



• TOPIC-POISONS AND ALLERGENS OF PLANTS AND ANIMAL ORIGIN.THEIR EFFECT ON THE HUMAN BODY

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**Poisonous plants** are plants that produce toxins that deter herbivores from consuming them. Plants cannot move to escape their predators, so they must have other means of protecting themselves from herbivorous animals. Some plants have physical defenses such as thorns, spines and prickles, but by far the most common type of protection is chemical. Over millennia, through the process of natural selection, plants have evolved the means to produce a vast and complicated array of chemical compounds in order to deter herbivores. Tannin, for example, is a defensive compound that emerged relatively early in the evolutionary history of plants, while more complex molecules such as polyacetylenes are found in younger groups of plants such as the Asterales. Many of the known plant defense compounds primarily defend against consumption by insects, though other animals, including humans, that consume such plants may also experience negative effects, ranging from mild discomfort to death.

# HOW TO IDENTIFY POISON IVY



**"If butterflies land there, don't put your hand there."**

Some butterflies land on poison ivy, since they are not affected, which provides them protection as their predators avoid eating the plant.



**"Leaves of three, let it be."**

This old rhyme refers to the grouping of three leaves that are most commonly associated with poison ivy. Though there are many other plants with three predominate leaves, this can be a good starting point for identification.



**"Berries white, run in fright" & "Berries white, danger in sight."**

The berry-like fruit, a drupe, mature by August to November with a grayish-white colour. Fruits are a favorite winter food of some birds and other animals. Seeds are spread mainly by animals and remain viable after passing through the digestive tract.



**"Red leaflets in the spring, it's a dangerous thing."**

Sometimes in the spring new leaflets have a red appearance. (Note that later, in the summer, the leaflets are green, making them more difficult to distinguish from other plants, while in autumn they can be reddish-orange.)



**"Hairy vine, no friend of mine." & "Raggy rope, don't be a dope!"**

Poison ivy vines on trees have a furry "raggy" appearance. These rhymes warn tree climbers to be wary. Old, mature vines on tree trunks can be quite large and long, with the recognizable leaves obscured among the higher foliage of the tree.



**"Longer middle stem, stay away from them."**

This refers to the middle leaflet having a notably longer stem than the two side leaflets and is a key to differentiating it from the similar-looking *Rhus aromatica* - Fragrant sumac.



**"Side leaflets like mittens, will itch like the dickens."**

This refers to the appearance of some, but not all, poison ivy leaves, where each of the two side leaflets has a small notch that makes the leaflet look like a mitten with a "thumb."

# POISONOUS PLANTS

POISON IVY



POISON OAK



FOXGLOVE



AZALEA



STINGING NETTLE



OLEANDER



GIANT HOGWEED



MISTLETOE



BITTER NIGHTSHADE



POINSETTIA



JIMSONWEED



WILD PARSNIP





# The Deadly Four

Plants make chemicals that can be valuable nutrients, powerful medicines, or deadly poisons. Many plants can make you sick, but these four are the most lethal near Seldovia. Learn them well!!

