

# AMINO ACID LETTER CODES

by Frank Deis

1. **HYDROPHOBIC:** When my Volkswagen has an empty tank, I have to go buy some hydrophobic fuel at the gas station so I can

FILL MY VW

F phe	I ile	L leu	M met
Y tyr	V val	W trp (double-U, double ring)	

2. **POLAR:** When the British gave Hong Kong to China, a lot of political polarization was produced by the Communists, or:

HK RED

H his	K lys	R arg "ARginine"
E glu (5th letter, 5 carbons)		D asp (4th letter, 4 carbons)

3. **ALIPHATIC:** The hydrophobic and polar amino acids get all the attention, but there is something to be said for the "normal" amino acids, which simply have their first letter as the one letter code. They are "pretty good cats":

PG CATS

P pro	G gly	C cys
A ala	T thr	S ser

4. **AMIDES:** The two amides are Glutamine (say "Q"-tamine) and Asparagine, which differs from Aspartate by its amide nitrogen (AsN = "N"). [Not used very often are the letters B (either D or N) and Z (either E or Q)].

Q Gln "Q-tamine"	N Asn
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5. **LEFTOVERS.** The alphabet has 26 letters. Twenty are used for single amino acids, two are used for "either or" amino acids, and there are four left over. It is useful to remember which letters are not used in this scheme. The leftovers have no use, so they are like toys, or in French:

JOUJOUX

[In fact "O" is sometimes used for Ornithine, but that's not used in protein synthesis.]