Some Tips for Success in Year 3 and Beyond

Professor Jeremy Hughes

What do you need?

- Understand yourself
- Skills and abilities
- Weaknesses
- Particular interests
- Goals (personal and career)

- Gain multiple transferrable skills

What transferrable skills

- Ability to thoughtfully appraise evidence
- Methodical and logical approach
- Attention to detail but also be able to appreciate the bigger picture
- Independent thinker able to make decisions
- Clear communicator (clinical notes, letters and in person)

Year 3

Understanding how to read and critique a Research Paper (use this approach when you are writing your dissertation)

- A critique is critical evaluation of a text.
- Not just a negative review
- Circumspect evaluation and judgement of quality and merit that takes into account strengths and weaknesses of the work

Abstract

- Does it give a clear, concise and succinct overview of the study?
- Does it state research question or hypothesis?
- Does it provide information on experimental system/sample, methodology, analysis
- Are key findings placed in context
- **Important as abstract used to ‘screen’ papers**

Introduction

- Is the problem to be studied clearly identified?
- Is a clear rationale given for the research?
- Does the literature identify a need for the research?

Introduction

- Does it provide an accurate context for the research presented?
- Is it balanced and well referenced?
- Are the references appropriate i.e. recent work, reflects the work of key players in the field etc?

Introduction

- Researchers can cite minimally relevant references to ‘bulk up’ the bibliography
- Are the references irrelevant?
- Clarity of English and grammar is important in all aspects of the paper and needs to be of adequate quality

Introduction

- Is the research aim(s), question or hypothesis identified and clearly stated?

- Is there a clear narrative, logical consistency or ‘flow’ to the text?

Methods

- This section should present clearly and concisely how the research was carried out.
- It should explain and justify why that method was chosen and evidence should be used to support the choice of methodology.
- Each aspect of the method must be explained so that someone else could carry out the same research and justified (may be supplemental file)

Methods

Methods very depending upon topic:

- Cell lines, primary cells (various assays)
- Experimental model with many potential readouts
- Systematic Review or Meta analysis
- Human patients/subjects (ethics, data collection, sample size)

Methods

Is the model and methods chosen for the study appropriate to answer the research question posed by authors?

Are methods well established and referenced?

Methods

Other issues that may need consideration:

•Controls, controls, controls!

•Controls include:

-housekeeping genes for PCR,

-isotype primary antibodies for staining tissue sections or flow cytometry,

-vehicle control for studies with drug/chemicals

- patient controls (placebo)

Methods

Other issues that may need consideration:

• Consider potential for conscious/unconscious bias to confound the data – randomization, blinding

•Are authors using and interpreting an experimental model appropriately?

Methods

Other issues that may need consideration:

- Human studies – nature and size of sample, selection, inclusion/exclusion criteria
- Are there appropriate controls (age, gender, ethnicity)?
- Ethics and consent
- Research or experimental design
- Statistical power

Methods

- What type of data has been generated?
- Was data analysed using appropriate statistics (t-test, ANOVA, correlation etc)?
- How is the data presented?

Methods

Ideally the Methods sections should be of sufficient quality and depth to allow a researcher to try and duplicate the work

Methods


NO, NO, IF YOU MAKE THE PAPER TOO EASY TO READ, EVERYONE WILL KNOW HOW YOU GOT THE RESULTS!

Methods (big picture)

Poor quality or flawed methodology generates poor quality data

It does not matter how well the data is presented!

Results

- Are results or findings presented clearly and consistently in line with research aim?
- The results are not discussed/analysed at this stage, but should be fully presented using visual methods (images, graphs, tables).
- If there is any absence of relevant data, the gap should be explained so that the reader is fully aware of the context.

