Amanitaceae - first white-spored group

Characters that define Amanita
Habit pluteoid; lamellae free; spores white often amyloid; universal veil and often partial veil present; lamella trama divergent and made up of inflated cells.

Comparison to Lepiota and Lepiota-like taxa
volva present vs. volva absent
Gill trama divergent vs. gill trama regular or trabecular
spores often amyloid (blue in Meltzers) vs. usually dextrinoid (reddish brown in Meltzers).

Amanita – a big genus, world wide; most species ectomycorrhiza-forming. Characters used to identify species: color, stipe shape, veil remnants, staining, smell, pileus margin, spores amyloid or not.

Some common autumn species around here:

**subgenus Amanita sect Amanita** - abrupt bulb with strongly reduced volva
*Amanita muscaria* (Fly agaric) – with a strikingly red pileus, set with red cottony veil remnants; volva breaking up in girdles of cottony material on stipe base; annulus hanging, skirt-like; contains ibotenic acid and muscarin
*Amanita gemmata* (and *A. paterina*) – pale yellow pileus; pileus margin striate; veil whitish-greyish in warts on pileus; annulus present

**Sect Vaginata** (*Amanitopsis*) - no partial veil, tall slender-stiped species,
*Amanita vaginata* (Grisette) – grey pileus with sulcate margin;
*A. pachycolea* – dark brown pileus, thick volva

**Subgenus Lepidella** spores amyloid, volva often fragile or strongly reduced, - oder often pungent and disagreeable.
*Amanita phalloides* (Death cap) – with a radial greenish-brownish-striped pileus, but variable in colour, often without veil remnants on the pileus; with hanging skirt-like annulus; fruitbodies from small to big; ectomycorrhizal with oak, imported from Europe; contains amatoxins
*Amanita ochreata* - our pure white species that is similar to A phalloides in general structure and toxicity
*Amanita calyptrata*, - the coccoli - single large patch of velum on cap, yellow-orange pileus (also *calyptratae* - pale pinish gray pileus, and *A. velosa* - a spring species, especially in Sierra)
*Amanita francheti* (also known as *A. aspera*) – brown pileus; yellow veil and of the same consistence as that of *A. muscaria*
*A. novinupta* - blushing red, keys out to *A. rubescens* in Arora
*A. magniverrucata* - huge white scales on white pileus, smelly bleachy oder

**Limacella** – a rather small genus; universal veil glutinous, disappearing with age; Pileus glutinous, no volva, gill trama divergent. the species look a bit like Lepiota-species, but lack scales; smell often farinaceous to rancid. Probably saprotrophic.

**Amatoxins** – present in *A. phalloides, A. verna, A. virosa, A. bisporigera, A. hygroscopica, A.ocreata, A. suballiaeae*, and *A. tenuifolia* (and in members of
*Lepiota* section *Ovisporae*, *Conocybe* subgenus *Pholiotina*, and *Galerina* section *Naucoriopsis*). Inhibits RNA-polymerase B in all Eukaryotes (with the exception of the amatoxin accumulating mushroom species, and some *Drosophila* species). In mammals the toxic effect is seen primarily in the liver and kidneys. 5-7 mg amatoxin is lethal for a human, that means less than 50 grams of a fresh fruitbody of *A. phalloides* (c. 100 grams of a *Lepiota* species).

A simple test for the presence of amatoxins is the Wieland-test (aka Meixner-test or newspaper test). Draw with a pencil (not a pen) two circles on the unprinted part of a newspaper (containing wood fibers). Squeeze a drop of juice from the mushroom into one of the two circles, and allow to dry. Do not expose to sunlight. When dry, place a small drop of concentrated hydro-chloric acid (25 %) on the spot of the juice and a drop in the control circle. A positive reaction occurs when there is more than 0.02 mg amatoxin/ml, and may take only a few minutes, but wait for one hour to be sure. A positive reaction is indicated by a pale blue green colour, which might be very faint. False positives occur, as this test tests for the presence of indoles; terpenes may cause the same coloration.

**Ibotenic acid, muscimol, muscazone** – present in *A. muscaria* and allies, *A. pantherina*, *A. gemmata* (probably), *A. cothurnata*. Effects the central nervous system, and causes a state similar to alcohol intoxication and ends in a deep sleep.

**Muscarin** – present in some *Inocybe* species, some *Clitocybe* species; in very small quantities in *A. muscaria*. Causes PSL-syndrom: perspiration, salivation, lacrimation. It resembles and replaces acetylcholine – a neurotransmitter; atropin is used as an anti-drug.

Some References:
http://pluto.njcc.com/~ret/amanita/mainaman.html