Introduction
Proteoglycans are glycoproteins in which the carbohydrate moiety is a glycos-amino-glycan (keratin sulphate, hyaluronic acid, chondroitin sulphate, heparin sulphate) covalently linked to a protein core. These macromolecules are quite large, have high buoyant densities, and are highly polyanionic. They have been isolated from many kinds of cartilage smooth muscle, bone, retina, corneal stroma and other types of body tissue and fluids.

After the tissue is homogenized or the body fluids are solubilized, extraction is usually performed with guanidine-hydrochloride in the presence of protease inhibitors. The most common method of purification is by buoyant density centrifugation usually with cesium chloride (CsCl).

Procedure
1. Place 6 g CsCl into 8 mL of glycoprotein solution to yield 10 mL CsCl/glycoprotein solution per tube (Final sample density = 1.4 g/mL).
2. Load the solution into a polyallomer centrifuge tube (ex: PN 010-1262) and place into Thermo Scientific Fiberlite F65L-6x13.5 ultracentrifuge carbon fiber rotor (Figure 1).
3. Centrifuge solution at 65,000 rpm (324,143 xg) in a Thermo Scientific Sorvall Ultracentrifuge with rapid acceleration and slow deceleration at 20° C for 12-14 hours.

Conclusion
The glycoproteins will be seen as a faint band approximately 65% from the top of the tube. Another band or zone containing other proteins will be seen approximately 45% from the top of the tube. The side of the tube can be punctured at the site where the zones were visible for glycoprotein collection. The glycoproteins can be collected by aspiration with the hypodermic needle and syringe as shown in Figure 2.

References