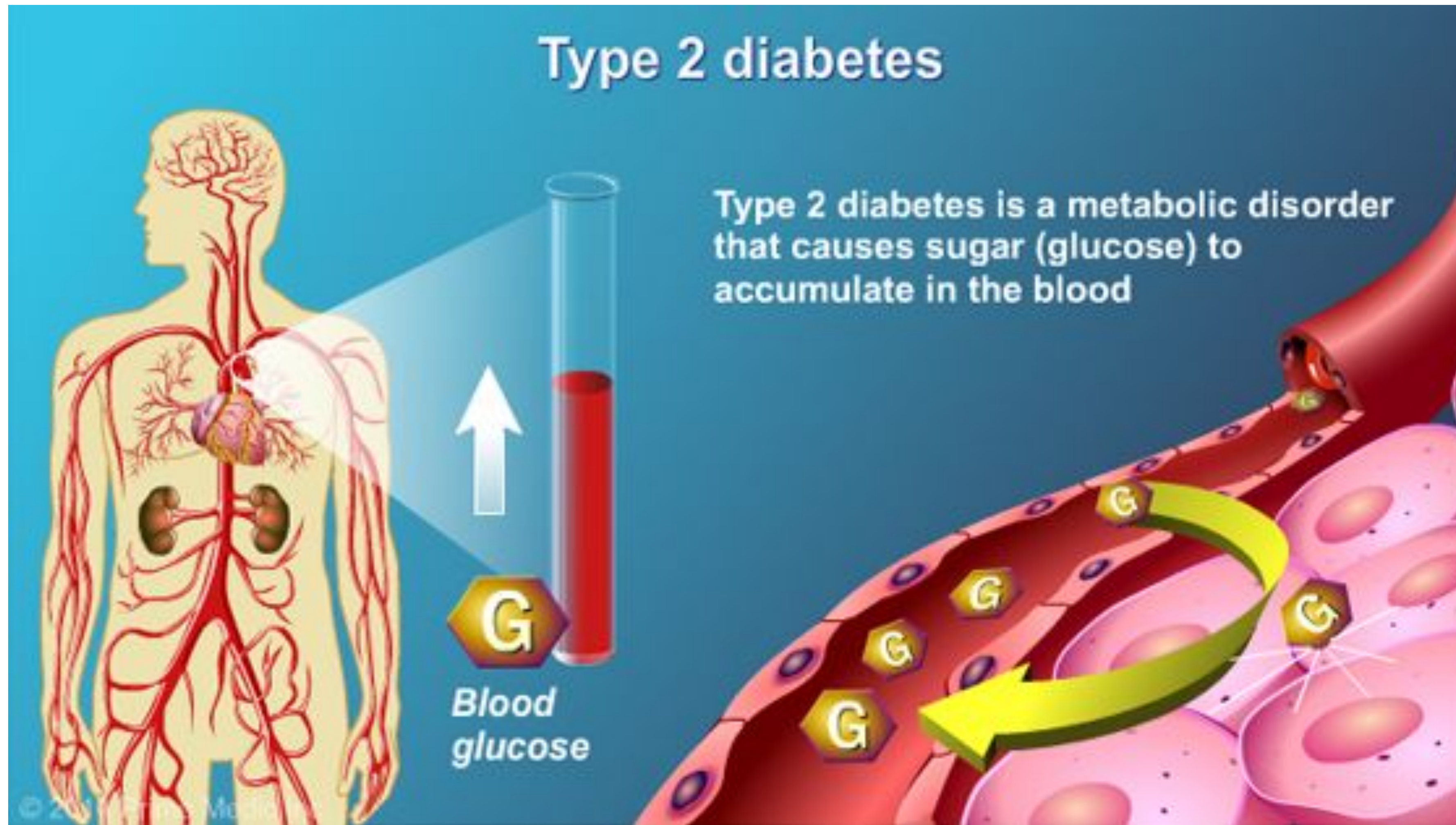
