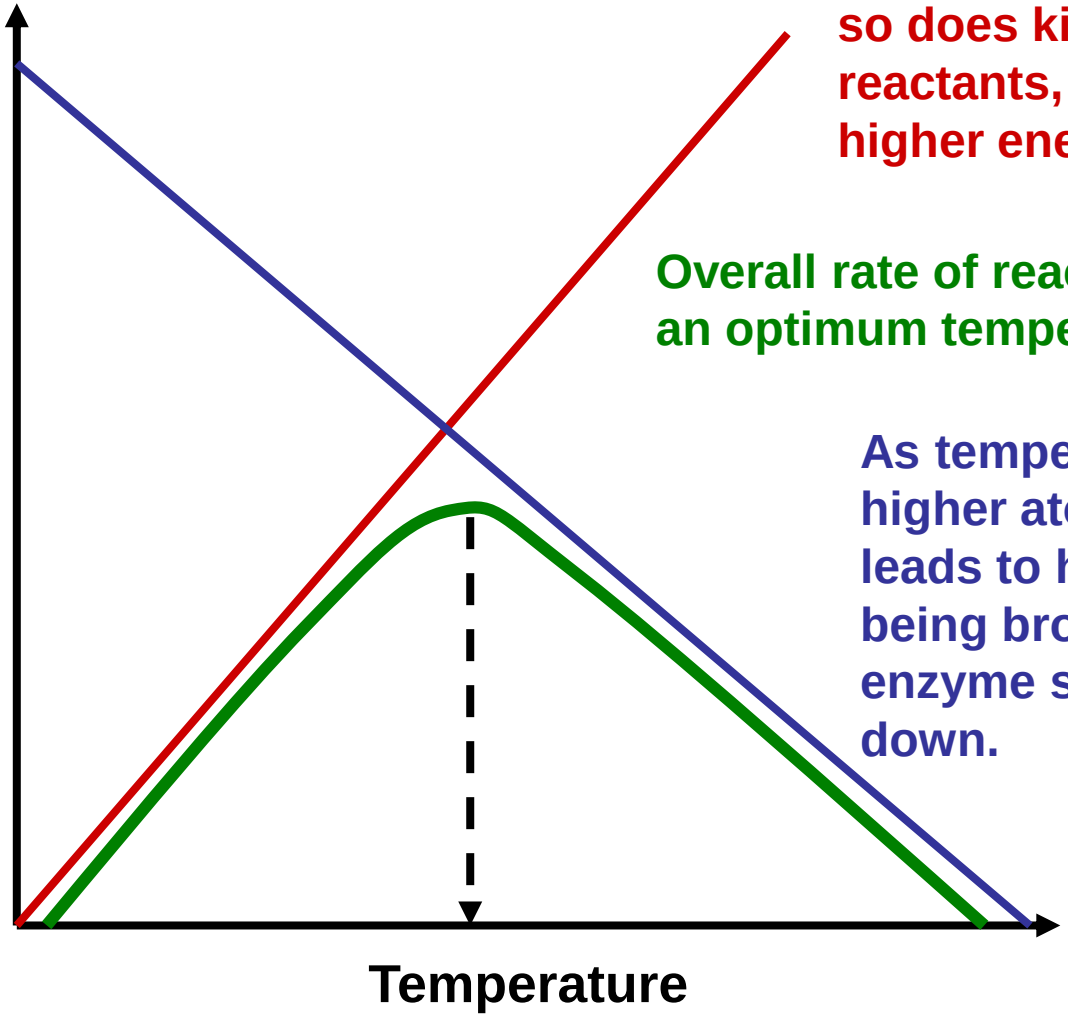
Enzymes at Work

What factors affect enzymes?

