



RASTRUM

Handling of RASTRUM
Removable Models



HANDLING OF RASTRUM REMOVABLE MODELS

Introduction

With the ability to print **RASTRUM** Advanced Cell Models on coverslips, it is now possible to remove your hydrogel models to conduct immunohistochemistry, light-sheet microscopy, advanced tissue-omics and transplantation. Here, we describe the process of handling the RASTRUM Removable Models to allow for the implementation of these techniques.

Protocol

Note:

This protocol should be performed inside a biosafety cabinet.

Ensure all hazardous materials are appropriately disposed of according to your institution's waste disposal policies.

Fixation

1. Remove the media from the Advanced Cell Models and wash with 0.3 mL of 1x PBS per well.
2. Add 0.3 mL of 4% paraformaldehyde per well and incubate at room temperature (RT) for 2h.
3. Remove the paraformaldehyde and wash the models twice with 0.3 mL of 1x PBS.

Note:

These steps are only required if the downstream application of your RASTRUM Removable Models requires fixation (e.g. histology, IF staining, spatial multiomics). If the downstream application requires live cells (e.g. transplantation), proceed to Coverslip Transfer.

Graphical Protocol

- 1 Take out the cultured **RASTRUM** Removable models from the incubator.

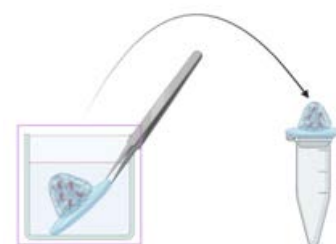


- 2 Wash with PBS

Note:
Models can be fixed at this stage if required.



- 4 Transfer coverslips to the lid of a microcentrifuge tube

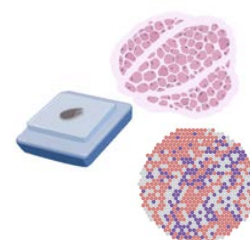


- 5 Slide a floss-pick (or scalpel, cell scraper) along the surface of the coverslip and underneath the model to detach it from the glass surface



- 6 Proceed to downstream application

- IHC/Spatial omics



- Transplantation



Coverslip Transfer

Note:

Make sure your tweezers and floss picks are sterilised before starting below steps. Simply place them in 10% bleach for 10 minutes and wash twice with 1x PBS to remove any traces of bleach.

1. Bend the tip of the syringe needle (bevel side up) 90-degrees using tweezers and set-up the same number of microcentrifuge tubes as printed models in a rack.
2. Using the tip of the tweezers, apply gentle force to the edge of the coverslip to dislodge it from the well plate surface.

Note: Ensure 0.3 mL of 1x PBS is in each well before proceeding with coverslip transfer.

3. With one hand, slide the bent end of the syringe needle under the edge of the coverslip and lift 45–60 degrees (**Figure 1A**). With your other hand, carefully grasp the edge of the coverslip using tweezers and transfer the coverslip to the top of a microcentrifuge tube (**Figure 1B**).

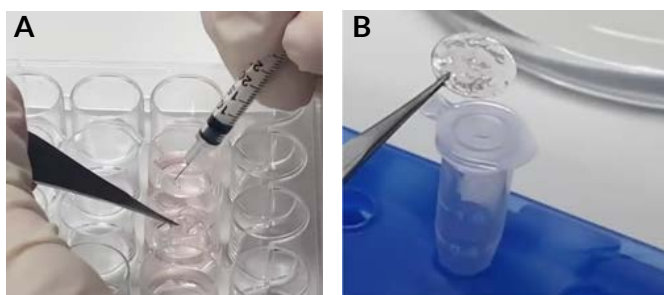


Figure 1. Demonstration of coverslip transfer from 24-well plate to a microcentrifuge tube.

Note:

Click [here](#) to see removing RASTRUM Models from coverslip video demonstrating removal and handling of the model.

Cell Model Removal

1. Add 10 mL of 1x PBS to a petri dish.
2. With one hand, place the tip of the tweezers at the edge of the coverslip to prevent it from sliding off the microcentrifuge tube (**Figure 2A**). With the other hand, at the opposite edge of the coverslip, gently slide the floss pick wire between the surface of the coverslip and the Advanced Cell Models in one motion (**Figure 2B**).

Note: A cell scraper or scalpel may be used as an alternative to remove the Advanced Cell Models from the coverslip. Individual workflows may change to accommodate the use of other tools.

Note: Advanced Cell Models will either remain on the coverslip or stick to the floss pick.

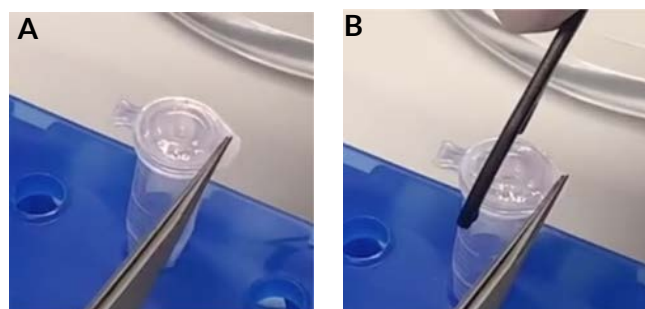


Figure 2. Demonstration of Advanced Cell Model removal from a coverslip.

- 3 To completely remove the Advanced Cell Model
 - from the coverslip, using tweezers, lift the coverslip from the lid of the microcentrifuge tube and invert it into the petri dish containing 1x PBS. The liquid surface tension will remove the Advanced Cell Model from the coverslip.

Note: If your Advanced Cell Model has stuck to the floss pick wire, gently sway the floss pick in the petri dish containing 1x PBS until the model detaches.

- 4 To transfer the Advanced Cell Model to your
 - required vessel for downstream analysis, use a horn spatula to collect from the petri dish.

Reagents and Consumables Required

Product name	Catalogue number	Company
RASTRUM™ Matrix	<i>inquire for details</i>	<i>Inventia Life Science</i>
RASTRUM™ Model	<i>inquire for details</i>	<i>Inventia Life Science</i>
Clear 24-well plate	142475	Thermofisher
Non-TC Treated Borosilicate coverslips (12 mm, No. 1, 0.13–0.16 mm)	CS12RD	Livingstone
0.5 mL G29 insulin syringe	324901	BD
Horn spatula	Multiple options	
Tweezers	Multiple options	
Dental floss picks (or cell scraper/scalpel)	Multiple options	
10% sodium hypochlorite (bleach)	Multiple options	
4% paraformaldehyde	Multiple options	
1x phosphate-buffered saline (PBS)	Multiple options	
Microcentrifuge tube rack	Multiple options	
Microcentrifuge tubes (1.5 mL)	Multiple options	
10 cm petri dish	Multiple options	
70% Ethanol (EtOH)	Multiple options	

Equipment Required

Product name	Company
RASTRUM™ Instrument	<i>Inventia Life Science</i>
Multichannel pipette	<i>Multiple options</i>
Biosafety cabinet (BSC)	<i>Multiple options</i>

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