

Writing the materials and methods section of a scientific paper

Source: <https://bit.ly/2HmuZ91> & <https://bit.ly/2INzvOh>

The materials and methods section should provide clear information on:

- Details of experimental procedures (what was done, and how).
- Details of quantities, times, and other relevant parameters and experimental conditions.
- Details of equipment.
- Details of materials.

The order and specific subsections can vary depending on the journal style.

Typically these can be divided into:

- Materials
- Instrumentation
- Experimental procedures
- Statistics

Methods should be clear to allow experiments to be reproduced, but concise.

Written as past tense, passive form.

Materials and methods

Materials. Culture media were obtained from Life Technologies (Gaithersburg, MD). Okadaic acid was purchased from Alexis Company (Läufelfingen, Switzerland). Antibodies to MEK1/2 and phosphorylated MAPK were purchased from New England Biolabs (Beverly, MA).

Induction of cell death. Cell death was induced as described previously [15]. Briefly, cell death was induced by adding okadaic acid (0-300 nM, Alexis Co.) after washing slice cultures in serum-free medium.

Light and electron microscopy. Cultures were fixed in 2.5% glutaraldehyde and 1% formaldehyde, treated with 1% OsO₄ in 0.1 M phosphate buffer, pH 7.4, dehydrated in a graded series of ethanol and propylene oxide, and flat-embedded in epoxy resin (Durcupan ACM, Fluka, Neu-Ulm, Germany). Semi-thin sections were stained with toluidine blue, and ultra-thin sections were stained with 1% uranyl acetate for 20 min and 1% lead citrate for 2 min.

Statistics. For statistical analysis, 2-tailed Student's *t* test was used to assess the significance of mean differences. Differences were considered significant at a *P* value of 0.05 or less.

Materials described first*
Suppliers/location given

*Depending on the journal, materials can be described under each relevant subsection

Clear subheadings
Refs used to save space

Enough information to reproduce the experiment

Statistical test parameters provided