

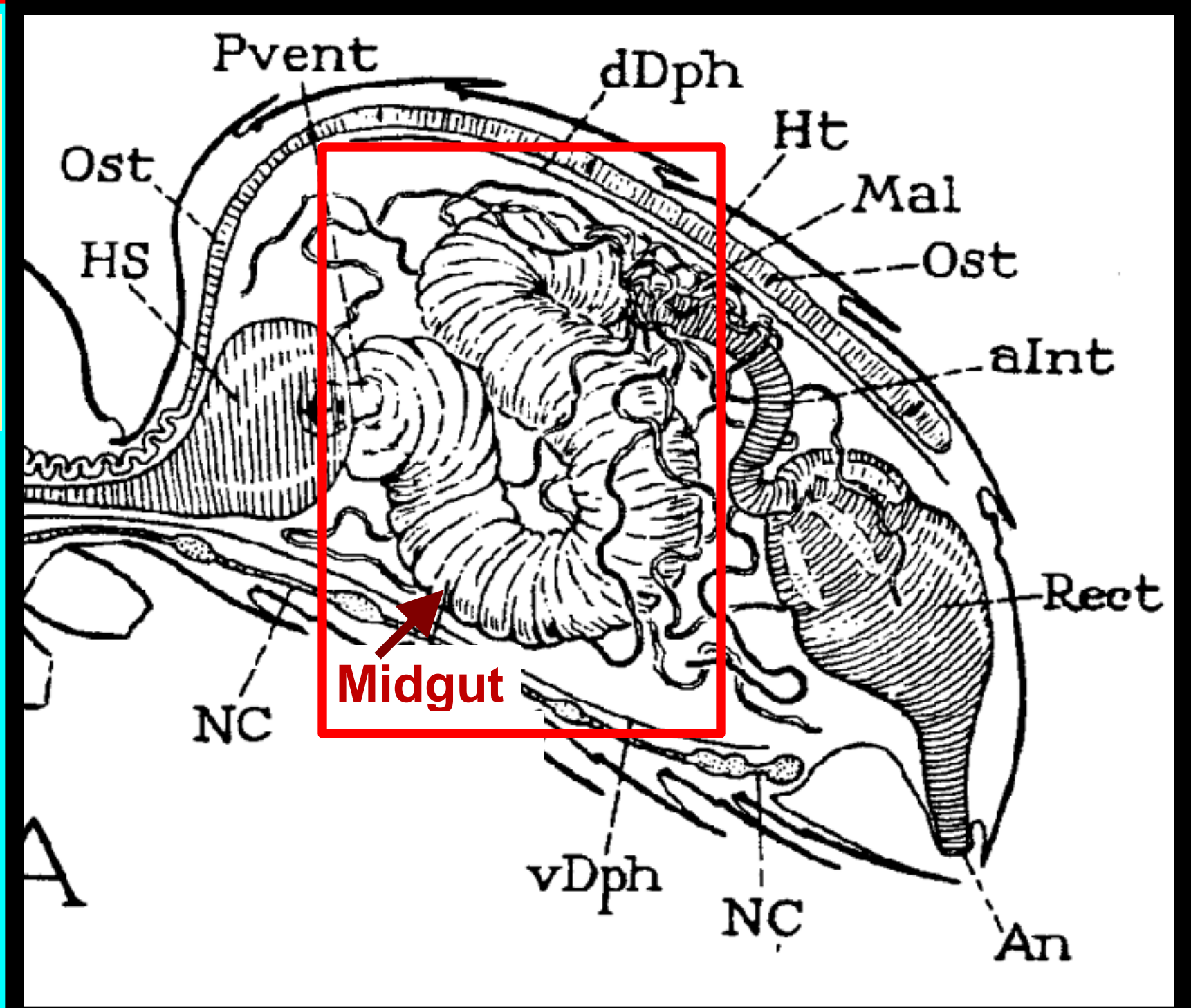
These are the 21 amino acids (AA) that are the building blocks of all biological proteins; 8 are absolutely essential to humans and honey bees; several of the others may be essential at various times or situations or for specific organisms.

