

## One Pathologist's Approach to Teaching Frozen Sectioning

By Dr. Stephen Peters

*Anyone who has visited Dr. Peter's website tutorial on frozen section techniques knows that he is a true believer in the brush technique. Let's learn how he teaches this valuable skill to his residents:*

The first step is to find a comfortable hand position to maximize fine motor ability for this very delicate maneuver. For this, I have my students hold the brush like a pen and gently rest a finger on the anti-roll plate or at the edge of the cryostat stage. Next, I tell them to try to write their names on the edge of the block with the brush to gain a sense of the fine movements they will use in the sectioning process.



We then turn the cryostat wheel continuously, without any hesitation, and catch the sections with the brush. This precise, delicate motion can be compared to catching a falling snowflake with the brush. In order to do this, the brush must continue to move in an elliptical motion, which in conjunction with the right hand turning the wheel is like turning the pedals of a bicycle. I have found that the best way to teach this skill is to hold hands.

Once a student is holding the brush in the correct position, I take hold of the student's hands and ask them to let their hands to go totally limp. Standing next to the student I move the right hand (holding the brush) while moving the left hand (holding the wheel handle). We cut together in continuous

motion for a minute or two to give the student the muscle memory of what this motion feels like. Next, the student uses the brush alone with the left hand, while I continuously turn the wheel with my right. After a minute of this, I will again take both hands and get started in continuous motion. After another 30 seconds of turning both hands together I let go. If there is hesitation, I nudge the student along until he or she is cutting continuously on their own. After a few minutes of practice, most students will now be cutting continuously. If there is still hesitation, we repeat the steps as necessary.

My next goal is to make sure that students are pulling the sections along the stage like pulling the covers over yourself in bed. I emphasize not to press the brush and tissue to the stage so that the tissue will not stick to the stage, a problem particularly common while cutting fatty tissues. To foster the correct motion across the stage I sharpen a point on an applicator stick and have the students catch a section with the pointed stick rather than the brush. Pressing the section to the stage with the pointed stick results in tearing, and it teaches them to grab just the edge of the section and pull in gently across the stage.

My last goal is for students to learn all of the information in my cryosectioning tutorial. The tutorial covers such things as adjusting the block temperature so that sections will cut optimally; proper embedding and sectioning of tissues relative to the knife blade; and most importantly, how to recognize various thickness variations and artifacts inherent in cryosectioning to assess the quality of the result while sections are taken, not later when the slide is under the microscope.

My advice: Know how your cryostat works, learn simple maintenance and troubleshooting, and above all use a sharp blade! To learn more about this pathologist's approach to cryosectioning visit Dr. Peter's tutorial at:

[http://pathologyinnovations.com/frozen\\_section\\_technique.htm](http://pathologyinnovations.com/frozen_section_technique.htm).