

# DECREASED BODY TEMPERATURE

## STIMULUS

### INTERNAL ENVIRONMENT

- ↓ MUSCULAR ACTIVITY  
e.g. RESTING, SLEEPING
- SOME DISEASES

### EXTERNAL ENVIRONMENT

- COLD ENVIRONMENTAL TEMPERATURE → HEAT LOSS
  - \* RADIATION
  - \* CONDUCTION
  - \* CONVECTION

COLD RECEPTORS IN SKIN STIMULATED

THERMORECEPTORS IN HYPOTHALAMUS

### RESPONSES TO ↓ IN TEMPERATURE

VASOCONSTRICTION  
\* ↑ SYMP. VASOCONSTRICTOR TONE TO B.V. AT SKIN SURFACE  
= ↓ RADIATION  
↓ CONDUCTION  
↓ CONVECTION  
= MORE HEAT IN BODY CORE

SUPPRESSION OF SWEAT GLANDS  
\* ↓ EVAPORATION FROM SKIN SURFACE

'GOOSEBUMPS'  
\* CONTRACTION OF ARRECTOR PILLI MUSCLES → TRAPS WARM AIR BETWEEN HAIR & SKIN  
↑ DIETARY PROTEINS  
\* STIMULATES ↑ IN METABOLIC RATE

CEREBRUM

### VOLUNTARY ACTIONS

1. ↑ INTAKE OF WARM FOOD / DRINKS
2. CHANGE IN DIET → ↑ SUBCUTANEOUS FAT FOR INSULATION
3. MORE CLOTHING
4. SEEK WARMER PLACES
5. USE HEATERS

↑ METABOLISM (LONG TERM COLD STRESS)

= ↑ TSH = ↑ THYROXINE

# INCREASED BODY TEMPERATURE

## STIMULUS

### INTERNAL ENVIRONMENT

- EXERCISE : ↑ MUSCULAR ACTIVITY  
↑ OXIDATION OF FOODS
- DISEASE : FEVER

↑ TEMP OF BLOOD DETECTED BY...

THERMORECEPTORS IN HYPOTHALAMUS

### EXTERNAL ENVIRONMENT

- HOT ENVIRONMENTAL TEMP.
  - ↳ GAINING HEAT BY:
    1. RADIATION
    2. CONVECTION
    3. CONDUCTION

HEAT RECEPTORS IN SKIN STIMULATED

### RESPONSES TO ↑ IN TEMPERATURE

#### VASODILATION

\* ↓ SYMP. VASOCONSTRICTOR MUSCLE TONE TO B.V. AT SKIN SURFACE  
= ↑ RADIATION, ↑ CONDUCTION & ↑ CONVECTION  
= HEAT LOSS, FLUSHED APPEARANCE OF SKIN

INCREASE IN SECRETION OF SWEAT GLANDS  
→ ↑ ENERGY LOSS BY EVAPORATION OF HOT LIQUID TO GAS = REMOVAL OF HEAT ENERGY

↓ IN DIETARY PROTEIN  
↳ ↓ METABOLISM

↓ SKELETAL MUSCLE TONE = ↓ HEAT PRODUCTION

CEREBRUM

### VOLUNTARY ACTIONS

1. DIMINISHED HEAT PRODUCTION = ↓ MOVEMENT = ↓ HEAT PRODUCED
2. ↑ INTAKE OF COLD FOOD / DRINK (↑ CONDUCTIVE HEAT LOSS)
3. REMOVAL OF INSULATION (CLOTHES)
4. SEEK COOLER PLACES - SHADE (↓ RADIATION)
5. USE OF FANS = ↑ CONVECTION
6. USE OF COOL WATER - POOLS / SHOWERS ETC. (↑ CONDUCTIVE LOSS)