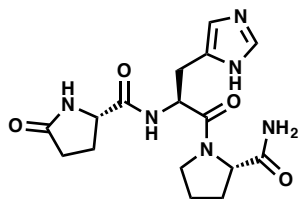


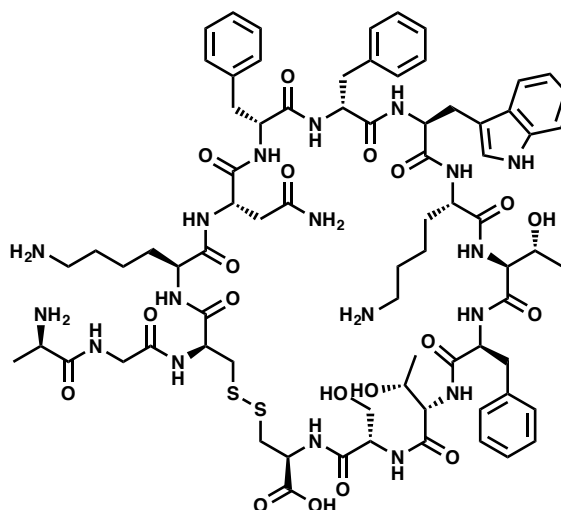
4 – Peptides

Examples of peptidic natural products



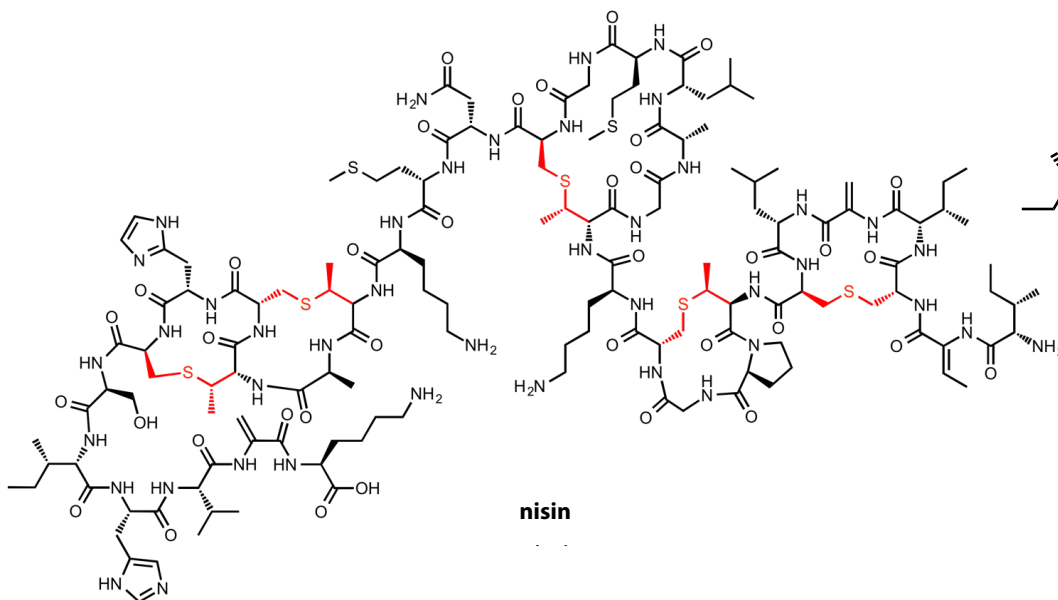
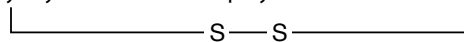
thyrotrophin-releasing hormone (TRH)

