

## Isinglass for Consolidation

Time: approximately 2-3 days

The following guidelines provide approximate weight of the dried sturgeon bladder membrane and volume of water to make a large quantity of isinglass (1 L) that will ultimately be cast into disks, preserved and stored for future use; one can certainly adjust the w/v according to their needs. We normally start the procedure with 30 grams of dried sturgeon bladder, and end up with one liter or 1000 ml of extracted collagen liquor to be cast. Practically, we have found it easier to divide the operation into three portions, especially for working ease of the double boiler system as well as beaker sizes. Additionally, when it is time to cast the liquid into the disks, three people help to distribute all the liquid onto the silicon release Mylar sheets, making the whole process faster.

### YIELD

Total volume: 1 L of an approximately 3% w/v solution that will be dried into individual disks that can be rehydrated as needed

### INGREDIENTS

30g Source of dried sturgeon bladders: Talas

Deionized water

### DIRECTIONS

Break the 30g of dried bladder into pieces no bigger than 3-5 grams each and place ~10g of the dried bladder pieces into three separate beakers, cover with just enough de-ionized water to top off the bladder. Cover the beaker and let it soak overnight.

Next, pour off and discard the soak water and gently gather together (massage) the swollen bladder mass into an even cluster, add 333.5 ml of deionized water, this will cover the bladder enough to surround and allow the pieces to float. Put this beaker into a larger container of water and make a bain-marie or double boiler.

Heat the double boiler on a low temperature, just enough to release the collagen extract from the fiber of the bladder generally between 30-45°C. Do not exceed 60°C/140°F as this will denature the collagen. Be extremely mindful of the heat, there should be no steam or bubbles released as this will in part denature the protein. The fiber of the bladder will shrink as it releases the collagen. To keep the water from evaporating off, cover the beaker with a watch glass. After several hours, the pure collagen will be extracted from the fibrous membrane of the bladder.

Sieve or decant this liquid through cheesecloth (doubled or tripled) or silk into a clean beaker.

Find a safe and undisturbed area to deposit the liquid into disks; you will need a fair amount of space in a dust-free environment with enough air to flow and circulate around them during drying. Place several medium sized sheets of silicon release Mylar on a flat surface where you intend to carry out dispensing of the disks. Disposable pipettes or eye droppers have been found to be the best tools for distributing the liquid.

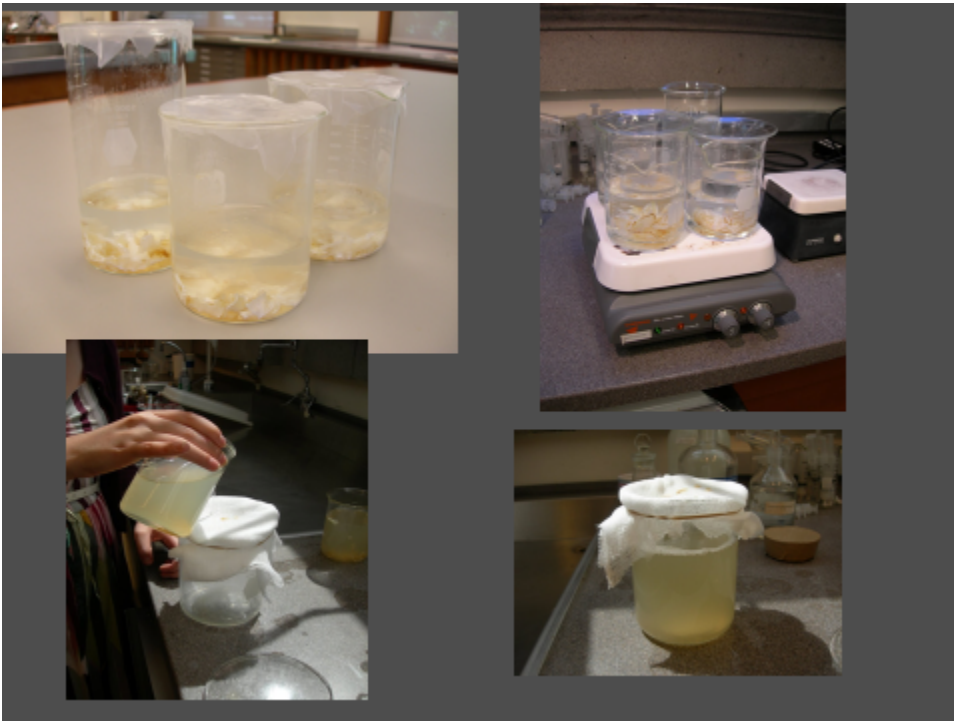
Deposit and form a circular puddle of the liquid into approximately one and a half inches in diameter onto the silicon release Mylar, spaced out with enough room in between so they don't run together. Finding solutions to protect the disks while they dry can be a little tricky as you do not want to disturb the liquid as it dries. We make tents of blotters, folded in half so that they span the width of the Mylar and taped or weighted in place onto the counters to protect the disks from airborne contaminants as they dry. Once dry, the dehydrated disks can be peeled off the Mylar and kept stored in a glass jar.

A 1-1.5% solution is generally used for consolidation purposes.

Because of the ever increasing difficulty in securing Russian sturgeon bladder, only small quantities are made as needed.

Example: make 10 ml of a 1% isinglass solution for consolidation:

- Weigh 0.1g of isinglass in dry disk form (folded or torn into small pieces)
- Place these pieces into a small beaker
- Add 10 ml deionized water to the isinglass
- Create a bain-marie or water bath
- Heat on a warm hot plate until disks are dissolved into solution
- If possible, keep a watch glass on the beaker to maintain concentration
- Never mix ethanol into the isinglass as this will denature or dismantle the structure



Soaking, cooking, straining



Depositing the liquid onto silicon release Mylar, drying disks



Dried swim bladder, dried and purified disks, and in beaker within a bain-marie