

Welcome students I am Mrs. Suchana Amonkar from Dhempe College of Arts and Science. In this session you are going to learn about unit 2 phylum porifera the name of the module is classification up to classes, module number eight. The outline includes classification of phylum porifera up to classes. At the end of the session the students will be able to list out the specific characters of various classes of phylum porifera and site examples for respective classes. The classification of poriferans is based mainly on the types of skeleton found in them. When we are referring to the types of skeleton found in them, we must remember here that when we can see that the skeleton of sponges is made up of what is called as spicules or of spongin fibers. When we refer to the spicules they can be of two types that is calcareous spicules and siliceous spicules. In fact these spicules are of crystalline nature and you can see that there is presence of what is called as a core which is made up of an organic substance around which there is deposition of an inorganic material which can be either calcium carbonate or a hydrated silica. So if the spicule is comprised of calcium carbonate, we refer it to as a calcareous spicule and if there is presence of a siliceous material we refer it to as a siliceous spicule and the third type of skeleton is the one which is comprised of spongin fibers. So spongin fibers are entirely different compared to that of the spicules. Before moving on to the classification of phylum porifera we must understand here that these spicules are variously named depending upon the number of axes and the rays which emerge from them so we will be coming across terms like monaxon, tetraxon, tri-radiate and so on. This is in reference to particularly the number of axes and the number of rays, so if it is one axis we refer to the spicule as monaxon and if it is showing the presence of three axis we call it as a triaxon but if the number of rays are about six rays we call it as a hexagonal spicules so the axis may be three in number but the number of rays which emerge from them can be six and that is the time we refer it to as a hexagonal specule so depending upon the presence of the skeleton the classification of poriferans is done so there are three classes of phylum porifera depending exclusively on the type of skeleton that is found in them. So we have class one which is referred to as calcarea or calcispongiae, class two referred to as hexactinellida or hyalospongiae and class three which is referred to as demospongiae. Class 1 calcarea or calcispongiae. So as mentioned when we are referring to class calcarea, it is the one which is made up of exclusively the calcareous spicules, the spicules are of monaxon or tetraxon type. So when we are referring to monaxon we are referring to a spicule which is having just one single axis whereas when we are referring to a tetraxon type we find that there is presence of four axis but in case of class calcarea what should be noted is that in case of a tetraxon spicule, most of the time one of the axis is lost giving rise to what is called as a tri-radiate spicules. As you can see in the diagram, most of the spicules which are seen in case of class calcarea are tri-radiate, the body shape is cylindrical or vase-like. So in case of class calcarea most of the sponges exhibit this particular body shape that is either cylindrical or a vase-like shape and all the three types of canal systems are encountered in class calcarea that is asconoid, syconoid or the leuconoid type of canal system and that too depending upon the complexity of the body wall. These sponges are exclusively marine they are found in shallow waters so though they are found in marine waters they are restricted to only shallow waters and being restricted to shallow waters we find that these sponges are having a small size so the size is less than 15 centimeters the examples of this particular class include Leucosolenia and Sycon. Class 2 hexactinellida or hyalospongiae. In case of class hexactinellida the skeleton is of siliceous spicules. So when we are referring to siliceous picus we are talking about a spicule in which there is deposition of hydrated silica so they're called as siliceous spicules. The spicules are triaxon with six rays so we have observed that in case of a certain type of a spicule if there is one axis we call it as a monaxon and if there are three axis we call it as a triaxon spicule but in case of this particular spicule you can see the emergence of six rays though the axis are three. So therefore we find that they are referred to as the hexactinal spicules because of the presence of the six rays. They are generally called as glass sponges they have a very glassy appearance in fact some of the spicules

merge together and give rise to a lattice-like skeleton and that gives the appearance of a glass sponge. The body of the sponges belonging to class hexactinellida exhibit a funnel-shaped body, they are the deep-sea forms unlike the previous class. In this particular class the sponges are seen in deep sea, they are the large sized sponges and they grow up to one meter in size the canal system may be syconoid or leuconoid. We never come across an asconoid type of canal system in case of class hexactinellida but we have only the two types that are either syconoid or the leuconoid type. The examples of this particular class include Hyalonema and Euplectella. In this picture you can see the the picture of a hyalonema which is kept in the laboratory in which you can see the presence of the funnel shaped body and you can see the presence of root tufts which are at the bottom and which get attached to a substratum so the picture depicts one which is kept in a glass jar and the other one which is found in the natural waters attached to the sea bed to a particular substratum. In case of euplectella you can see the appearance of a lattice-like skeleton and you can also see the presence of a sieve-like plate on the osculum which is the opening which is present on top. Class 3 demospongiae. In class demospongiae the skeleton is comprised of spongin fibers or spongin fibers with siliceous spicules. So the skeleton can be exclusively made up of spongin fibers or the spongin fibers may be intertwined with siliceous spicules. The spicules are either monaxon or the tetraxon type. So we never come across the tri-radiate type of a spicule in case of class demospongiae but they are only of the monaxon or the tetraxon type. The body shape is irregular. Here we can see the diversity of the demospongiae spicules which are of various types. The canal system in this particular class is of leuconoid type only. So this particular class includes a canal system which is only of the leuconoid type. So you do not come across the asconoid and the syconoid type. Most of these sponges are marine but we do come across a few fresh water forms so when we're talking about the few fresh water forms. These are the ones which belong to the family Spongillidae and it includes the largest number of sponge species. The example of which is spongilla and this is a picture of spongilla which is a freshwater sponge. These are my references for the session. Thank you