# How to generate a cross-referenced bibliography[1]

There are two ways to generate a reference list [1]. The first way, a bit simpler to learn but requiring more work on the part of the author, is to make a "thebibliography" environment which is much like other types of lists (eg. itemized, enumerated). The first reference section below is made this way. Look at the .tex file to see how it is done [2]. Note that it is completely self-contained – that is, no files other than the .tex file need to be generated by the author.

The second technique is a bit more involved but well worth learning as it saves you from most of the annoying busy-work involved in compiling a reference list [3]. In addition to the .tex file, you will need to make a .bib file containing all your references in the correct BibTeX format. To make it, you can either type it all out by hand or you can download a reference manager (BibDesk, Bookends, Sixpack, End Note, etc.). Most reference managers make it easy to download reference info directly from online databases and many allow for export to .bib format. Once you have a .bib file, suppose you called it myBibFile.bib, you need to add the following commands to your .tex file exactly where you want the reference list to appear (after the Discussion or Appendix if you have one).

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\bibliographystyle{plain}
\bibliography{myBibFile}
```

This generates a reference list in the "plain" style. If you want to use a specific style, say the AMS style, you have to download the ams.bst file (posted on my Teaching resources page) and place it in the same directory as your .tex file. To make an AMS reference list, replace "plain" with "ams" in the command above. For future reference, there are .bst files available for just about every style out there and if you can't find one, you can always make your own. You will have to typeset the .tex file first, then "process the .tex file in BibTeX mode", then typeset the .tex file again twice (this is necessary to get the cross-referencing right). The meaning of "process the .tex file in BibTeX mode" depends on what typesetting program you use. On TeXShop, there is a pulldown menu next to the typeset button – set the pulldown menu to BibTeX then hit "Typeset".

A few more words on how typesetting works might help you figure out how to get this working with other typesetting programs or the command line. First, when you typeset a file called fileName.tex, it generates two other files, fileName.log and fileName.aux. The .log file has information on everything that happened when you typeset the .tex file so is mostly useful for troubleshooting. The .aux file is the file that contains all the cross-referencing information that your file requires (equation referencing, citations, etc). The first time you typeset the .tex file, the .aux file is generated but because the typesetter reads through the .tex file only once, it cannot properly determine which reference matches which label and so all the references in your text appear as "?". When you typeset a second time, cross-referencing information is extracted from the .aux file first and so all the ?s are then replaced by the correct references. That's how it works for cross-referencing that occurs within a .tex file, as with the first "self-contained" example described above.

When using a .bib file to generate a bibliography, an extra step is required. When you first typeset the .tex file, the label from every `\cite{label}` command in your .tex file is recorded in the .aux file in the form `\citation{label}`. When the typesetter reaches the `\bibliography{myBibFile}` command in your .tex file, if no .bbl file exists yet (explained below), it simply makes a note of your .bib file name in the .aux file in the form `\bibdata{myBibFile}`. The next step is to "process the .tex file in BibTeX mode". This causes the .aux file to be examined for a `\bibdata` entry and, if one exists, each `\citation` in the .aux file is used to extract the correct citation data from the .bib file. The citation data is then formatted and saved in a new .bbl file which is a file that looks like

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[1]The citations in this document are completely random and are only intended to illustrate the citation technique.

source code for the first reference list below (look at the biblioHowTo.tex file posted online). Now, when you switch back to normal typesetting and typeset again, the .bbl is found and the entries contained therein are added to the .aux file as `\bibcite{label}` entries. You should now get a bibliography section in the .pdf file at the location of the `\bibliography{myBibFile}` command but all of the references to the bibliography entries in the text still come out as "?". When you typeset one more time, the .aux file is now complete so these cross-references finally come out correct.

A trouble-shooting tip – when things aren't working and you don't why, it is sometimes useful to delete the the .aux, and .bbl (the .log file shouldn't cause trouble but, out of superstition, I get rid of that one too). Some typesetting programs actually have a "Delete .aux files" button.

Journals that accept .tex files sometimes prefer that you copy the contents of the .bbl file into the .tex file so that they only need to handle one file. That's actually how I generated the first list below.

The best way to really understand how this works is to look at the .tex file that I used to generate this .pdf and then go through the procedure described above, stopping at every step to examine the .aux and .bbl files.

# References

[1] J. Howard, *Mechanics of Motor Proteins and the Cytoskeleton*, Sinauer Associates, Inc, Sunderland, Massachusetts, 2001.

[2] T. Mitchison and M. Kirschner, *Dynamic instability of microtubule growth.*, Nature **312** (1984), 237–242.

[3] T. Holy and S. Leibler, *Dynamic instability of microtubules as an efficient way to search in space.*, Proc Natl Acad Sci USA **91** (1994), 5682–5685.

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