAVYFAPDTTAGFLDAITTAIHDPTLKPSVVSISWSGPEDSWTSAAIAAMNRAFLDAAALGVTVLAA
AGDSGSTGGEQDGLYHVHFPAASPYVLACGGTRLVASGGRIAQETVWNDGPDGGATGGGVSRIFPLPAW
QEHANVPPSANPGASSGRGVPDLAGNADPATGYEVVIDGEATVIGGTSAVAPLFAALVARINQKLGKAVG YLNPTL
YQLP ADVFHDITEGNNDIANRAQIYQAGPGWDPCTGLGSPIGVRLLQALLPSASQPQPGSTENL YF
QSGALEHHHHHH

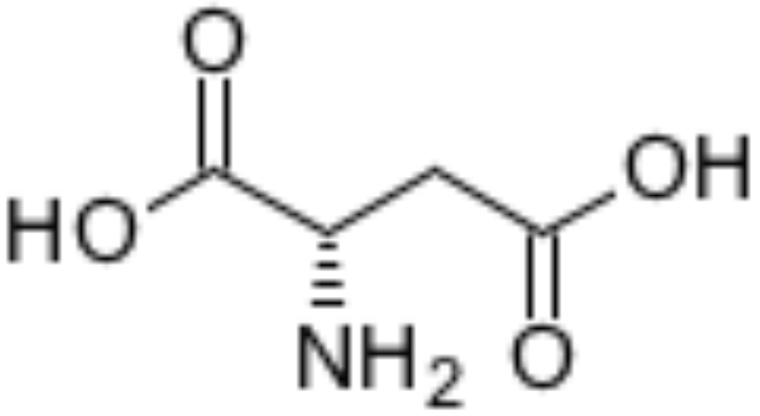
For example, V119D

V = valine



C00183

D = aspartic acid



C00049

https://www.rcsb.org/3d-view/1T1E/1

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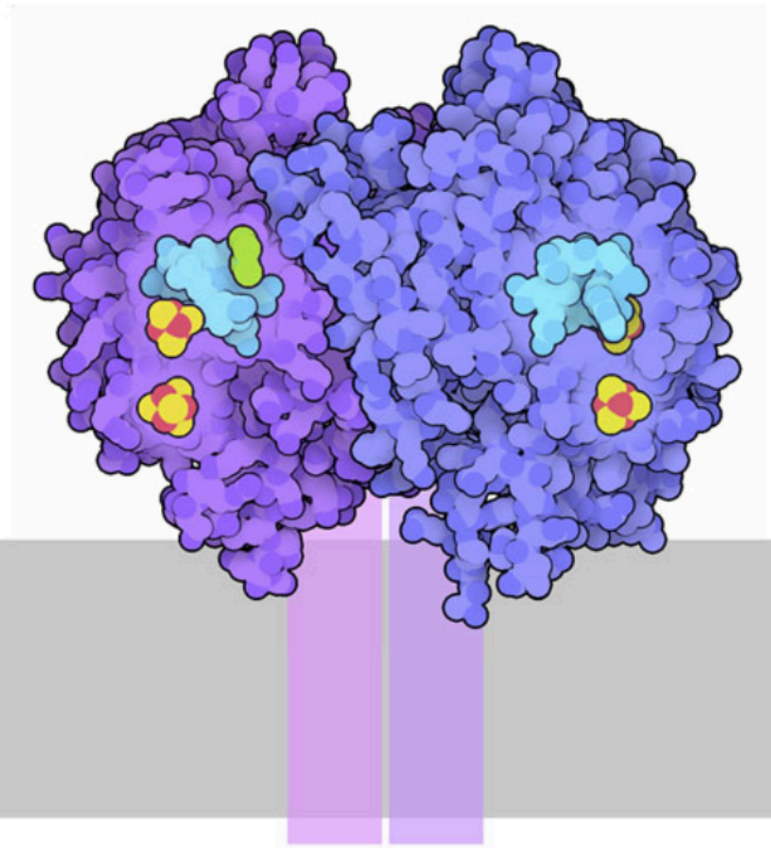
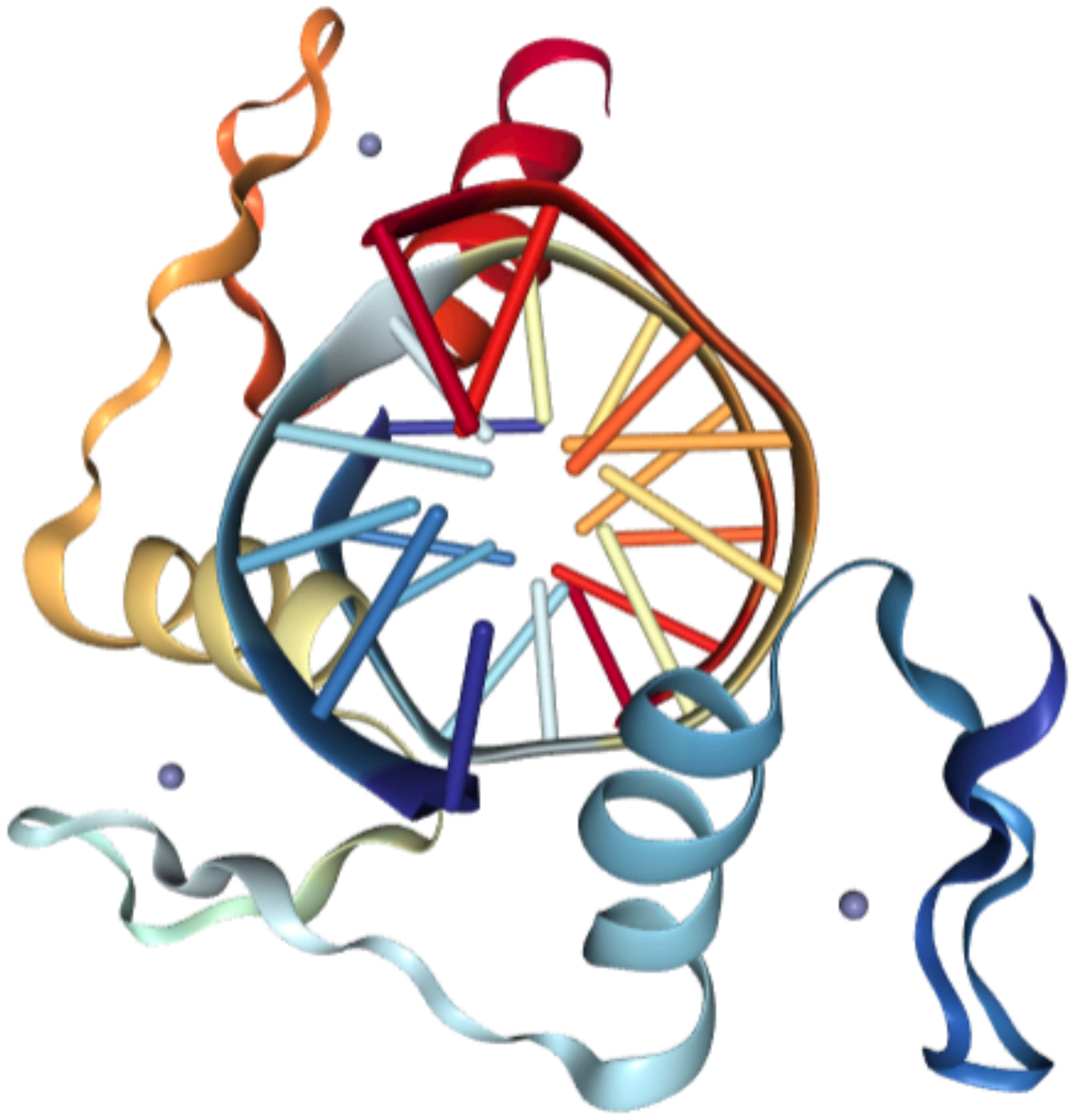
April **Molecule of the Month**