PyE-His-Pro-NH₂

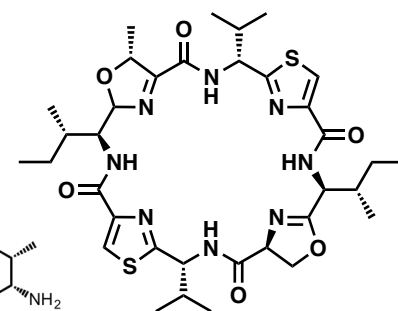


somatostatin

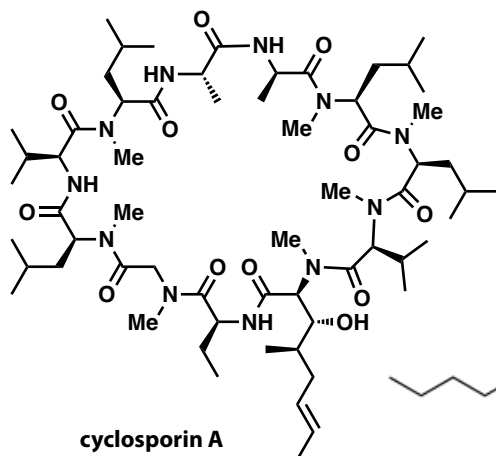
H-Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH



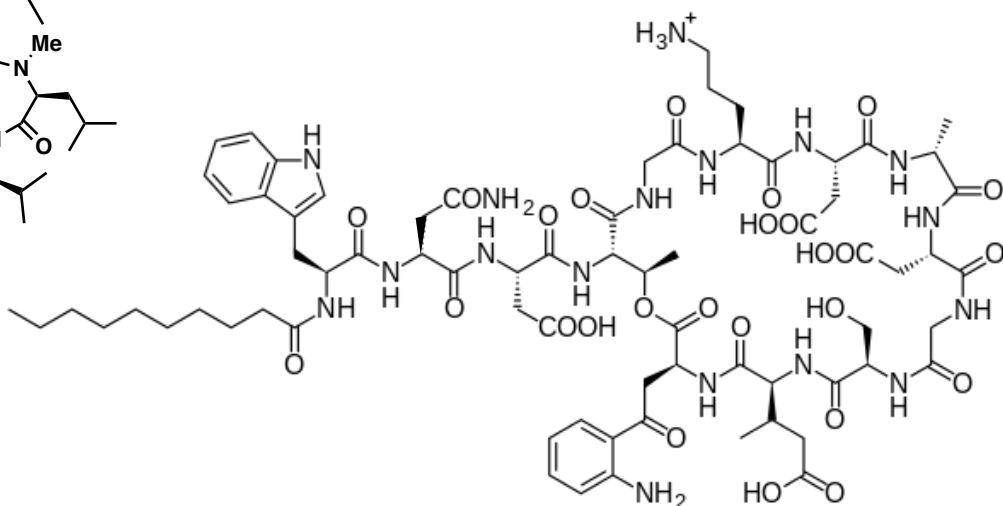
nisin



patellamide A



cyclosporin A

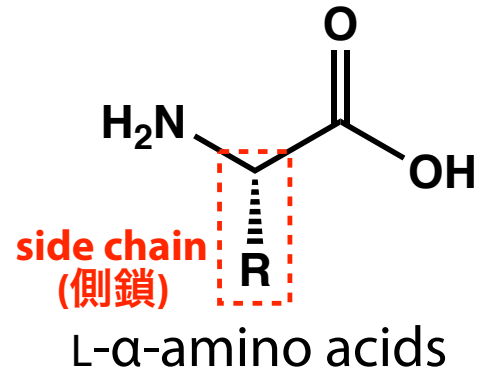
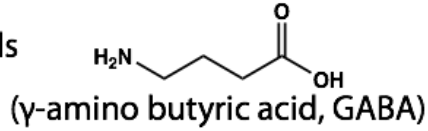