- Temperature
- pH
- Enzyme or Substrate Concentration.
- Coenzymes/Prosthetic Groups
- Poisons/Drugs

Temperature

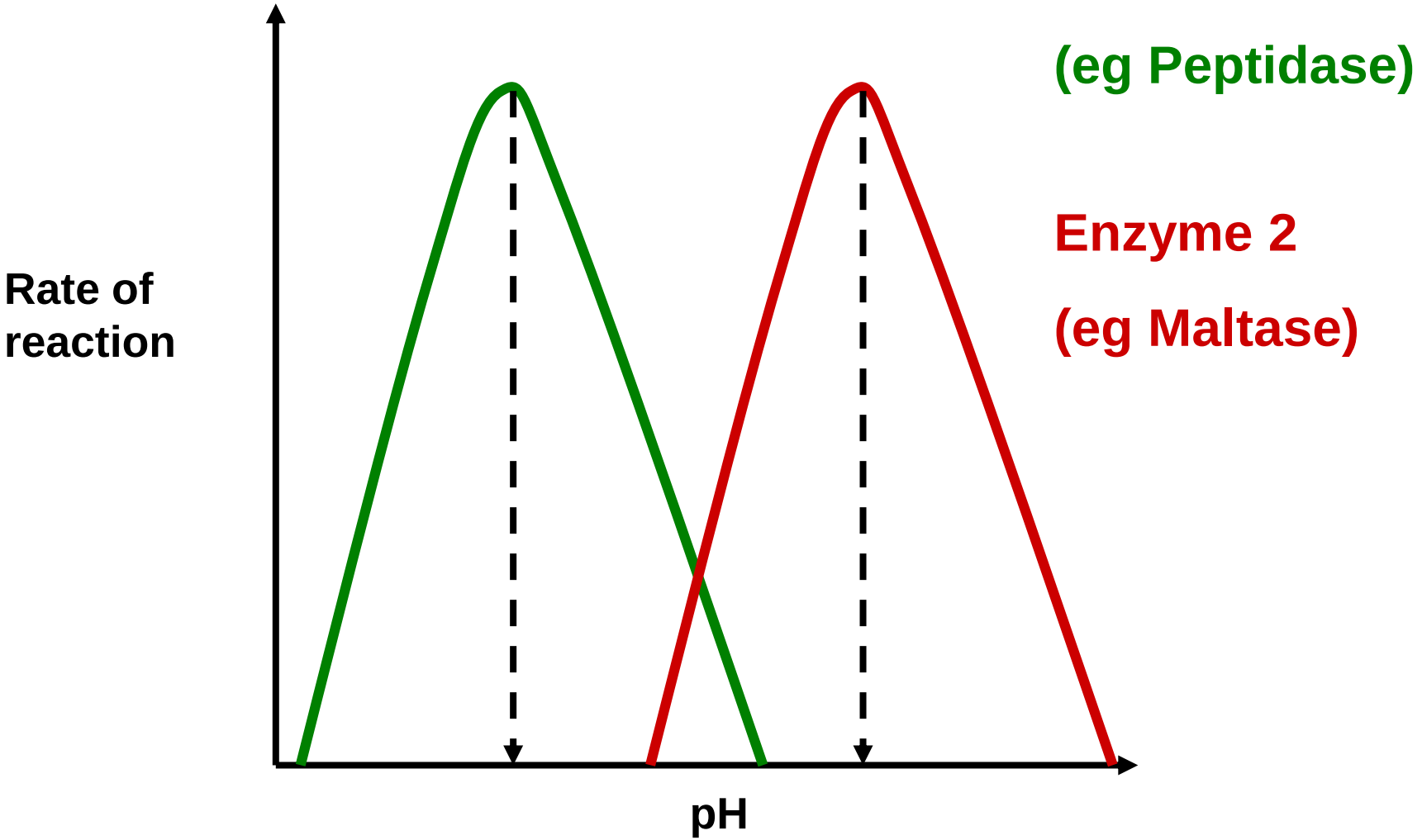


As temperature increases so does kinetic energy of reactants, leading to more & higher energy collisions

Overall rate of reaction has an optimum temperature.

