

Cells with large central vacuole, which is confined with tonoplast and filled with the cell sap and can contain crystal inclusions. These cells are typical for ... {

- =plants
 - ~animals
 - ~cyanobacteriae
 - ~fungus
 - ~algae
- }

Organelles of cytoplasm complex do not include ... {

- = nucleus
 - ~Golgi complex
 - ~endoplasmic reticulum
 - ~mitochondria
 - ~ribosomes
- }

Plant cell organelles that realize a protective function are ... {

- =lysosomes
 - ~ribosomes
 - ~centrosomes
 - ~microtubules
 - ~mitochondria
- }

... participate in the formation of vacuoles. {

- =bubbles EPR, dictyosomes
 - ~nucleus
 - ~lysosomes
 - ~ribosomes
 - ~mitochondria
- }

The cell sap containers in the plant cell are bordered by tonoplast from the cytoplasm, they accumulate water, reserve nutrients and ergastic substances; they also provide the osmolality and cell turgor. They are ... {

- =vacuoles
 - ~nucleus
 - ~mitochondria
 - ~ribosomes
 - ~chloroplasts
- }

The membrane, which is adjacent to the vacuole, is called ... {

- =tonoplast

- ~plasmalemma
- ~protoplast
- ~mezoplasma
- ~karyoplasma

}

The above-membrane component of plant cells includes... {

- =cell wall
- ~microfilaments
- ~plazmalemma
- ~microtubules
- ~glycocalyx

}

A cellulose monomer is ... {

- =glucose
- ~galactose
- ~ribose
- ~sucrose
- ~fructose

}

It has been found that soluble polysaccharide is part of the cyanobacteria and fungi cells. When colored with Lugol's solution, it becomes brown and it is cleaved to glucose phosphate by the enzyme phosphorylase. It is ... {

- =glycogen
- ~starch
- ~cellulose
- ~inulin
- ~fructose

}

Fungus cells, unlike plant cells, accumulate ... {

- =glycogen
- ~starch
- ~aleurone
- ~inulin
- ~chitin

}

Cytoplasmic filaments, which go through pores of the cell wall, provide interrelation of protoplasts and metabolism between them. They are ... {

- =plasmodesmas
- ~microtubules
- ~fibrils

~microfilaments
~cytoskeleton
}

Cell walls of these plants consist of chitin. It is typical for ... {
=fungi
~arboreal plants
~gymnospermous plants
~higher spore plants
~algae
}

To plant cell organelles that provide concentration, dehydration and induration of substances of endo-and exogenic nature belong the following ones: {
=Golgi complexes
~lysosomes
~ribosomes
~plastids
~endoplasmic reticulum
}

While study of a plant cell under microscope it is indicated structures having the form of heap of depressed membrane cisterns and bubbles. This is a ... {
=Golgi apparatus
~endoplasmic reticulum
~plastids
~mitochondrion
~calcium microbody
}

During examination of a plant cell under the electron microscope some structures in form of a stack of flattened membrane cisterns and vesicles were found. What organelles are these? {
=Golgi apparatus
~Endoplasmic reticulum
~Plastids
~Mitochondrions
~Microbodies
}

The cytoplasm of a plant cell is isolated from the cell wall by ... {
=plasmolemma
~tonoplast (vacuolar membrane)
~hyaloplasma

- ~nucleus envelope
- ~endoplasmic reticulum
- }

It is known that bluish purple petal coloration of a plant under examination varies up to pink or light pink according to pH of cellular fluid of vacuole. It is caused by presence of: {
=anthocyanins
~carotins
~phycobilins
~chlorophylls
~xanthophylls
}

It is known that depending on pH of cellular fluid petal coloration can vary from blue-and-violet to pink and light pink. This is caused by presence of: {
=anthocyanins
~xanthophylls
~chlorophylls
~carotins
~phycobilins
}

Green pigments of the plants are contained in ... {
=chlorophylls
~amyloplasts
~chromoplasts
~proteoplasts
~mitochondria
}

A plant cell differs from the animal one by presence of... {
=plastids
~mitochondria
~Golgi complex
~lysosomes
~nucleus
}

Plastids are covered by ... {
=double membranes
~one membrane
~without membrane
~numerous membranes
~three membranes

}

Semi-autonomous organelles of plant cells, which are formed from proplastids, and able to divide, grow and move, like mitochondria, are called ... {

=plastids

~Golgi vesicles

~chloroplasts

~endoplasmic reticulum

~ribosomes

}

While microscopical study of the plant cell it is established that a well-developed system of the tylakoides is typical for ... {

=inner membrane of the chloroplast

~outer membrane of the chloroplast

~inner membrane of the mitochondria

~inner membrane of the mitochondria

~outer membrane of the proplastid

}

Primary starch is formed in ... {

=chloroplasts

~leucoplasts

~chromoplasts

~leucoplasts and chloroplasts

~mitochondria

}

Secondary reserve starch is formed in the ... {

=amyloplasts

~chloroplasts

~chromoplasts

~oleoplasts

~proteoplasts

}

Carotin, phyllixanthin and licopin are pigments, which colour petals, fruits and leaves of plants and are accumulated in ... {