### Essential AA

- [Isoleucine](#)
- [Leucine](#)
- [Lysine](#)
- [Methionine](#)
- [Phenylalanine](#)
- [Threonine](#)
- [Tryptophan](#)
- [Valine](#)

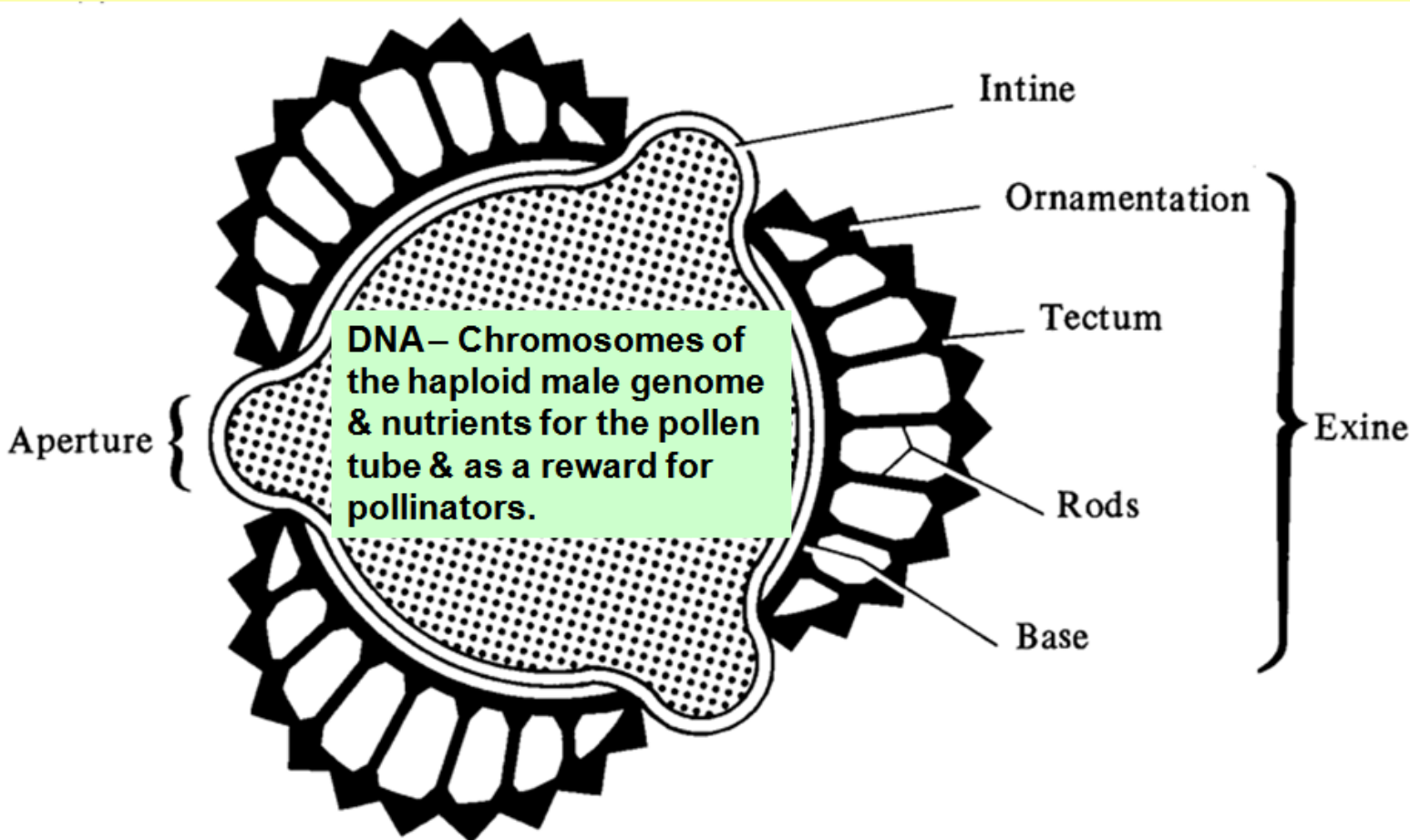
### Nonessential AA

- [Alanine](#)
- [Asparagine](#)
- [Aspartic Acid](#)
- [Cysteine\\*](#)
- [Glutamic Acid](#)
- [Glutamine\\*](#)
- [Glycine\\*](#)
- [Proline\\*](#)
- [Selenocysteine\\*](#)
- [Serine\\*](#)
- [Tyrosine\\*](#)
- [Arginine\\*](#)
- [Histidine\\*](#)