Dehalogenases

https://www.rcsb.org/



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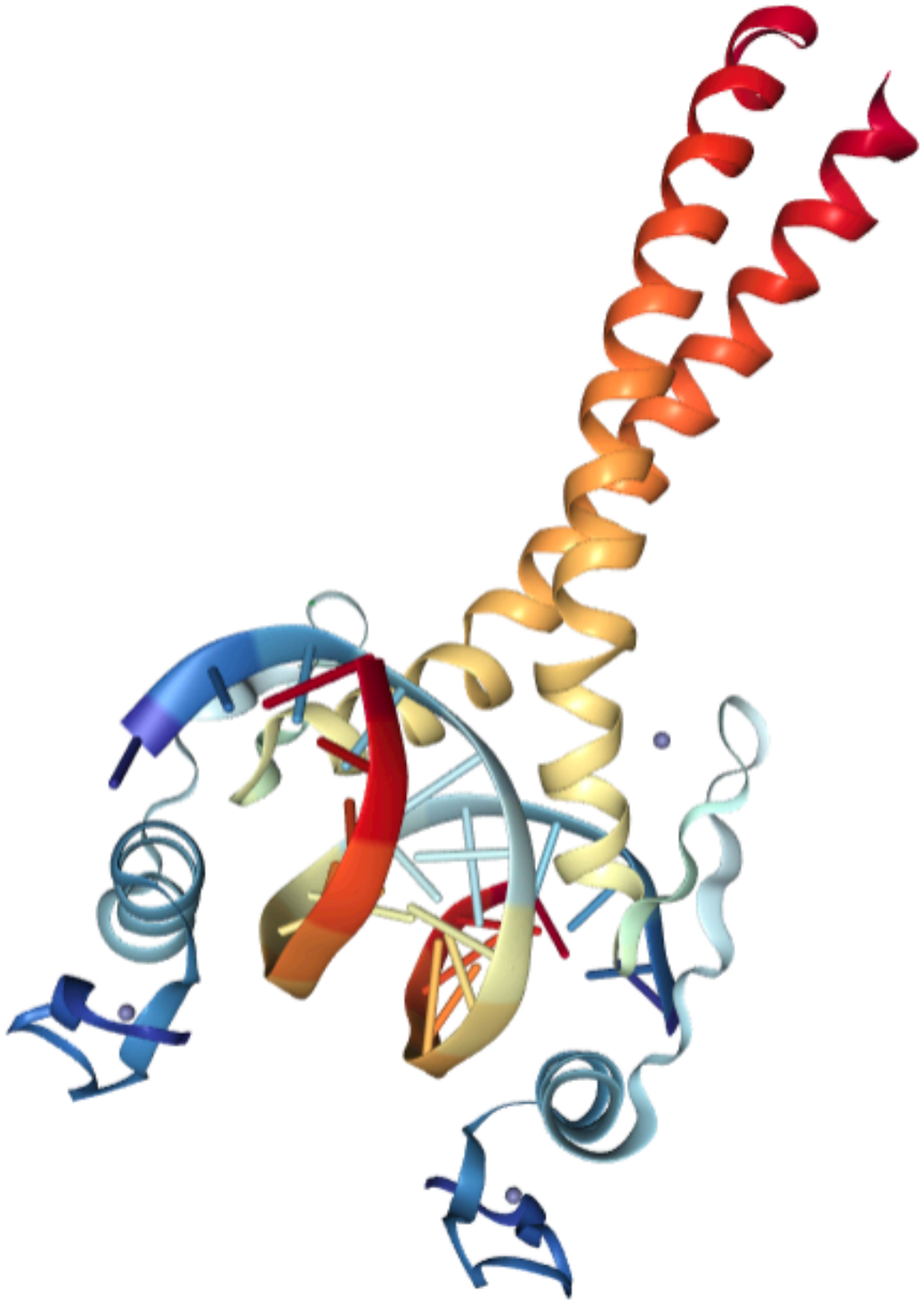
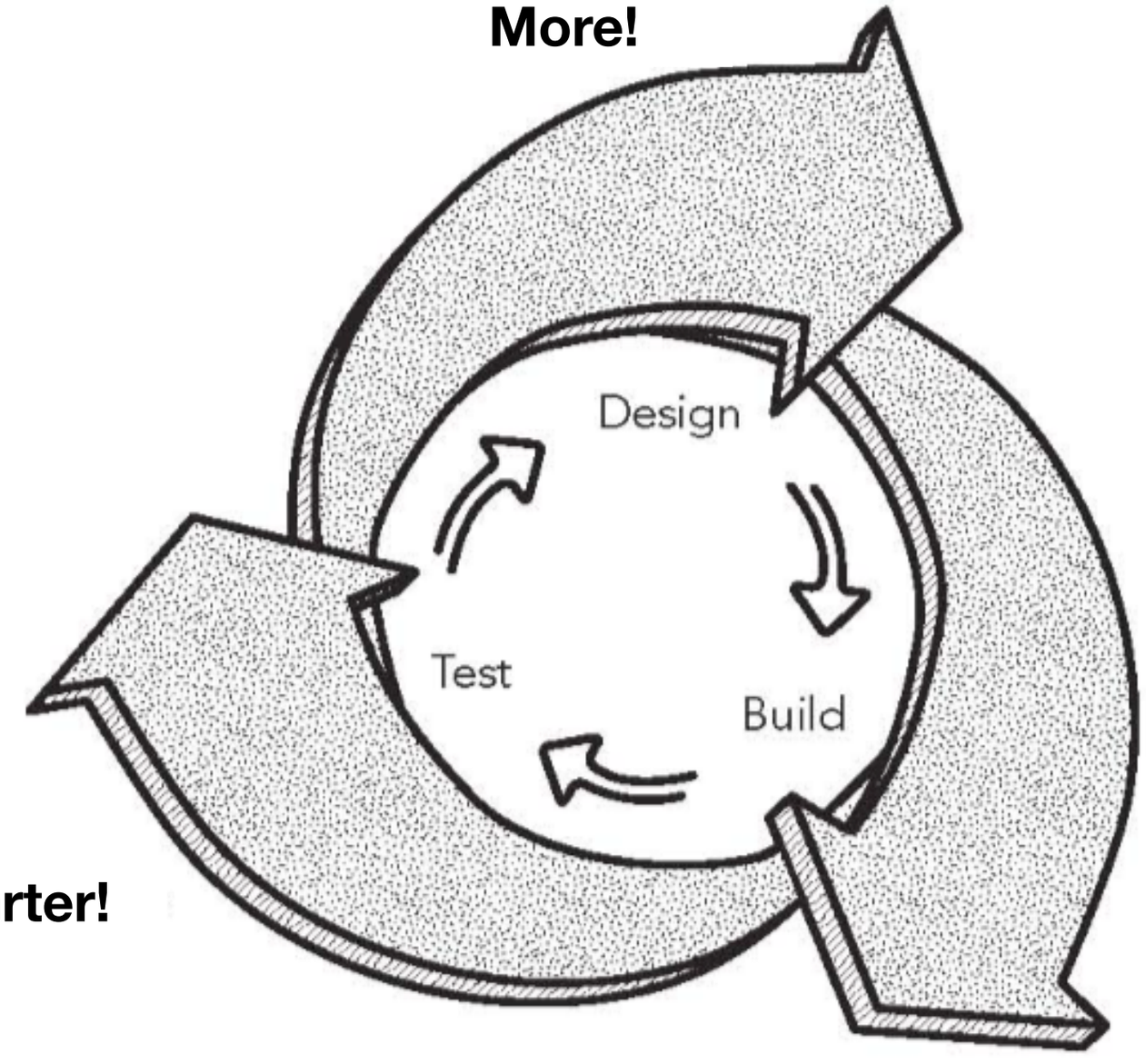