=chromoplasts

~amyloplasts

~chloroplasts

~oleoplasts

~proteoplasts

}

Plastids contain pigments which act as antioxidants and are provitamins A. What are these pigments? {

=carotinoids

~only chlorophylls

~anthochlor

~anthocyanins

}

While in photosynthesis it is forming a short-lived starch in chloroplasts. It is hydrolyzing quickly up to glucose. Such a starch is called ... {

=primary

~secondary

~transient

~reserve

~storage

}

Microscopic examination of a potato tuber showed some cell inclusions that become blue- violet as affected by Lugol's iodine solution. These inclusions are: {

=starch granules

~aleurone grains

~inulin crystals

~drops of fatty oil

~calcium oxalate crystals

}

In the powder of the rhizomes prevail cells with small granular structures, which have concentric foliation and rima in the center. Lugol's solution colour them in dark blue colour, so these structures are ... {

=simple starch grains

~complex starch grains

~half-complex starch grains

~simple aleuronic grains

~complex aleuronic grains

}

In the cytoplasm of the plant cells we find storage products. These are grainy structures with numerous centres of forming and alternating dark and light layers around them. Consequently, these are ... {

=complex starch grains

~complex aleuronic grains

~simple starch grains

~half-complex starch grains

~simple aleuronic grains

}

Starch is discovered by the action Lugol's solution (dark and blue coloration) on the root end. This starch is ... {

=secondary, reserve

~primary, anabolic

~secondary, transitional

~primary, preserve

~secondary, reserve

}

Thin cuts of *Inula helenium* roots are put into ethyl alcohol 96%. While microscopical analysis of the cuts we found out spherocrystals. This indicates the presence of... {

=inulin

~starch

~protein

~mucus

~fat

}

Among the groups of biologically active substances listed below there is a compound of reserve nutrients of cell sap. It is ... {

=inulin

~coumarins

~saponins

~flavonoids

~terpenoids

}

According to its chemical nature and significance, inulin is a ... {

=carbohydrate

~lipoid

~storage protein

~mineral substance

~excretory product

}

While microscopical studied of the seeds we find aleuronic grains, which are complex, because they consist of ... {

=crystalloid, amorphous protein, globoid

~nucleus, vacuoles, globoid

~globoid, vacuoles, crystalloid

~vacuoles, amorphous protein, globoid

~nucleus, amorphous protein, crystalloid

}

Under the action of concentrated nitric acid and heating the proteins is dyed in ...

{
=bright yellow
~red
~orange
~violet
~blue
}

Solid inclusions containing proteins were found in cells of castor seeds during their microscopic examination. They are ... {

=aleuronic grains
~starch grains
~cystolith
~styloids
~raphides
}

Aleuronic grains accumulate... {

=proteins
~carbohydrate
~mineral substances
~lipids
~excretory substances
}

Inclusions of a plant cell that contain crystalloids, globoids or crystals of calcium oxalate, are ... {

=complex aleuronic grains
~half-complex starch grains
~inulin
~solid fats
~complex starch grains
}

Histochemical test for fixed oils with sudan III results in the following stain colour:

{
=pink and orange
~blue and violet
~lemon-yellow
~raspberry-red
~ black and purple
}

The influence on the slide of sunflower (*Helianthus annuus*) seed by the solution of Sudan III, pink-orange coloration appeared, it is the evidence of the presence of the ... in the seed. {

- =fatty oil
 - ~protein
 - ~starch
 - ~inulin
 - ~cellulose
- }

... belongs to reserve liquid inclusions of a plant cell. {

- =fatty oil
 - ~primary starch
 - ~secondary starch
 - ~transient starch
 - ~aleuronic grains
- }

Organic compounds of plant cell of non-carbohydrate nature include ... {

- =waxes
 - ~pectin substances
 - ~inulin
 - ~fiber
 - ~mucus
- }

While microscopical study of leaf we determined the presence of the crystalline facing which accompanies ... {

- =the central vein
 - ~the columnar mesophyll
 - ~the spongy mesophyll
 - ~the edge of leaf blade
 - ~supporting idioblasts
- }

Druses are ... {

- =growths of pyramidal crystals
 - ~aggregate of single crystals
 - ~aggregate of crystal sand
 - ~aggregate of acicular crystals
 - ~aggregate of cystoliths
- }

With the help of microscopic and histochemical methods in the cells of solomon's seal (*Polygonatum officinalis*) rhizome one can determined raphids, which are ... {
=needle-shaped crystals of calcium oxalate
~star-shaped crystals of calcium oxalate
~single crystals of calcium oxalate
~grape-shaped crystals of calcium carbonate
~needle-shaped crystals of calcium carbonate
}

On superficial preparation of lily-of-the-valley (*Convallaria majalis*) leaf bunches of needle-shaped crystals are distinguishable in cells-idioblasts of the mesophyll. These are ... {
=raphides
~cells of cystoliths
~druses
~singles crystals
~stiloids
}

