AIM Biotech
3D Cell Culture Chip

Product Information Sheet
10/07/16 Rev. 1.1

AIM Biotech 3D Cell Culture Chip is a sterile, single-use, optically clear 3D cell culture platform that features a 3D gel region flanked by 2 media channels. Cells can be cultured in any channel.

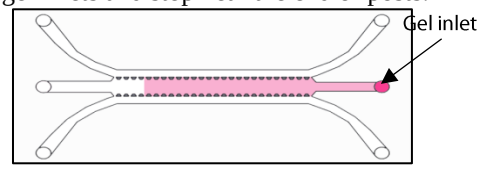
PROTOCOL OVERVIEW

Collagen Gel Preparation **TIMING 10 min**

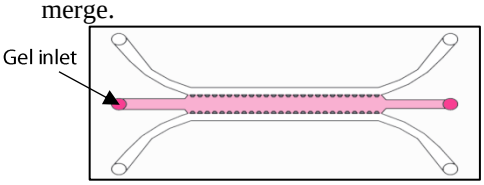
1. Perform the following steps in a laminar flow hood.
2. Mix 10X PBS, collagen I, 0.5 M NaOH solution and deionized water in a microcentrifuge tube thoroughly on ice, according to the pre-determined collagen gel preparation recipe. You may use any hydrogel relevant to your specific application.

Collagen Gel Filling **TIMING 40 min**

3. Assemble AIM chip into AIM holder.
4. Fill **10 µl** of collagen solution from either one of the gel inlets and stop near the end of posts.



5. Fill from the other gel inlet until the gel fronts merge.



6. Place the gel-filled chips (on AIM holder or in humidified chambers) into a 37 °C incubator and incubate for 30 min to allow the gel to polymerize completely.

! Critical *Chips with unpolymerized gel must be handled with care. Excessive agitation or impact may cause unpolymerized gel to leak out of the gel channel.*

Media Channel Hydration & Coating
TIMING 70 min

7. After incubation, insert pipette tip into the media inlet at the center of the port until the tip fits and then gently inject 15 µl of coating solution (e.g. 50 µg/ml fibronectin solution diluted in culture media or 1X PBS) into the channel that requires coating. Repeat this step for the opposite channel. Use culture medium instead if coating is not required.

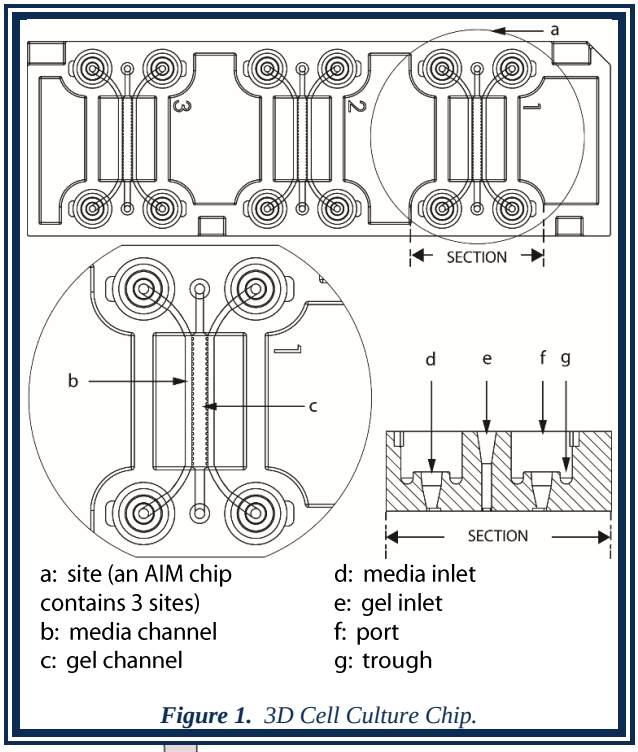
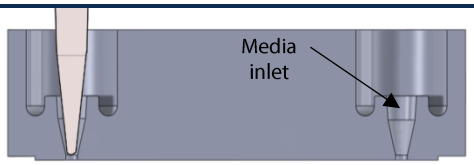
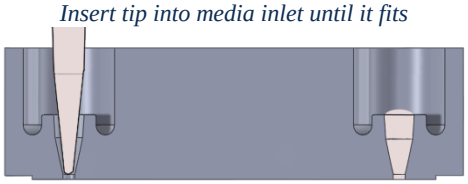