daptomycin

α -amino acids

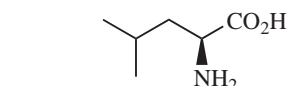
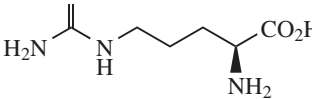
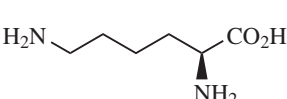
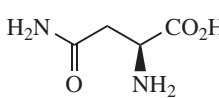
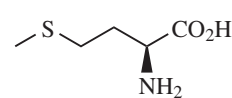
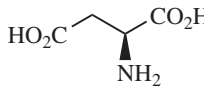
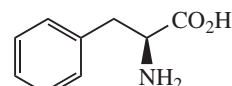
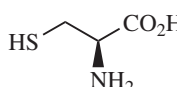
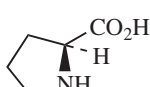
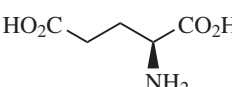
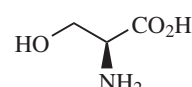
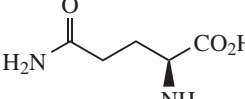
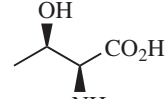
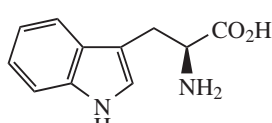
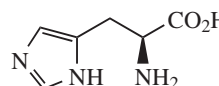
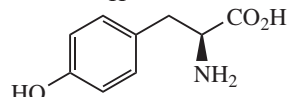
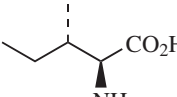
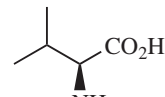


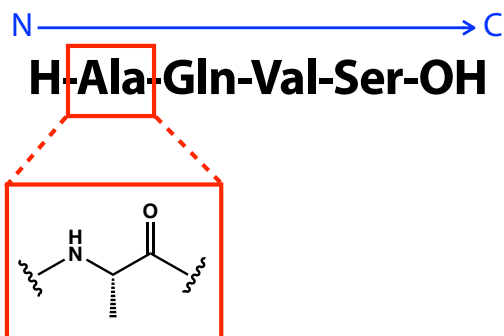
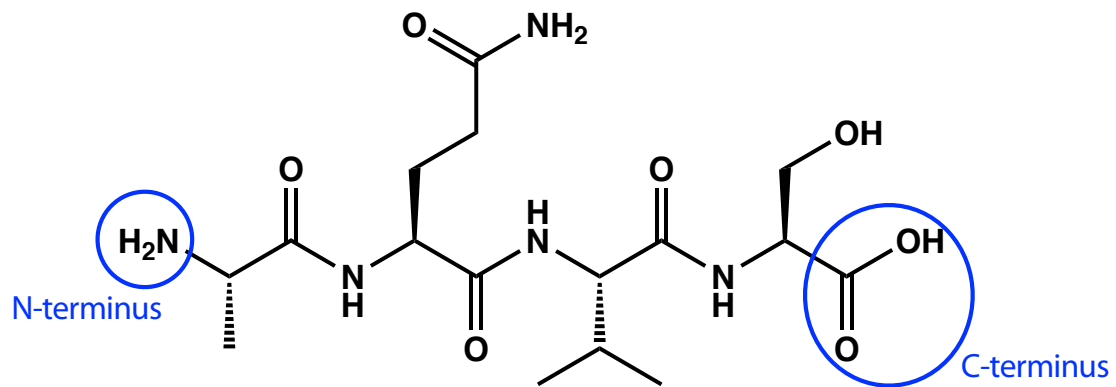
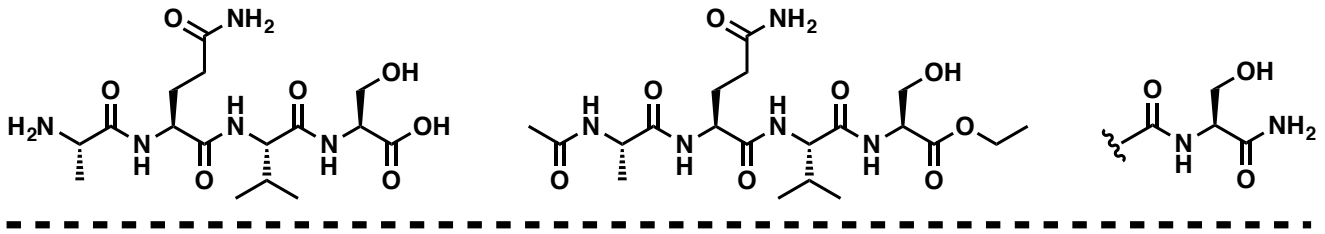
γ -amino acids