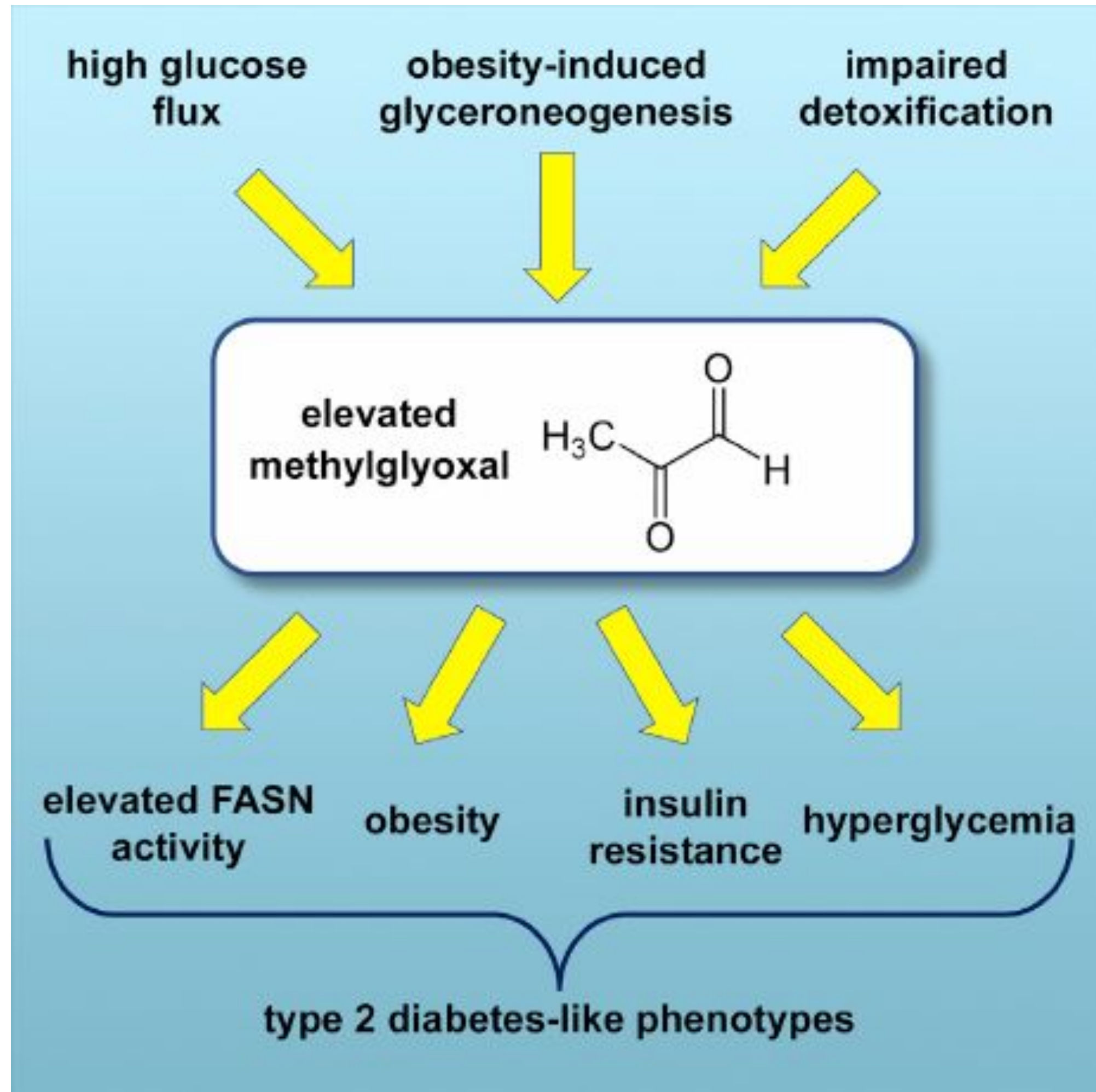


