

A healthy diet satisfies three needs • Fuel to power the body • Organic molecules to build molecules • Essential nutrients—raw materials that animals cannot make for themselves Chemical energy powers the body Nutrients are oxidized inside cells to make ATP • Proteins, carbohydrates, and fats are the main sources of calories • Basal metabolic rate (BMR): energy a resting animal requires each day • Metabolic rate: BMR + the energy needed for physical activity • Excess energy is stored as glycogen or fat An animal's diet must supply essential nutrients • Essential nutrients cannot be made from any raw material • Undernourishment—not enough calories • Malnourishment—missing essential nutrients • Animals cannot produce eight of the 20 amino acids named essential amino acids. • These eight amino acids must come from the diet. A healthy diet includes 13 vitamins and many essential minerals . • Essential vitamins and minerals – Required in minute amounts – – Extreme excesses can be dangerous – – Excess water-soluble vitamins can be eliminated in urine – – Excess fat-soluble vitamins accumulate to dangerous levels in body fat – – Minerals are simple inorganic nutrients usually required in small amounts – Calcium and phosphorus are required in larger amounts CONNECTION: Diet can influence cardiovascular disease and cancer • A healthy diet may reduce the risk of cardiovascular disease and cancer • Two main types of cholesterol : – LDL : contributes to blocked blood vessels and higher blood pressure – HDL : tends to reduce blocked blood vessels • Exercise increases HDL levels • Smoking decreases HDL levels