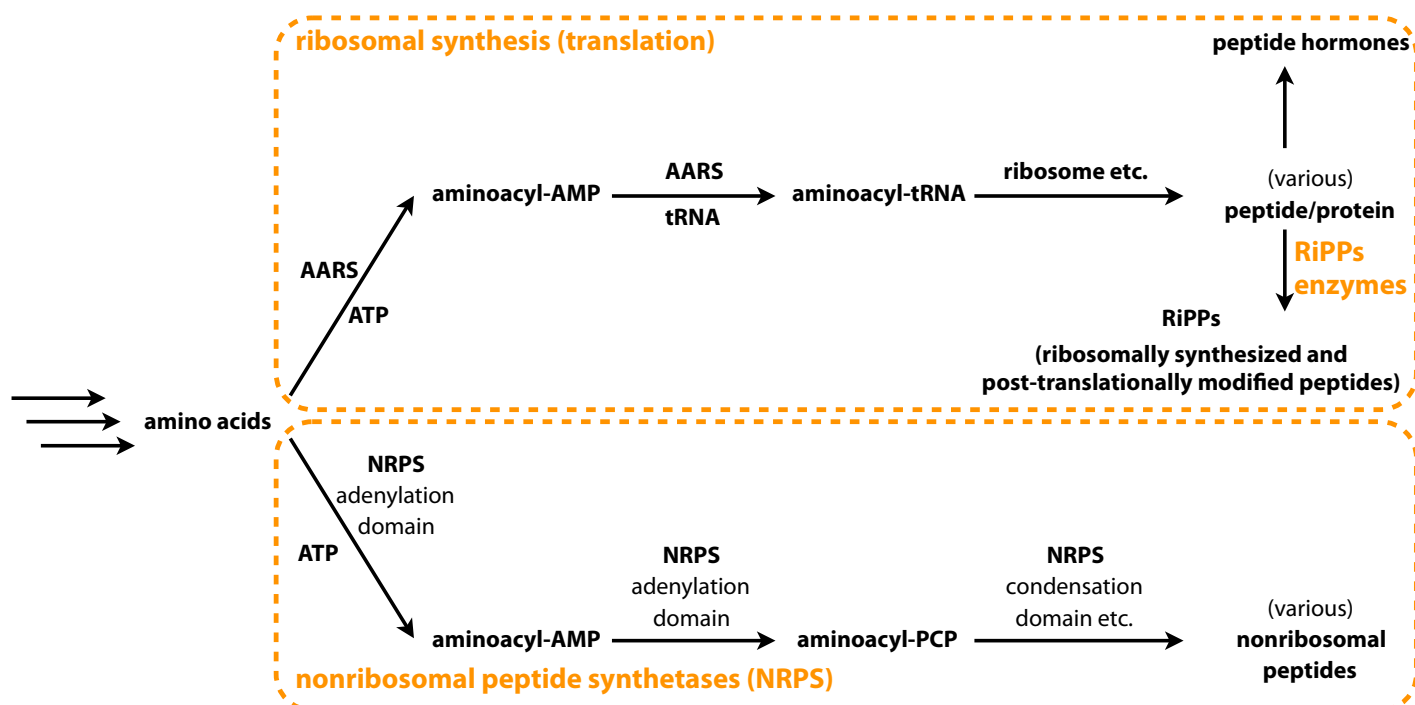
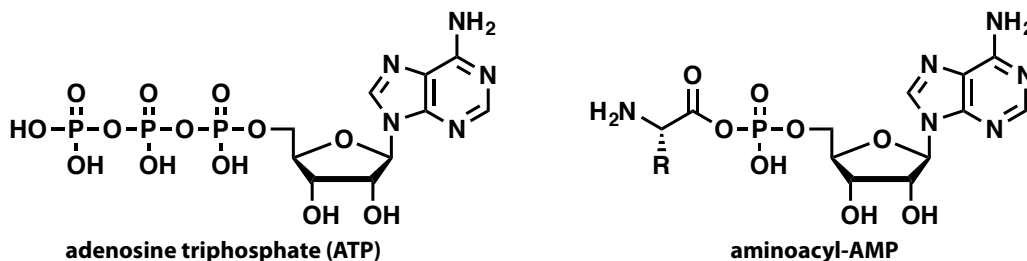
 List of proteinogenic amino acids

