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*NB In the event that the sponsoring lab can provide unpublished data for analysis, the results section would consist of a more conventional analysis of such data as is available, but this is not essential.*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