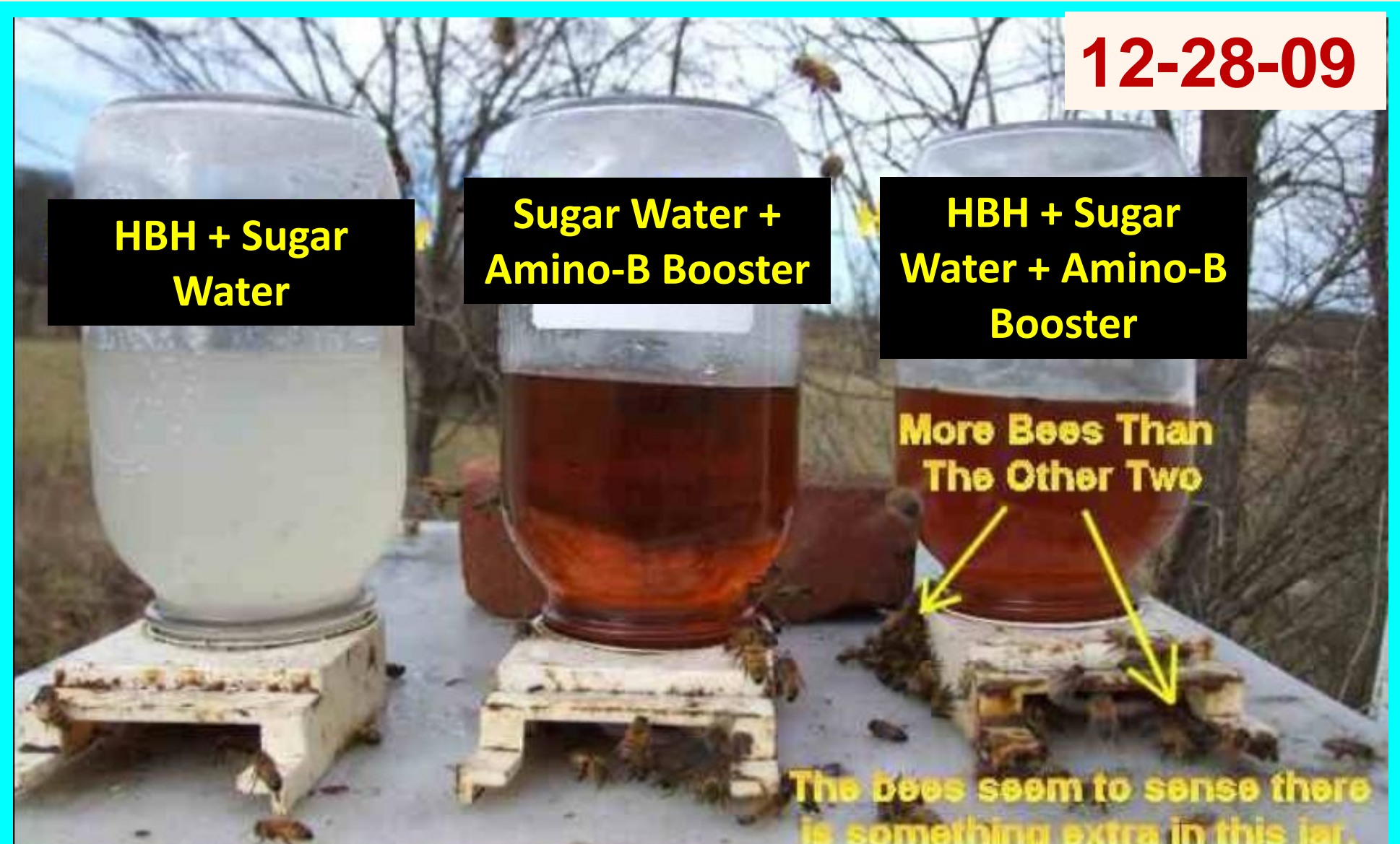
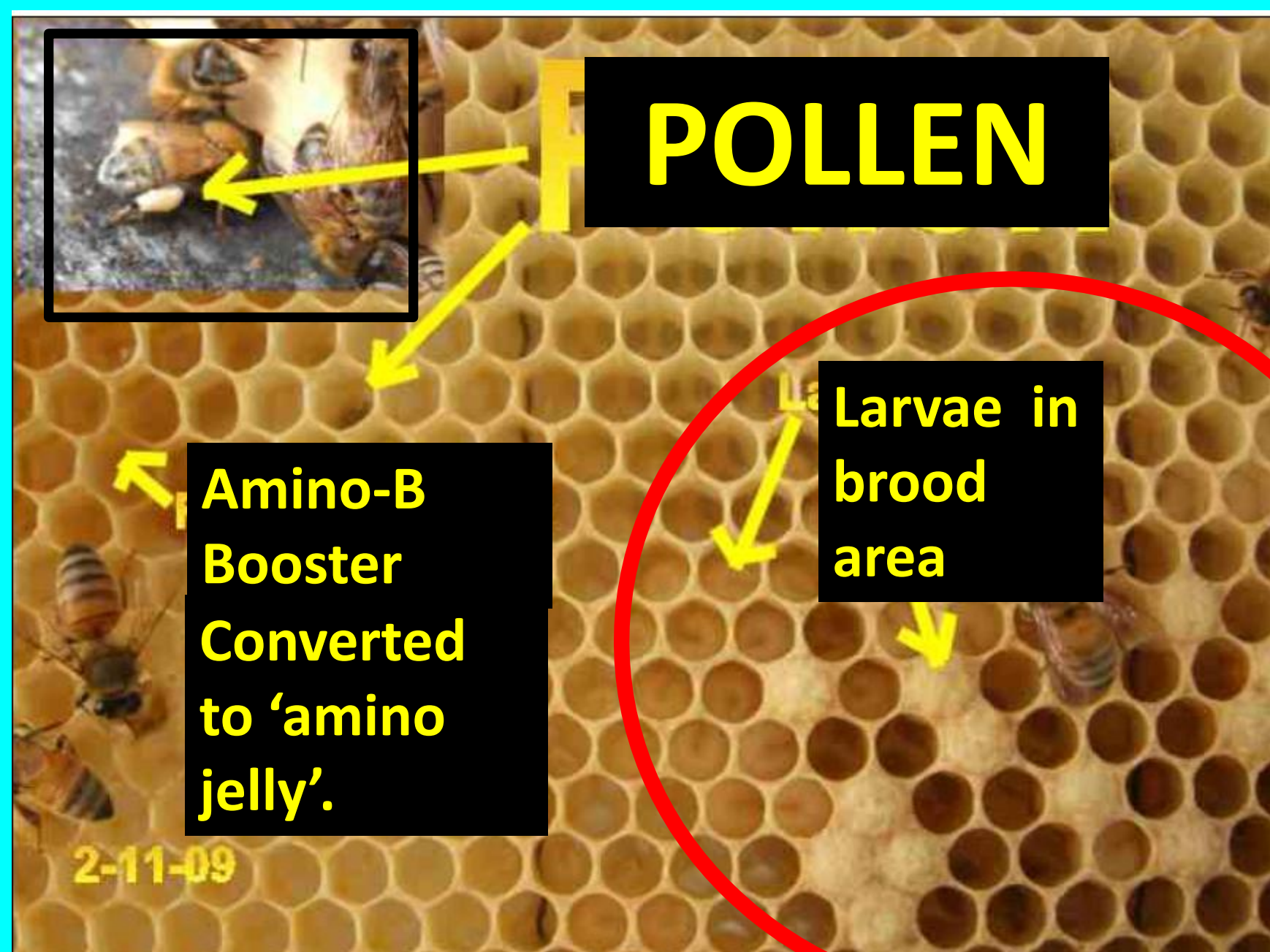
Protein digestion occurs in the Midgut; midgut cells secrete enzymes, these penetrate pollen grains, whatever protein is present is digested to amino acids.

