

Writing the materials and methods section of a scientific paper

Adapted from slide share (Edanz group) & slide player (Bethanie Harmon) (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.**

Annotated example:

Materials described first (Depending on the journal, materials can be described under each relevant subsection). **Suppliers/location given.**

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).

Clear subheadings. Refs used to save space.

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.

Enough information to reproduce the experiment.

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.

Statistical test parameters provided.

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.