Problem

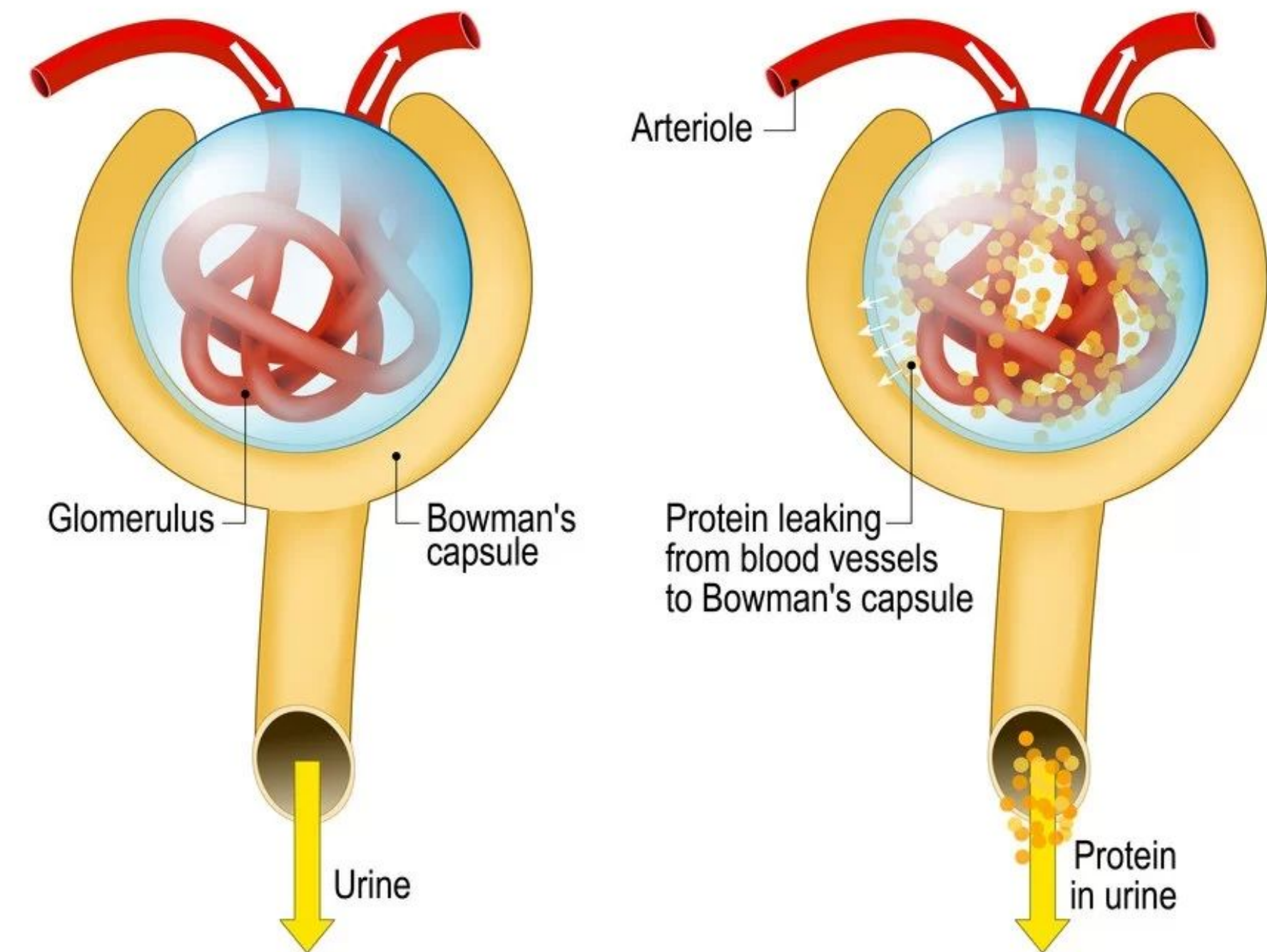


Problem: advanced glycation end products



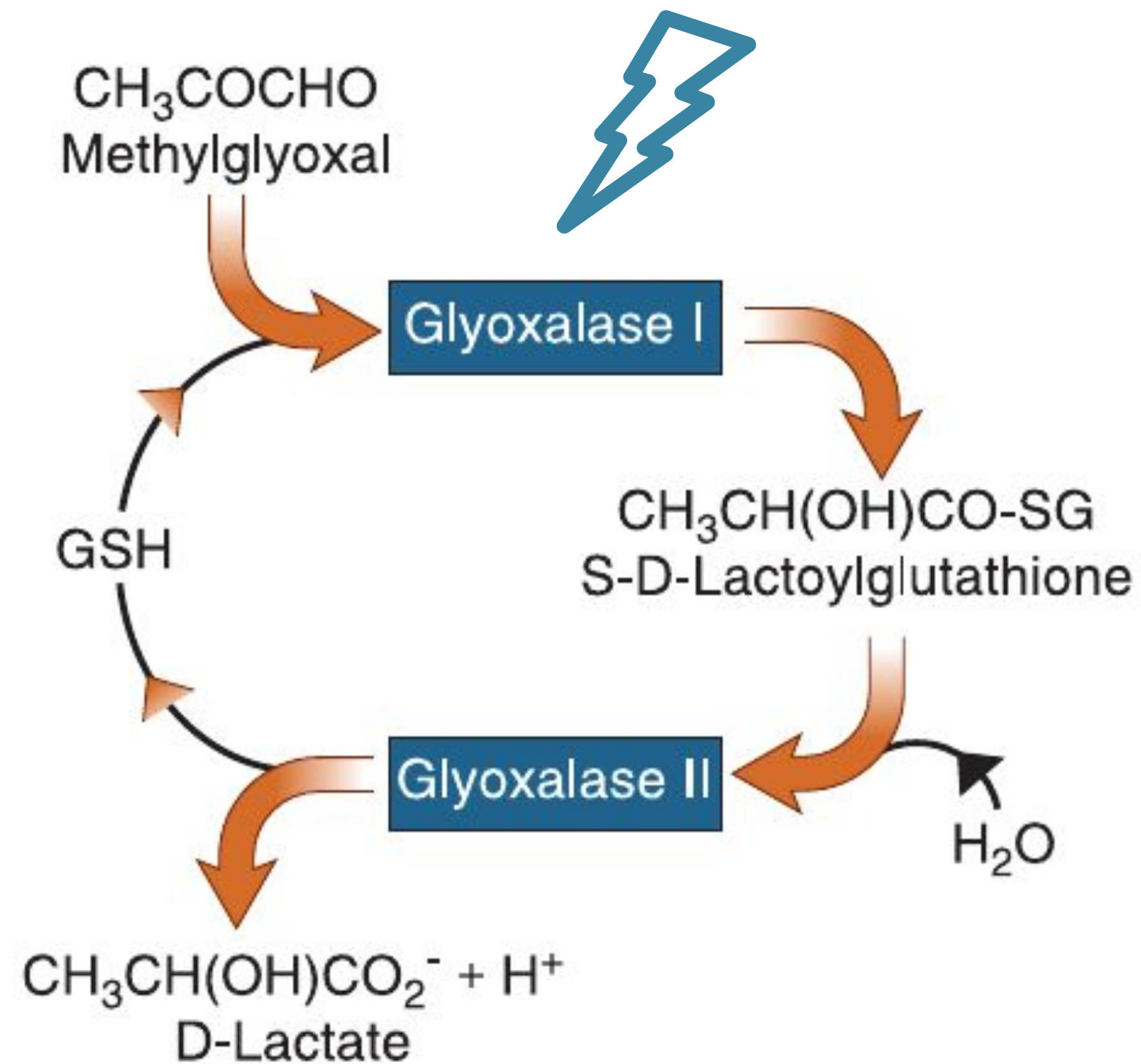
↑ AGEs

Diabetic nephropathy



30% of diabetic patients

Solution: engineered glyoxalase I



- DKD is characterized by \downarrow Glo1:
 - nephropathy in Glo1-deficient mice
 - \uparrow MGO in diabetic patients
- Overexpression of Glo1:
 - alleviates nephropathy in experimental models

Engineered Glo1 enzyme more efficient at removing toxic methylglyoxal in diabetic kidneys.

Market opportunity: diabetic nephropathy

1.4 million new cases among people ages 18 and older in 2019.

DIABETES

DIABETIC KIDNEY

Diabetic kidney disease is the leading cause of end-stage kidney disease in developed countries.









4.3% CAGR forecast from 2022 to 2028.