Figure 1. *3D Cell Culture Chip.*



Insert tip into media inlet until it fits



Inject coating solution or culture medium until it comes out from the opposite connecting media inlet

8. Incubate for 1 h or optimized time for other coating solutions in a 37 °C incubator.
9. Add 70 µl of medium into one port and then add 50 µl to the opposite port of media channels to flush out coating solution (If complete removal of coating solution is needed, wash the media channels with culture media by repeating this step twice).

Cell Seeding **TIMING 40 min**

10. Prepare cell suspensions with densities ranging from 0.5 to 3 M cells/ml, depending on the application.

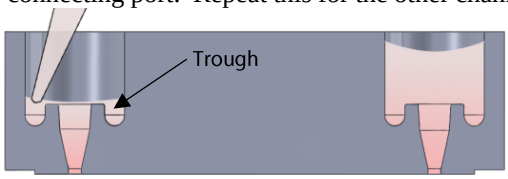
11. If cells need to be seeded on the gel interface, add additional 20 µl of medium into one of the ports at the media channel that is to be seeded with cells. Otherwise, proceed to step 12.
12. Use a micropipette to withdraw 10 µl cell suspension. Direct the tip near the media inlet and inject the cell suspension. Wait for 2 min and then repeat the same procedure at the opposite connecting media inlet.

Place the pipette tip near media inlets while injecting the cell suspension.

13. Visual inspection under microscope is recommended. If the cell distribution is not optimal for your application, adjust the concentration of the cell suspension and repeat the cell seeding step.
14. If another cell type B is to be seeded in the opposite media channel, incubate the chip for at least 30 min after seeding cell type A to allow proper cell attachment on substrates before repeating the cell seeding steps for cell type B.
15. Keep the chips in an incubator.

Media Changing **TIMING 10 min**

16. Change media 2 to 4 h after cell seeding (or longer for less adhesive cell type) when the cells have adhered to the substrates.
17. Remove media from all 4 ports by carefully aspirating media out from the troughs. To change media in a media channel, add 70 µl of media into one port and then add 50 µl to the opposite connecting port. Repeat this for the other channel.



Always remove media from troughs

18. Keep the chips in an incubator. If cells need to be kept longer in culture, change media **daily** as described in step 17.

Please refer to www.aimbiotech.com/protocols for a detailed explanation of the core techniques and application specific protocols.

PRECAUTIONS AND WARNINGS

- The 3D Cell Culture Chip is for **single use** only. Do not reuse. Do not re-sterilize.
- Always use **aseptic technique** while handling the chip. Do not use if packaging is damaged.
- Excessive exposure to solvents will cause the chip to delaminate. **Avoid using chlorinated solvents** (such as methylene chloride).

SHIPPING AND STORAGE

3D Cell Culture Chip is shipped at room temperature. Store in a dry environment at room temperature.

STERILIZATION

3D Cell Culture Chip is supplied in a Tyvek-sealed pouch and sterilized by ethylene oxide. The chip is sterile if the packaging is not damaged.

END USER LICENSE AGREEMENT

For more information about the chips, see http://www.flexcellint.com/AIMChips.htm.

ORDERING INFORMATION

3D Cell Culture Chips (Cat. No. AIMDAX) are sold by the case of 25. Accessory items including chip holders (Cat. No AIMHOL) and connectors (Cat. No AIMLUC) are sold separately.