Guidelines for Data Presentation in a Master Thesis

Image presentation:

As you prepare your figures, please adhere to the following guidelines to ensure accurate presentation of your data and to minimize delays during production:

- No specific feature within an image may be enhanced, obscured, moved, removed, or introduced.
- The grouping of images from different parts of the same gel, or from different gels, fields, or exposures must be made explicit by the arrangement of the figure (i.e., using dividing lines) and in the text of the figure legend.
- Adjustments of brightness, contrast, or colour balance are acceptable if they are applied to every pixel in the image and as long as they do not obscure, eliminate, or misrepresent any information present in the original, including the background. All adjustments - in particular non-linear adjustments (e.g., changes to gamma settings) - must be disclosed in the figure legend.

A more detailed discussion of image presentation can be found in Rossner and Yamada, *J. Cell Biol.* 166:11–15.

Microscope image acquisition:

The following information must be provided about the acquisition and processing of images:

1. Make and model of microscope
2. Type, magnification, and numerical aperture of the objective lenses
3. Exposure time
4. Temperature
5. Imaging medium
6. Fluorochromes
7. Camera make and model
8. Acquisition software
9. Any software used for image processing subsequent to data acquisition. Please include details and types of operations involved (e.g., type of deconvolution, 3D reconstitutions, surface or volume rendering, gamma adjustments, etc.)

All figures must show controls demonstrating the specificity of the antibodies used. (e.g. transfected versus non-transfected cells, pre-immuneserum versus antiserum. The control figures must be recorded under the same conditions and this must be stated in the figure.

Scale bars:

All micrographs must include a bar to indicate the scale.

Molecular weights and fragment sizes:

The migration of protein molecular weight size markers or nucleic acid size markers must be indicated and labeled appropriately (e.g. "kD", "nt", "bp") on all figure panels showing gel electrophoresis.

Gels and Western Blots

All images must show the entire gel or blot. It is not acceptable that only the polypeptides or DNA fragments of interest are shown. Each gel must show molecular weight size standards

Gels should show controls which validate the specificity of the antibody used. (e.g. transfected versus non transfected cells, comparison of pre-immuneserum and antiserum.

Numerical data:

Error bars on graphic representations of numerical data must be clearly described in the figure legend. The number of independent data points (*n*) represented in a graph must be indicated in the legend. In a biological experiment only replications of the entire experiments represent an independent data point. Numerical axes on graphs should go to zero, except for log axes and ratios. Axes may not be broken.

Statistical analyses must be carried out on all available data and not just on data from a representative experiment. It is not allowed to exclude the results of any experiments unless the reason for exclusion are specifically explained. Statistics and error bars should only be shown for independent experiments and not for replicates within a single experiment.

A more detailed discussion of error bars in experimental biology can be found in Cumming et al., *J. Cell Biol.* 177:7–11.