



E-chip surface preparation

Poseidon sample supports, called E-chips are composed of a thin film of silicon nitride, supported by a silicon frame. Poseidon E-chip is a cell culture compatible support substrate that mimics the smoothness and rigidity of a glass coverslip, resulting in improved cellular attachment compared to traditional formvar coated metal TEM grids. Cells can be grown, processed, and imaged without disturbing their adherence. The silicon nitride of the E-chip is transparent to both electrons and light, thus it is suitable for correlative light and electron microscopy applications.

Pre-treatment

Poseidon E-chip sample supports are stable to both chemical and glow discharge tissue culture sterilization processes. Bio-compatible coatings, such as poly-L-lysine, may be applied to the surface to promote cellular adherence.

1. Briefly treat the E-chip with a glow discharge plasma to render the surface hydrophilic and to sterilize for tissue culture.
2. Immerse the sample supports in the coating solution according to the manufacturer's specifications. 0.01% poly-L-lysine for five minutes works well.
3. Briefly dip the coated sample supports in HPLC grade water to remove unbound material.

The E-chips are now ready for cell seeding.

Whole mount cell preparation

The dimensions of Poseidon E-chips are such that a single E-chip fits easily into a single well of a 96-well plate. Hence, multiple samples can be processed simultaneously under identical conditions. These samples can be used for liquid-EM and light microscopy, or additional processing can be performed for SEM and whole mount TEM applications.

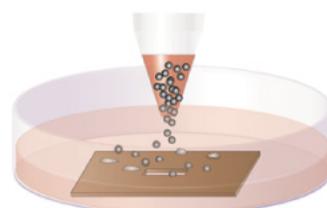
- A. Place each E-chip into a well containing cell growth media. The E-chip must be oriented such that the flat surface of the support is facing upwards. Next, deposit a droplet of cell suspension into the well over the E-chip.
- B. Allow the cells to adhere and grow under normal incubation conditions (dependent upon cell line). Note that for liquid-EM applications, chips should have no more than 4 or 5 cells attached to the window.
- C. Transfer the E-chips between wells to rinse, label, fix, or stain as desired. Samples can be imaged directly with light microscopy and liquid-EM, or dehydrated and processed further for SEM and TEM imaging.
- D. For conventional SEM and whole mount TEM samples the E-chip can be dried using a standard critical point dryer or hexadimethylsilane. After drying, the E-chip supported samples can be coated with evaporated carbon or metal shadowing.

Benefits

- Precision diced edges for ease of handling
- Compatible with standard EM stains and drying processes
- Autoclavable for use in sterile tissue culture environments
- Reduced sample preparation artifacts
- Correlative imaging enables rapid screening and more comprehensive data sets

Poseidon E-chips are available in a range of window designs and spacer thicknesses for liquid-EM experiments. Contact us at (919) 341-2612 or contact@protochips.com

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A



B



C



D



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