Table 7.1 Amino acids: structures and standard abbreviations

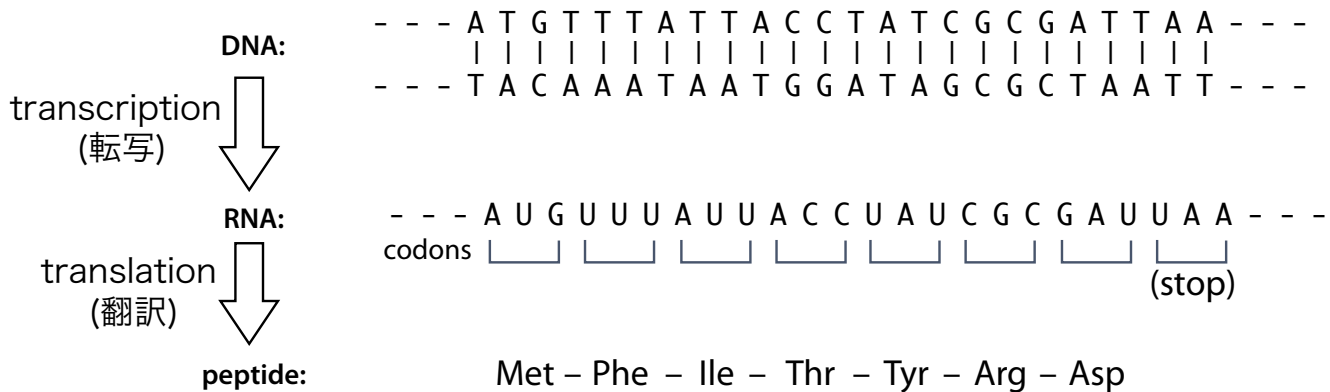
Amino acids encoded by DNA							
Alanine		Ala	A	Leucine		Leu	L
Arginine		Arg	R	Lysine		Lys	K
Asparagine		Asn	N	Methionine		Met	M
Aspartic acid		Asp	D	Phenylalanine		Phe	F
Cysteine		Cys	C	Proline		Pro	P
Glutamic acid		Glu	E	Serine		Ser	S
Glutamine		Gln	Q	Threonine		Thr	T
Glycine		Gly	G	Tryptophan		Trp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