GROWTH

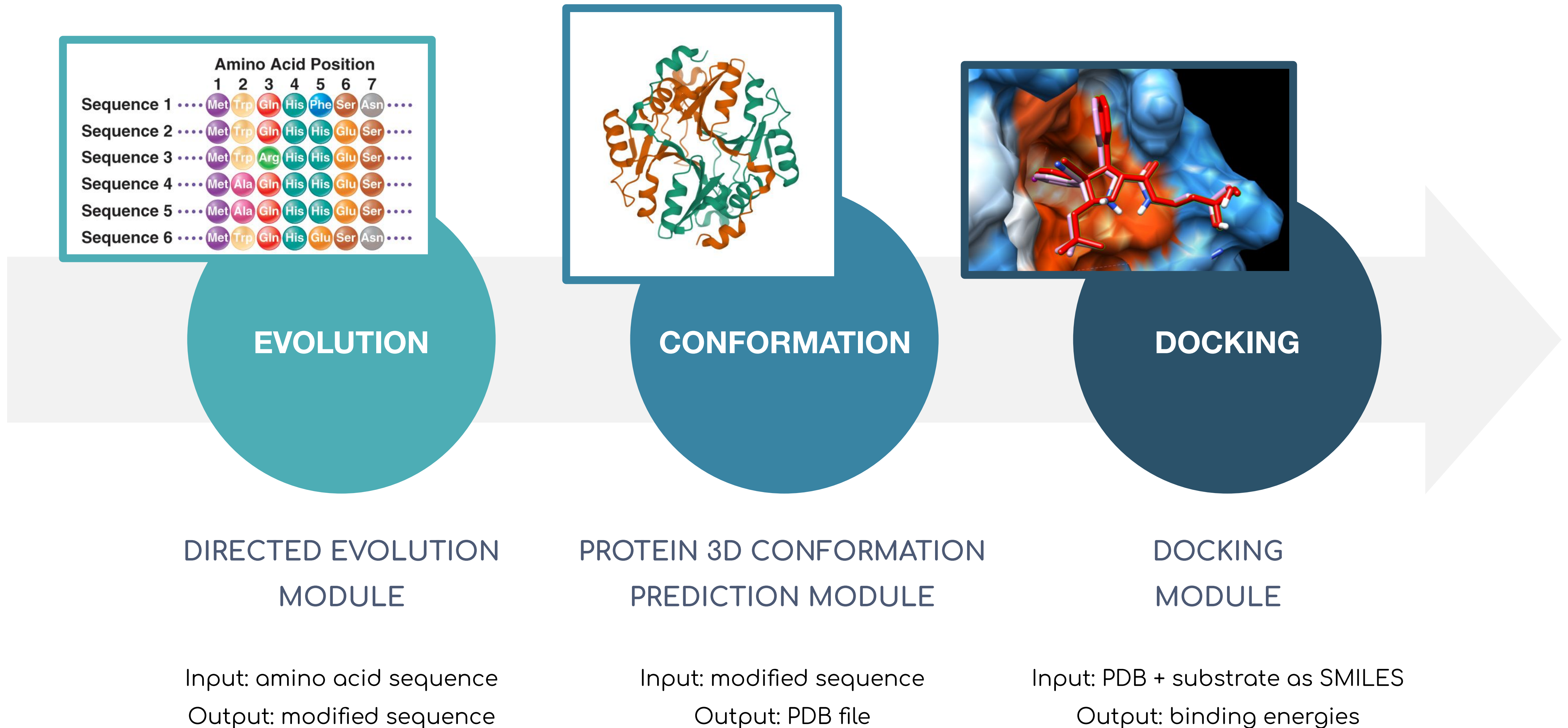
MARKET

The global diabetic nephropathy market estimated to rise from USD 2.49 billion in 2021 to USD 3.34 billion by 2028.

Competitors

	AGES	Precursors	Receptors	Small molecule	Biologics
		✓			✓
 	✓			✓	✓
		✓		✓	
 			✓	✓	✓
 					
