



## Breast Cancer Universal Bioink™ Mixing Protocol with Cells

### Protocol Outline

This protocol outlines the mixing and preparation of VoxCell's Universal Bioink™ with the use of cells. To maintain the sterility of the product, work under sterile conditions. If working without cells, see the *Universal Bioink™ Mixing Protocol* at [voxcellbio.com](http://voxcellbio.com). For best results, protect components from light while mixing, preparing, and storing VoxCell's Universal Bioink™.

### Materials

Materials included in your VoxCell Universal Bioink™ Kit:

- **VoxCell Photoinitiator: LAP** (52.5 mg, non-sterile)
- **VoxCell Breast Cancer Universal Bioink™** (1225 mg, sterile)

Other materials required:

- 9.5 mL of buffer or media of choice (PBS, cell culture medium, etc.) to prepare Universal Bioink™
- 1 mL of buffer or media of choice to prepare cell suspension
- Magnetic stirring hotplate
- Magnetic stir bars (2)
- 0.22 µm syringe filter
- Syringes
- Needle
- Pipette
- Pipette tips

### Universal Bioink™ Preparation

1. Remove the **Photoinitiator: LAP** and **Universal Bioink™** from cold storage and allow the materials to reach room temperature.
2. Add 9.5 mL of **buffer or media** to the amber vial containing the **Photoinitiator: LAP**.
3. Place the amber vial on a **stirring hotplate** with a **magnetic stir bar** and stir vigorously at room temperature until the **Photoinitiator: LAP** is fully dissolved. This will typically take 20-30 minutes.
4. Take up the **Photoinitiator: LAP** solution using a **syringe** and **needle** and filter into the amber jar containing the **Universal Bioink™** using a **0.22 µm sterile syringe filter**. Please note: the typical volume of LAP solution lost to the syringe filter during this filtering step has been accounted for in this protocol.
5. Place the amber jar on a **stirring hotplate** with a **magnetic stir bar** and heat the mixture to 50 °C while gently stirring (100-350 rpm). As the **Universal Bioink™** components begin to dissolve and



become fully submerged in the solution, we recommend increasing the stirring rate to 1500 rpm to aid dissolution. This will typically take approximately 60 minutes.

6. Allow the **Universal Bioink™** to cool to 37 °C.
7. Add 1 mL of a cell suspension to the **Universal Bioink™** and gently mix by pipetting to ensure homogeneity. Tip: when mixing cells with highly viscous bioinks, trim the end of the pipette tip to reduce shear forces experienced by the cells.

### Universal Bioink™ Storage and Reuse

1. Store any unused bioink in a sealed amber container at 2 to 8 °C.
2. To reuse, heat the **Universal Bioink™** to 37 °C using a **stirring hotplate** with a **magnetic stir bar** for 15 minutes or until any precipitated components have been fully dissolved.