## Poison Water Hemlock

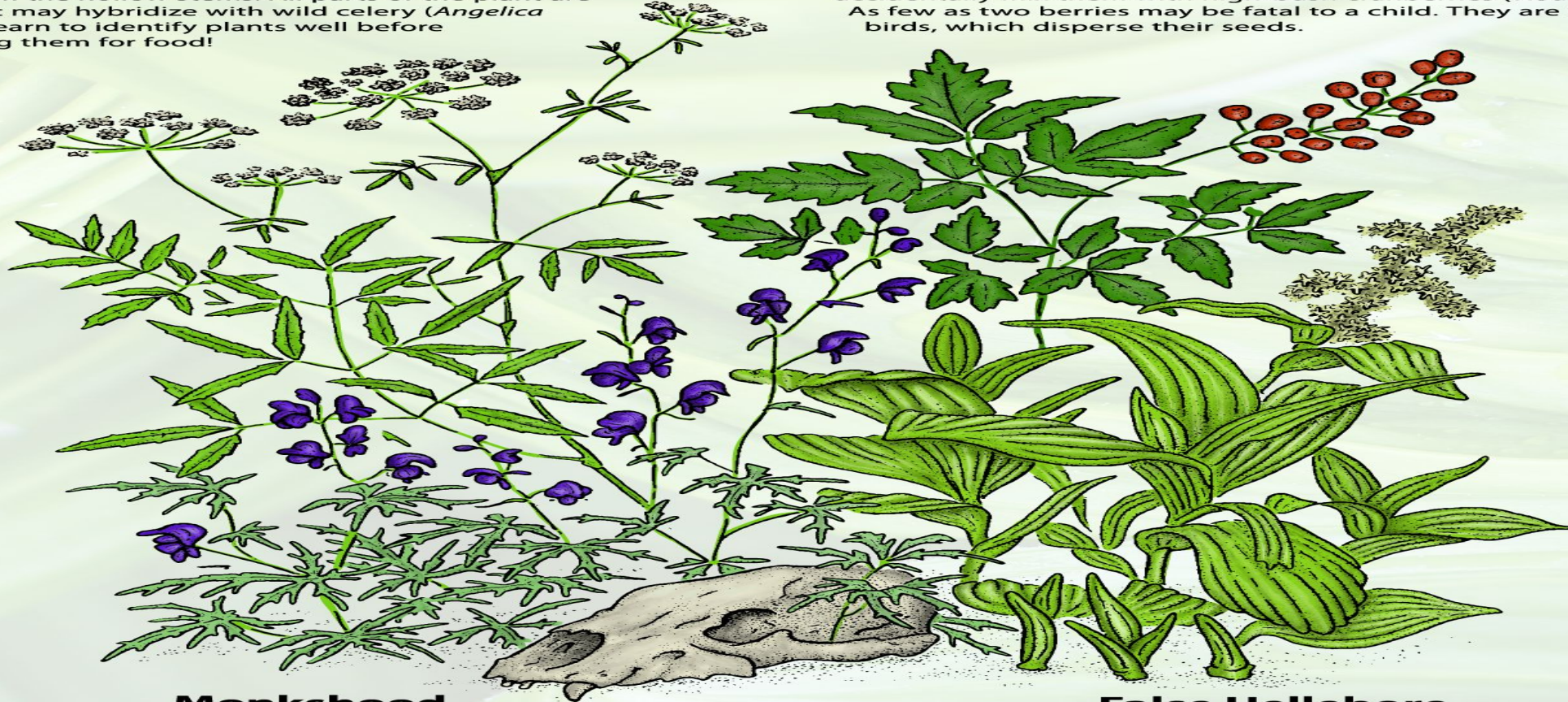
*Cicuta douglasii* and *C. virosa*

Part of the carrot family, poison water hemlock usually grows in standing water. It is the most deadly plant in North America and a big killer of livestock. Children have been poisoned by making whistles from the hollow stems. All parts of the plant are toxic, and it may hybridize with wild celery (*Angelica* species). Learn to identify plants well before harvesting them for food!

## Baneberry

*Actaea rubra*

Opaque red or white berries bristle from an upright stalk, each with a black dot on one end and a crease down the side. Baneberries are noxiously bitter, but poisonings can occur when berry pickers accidentally mix them with high-bush cranberries (*Viburnum edule*). As few as two berries may be fatal to a child. They are harmless to birds, which disperse their seeds.



## Monkshood

*Aconitum delphinifolium*

From the hood-shaped purple flowers to the tips of the roots, this plant is both beautiful and perilous. Monkshood poison was used by the Aleutian Island Natives to hunt whales, paralyzing them with poisoned harpoon tips and causing them to drown. Common in meadows, monkshood contains a potent neurotoxin called aconite that can cause death within hours. It can also be absorbed through the skin, so avoid picking these flowers!

## False Hellebore

*Veratrum viride*

Recognize false hellebore by its large, deeply-ribbed leaves. A distinctive plant that can be over three feet tall when full-grown, its young shoots can sometimes be confused with the tasty shoots of watermelon berry (*Streptopus amplexifolius*). False hellebore has paired leaves and is always green, while watermelon berry has alternating leaves and a stem which may be pinkish with spots.

# TYPES OF ALLERGIES

Pets Allergy



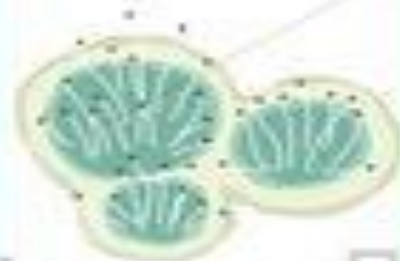
Dust Mites Allergy



Pollen Allergy



Mould Allergy



Vaccine Allergy



Drug Allergy



Sun Allergy



Food Allergy



Chemicals Allergy



Viruses Allergy





- Hundreds of species of plants release their **pollen** into the air every year, causing allergic reactions in many people.

