Summer Studentship: Abstract Submission Guidelines

You are strongly advised to read the following before submitting your abstract.

1. What is an abstract?

An abstract is a short summary of your experiment/research. It is a highly structured writing exercise. Like a paper, it should contain an introduction, methods, results and conclusions (although these actual headings are not required). Abstracts usually have a prescribed length (3,000 characters). This makes them deceptively difficult to write, because they need to convey a lot of information in a very small space. If done well, it makes the reader want to learn more about your research. A sample of a well-written abstract can be found in section 8 below.

2. Components of an abstract

These are the basic components of an abstract in any discipline:

1. Motivation/problem statement: What are you studying? Why do we care about the problem? What practical, scientific gap is your research filling?
2. Methods/procedure/approach: What did you actually do to get your results? There is no requirement to include full experimental protocols. However, sufficient information must be given within the text, or by reference to published work, to indicate how the experiments were performed. In addition, please note the specific details required by The Society on experiments with animals, animal tissues, humans or human tissues (section 7).
3. Results: As a result of completing the above procedure, what did you learn? Abstracts must include data and this will be the main component of the abstract. You must include within the abstract a clear description of the results and all the appropriate data to support any conclusion you wish to make. If numerical data are presented as mean values, the standard deviations or standard errors should be given; the form used, and the n values must be stated. When statistical significance is shown, the statistical test must be named. For non-numerical data (*e.g.* Western blots), the number of replicates is required. If you are invited to present at the conference, you will be expected to present all the data described in the abstract.
4. Conclusion/implications: What are the larger implications of your findings, especially for the problem/gap identified in step 1?

Many abstracts will also feature tables, figures, abbreviations and references.

3. The writing process

It will help you to write your abstract methodically, section by section, to make sure that it is complete. At this stage, don't worry too much about the length. After you've written the first draft, check to see if it's within the 3,000 character restriction. If it's too long (which is usually the case at this stage of writing), look it over to see where it could be made more concise. For each word or phrase, ask yourself, "Is this really necessary? Is there a simpler way I can convey the same meaning?" Don't use three words where you can communicate the same idea in one. Remove redundancies and any unnecessary detail. Keep editing your abstract until it falls within the character allowance. Ask your supervisor to read the abstract and offer feedback. Finally, make sure to spell-check and proofread carefully!

4. Character allowance

The character allowance is 3,000 characters. This consists of the title and main body text (including tables). Each special character, space or punctuation mark counts as one character. References and figures do not contribute to the character count.

5. What makes good tables, figures and references?

Tables
The good features of a table are that:

- it is numbered;
- the legend explains key details of the experiment;
- error terms such as standard deviation are clearly stated;
- it explains the meaning of unusual abbreviations;
- it provides enough information on what statistical test and significance level were used.

Figures
The good features of a figure are that:

- it has clearly labelled axes;
- it has informative legends;
- it has simple symbols/colour codes that can be readily distinguished for different treatment groups;
- its font sizes and line thicknesses are sufficiently large/bold to read;
- it is self-contained.

Abbreviations
All abbreviations must be explained within the text. New or non-standard abbreviations should be avoided whenever possible. A large number of abbreviations within an abstract can detract from the sense.

References
You may use either the Harvard [*e.g.* Smith et al. (2004) within the text, and alphabetically within the reference section], or the Vancouver [numbering from (1) to (5) within the text and in order of citation within reference section] system of citation.

6. Ethical requirements

- For work conducted in the UK, all procedures accorded with current UK legislation.
- For work conducted elsewhere, all procedures accorded with current national legislation/guidelines or, in their absence, with current local guidelines.

You must check with your supervisor that all relevant animal licences and human ethics approvals were in place at the time you started the project, and tick the appropriate box to confirm this.