4 – Peptides-2

 Overview of biosynthetic pathways of peptidic natural products

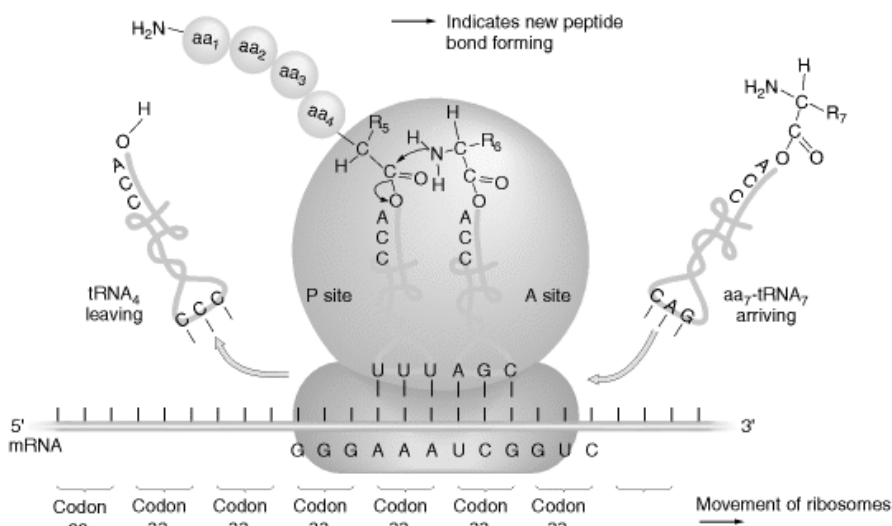
☒ Overview



☒ Genetic code

		second nucleotide													
		U		C		A		G							
first nucleotide	U	UUU	Phe	UCU	Ser	UAU	Tyr	UGU	Cys	U		U			
		UUC		UCC		UAC		UGC		C					
		UUA		UCA		UAA		UGA		A					
		UUG		UCG		UAG		UGG		G					
	C	CUU	Leu	CCU	Pro	CAU	His	CGU	Arg	U		U			
		CUC		CCG		CAC		CGC		C					
		CUA		CCA		CAA		CGA		A					
		CUG		CCG		CAG		CGG		G					
	A	AUU	Ile	ACU	Thr	AAU	Asn	AGU	Ser	U		U			
		AUC		ACC		AAC		AGC		C					
		AUA		ACA		AAA		AGA		A					
		AUG		ACG		AAG		AGG		G					
	G	GUU	Val	GCU	Ala	GAU	Asp	GGU	Gly	U		U			
		GUC		GCC		GAC		GGC		C					
		GUA		GCA		GAA		GGA		A					
		GUG		GCG		GAG		GGG		G					
		U		C		A		G						third nucleotide	
		U		C		A		G							

☒ Peptidyl transfer reaction catalyzed by ribosome



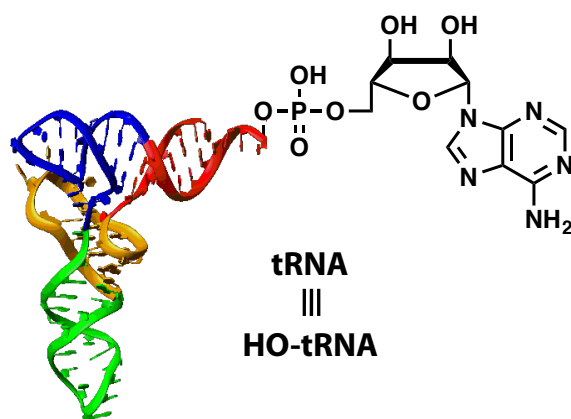
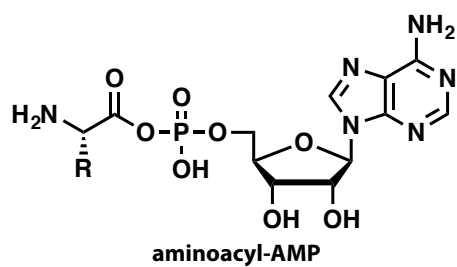
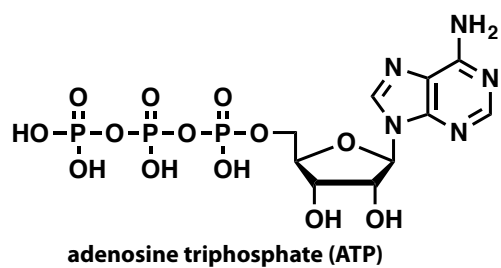
see also

<https://www.youtube.com/watch?v=Ikq9AcBcohA>

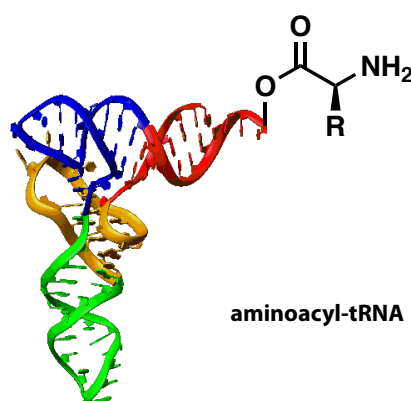
Ribosomal synthesis of peptides (translation)

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☒ Organic chemical aspects of translation