	Supplements				

Technology: directed evolution platform



Platform demo

https://hack-age.streamlit.app/in_silico_platform

1

In Silico Directed Evolution Platform

Input sequence

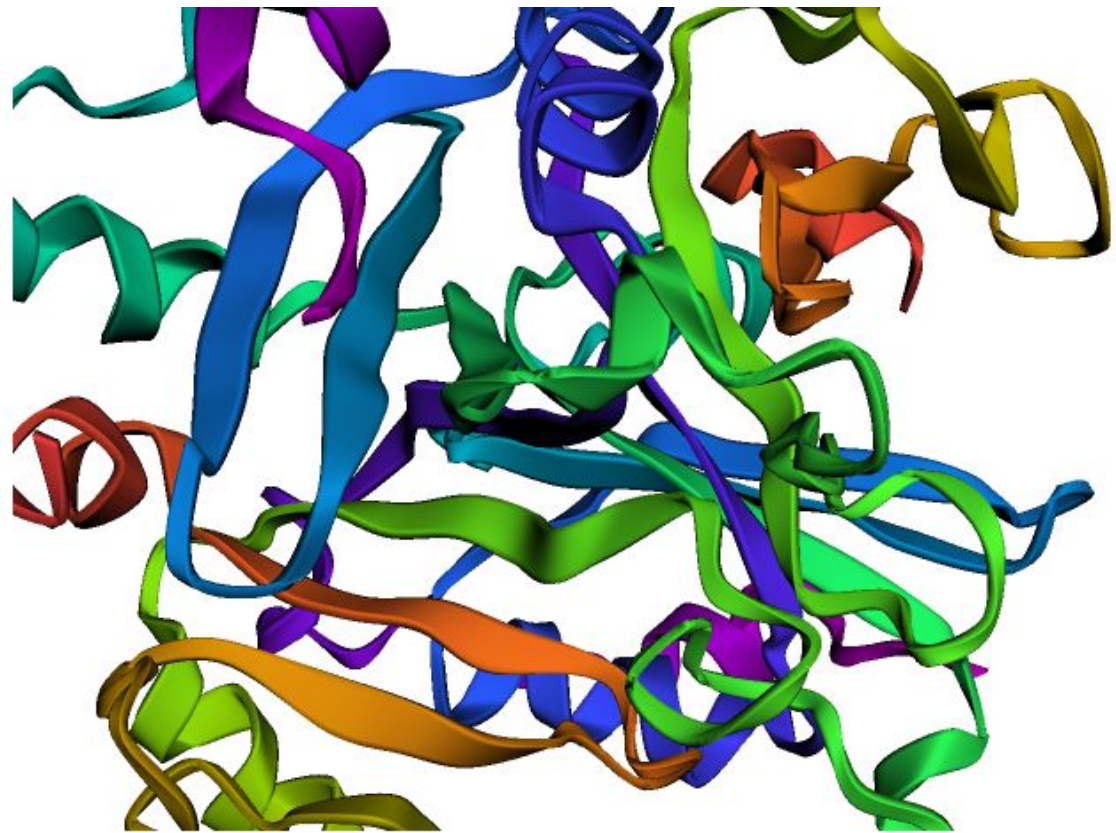
7WT1

Input chain

A

Input SMILES

CC(=O)C(O)SCC(C(=O)NCC(=O)O)NC(=O)CCC(C(=O)O)N



2

Input sequence

7WT1

Input chain

A

Input SMILES

CC(=O)C(O)SCC(C(=O)NCC(=O)O)NC(=O)CCC(C(=O)O)N

style

cartoon

Start project

Amino acid sequence for selected protein

MAEPQPPSGGLTDEAALSCSDADPSTKDFLLQQTMLRVKDPKKSDFYTRVLGMTLIQKCDFPIMKFSLYFLAYEDKND
IPKEKDEKIAWALS RKATLELTHNWGTEDDETQSYHNGNSDPRGFGHIGIAVPDVYSACKRFEELGVKFKKPDDGKMK
GLAFIQDPDGYWIEILNPKNMATLM

Generate mutations

Amino acid sequence for mutated protein

Mutated amino acid sequences for selected protein

MAEPQPPSGGLTDEAALSCWSDADPSTKDFLLQQTMLFVKDPKKSDFYTRVLGMTMAQKCDFPIMKFSLYFLAYEDK
NDIPKEKDEKIAWALSRTATLELTHNWGTEDDETQSYHNGNSDPRGFGHIGIAVPDVYSACKRFEELGVKFKKPDDVK
MKGLAFIQDPDGYWIEILNPKNMATLM