https://www.rcsb.org/3d-view/1LLM/1

Design, build, & test week

(model) **(make)** (measure)

More!



Smarter!

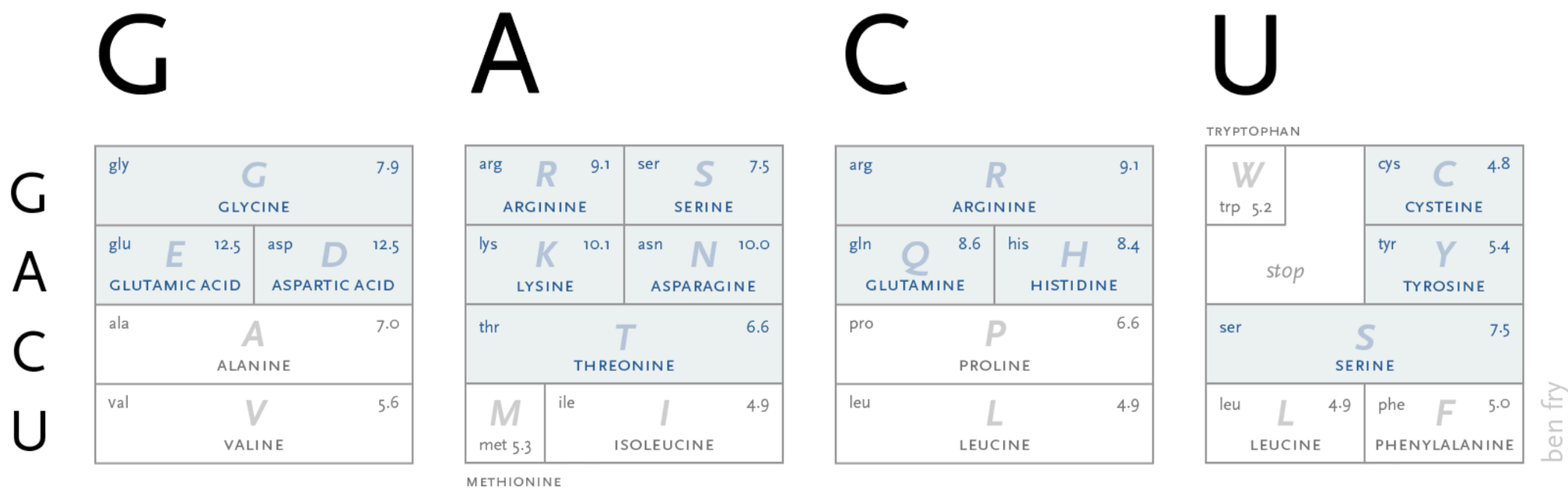
Faster!

Graphic adapted from "Synthetic Aesthetics" MIT Press (2014)

How do I make KumaMax?

>KumaMax
MSDMEKPWKEGEEARA VLQGHARAQAPQA VDKGPV AGDERMA VTVVLRRQRAGELAAHVERQAAIAP
HAREHLKREAFAASHGASLDDFAELRRFADAHGLALDRANVAAGTAVLSGP**D**DAINRAFGVELRHFDHPD
GSYRSYLGEVTVPASIAPMIEAVLGLDTRPVARPHFRMQRRAEGGFEARSQAAAPTAYTPLDVAQAYQFPE
GLDGQGQCIAIIELGGGYDEASLAQYFASLGVPAPQVVSVSVDGASNQPTGDPKGPDGEVELDIEVAGALA
PGAKFAVYFAPDTTAGFLDAITTAIHDPTLKPSVVSISWSGPEDSWTSAAIAAMNRAFLDAAALGVTVLAA
AGDSGSTGGEQDGLYHVHFPAASPYVLACGGTRLVASGGRIAQETVWNDGPDGGATGGGVSRIFPLPAW
QEHANVPPSANPGASSGRGVPDLAGNADPATGYEVVIDGEATVIGGTSAVAPLFAALVARINQKLGKAVG YLNPTL
YQLP ADVFHDITEGNNDIANRAQIYQAGPGWDPCTGLGSPIGVRLLQALLPSASQPQPGSTENL YF
QSGALEHHHHHH

First, convert from Amino Acid sequence to DNA sequence via "Genetic Code"



Note:
T (DNA)"is" U (RNA)

https://benfry.com/aasd/

How do I make KumaMax?

>KumaMax (amino acid sequence)
MSDMEKPWKEGEEARA VLQGHARAQAPQA VDKGPV AGDERMA VTVVLRRQRAGELAAHVERQAAIAP
HAREHLKREAFAASHGASLDDFAELRRFADAHGLALDRANVAAGTAVLSGP**D**DAINRAFGVELRHFDHPD
GSYRSYLGEVTVPASIAPMIEAVLGLDTRPVARPHFRMQRRAEGGFEARSQAAAPTAYTPLDVAQAYQFPE
GLDGQGQCIAIIELGGGYDEASLAQYFASLGVPAPQVVSVSVDGASNQPTGDPKGPDGEVELDIEVAGALA
PGAKFAVYFAPDTTAGFLDAITTAIHDPTLKPSVVSISWSGPEDSWTSAAIAAMNRAFLDAAALGVTVLAA
AGDSGSTGGEQDGLYHVHFPAASPYVLACGGTRLVASGGRIAQETVWNDGPDGGATGGGVSRIFPLPAW
QEHANVPPSANPGASSGRGVPDLAGNADPATGYEVVIDGEATVIGGTSAVAPLFAALVARINQKLGKAVG YLNPTL
YQLP ADVFHDITEGNNDIANRAQIYQAGPGWDPCTGLGSPIGVRLLQALLPSASQPQPGSTENL YF
QSGALEHHHHHH

>KumaMax (DNA sequence)
atgagcgatatggaaaaaccgtggaaagaaggcgaagaagcgcgcgcggtgctgcagggccatgcgcgcgcgcaggcgccgcaggcggtggataaaggccc
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at

How do I make KumaMax?