According to the morphological features the herbaceous plant is lily-of-the-valley (*Convallaria majalis*) to confirm this additionally it was made a microscopic analysis of a leaf and searching of crystalline inclusions of... {
=raphids
~singl crystals
~druse
~styloid
~crystal sand
}

Monocot plants have needle-shaped crystals of oxalate calcium which are collected in packs. These are ... {
=raphids
~druse
~styloids
~twin crystals
~crystal sand
}

Single elongated prismatic crystals with pointed ends were found in leaf cells of a monocot plant. They are ... {
=styloids
~raphids
~druse
~crystal sand
~cystolith
}

Investigated plant is determined as *Urtica dioica* on the base of morphological diagnostic features. It is verified while the microscopical study by the present of

the ... {
=cystolith
~druses
~ raphids
~styloids
~single crystals
}

By microscopic study of fig leaf (*Ficus*) in some epidermal cells the inner outgrowth of the cell wall was observed with accumulation of crystals that under the action of hydrochloric acid are soluble with evolving of carbonic gas. This structure is ... {

=cystolith
~single crystal
~druse
~styloid
~raphide
}

Examination of the leaf epidermis revealed cells containing cystoliths. Presence of cystoliths is typical for plants of the following family: {

= Urticaceae
~ Brassicaceae
~ Fabaceae
~ Solanaceae
~ Papaveraceae
}

Among the products of life activity of the protoplast we find aciniform concretions of the calcium carbonate, i.e. ... {

= cystolith
~ single crystals
~ raphids
~ styloids
~ druses
}

While microscopical analysis of the beech wood we discover crystals, which under the action of hydrochloric acid dissolve with gas isolation. So these are crystals of

... {
= calcium carbonate
~ calcium oxalate

- ~ calcium potassium
- ~ suberin
- ~ inulin
- }

Under the action of chlorine-zinc-iodine the thickened, colourless cell walls of collenchymas turned violet. Thus, cell walls are ... {

- = cellulose
- ~ lignified
- ~ cutinized
- ~ mineralized
- ~ suberinized
- }

The cell walls of the inner epidermis of the pepper pericarp are penetrated with pits. In adjacent cells short cylindrical pit holes coincide as for their diameter and direction. These pits are ... {

- = straight
- ~ oblique
- ~ chinked
- ~ branched
- ~ bordered
- }

Pericarp of nuts, stone of cherry, wood of stems are solid, because they accumulated ... in their cell wall. {

- =lignin
- ~ silica
- ~ chitin
- ~ suberin
- ~ calcium carbonate
- }

Processing of the plant microslide with phloroglucinol with concentrated hydrochloric acid resulted in crimson-red colouring of cell walls, which indicates the presence of ... {

- =lignin
- ~pectin
- ~ cellulose
- ~ hemicellulose
- ~ suberin
- }

Under the action of aniline sulphate reagent cell walls are coloured yellow, thus the walls are ... {

- = lignified
- ~ suberized
- ~ cutinized
- ~ sliming
- ~ mineralized
- }

Suberization of the cell walls involves accumulation of ... {

- =suberin
- ~ lignin
- ~ mucus
- ~ calcium oxalate
- ~ cutin
- }

The cell walls were coloured orange as a result of processing of the plant microslide with Sudan III solution, which indicates the presence of ... {

- = suberin
- ~ cellulose
- ~ pectin
- ~ lignin
- ~ hemicellulose
- }

While microscopical analysis of the leaves we discovered thick layer of the lipid substance. This is ... {

- =cutin
- ~ suberin
- ~ lignin
- ~ mucus
- ~ calcium carbonate
- }

Seeds of flax (*Linum usitatissimum*) are used as coating drug, due to the capability of cell walls to ... {

- =sliming
- ~ suberization
- ~ suberization
- ~ lignification
- ~ mineralization
- }

As a result of the action of methylene blue solution on the cut of marshmallow root, secretory cells are colored blue. It indicates to the presence of ... {

- = mucus

- ~glycogen
- ~ starch
- ~ inulin
- ~ lipids
- }

Destruction of intercellular substens and cell breakway in overripe fleshy fruits is a result of ... {

- = maceration
- ~ gummosis
- ~mineralizathion
- ~ lignificathion
- ~ sliming
- }

A yellow pigment is present in the cell sap of the citrus pericarp. It gives the color to the fruit and is involved in redox reactions. It is ... {

- = anthochlor
- ~ anthocyanin
- ~ carotin
- ~ xanthophyll
- ~ fikobellin
- }

...belong to excretory inclusions of plant cells. {

- =essential oils
- ~ primary starch
- ~ secondary starch
- ~ transitional starch
- ~ aleuronic grains
- }

Essential oil of plant cell it`s ... {

- = a mixture of volatile aromatic substances
- ~ crystallized proteins
- ~ starch with inulin
- ~ a mixture of resins and balsams
- ~ mineral inclusions
- }