### Detail of a Triporate Pollen Grain.



Bees need to gather many types of pollens in order to get proper nutrition. During the year, pollen may be absent or deficient in protein, resulting in "protein stress". Amino-B Booster™ is a specially formulated apiary blend of free amino acids that can be mixed with sugar syrups (sucrose as cane or beet sugar is preferred; never use corn syrup or HFCS), and mixed with Honey-B-Healthy© which enhances its attractiveness to bees and prevents fermentation.

As a blend of free amino acids, Amino-B Booster™ is assimilated rapidly, directly through the midgut to the bee hemolymph and hemocytes, then transported to the sites where protein is needed for growth of the bee, both as larvae and as adults.



Three half quarts of feeding mixes placed on top of a colony. Within a short time bees were all over the HBH/A-BB sugar water jar on the right with only a few bees on the A-BB sugar mix center and HBH sugar mix at left.

### FEEDING AMINO-B BOOSTER CAN BENEFIT BEES AND BEEKEEPERS IN THE FOLLOWING SITUATIONS:

1. EARLY BROOD DEVELOPMENT FOR BEEKEEPERS PRODUCING STRONG COLONIES FOR POLLINATION, OR FOR PRODUCING NEW COLONIES OR NUCS.
2. FEEDING BEES PROTEIN DURING DEARTHES OF POLLEN IN LATE WINTER, MID-SUMMER OR DURING DROUGHTS.
3. FOR BEEKEEPERS PRODUCING QUEENS: AMINO-B BOOSTER WILL PROVIDE ALL OF THE AMINO ACIDS NEEDED FOR HEALTHY NURSE BEES AND FOR PRODUCTION OF HIGH QUALITY BEE MILK AND ROYAL JELLY.
4. TO ASSIST BEEKEEPERS TO PRODUCE EARLY STRONG COLONIES TO TAKE ADVANTAGE OF EARLY BLOOMING HONEY PLANTS, SUCH AS AUTUMN OLIVE IN WV.
5. TO BUILD AND STRENGTHEN WEAK COLONIES; ESPECIALLY FOLLOWING VIRUS OR NOSEMA CERANAE ATTACK OR AFTER PESTICIDE INJURY.