Preparation of all-trans retinal food

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1 Retinal Food Preparation

Protocol modified from:

- Optogenetics teaching protocol
- Molasses food recipe

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2 Preparation of All-Trans Retinal (ATR)

- Suspend ATR in ethanol to make a 250 mM stock solution.
- Prepare fly food with a 1:200 dilution ⟶ final concentration 0.2 mM.
- ATR does not fully dissolve, resuspend as much as possible.
- Store 1 mL aliquots at −20°C (stable indefinitely).

> ⚠ Light Sensitivity of ATR
>
> All-trans retinal is highly light sensitive. Avoid exposure to strong white light and keep solutions covered with foil whenever possible.

3 Fly Media Options

3.1 Option 1: Pre-made fly media

- Purchase fly media online Archon Scientific
- Supplement with ATR as needed
- **Clark lab:**
  - Drip ATR onto food surface
- **Lacin lab:**
  - Scrape food from ~40 vials (~5 mL each)
  - Microwave to melt and cool
  - Add 2 vials of 250 mM ATR to 40 vials

3.2 Option 2: Prepare your own fly media

Consumables and Equipment:

- Please refer to the vendors listed by the Bloomington Drosophila Stock Center for supplies and equipment. Vendors Fly supplies.
  - Genesee Scientific is amongst the most cometitvely priced vendors for fly vials, plugs and food.
- A simple kettle on heat plate or turkey roaster oven (~$75.00) are economic solutions for cookign the fly food.
  - Turkey Roaster Oven

Recommended mix:

- Nutri-Fly™ Molasses formulation Genesee Scientific] () (Costs < $3.00 per liter)
  - Nutru-Fly™
- Or use the recipe below:

3.2.0.1 Yield

- Makes ~**1.2 L**
- Enough for ~**100 vials**

3.2.0.2 Ingredients

Ingredient	Amount
Water	1041.5 mL
Yeast Red Star Active Dry)	26.4 g
Yellow cornmeal	40.8 g
Agar	9.6 g
Molasses	64.83 mL
Tegosept (20% in ethanol)	12 mL
Propionic acid	6.0 mL
Extra water	141 mL

Ingerient vendor: We recommend Genessee Scientific #### Instructions

1. Add ¼ of the water and stir with:
   - agar
   - yeast
   - cornmeal

- molasses (≥10 minutes)

2. Add remaining water and boil for 20 minutes, stirring to dissolve lumps
3. Add remaining cold water to cool faster
4. When mixture is < 80°C, add:
   - acid
   - tegosept
5. Add 6 mL of 250 mM ATR

> ⚠ Protect from Light During Preparation
>
> After adding ATR, minimize light exposure. Work quickly and keep containers covered with foil when possible.

6. Dispense ~5 mL per vial
7. Dry overnight:
   - cover with cheesecloth
   - seal with Press'n Seal
   - cover tray with foil (light protection)
8. Storage:Best used within 4–6 weeks

> ✓ Storage Tip
>
> Keep prepared vials covered with aluminum foil and store in low-light conditions to preserve ATR activity.