Results – Image figures

- Bear in mind that the authors have shown their ‘very best images’ so they should be convincing (same applies to you!)
- Do they show ‘qualitative’ data e.g. images of cell/tissues but then adopt a ‘quantitative’ meaning – ‘*the staining showed increased expression of X in disease*’. This is not true if there has been no quantification

Results

- Are presented results clear and consistent?
- Are graphs or tables clear and coherent?
- Is sufficient detail provided in figure legends?
- Are any gaps in the data-gathering explained?

Results

- Important controls should be shown in the Figure rather than referred to as ‘data not shown’
- Graphs need to be clear with appropriate axes (e.g. 0-100% not 70-100%)
- Often data is now in supplemental figures that may be on-line only

Discussion/Analysis

- Does the discussion reflect the results presented?
- A clear but simple discussion can be a series of paragraphs highlighting the relevance of the 1st, 2nd and 3rd major finding is……..)

Discussion/Analysis

- The researcher provides:

- Conclusions: are they supported by results?
- An interpretation of the findings
- An evaluation of the strengths and weaknesses of the findings

Discussion/Analysis

- Outline the implications and significance to researchers and the general field.
- Researcher should refer back to points made in the literature review, both about previous research, and the research results presented.

Discussion

- Is the discussion objective, balanced, mature without any over-speculation?
- Are strengths/weaknesses acknowledged?
- Do the authors indicate relevance of findings for researchers in the field or highlight where future research may need to focus?
- ***Would a figure drawing the results together help the reader?***

Think about the TOTALITY of the work

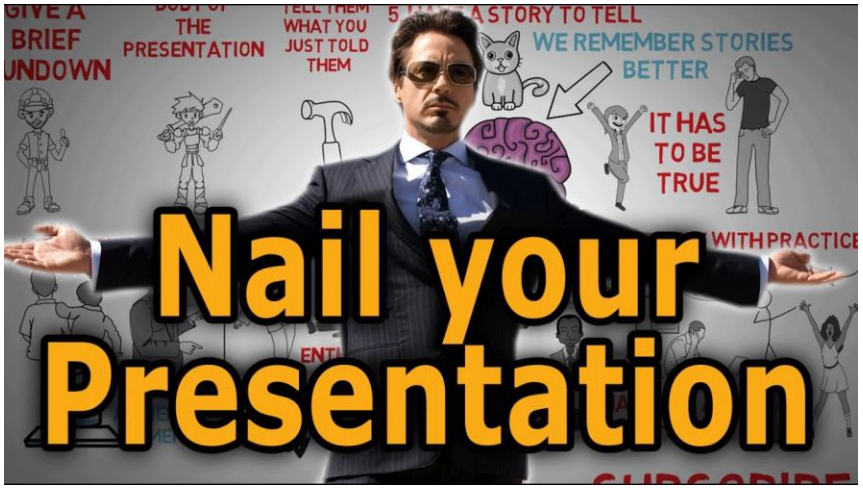
- Do you believe it?
- Is there a fatal flaw?
- Is it methodically sound?
- Is the work a significance advance or is it incremental (a ‘me too’ paper)?
- Would the work be of genuine interest to researchers in the field?