Medieval Book Production and Monastic Life

https://sites.dartmouth.edu/ancientbooks/2016/05/24/medieval-book-production-and-monastic-life/

Lynn Conway

From Wikipedia, the free encyclopedia

Lynn Ann Conway (born January 2, 1938)[2][3] is an American computer scientist, electrical engineer, inventor, and transgender activist.[4]

Conway is notable for a number of pioneering achievements, including the Mead & Conway revolution in VLSI design, which incubated an emerging electronic design automation industry. She worked at IBM in the 1960s and is credited with the invention of generalized dynamic instruction handling, a key advance used in out-of-order execution, used by most modern computer processors to improve performance.[5][6][7][8][9][10][11][12]

Contents [hide]

Lynn Conway

Conway in 2006

Born	January 2, 1938 (age 81) White Plains, New York, U.S.
Nationality	American
Alma mater	Columbia University
Known for	Mead & Conway revolution, transgender activism
Spouse(s)	Charles Rogers (m. 2002)
Awards	Computer History Museum Fellow (2014) [1]

Early life and education [edit]

https://en.wikipedia.org/wiki/Lynn_Conway

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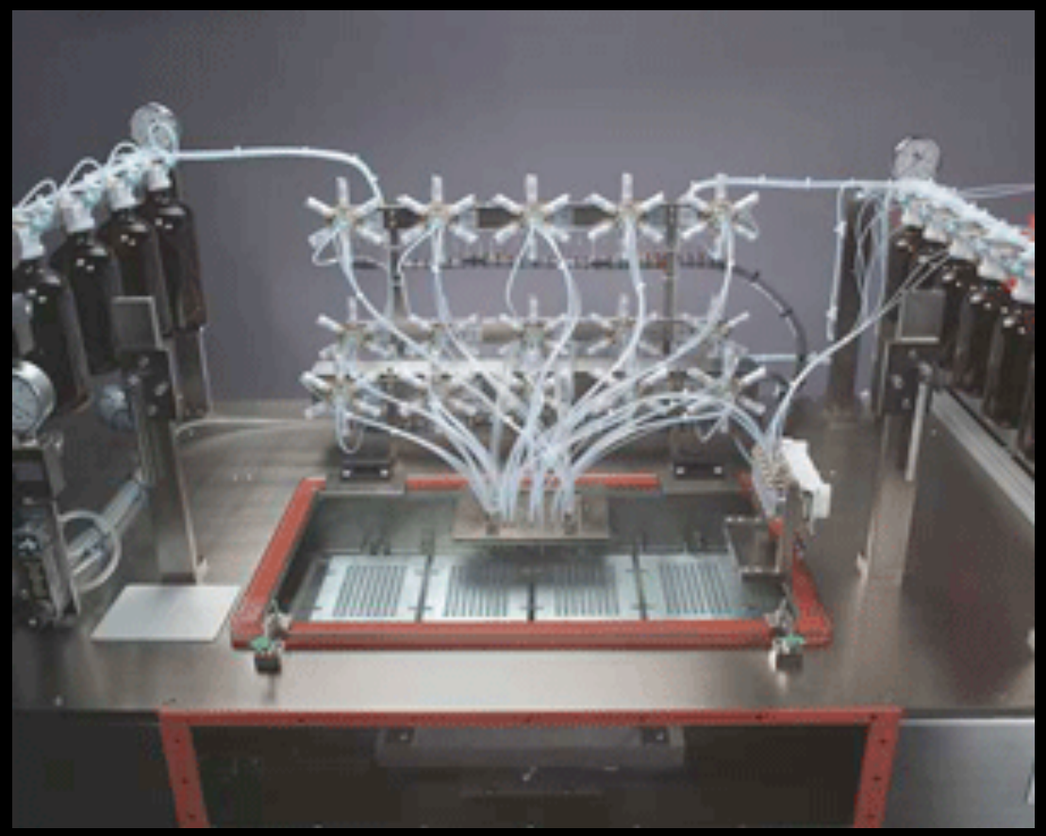

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Is decoupling design and build for DNA good or bad?