

Pheromones are substances that serve as chemical signals between members of the same species.

They are secreted to the outside of the body and cause other individuals of the species to have specific reactions.

Pheromones, which are sometimes called "social hormones," affect a group of individuals somewhat like hormones do an individual animal.

Pheromones are the predominant medium of communication among insects (but rarely the sole method).

Some species have simple pheromone systems and produce only a few pheromones, but others produce many with various functions.

Pheromone systems are the most complex in some of the so-called social insects, insects that live in organized groups.

Chemical communication differs from that by sight or sound in several ways.

Transmission is relatively slow (the chemical signals are usually airborne), but the signal can be persistent, depending upon the volatility of the chemical, and is sometimes effective over a very long range.

Localization of the signal is generally poorer than localization of a sound or visual stimulus and is usually effected by the animal's moving upwind in response to the stimulus.

The ability to modulate a chemical signal is limited, compared with communication by visual or acoustic means, but some pheromones may convey different meanings and consequently result in different behavioral or physiological responses, depending on their concentration or when presented in combination.

The modulation of chemical signals occurs via the elaboration of the number of exocrine glands that produce pheromones.

Some species, such as ants, seem to be very articulate creatures, but their medium of communication is difficult for humans to study and appreciate because of our own olfactory insensitivity and the technological difficulties in detecting and analyzing these pheromones.

Pheromones play numerous roles in the activities of insects.

They may act as alarm substances, play a role in individual and group recognition, serve as attractants between sexes, mediate the formation of aggregations, identify foraging trails, and be involved in caste determination.

For example, pheromones involved in caste determination include the "queen substance" produced by queen honey bees.

Aphids, which are particularly vulnerable to predators because of their gregarious habits and sedentary nature, secrete an alarm pheromone when attacked that causes nearby aphids to respond by moving away.