

= glue or glutinous substance) and cephalus (??????? =

head) meaning " with a sticky head " making reference to the viscid cap surface . It is commonly known as the " big sheath mushroom " , " rose @-@ gilled grisette " or the " stubble rosegill " .

= = Description = =

The cap of *Volvopluteus gloiocephalus* is between 5 and 15 cm (2 @. @ 0 and 5 @. @ 9 in) in diameter , more or less ovate or conical when young , then expands to convex or flat , sometimes with a slight central depression in old specimens . The surface is markedly viscid in fresh basidiocarps ; the color ranges from pure white to grey or greyish @-@ brown . The gills are crowded , free from the stipe , ventricose (swollen in the middle) , and up to 2 cm (0 @. @ 8 in) broad ; they are white when young but turn pink with age . The stipe is 8 ? 22 @. @ 5 cm (3 @. @ 1 ? 8 @. @ 9 in) long and 0 @. @ 7 ? 1 @. @ 5 cm (0 @. @ 3 ? 0 @. @ 6 in) wide , cylindrical , broadening towards the base ; the surface is white , smooth or slightly pruinose (covered with fine white powdery granules) . The volva is 2 ? 3 cm (0 @. @ 8 ? 1 @. @ 2 in) high , sacciform (pouch @-@ like) , white and has a smooth surface . The flesh is white on stipe and cap and it does not change when bruised or exposed to air . Smell and taste vary from indistinct to raphanoid (radish @-@ like) or similar to raw peeled potatoes . The spore print is pinkish @-@ brown .

The basidiospores are ellipsoid and measure 12 ? 16 by 8 ? 9 @. @ 5 µm . Basidia are 20 ? 35 by 7 ? 15 µm and usually four @-@ spored , but sometimes two @-@ spored basidia can occur . Pleurocystidia are 60 ? 90 by 20 ? 50 µm with variable morphology : club @-@ shaped , fusiform , ovoid , and sometimes with a small apical papilla . Cheilocystidia are 55 ? 100 by 15 ? 40 µm with similar morphology to the pleurocystidia ; they completely cover the gill edge . The cap cuticle (pileipellis) is an ixocutis (parallel hyphae wide embedded in a gelatinous matrix) . Stipitipellis is a cutis (parallel hyphae not embedded in a gelatinous matrix) . Caulocystidia are sometimes present , measuring 70 ? 180 by 10 ? 25 µm ; they are mostly cylindrical . Clamp connections are absent from the hyphae .

= = = Edibility = = =

Volvopluteus gloiocephalus is edible , although it is cited as mediocre or of poor quality . It was once sold in markets in Perth , Australia . Mature fruit bodies , collected in sufficient quantity , can be used to prepare soup , or added to dishes where wild mushrooms are used , such as stews and casseroles . The mushrooms are best used fresh as they do not preserve well . Young specimens of *Volvopluteus gloiocephalus* have white gills so it is possible to mistake them for an *Amanita* and vice versa . In the United States , there have been several cases of Asian immigrants collecting and eating death caps (*Amanita phalloides*) , under the mistaken assumption that they were *Volvariella* . A Greek study determined the nutritional composition of fruit bodies : protein 1 @. @ 49 g / 100 g fresh weight (fw) , 18 @. @ 36 g / 100 g dry weight (dw) ; fat 0 @. @ 54 g / 100 g fw , 6 @. @ 65 g / 100g dw ; carbohydrates 5 @. @ 33 g / 100g fw , 65 @. @ 64 g / 100 g dw .

= = = Similar species = = =

Molecular analyses of the internal transcribed spacer region clearly separate the four species currently recognized in *Volvopluteus* , but morphological identification can be more difficult due to the sometimes overlapping morphological variation among the species . Size of the fruit bodies , color of the cap , spore size , presence or absence of cystidia and morphology of the cystidia are the most important characters for morphological species delimitation in the genus . *V. earlei* has smaller fruit bodies (cap less than 5 cm (2 in) in diameter) , has no pleurocystidia (usually) , and the cheilocystidia usually have a very long apical excrescence (outgrowth) . In *V. asiaticus* the majority of the pleurocystidia have an apical excrescence up to 10 ? 15 µm long and the cheilocystidia are predominantly lageniform (flask @-@ shaped) . *V. michiganensis* has smaller basidiospores , on average less than 12 @. @ 5 µm long . *Volvariella acystidiata* , known from central Africa (Zaire)

and Italy , somewhat resembles *Volvopluteus gloiocephalus* . It can be distinguished from the latter by its smaller fruit bodies , with caps up to 3 cm (1 @. @ 2 in) in diameter , and , microscopically , by the complete absence of cheilo- and pleurocystidia .

= = Ecology , habitat , and distribution = =

Volvopluteus gloiocephalus is a saprotrophic mushroom that grows on the ground in gardens , grassy fields , both in and outside forest areas , and on accumulations of vegetable matter like compost or woodchips piles . It has also been reported fruiting in greenhouses . It usually fruits in groups of several basidiocarps but it can also be found growing solitary . In China it grows in bamboo thickets . It is not unusual for a season of " spectacular " fruiting to be followed by several years with no appearance of the mushroom .

This species has been reported from all continents except Antarctica , usually under names such as *Volvariella gloiocephala* or *Volvariella speciosa* . Molecular data have so far corroborated its occurrence in Europe and North America but records from other continents remain to be confirmed .