...

### **Weed Pollen Allergies**

- English plantain.
- lamb's quarters.
- ragweed (which affects nearly one in five Americans)
- redroot pigweed.
- sagebrush.
- tumbleweed (Russian thistle)

# When is Allergy Season?

Depending on Where You Live...



# Surviving Spring Allergies

Use these tips to manage spring allergy symptoms.

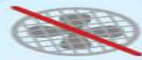
## Cool Wisely



Use an air conditioner



Avoid humidifiers and swamp coolers (possible molds)



Do not use window or attic fans

## Clean Up



Use a saline nasal wash



Change clothes and wash or shower away pollen

## Block Wind



Use a scarf or mask on windy days

## Know Triggers



Trees — early spring



Weeds — late summer



Grasses — late spring, early summer



Molds — midsummer in warmer states, year-round in southern/western states

## Garden Carefully



Avoid exposure to fertilizers and pesticides



Stay away from piles of leaves and branches (possible molds)



Do not mow the lawn (have someone mow it for you)



## Count Pollens

Keep home doors and windows and car windows closed during pollen season (especially when pollen counts are high)



Stay inside during afternoons and evenings when pollen levels are highest

## Take Medication



Consistently take doctor-recommended medicines and treatments



You can live an active life with allergies. Call your doctor for help identifying your allergies or managing your symptoms.

[niihealth.org](http://niihealth.org) | 877 CALL NIH (877 225 5654)

# SEASONAL ALLERGIES

SPRING



TREE  
POLLEN

SUMMER



GRASS  
POLLEN

FALL



WEED  
POLLEN

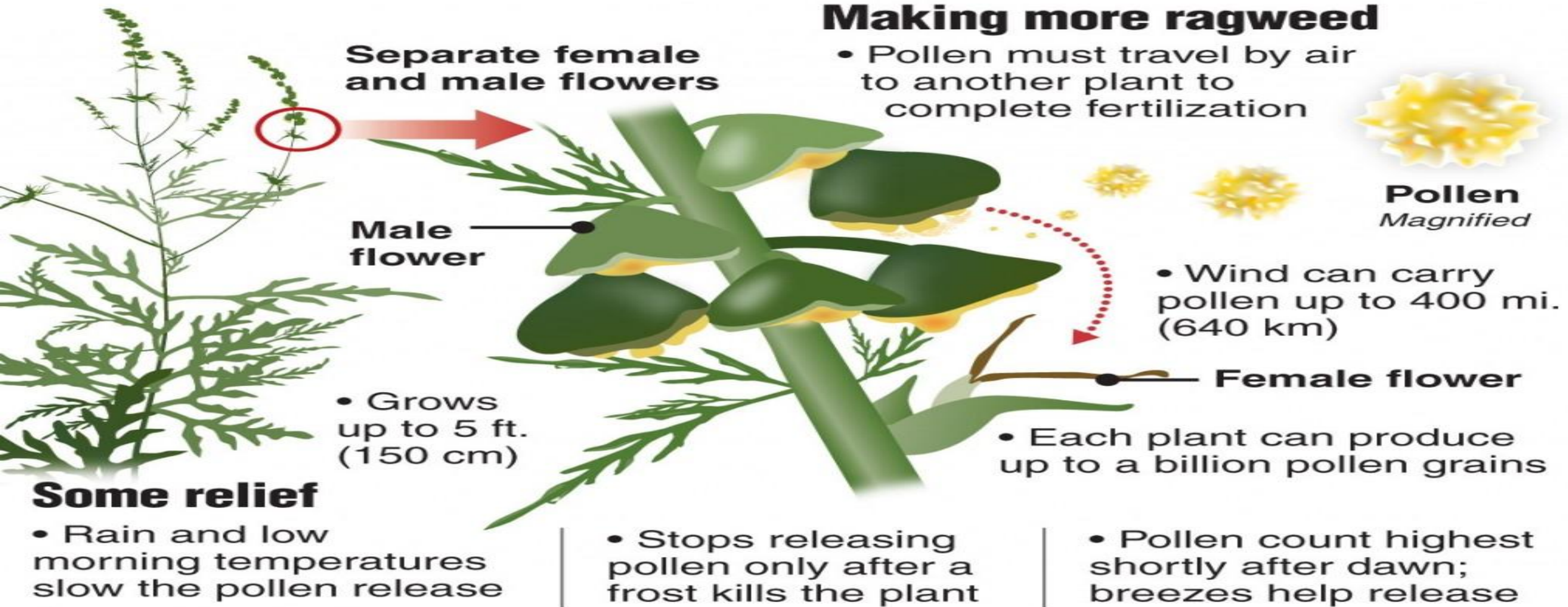
WINTER



MOLD

# What's making you sneeze

*Pollen from ragweed is a prime cause of hay fever and considered by many to be the greatest allergen of all pollens.*



