

**An important resource: Please consult CIHR's Guidebook For New Principal Investigators (<http://www.cihr-irsc.gc.ca/e/27491.html>) for suggestions on how to write a scientific document.**

## **Things to Do to Write Great Papers**

### **Unconsciously Imitate Great Style**

Before writing a paper, read a couple of papers that are really well written, in the journal to which you intend to submit your manuscript. As indicated above, our favourite papers invariably include virtually any of those by Tom Jessell in *Cell* or *Neuron*. They are beautiful models of how to write a scientific paper. Don't read the whole paper at once. Rather, when you start writing the Results section, go read a Jessell Results section for a few paragraphs. Don't worry that your data may not be as beautiful—that isn't the point! Once you start the Discussion section, do the same thing, and so on.

### **Write Every Day**

When they have papers to be written, the most productive researchers write daily as an integral part of their research life, even if only for 30 minutes each day. Cultivating this habit will help to make you much more successful. Writing every day is not only a lot more fun and stress-reducing (i.e., "Wow—I've actually started!"), it also produces a much better product. In addition, for those who do basic biomedical research, clinical research, quantitative research or qualitative research, if you begin to write months before you plan to submit your manuscript for peer review, you often identify problems or gaps in your data that should be addressed.

### **Order of Writing the Various Parts of a Paper**

Overarching guideline: You are telling a single story. Everything you write should be built around that story line. For basic biomedical research, clinical research and empirical research, write the paper in the following sequence:

#### **Figures, figure legends and tables**

Always do these first. If well done, the figures and their legends will present the story almost without the rest of the text!

#### **Results**

The results should be a written presentation of the information that is illustrated and documented in the figures and tables, and not a lot more. The text of the Results section should be able to stand by itself, even without the reader looking at the figures and tables.

***Begin each paragraph that deals with a new result, with the following words:*** "To determine..." or, "To define..." or, "To establish whether...", and so on. Don't even dream of doing anything else (usually). However, you may sometimes want to precede that first sentence with an introductory one(s), indicating the issue that was being addressed by the objective stated in your

sentence beginning "To determine..." (Small point: use the phrase "In order to..." infrequently. It wears thin quickly).

**Other infinitives that are used in Results:** To identify, define, test, assess, ascertain, investigate, discover, establish, find.

**Common error:** putting Discussion in Results. This is to be done only rarely, and only if you are not going to discuss a relatively small point in the Discussion.

## **Discussion**

In a first brief paragraph, it is often useful to summarize your major findings, but do so in language that is usefully different from the abstract of the paper. In the rest of the Discussion, discuss each of the Results, from two points of view. First, discuss the data itself—what does it mean, what does it allow you to conclude? Second, discuss each result in terms of the bigger picture of the field, of biology and of medicine.

## **Introduction**

In the first paragraph(s), introduce the big picture underlying your story. In subsequent paragraphs, if you are allowed the space, introduce the specific issues that each of your major results addresses. Sometimes it is difficult to decide whether some background information should go in the Introduction or in the Discussion. In the Discussion, you will often want to provide more context on an issue than you were able to present in the Introduction or in Results.

## **Abstract**

To write a great abstract, it is very useful to read a few great ones from a current issue of the journal to which you are submitting the manuscript. That is all the guidance you need. Writing a good abstract takes at least one day. In this PubMed® era, your abstract may be the only thing that most people will read, so devote at least a day to it, look at it again a few days later, and have it vetted by a colleague who is not intimately familiar with the work in that manuscript.

## **Methods**

It doesn't much matter when you write the Methods. Just don't pretend that you have accomplished much by getting them done. You haven't!!! Refer to previous papers for details, when possible. Most journals now allow/encourage you to put most of the details of methods into the Supplementary Information section of a paper, on the Web.

## **Other Important Issues**

- Never, ever submit a sloppily prepared manuscript. You will have lost the battle before you have even started.

- Submit to the correct journal. If it's a lovely JBC paper, don't send it to Nature. However, aim high.
- If you and your colleagues think the paper is really terrific, and it was turned down for the wrong reasons, you can always call the editor, but be **very** polite and deferential, and never combative.
- If that journal still won't re-examine it, then go to another fine journal at the same level. Amazingly, that often works.
- Review for a journal every chance you get, and then do a great job. The editors will begin to develop a favourable impression of you.
- It is foolish to submit a paper without having a colleague look at it first.
- Always suggest reviewers who are respected in the field.