7. Specific details required for experiments involving animals, animal tissues, humans or human tissues

For experiments on animals and animal tissues:

- abstracts must state the type of animal used (common name or genus) either in the title or text;
- abstracts must include the name, dose and route of administration of anaesthetics used in all the experimental procedures including preparative surgery (*e.g.* ovariectomy, decerebration);
- for experiments involving a neuromuscular blocker, abstracts must include its name and dose, plus the methods used to monitor the adequacy of anaesthesia during blockade (or refer to a paper with these details);
- when scientifically relevant, but not otherwise, the method of killing.

Note: in experiments where genes are expressed in *Xenopus oocytes*, details of oocyte collection are not required.

For experiments on humans or human tissue:

- abstracts must specify, in the title or text, that the work has been done on humans or human tissue.
- abstracts must include any use of non-proprietary drugs or chemicals
- references to non-proprietary drugs should include a brief description of their effects, and also a reference.

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8. Example abstract

Similar cardiovascular autonomic changes during the development of renovascular and angiotensin II (ANGII) induced hypertension in rats

M. A. Toward
Physiology and Pharmacology, Bristol Heart Institute, University of Bristol, Bristol, United Kingdom.

Hypertension remains a serious clinical problem. Numerous rodent models of hypertension have been developed to allow studies into possible causative mechanisms. Two such models are the chronic ANGII infusion and renovascular hypoperfusion (two kidney one clip; 2K1C). Although both models depend on activation of ANGII type 1 receptors, it is not known when and if the autonomic nervous system is engaged in the development and/or maintenance of the resultant hypertension. The development of hypertension in both models was documented using 24 hour radio-telemetry recording of arterial pressure (AP) and heart rate (HR) in conscious freely moving rats. Hey Presto software (Waki et al, 2006) was used to calculate spontaneous baroreflex gain (sBRG) and indices of autonomic function from the AP and HR variabilities by spectral analysis. ANGII model: Rats (male, 250-350g, n=12) were anaesthetised with a mixture of ketamine (60mg kg-1) and medetomidine (250µg kg-1, both i.m.) and radio-transmitters installed. Continuous recordings of AP and HR were made for 3 days prior to, and 10 days during, osmotic minipump driven infusion of ANGII (800ng/kg/min, s.c.). 2K1C model: Rats (male, 150-180g) were anaesthetised as above and radio-transmitters installed plus the left renal artery was partially obstructed with a silver clip of 0.2 mm width (n=6) or sham surgery (n=6). Recordings of AP and HR were made for 6 weeks. Values are means ± S.E.M., compared by ANOVA. Both models exhibited similar alterations in autonomic indices especially when the hypertension plateaued. For both the 2K1C and the ANGII group AP rose to similar levels (*e.g.* 185±15 mmHg vs. 103±10 for sham rats and 150±3 vs. 91±3 mmHg pre-infusion, $p<0.05$ respectively). Additionally, HR was elevated (ANGII: 409±10 vs. 368±5 bpm pre-infusion, $p<0.05$; 2K1C: 468±11 vs. 382±11 sham treated, $p<0.05$), very low frequency of systolic blood pressure increased (ANGII: 6.8±0.5 vs. 5.4±0.2 mmHg2 pre-infusion, $p<0.05$; 2K1C: 7.0±0.3 vs. 3.9±0.3 mmHg2 sham treated, $p<0.05$), high frequency of the pulse interval was reduced (ANGII: 10.6±1.5 vs. 15.0±1.1 ms2 pre-infusion, $p<0.05$; 2K1C: 9.6±0.5 vs. 16.7±0.9 ms2 sham, $p<0.05$) and sBRG was reduced (ANGII: -1.1±0.3 vs. -2.0±0.1 bpm/mmHg pre-infusion, $p<0.05$; 2K1C: -0.83±0.05 vs. -2.5±0.17 bpm/mmHg , sham, $p<0.05$). Thus, these established models of experimental hypertension are associated with failure of the parasympathetic component of the baroreflex and increased sympathetic vasomotor activity. These data suggest that chronically increased peripheral levels of ANGII, resulting from exogenous infusion or renal hypoperfusion, may cause hypertension via mechanisms involving central modulation of both cardiovascular autonomic activity and baroreflex function.