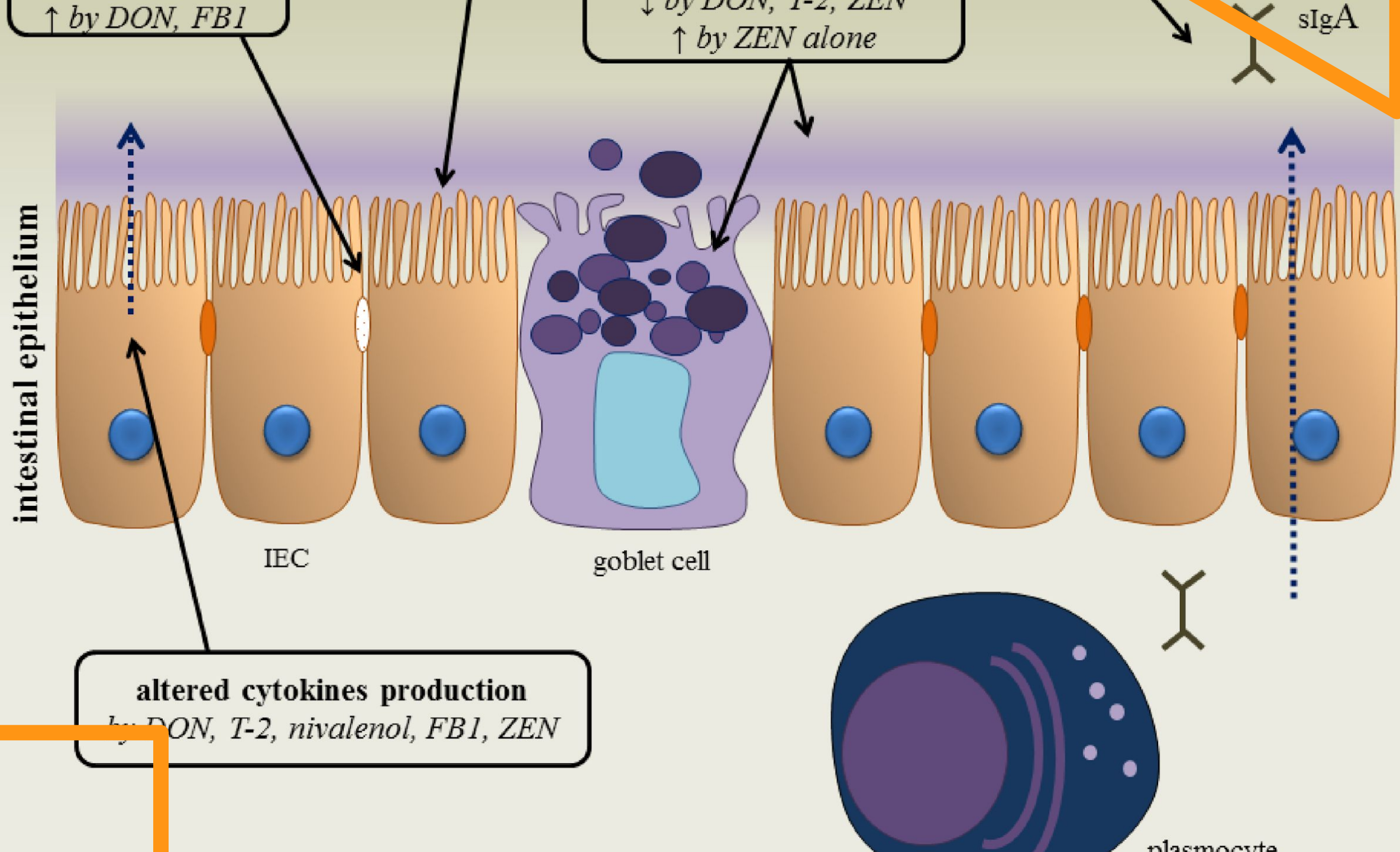
Source: Melina Yingling

Graphic: Cornell University, Asthma and Allergy Foundation of American

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- **Poisonous animals**[edit]. This list is a partial list of animals that are poisonous to humans (and other animals), or put another way, their flesh is toxic if consumed, ..
- [List of venomous animals](#) ·
- [Blue-capped ifrit](#)
- · [Common quail](#)
- · [Spur-winged goose](#)