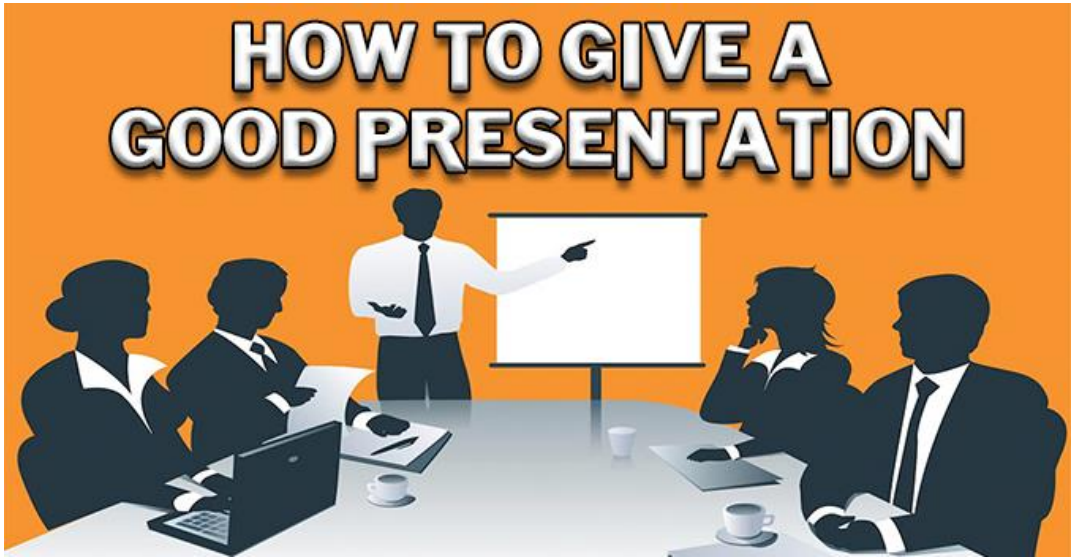
Take Home messages

- Good papers should be clear and easy to read
- They may be complicated but should be understandable
- Methods, controls and statistics!
- Beware of ‘Results manipulation’
- Believe in yourself and your opinion (there is lots of published rubbish!)

How to Impress When Giving An (Academic) Presentation


How to
give a
killer
presentation


BRIEF
THE
PRESENTATION
WHAT YOU
JUST TOLD
THEM
A STORY TO TELL
WE REMEMBER STORIES
BETTER
IT HAS
TO BE
TRUE
WITH PRACTICE
Nail your
Presentation


HOW TO GIVE A
GOOD PRESENTATION

Some simple tips

Understand your audience and have a feel for what they may or may not know – this is critically important as you need to pitch the talk at the correct level.

Broad audiences are the most difficult - the range of knowledge and understanding is very diverse

Be clear about what you want the audience to understand

What are your key take home messages (3 are often enough). I hope that you can now appreciate

1) the importance of ……

2) why we need to ….. and

3) how we can achieve this by …….

Decide what you want to say!

– this sounds obvious but it is key to a clear presentation

Ensure that the talk has a clear structure and narrative (a ‘story’) – it may be simple:

•Introduction – cover key information and context

•Indicate the question or topic to be discussed (the problem, hypothesis, research aim etc)

•Key information (methods and data, current guidelines)

•Outline your conclusions and/or future areas for the field

Use repetition to your advantage - In a long presentation this is useful to reinforce the key messages:

- Indicate at the start ‘What am I going to tell you?”
- Give brief summaries at intervals to ensure that the audience stays with you
- Finish talk with ‘What have I told you?’

Do not use excessive text – delete if not essential. The audience will always read all the text on the slide and this can be distracting. Less is more!

Aim to keep the presentation simple with clarity of meaning being the top priority. Complicated slides or content often results in losing the attention of the audience

You do not have to read the slides – try and make what you say ‘add’ to the slides

Use visual aids (images, graphs, schematic diagrams etc) as they are often much better than text or a bullet point list of facts especially when describing a ‘process’

Animation – can be useful if used appropriately:

- prevent the audience becoming distracted by material on the slide
- Highlighting a step-wise sequence of events or a process

(Reminder - Sydney Brenner talk)

Try and be personable and give your talk with

- Confidence
- Enthusiasm (need ‘light and shade’ to avoid being boring)
- An Air of Relaxation
- Authenticity (be yourself)
- Calm body language
- Sense of humour can be OK

Practise, practise, practise! – use the bathroom mirror or a colleague

This is important for many reasons:

• You will know the slides well so the ‘joins’ will be seamless

• You will be more relaxed and natural as you know the material well

The Post Talk Q&A!

Prepare well for the Q&A

- Know the basic facts really well so that you can correct any misunderstandings
- Think of the obvious questions (make a list)
- Ensure that you know the answers. The answer may not be a fact but an approach
- It is OK if you do not know the answer. You just need to try and say something sensible!