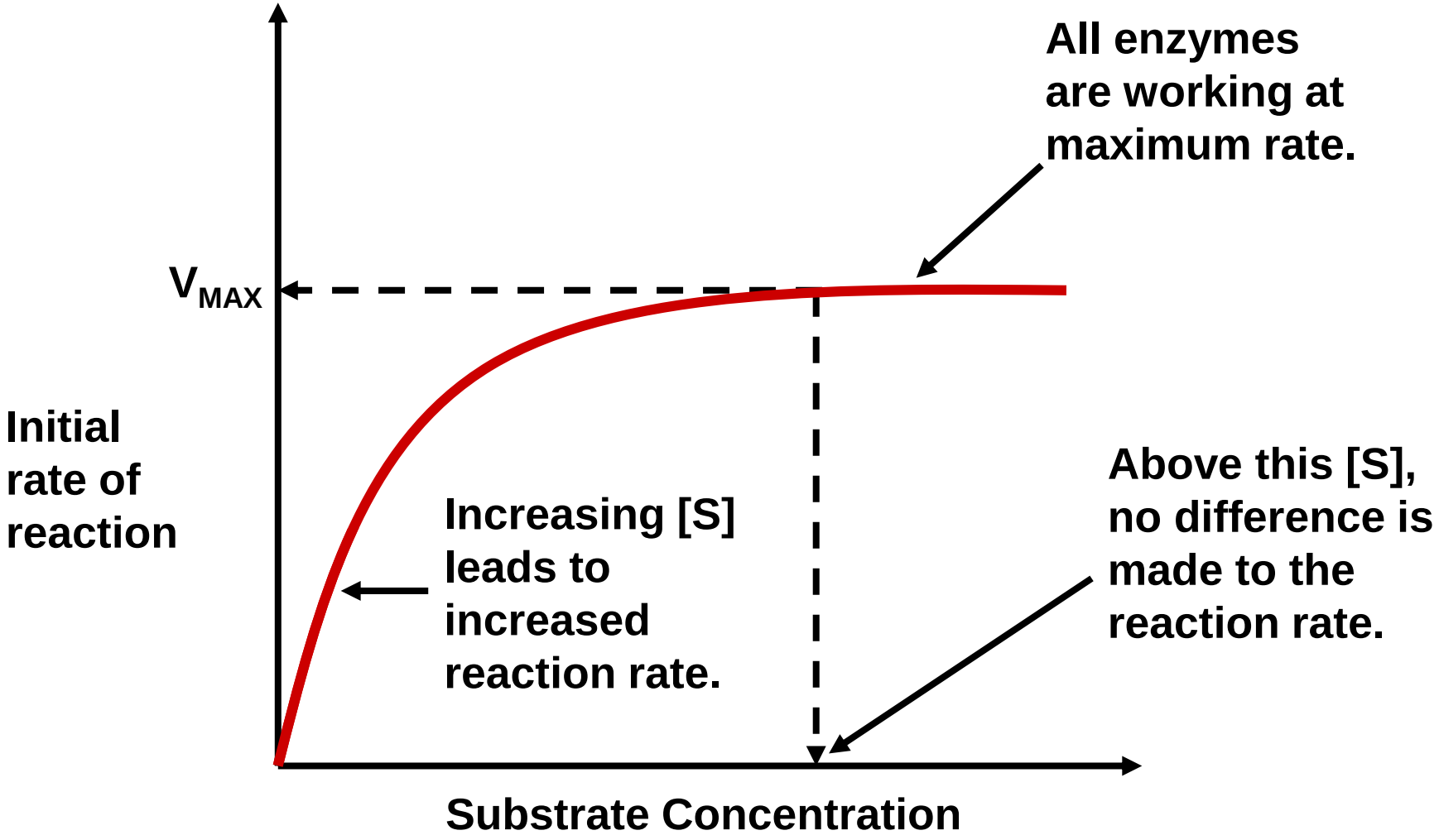
As temperature increases higher atomic vibration leads to hydrogen bonds being broken causing the enzyme structure to break down.