# Redback spiders



Left image: Redback Spider (*Latrodectus hasselti*)



Right image: Redback Spider next to a bunch of bananas



## Where they live

Australia-wide. They are



## Description

Size range of 1 cm (female) –



## Danger to humans

Only the female's bite is

# POISONOUS



POISON DART FROGS



SEA SLUGS



TOADS



SALAMANDERS



SOME GRASSHOPPERS



PUFFER FISH



CUBAN LAND SNAILS



PITOHUI BIRDS



SOME BUTTERFLIES

# VENOMOUS



WASPS



SCORPIONS



GILA MONSTERS



SPIDERS



MALE PLATYPUSES



VIPERS



CENTIPEDES



JELLYFISH



CONE SNAILS



MALE PLATYPUSES





# THE CHEMISTRY OF SPIDER VENOM

Spider venoms are complex mixtures with a large number of components. This graphic looks at the chemical identities of some of these components, and their roles in venoms.

## TYPES OF VENOM

Venoms are grouped into two main categories, necrotic or neurotoxic, though some spider venoms can exhibit both types of effect.



### NECROTIC

Also referred to as 'cytotoxic'. Damages and kills the cells and tissue around the site of the bite, causing blisters, inflammation, and lesions to appear. Recluse spiders and South African Sand spiders have necrotic venom.

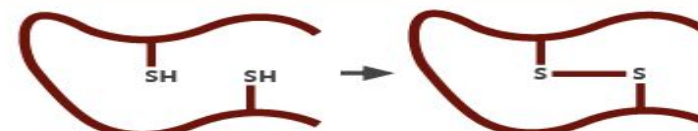


### NEUROTOXIC

These venoms act directly on the nervous system. They interfere with nerve signals; in extreme cases, this can lead to death from respiratory or cardiac failure. Black Widow & Funnel Web spiders have neurotoxic venom.



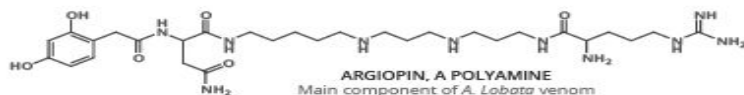
## LINEAR & DISULFIDE-CONTAINING PEPTIDES



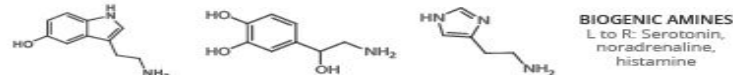
**DISULFIDE BONDS IN A PEPTIDE**  
Disulfide bonds form between thiol (-SH) groups on peptide chains

Cytolytic peptides are linear molecules, responsible for the necrotic activities of some venoms. They show activity against a broad range of target cells, have a function in aiding external digestion, and can also be synergistic with neurotoxins. Larger peptides containing disulfide bonds are neurotoxic, exerting effects by acting on certain ion channels. They are the major toxic components of the majority of spider venoms.

## LOW MOLECULAR WEIGHT COMPOUNDS



These are defined as compounds with a molecular weight of less than 1000, and include salts, carbohydrates, amino acids, amines, and acylpolyamines, some of which act synergistically with other venom components. Amines can contribute pain, and also help the venom spread from the bite site. Acylpolyamines help paralyse invertebrate victims by blocking ion channels that are activated by glutamate, but can also be effective against vertebrate nervous systems.



43,244

Number of different spider species catalogued (as of 2011)

150,000

Estimated number of different spider species in existence

174

Number of species for which venom components described

Almost all spiders produce venom, but very few produce venom that is harmful to humans. Venoms are often investigated for potential agricultural and medicinal uses.

## PROTEINS & ENZYMES

Enzymes in the venom play an important role in external digestion, and some can also act as spreading agents for the venom. In Recluse spider venoms, atracoxins are the primary toxic component. In Widow spiders, high molecular weight neurotoxins called latrotoxins cause release of neuromediators, resulting in blockade of nerve signal transmission.



### NEURONS, SYNAPSES & AXONS

Many spider venom proteins bind to various molecular targets on neurons. Other venom components can assist them in reaching these. Greek letters in front of a toxin often denote its target:  $\alpha$  = nicotinic, acetylcholine and glutamate receptors,  $\kappa$  = potassium ion channels,  $\mu$  = sodium ion channels, and  $\omega$  = calcium ion channels.



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