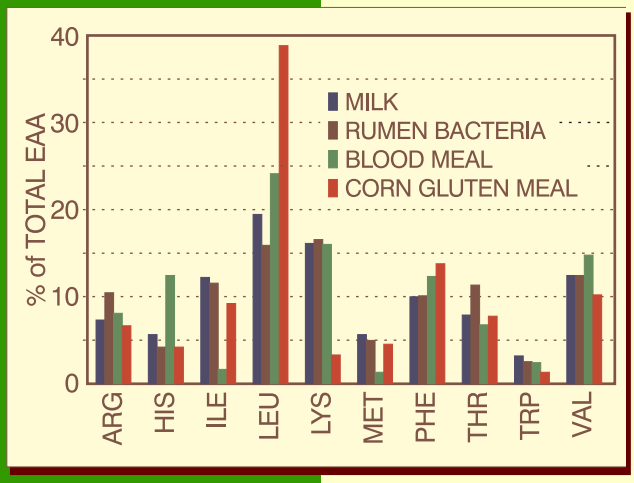
Amino Acids

Amino acids are the buiding blocks of proteins. Each unique protein is distinguishable by the sequence of 20 different amino acids found in its peptide-linked chains and by its amino acid profile.

Of the 20 common amino acids, 10 are *non-essential* - they can be synthesized by the animal. The remaining *essential* amino acids must by provided in the diet or, in ruminant animals, must be synthesized by rumen microorganisms. These essential and non-essential amino acids are as follows:



ESSENTIAL (EAA)		NON-ESSENTIAL (NEAA)	
ARG	- Arginine	ALA	- Alanine
HIS	- Histidine	ASP	- Aspartic Acid
ILE	- Isoleucine	CYSH	- Cysteine
LEU	- Leucine	CYS	- Cystine
LYS	- Lysine	GLU	- Glutamic Acid
MET	- Methionine	GLY	- Glycine
PHE	- Phenylalanine	HYPRO	- Hydroxyproline
THR	- Threonine	PRO	- Proline
TRP	- Tryptophan	SER	- Serine
VAL	- Valine	TYR	- Tyrosine

The figure above compares the essential amino acid profiles of milk and rumen bacteria with those of blood meal and corn gluten meal, two sources of undegradable intake protein (UIP: bypass protein) commonly used in Western Canadian dairy diets.

for more information:

Bypass Protein 1. Background, *University of Alberta Dairy Research Highlights*

Rumen-Protected Amino Acids 1. Background, *Dairy Research Results from the Lethbridge Research Centre*