pH


Enzyme 1
(eg Peptidase)
Enzyme 2
(eg Maltase)
Rate of reaction
pH

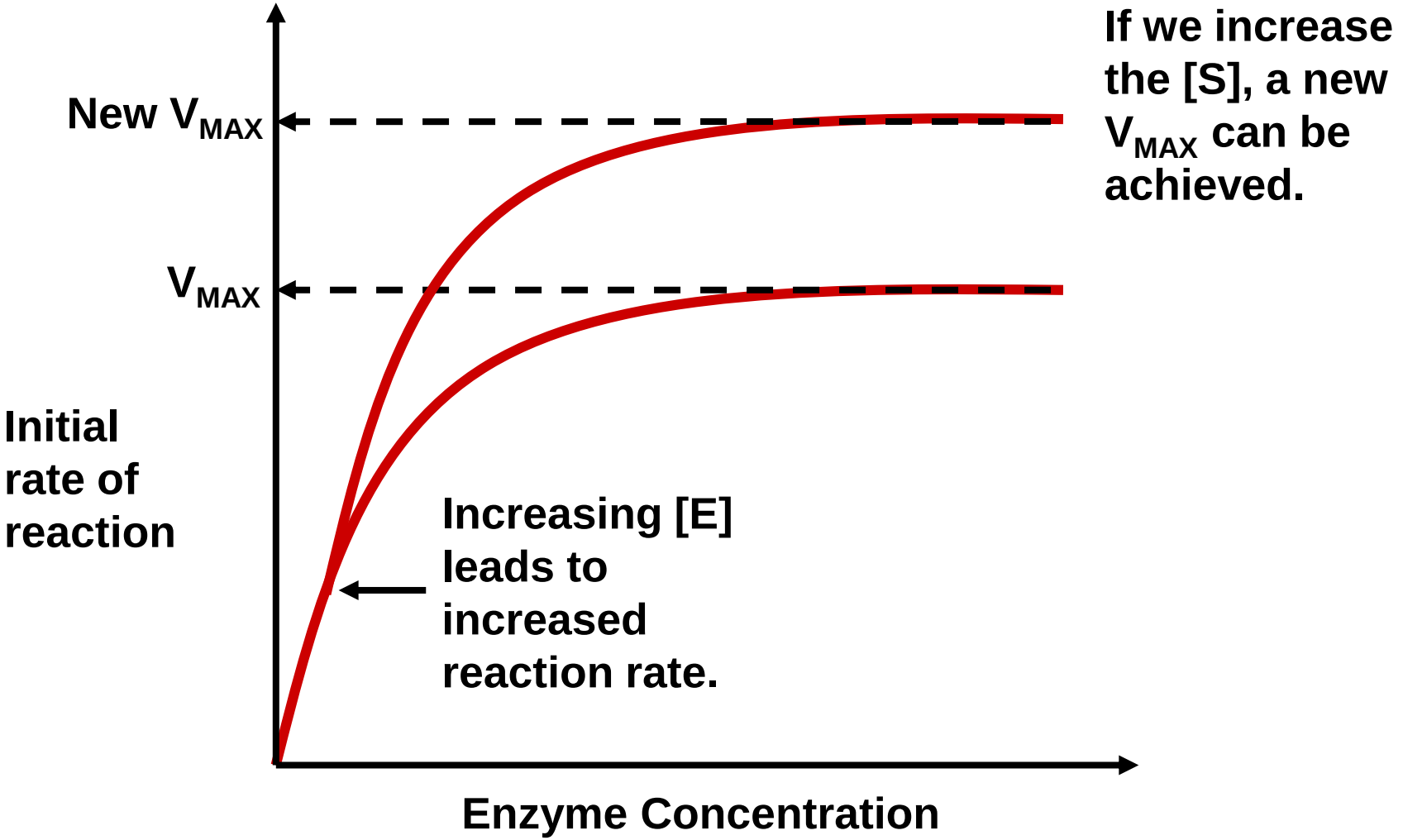
Concentration Effects

Varying the substrate concentration



Concentration Effects

Varying the enzyme concentration



Coenzymes & Prosthetic Groups

- Coenzymes:
  - Small molecules that bind to the active site with the substrate.
    - They carry substrates to the active site.

- Prosthetic Groups:
  - Small molecules that are permanently bound to an enzyme.
    - They contribute to the final 3D structure.

Poisons & Drugs

- Poisons:
  - Many poisons inhibit enzymes.
    - Eg. Cyanide inhibits cytochrome oxidase.
      - An enzyme controlling the last stage of aerobic respiration.

- Drugs:
  - Drugs can also inhibit enzymes.
    - Eg. Penicillin inhibits an enzyme that helps build bacterial cell walls.
      - The walls of growing bacteria are not made and so the bacteria are destroyed.