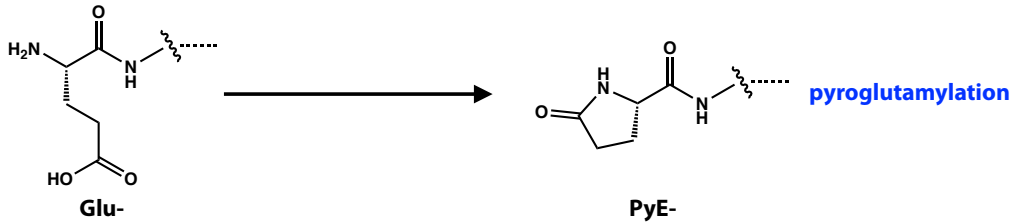
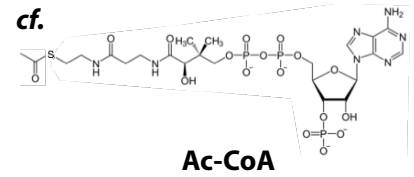


HO-tRNA

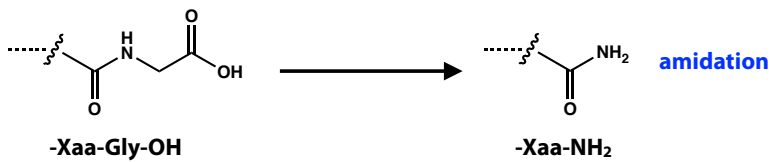


aminoacyl-tRNA

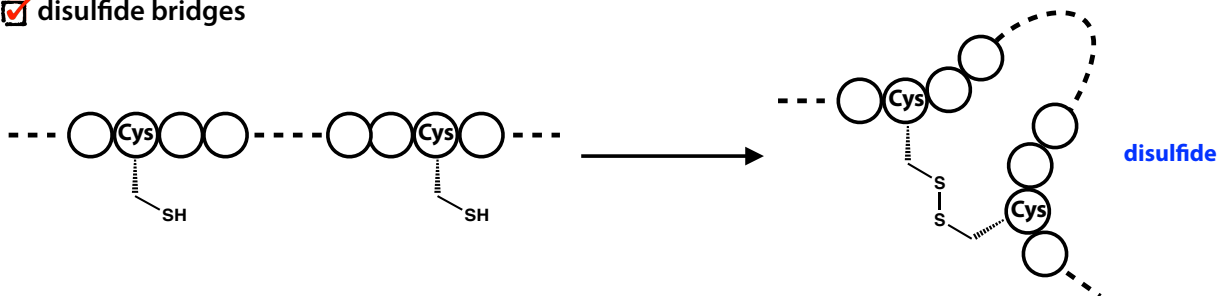
☑️ N-terminal modifications



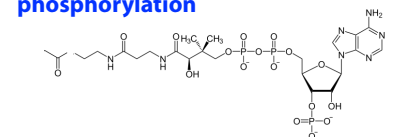
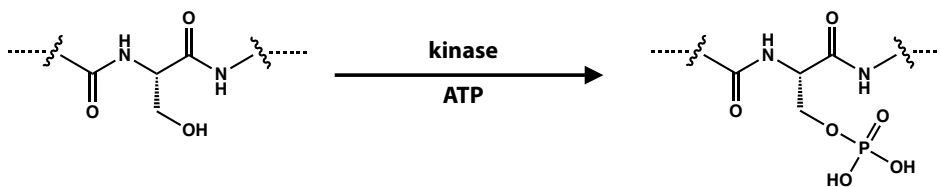
☑️ C-terminal modifications



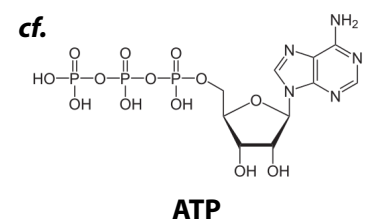
☑️ disulfide bridges



☑️ side-chain modifications



- glycosylation
- acetylation
- hydroxylation



☒ α , β -unsaturated amino acids

☒ lanthionine bridges

☒ heterocyclic backbones

