Use of the Speed-Vac

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I. Theory

The speed-vac is used to concentrate small-volume samples. Under vacuum (very low pressure), the vapor-liquid equilibrium of the solvent is shifted towards the gas phase, while your sample (DNA, peptide, etc.) remains primarily in the solid phase. Therefore, using a vacuum you can easily remove solvent with very little stress on your solute, leaving you with a dry, solid sample (plus salts that were present in the solvent buffer, etc.). You can then resuspend the sample in the desired amount of any buffer you want. For larger volumes, the lyophilizer is used to freeze-dry samples.

II. General use and maintenance

The speed-vac lid should always be closed, and the rotor should always be spinning. The Drying Rate switch on the front of the rotor controls the heat. This is usually set at Low (no heat). **Freeze** samples on dry ice prior using in speed-vac to prevent loss of material from bumping.

If using a screw-cap eppendorf tube, loosely place the cap on the tube. If using a normal snap-cap tube, poke a hole (or two or three) in the cap of the tube (or a cap cut off from another tube if you want to keep the cap intact) with a 16 gauge needle (it doesn't bend as much). Be careful not to hurt yourself with the needle. Close the cap firmly before placing the tube in the speed-vac.

The trap should be cleaned at least once a month, or as soon as it seems that drying rate is noticeably slower than usual. Oil is generally changed every month or so. These are usually the speed-vac czar's duties. Report to the speed-vac czar any problems or any part that appears inoperable.

A. Using the speed-vac

1. For hot (radioactive) or basic samples use the speed-vac in the hood in room KCL112. For cold (non-radioactive) and acidic samples use the speed-vac in the hood in room KCL106.
2. Before opening the lid to the speed-vac, you must **release the vacuum.** This is done by turning the bleed valve perpendicular to the line (closed position).
3. Place your samples in the speed-vac. Remember to counter balance!
4. Close the lid. Make sure that the rotor is spinning before you reapply the vacuum. Turn the bleed knob back into the parallel position (open position) so that the speed-vac is connected to the pump. If the vacuum is connected, you should hear the pump "gurgle" and the lid should be suctioned shut.
5. When concentrating very hot samples (i.e. freshly end-labeled DNA), the samples **MUST** be frozen and in a screw cap vial with the cap on.
6. Sign your name, time, and sample type on the log beside the speed-vac. Also indicate if you do not want your samples exposed to heat or light.
7. To remove samples follow the same procedure for releasing the vacuum and opening the sample chamber. Remember to turn the speed-vac back on after you remove your samples.
8. If taking unlabeled samples out of the radioactive (hot) speed-vac (i.e. basic samples) make sure that they are not radioactive (by checking with a Geiger counter) and be aware that other samples may be hot. If you remove samples

from the hot speed-vac always check your gloves to make sure the inside of the speed-vac is not hot.