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A Simple Method To Make High Resolution Projection Slides of Electron Micrographs

Jan S. Ryerse, Saint Louis University Health Science Center

The traditional method of preparing high quality projection slides of one's best electron micrographs was to "print" negatives onto Kodak 2" x 2" emulsified glass slides using a standard enlarger fitted with a reduction lens and then to tray develop the slide to the desired contrast. As A. Kent Christensen pointed out in the June/July 1994 issue of this publication, the cost of 2" x 2" slides has become prohibitive. In any event, I always found adjusting the reduction lens on the enlarger to be a major hassle and searching for the correct exposure and developing times to be a frustratingly inexact experience with much plate wastage.

Several years ago while making "positive inter-negatives" of freeze fracture negatives on Kodak 4489 film from which images with (the more natural) black shadows of replicas could be printed, if occurred to me that one could cut out a 2" x 2" square or 35 mm rectangle from the positive inter-negative and mount it in a large format 2" x 2" or standard 35 mm glass slide binder for projection. It worked like a dream! The technique is simple and fast, yields high resolution projection slides of good contrast and is remarkably inexpensive.

Making positive projection slides by contact printing onto EM film 1) takes advantage of the high resolution inherent in the small grain size of Kodak 4489 EM film, 2) avoids focusing problems because the negative and film are in contact, 3) allows several seconds for dodging if necessary, and 4) in principal doesn't even require an enlarger as any light source will do. Once the film is contact exposed, it is tray developed in D19:water (1:2) under safelights in a darkroom. It is then rinsed, fixed and washed as usual. You should watch the image form in the developer and pull it when the contrast looks right (usually between 60-120 seconds). You really can't tell if the contrast is perfect until the film has been in fix for a few minutes and the emulsion backing dissolved. After washing briefly in water, hold the film over a light box to check on contrast and detail. Finish washing or make adjustments in illumination intensity and repeat.

If you want the entire field of an EM negative in the projection slide, you must still reduce it before exposing the EM film. I prefer to make my projection slides from lower magnification EMs of fields of interest from which I can select the best areas. This method is also excellent for making montage

slides of original EMs without requiring the preparation of a master plate of positive EM prints. Simply cut out the desired sizes of images from the contacted film and mount with thin strips of tape to keep the film from moving around in the multiple image slide binders sold by manufacturers such as Gepe. ■

Chief Microscopy Technician

The Reproductive Endocrinology Center (REC) and OB/GYN & Reproductive Sciences at UC, San Francisco seeks an experienced LM/EM Technician to manage the REC Morphology Core Laboratory at the UCSF Medical Center. You'll perform experiments, collect data, coordinate use and maintain equipment, and provide instruction to Core Lab users. You'll also compute recharges and quarterly billing of investigators, monitor/stock lab supplies, and keep lab protocols current.

We require a BS degree or equivalent, proficiency in all aspects of LM and EM specimen preparation, experience with most ICC and ISH techniques, and skill in transmission electron and light microscopy and darkroom printing techniques. Working knowledge of Macintosh, video image analysis, and familiarity with cell and tissue structure, basic anatomy and endocrinology are also necessary.

For more information, contact Professor Paul C. Goldsmith, Ph.D., Director, Morphology Core Laboratory at (415) 476-3995. To apply, send resume to: UCSF Personnel, Job # PMT1473T, 1350 7th Ave., San Francisco, CA 94143-0832. aa/eoe/mfdv.

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