3

Input sequence

7WT1

Input chain

A

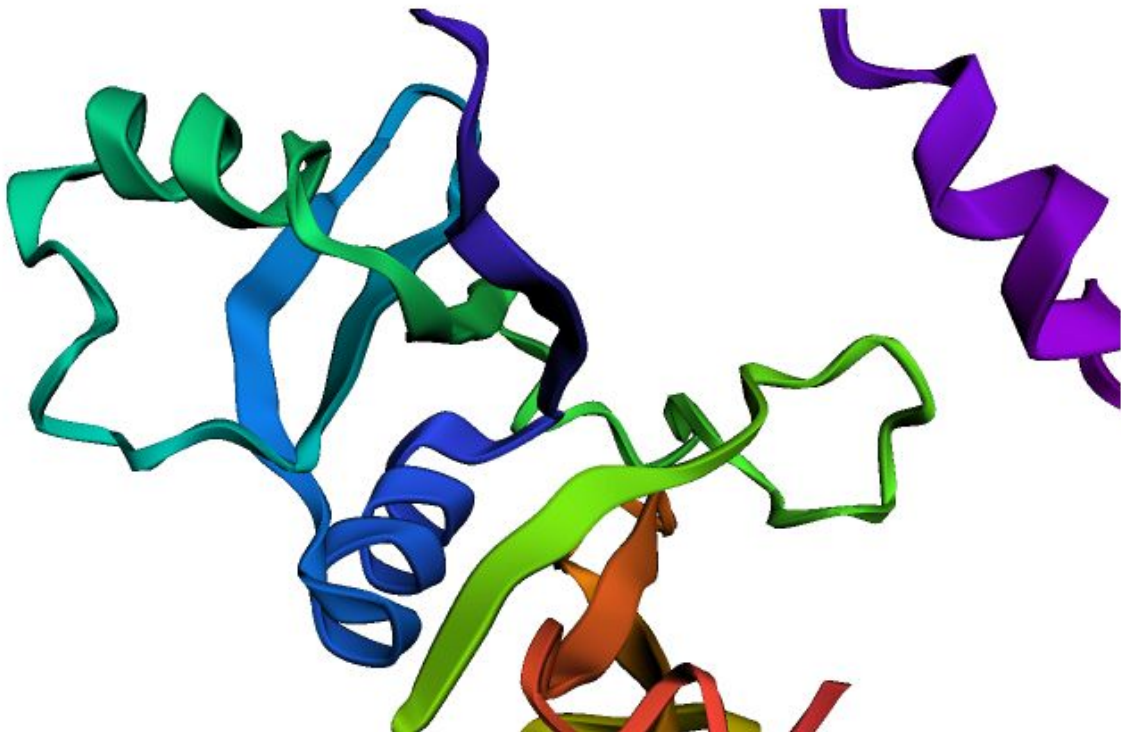
Input SMILES

CC(=O)C(O)SCC(C(=O)NCC(=O)O)NC(=O)CCC(C(=O)O)N

style

cartoon

Mutated protein structure predicted by ESMFold



4

Input sequence

7WT1

Input chain

A

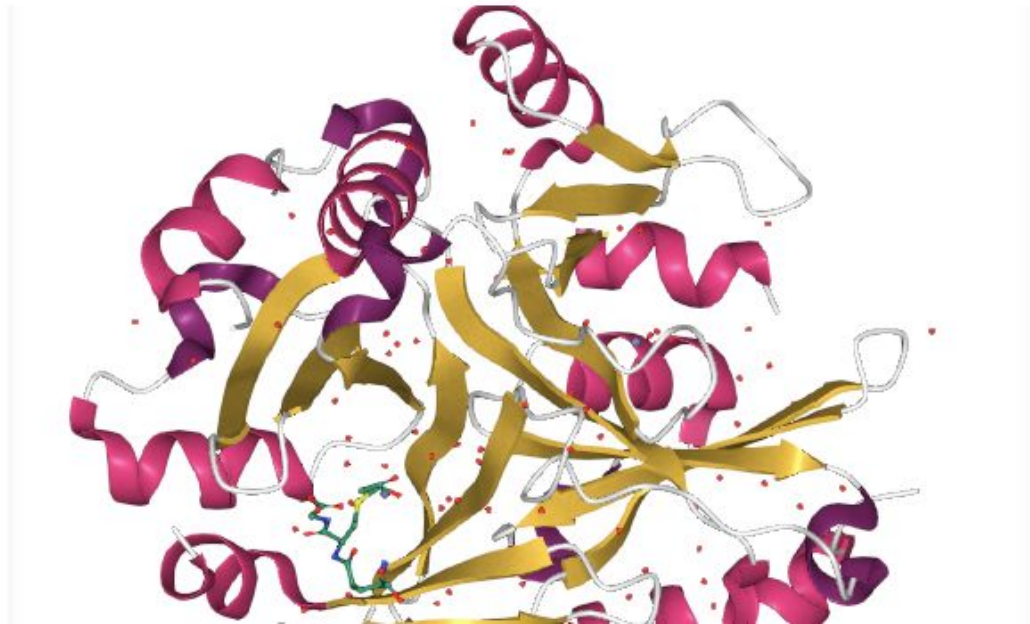
Input SMILES

CC(=O)C(O)SCC(C(=O)NCC(=O)O)NC(=O)CCC(C(=O)O)N

