

Molecular Biology, part 1

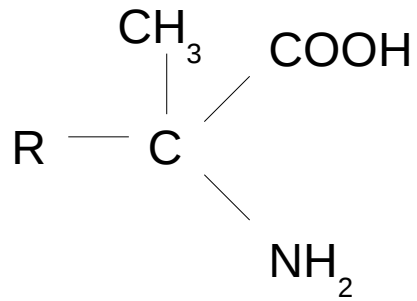
- Living beings: how are they so active?
- Biochemistry: reactions involving carbohydrates, lipids, fatty acids, sterols
- Proteins:
 - structure
 - catalysis
- Nucleid acids:
 - making of proteins
 - passing info on to next generation

Amino acids, 1 letter-, 3-letter code

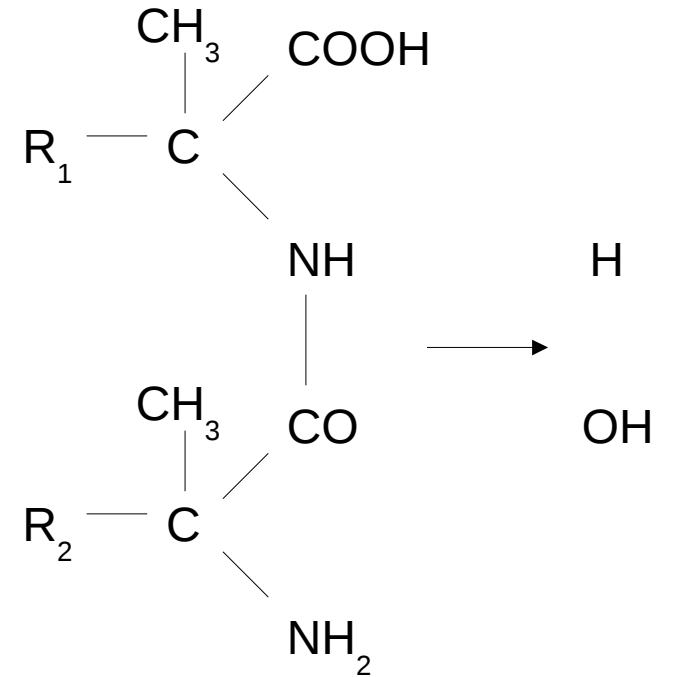
Amino acid	Three letter code	One letter code
alanine	ala	A
arginine	arg	R
asparagine	asn	N
aspartic acid	asp	D
asparagine or aspartic acid	asx	B
cysteine	cys	C
glutamic acid	glu	E

(partial list)

Proteins



Amino acid



Peptide chain

Orientation: N → C

Proteins

- Primary structure
- Secondary structure
- Tertiary structure
- Quaternary structure
- 3D structure related to function

DNA

- Base, sugar, phosphate: nucleotide
- 4 bases: A, C, G, T
- Orientation: 5' to 3' (notice: NOT usual)
- Complementary bases: A-T, C-G
- Double helix: antiparallel strands
- Reverse complement

RNA

- Ribose, not desoxyribose
- U, not T
- No double helix
- Tertiary structure more like proteins

Molecular genetics

- Genomes, chromosomes, genes, codons
- Genetic code

Genetic code

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

Third letter

Molecular genetics

