

Template for adapting lab based post graduate research projects

Introduction

- Based on a careful literature review, introduce the background to the subject, identify gaps in knowledge and their significance, and explore the significance of being able to elucidate these areas of uncertainty.
- Formulate a specific hypothesis for testing.
- Clearly prioritise specific objectives/aims to test the hypothesis.

Materials and Methods

- Based on existing relevant literature, identify existing resources in the field (datasets, patient samples, cell lines, animal models, specific reagents, antibodies, inhibitors).
- Critically appraise existing resources and their limitations.
- Produce a comparative critical analysis of the experimental approaches available to address the hypothesis.
- Formulate a hierarchical plan of experimentation, including controls and troubleshooting/decision points about alternative methods.
- Consider sample sizes and statistical methods to be used.

Results

- Consider order of experimentation, design and implementation (timelines, durations, dependencies, resources in reagents, shared equipment, experimenter timing and availability).
- Describe possible outcomes for each experiment, together with an outline of the logic of experimental sequence dependent on each result (flow chart, decision tree etc).

NB In the event that the sponsoring lab can provide unpublished data for analysis, the results section would consist of a more conventional analysis of such data as is available, but this is not essential.

Discussion

- Succinctly summarise the mapping of experimental design onto the test of the hypothesis, and consider possible outcomes and their implications.
- Consider uncertainties where a result might leave ambiguities of interpretation, and suggest future approaches to resolve these.
- Close by placing the study in the context of the research area, and describe its overall significance (methodological, clinical, epidemiological etc).

Impact statement

- For clinical-based projects, discuss the potential impact and translatability of the outcomes for patient care and health systems.
- For basic research projects, discuss the potential impact on the future for the field of investigation

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