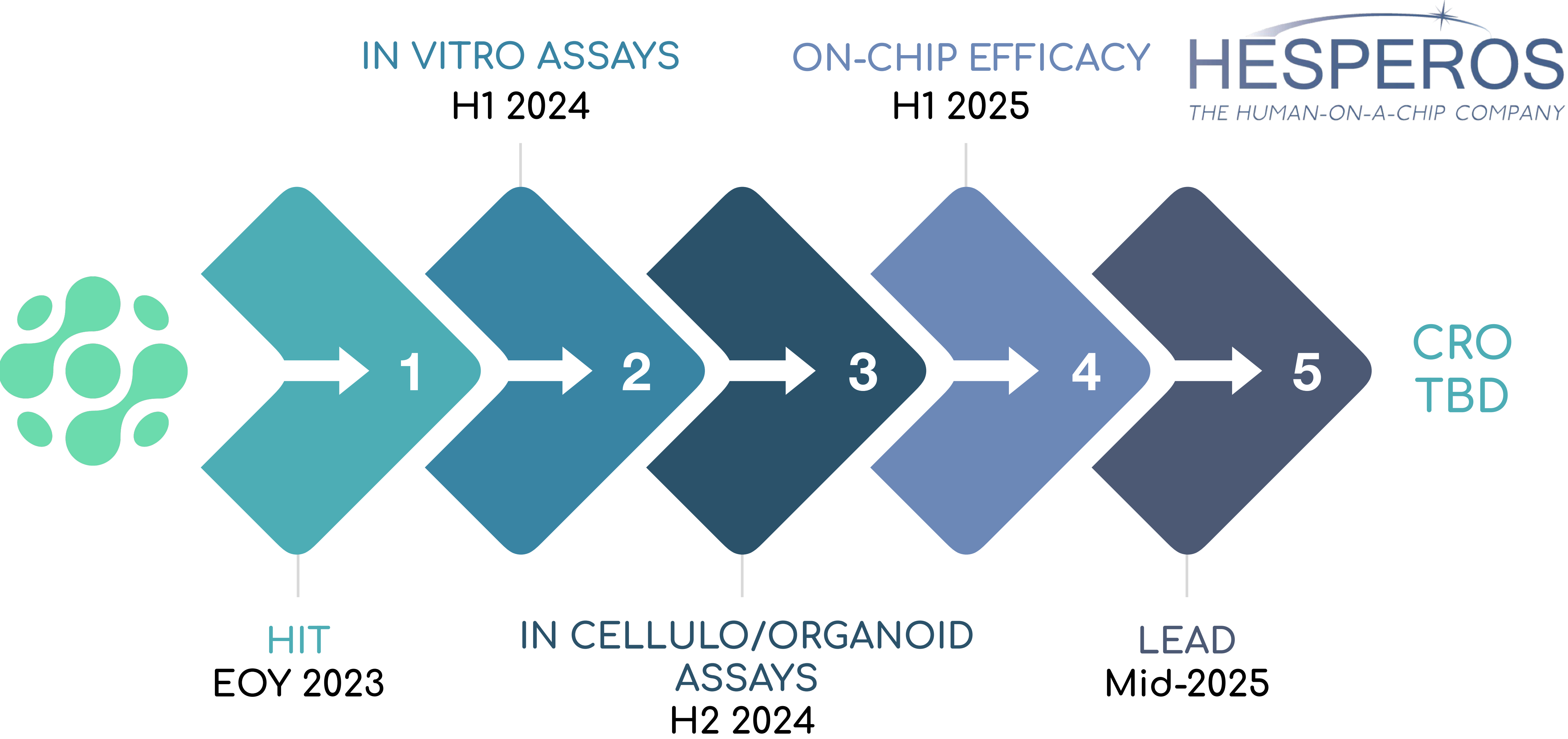
style

cartoon

Protein-Ligand docking results using DiffDock solution



(Pre-)clinical strategy and timeline

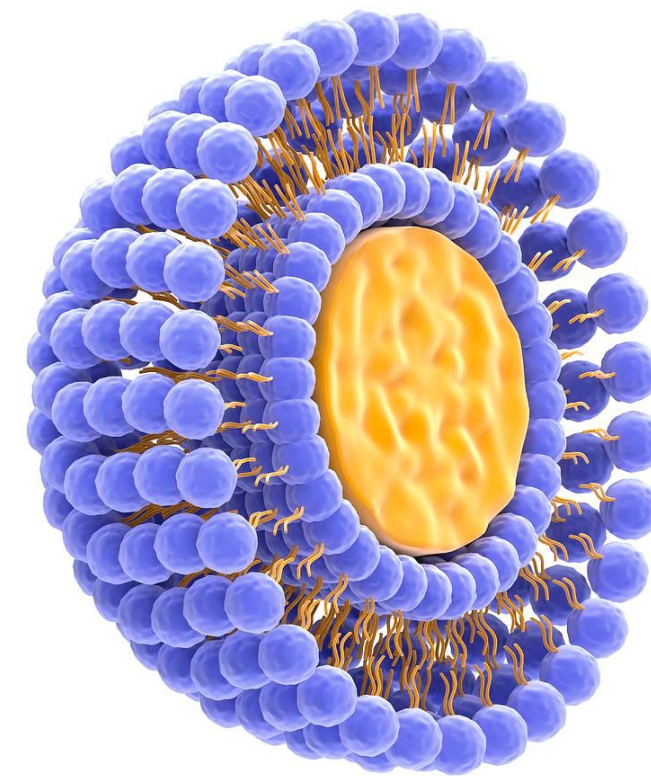


IP strategy

01 Engineered Glo1



02 Delivery method



03 Glutathione supplementation



Team

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We hack age.