Goosebumps and the shivers

Dear Alice,

Why do you shiver? What causes "goosebumps"?

Lena

Answer

Dear Lena,

Brrrr!! Shivering is when your muscles contract and relax quickly, causing uncontrollable quivering all over your body. This is an involuntary muscle reaction to a variety of conditions, the most common of which is feeling cold. Fever, illness, fear, childbirth, orgasms, or other circumstances can also set off the shivers. Fevers produce shivering because they can cause one to feel cold, even though the person's core temperature is higher than normal. Internal organs can shiver, too!

In the case of a reaction to cold, a drop in skin and body temperature will signal the hypothalamus. Once activated, this part of the brain stimulates muscle contractions (the shivering reflex) in order to warm up your body. After enough heat has been produced, the shivering stops.

Did you know that babies and very young children can't shiver? That's one reason for the extra baby fat. When they're cold, babies thermo-regulate by burning fat in a process called thermogenesis, rather than by shivering, which is the same mechanism used by hibernating mammals to keep warm.

Goose bumps are caused by the pilomotor reflex. When you're exposed to cold temperatures or intense emotional stimuli (such as awe, pleasure, or fear), or if your skin's irritated, this reflex triggers an involuntary muscle contraction that raises the hairs of your skin, producing goose bumps. This response to cold or other stimuli, known as piloerection, results in erect hairs trapping air near the skin, thereby retaining heat for the body (this feature works better in mammals with more fur than humans).
In a fear reaction, shivering and goose bumps are triggered by adrenaline. This is why strong emotional experiences, especially fear, can produce shivering or "the chills." Again, for mammals with lots of fur, all the erect hair makes them appear larger and more threatening to predators. And in the case of some mammals, like the porcupine, this makes them not only appear more threatening, but more dangerous as well.

Stay warm!

Alice!

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