



Developing the Undergrad Thesis Proposal, Thesis Presentation & Written Document

First...How it Fits into the UTSA Universe..

- ▶ Can write for MARC, COS Res/Thesis Experience, and Honors College Credit...
- ▶ INSTITUTIONAL!
 - ▶ <https://sciences.utsa.edu/student/dir.html> “Distinction”
 - ▶ <https://honors.utsa.edu/academics/exp-spices/thesis.html>
- ▶ COS Going to Evolve -
 - ▶ Grad with Research Thesis Experience - Experiential Learning
- ▶ Honors College or COS Honors
 - ▶ Need two readers as well

Need to Submit to MARC / MARC-2

- ▶ Thesis Proposal (short)
- ▶ Thesis Proposal Oral Presentation
- ▶ Thesis (as long as needed)
- ▶ Thesis Oral Presentation
- ▶ Length?
 - ▶ Proposal oral is shorter - 5 minutes
 - ▶ Thesis: 8 minutes for thesis + 2 for Questions

MARC Thesis Proposal & Thesis

- ▶ Should be UTSA Research (unless permission is obtained)
- ▶ Begin as soon as you have independent project (at latest at beginning of Sr. Year)
- ▶ Intro - NOT A FULL REVIEW OF THE LITERATURE! JUST PERTINENT!
- ▶ MARC must take two major research courses (6 credits).
- ▶ Integrate thesis-building into these courses
- ▶ Products:
 - ▶ Thesis Proposal Document: (~5 pages)
 - ▶ Thesis Proposal Presentation: 5 Min (Quick!)
 - ▶ Thesis Document (as many pages as is needed) **OR COULD BE FIRST AUTHOR RES PAPER!**
 - ▶ Thesis Presentation: 10 min (8 presentation minutes, 2 questions)
- ▶ Slides:
 - ▶ Figure about 1 per minute, plus 2, at most
- ▶ Thesis Proposal & Thesis
 - ▶ Written document

Thesis **Proposal** Outline - Written

- ▶ Written: About 5 pages. Short.
- ▶ Introduction/Background and rationale of the study
 - ▶ General background of the subject area
 - ▶ Specific background for the topic of investigation (Gap in literature identified)
 - ▶ Review of the literature <<Normal, but we don't ask for it. Just pertinent projects leading to your project>>
Keep this short for proposal
 - ▶ The hypotheses or questions to be addressed
- ▶ Methodology
 - ▶ Identify and justify the choice of general approach and specific research method
 - ▶ Subjects (if applicable; describe them and your rationale for their selection)
 - ▶ Methods
 - ▶ Limitations
- ▶ Outline of Projected Results
- ▶ Potential Conclusions and Implications
- ▶ “Working” Bibliography of Sources & Materials

Thesis Proposal Presentation (Short!)

- ▶ Thesis Proposal PPT
 - ▶ TECHNICAL (not 3MT) but tell a good story
 - ▶ Integrate a few Images for interest...
 - ▶ Present - 5 minutes
 - ▶ Small numbers of slides
 - ▶ Title Slide (w PI & You & title & UTSA)
 - ▶ Slides 1 & 2:
 - ▶ Introduction with implications
 - ▶ Background w Supporting Literature, Prelim results
 - ▶ Slide 2: Purpose (Filling what gap in literature?), Specific Aims (major goal!) usually 1 as UG), Hypothesis
 - ▶ Slide 3: Methods / Approach / Timeline / Stats to be used
 - ▶ Slide 4: Expected Results & potential problems
 - ▶ Slide 5: Questions?
 - ▶ References

Final Thesis Presentation

- ▶ May represent part of your total work.
- ▶ 8 minutes long, 2 additional for questions.
 - ▶ ABOUT 10 SLIDES MAX!!!!
- ▶ Title
- ▶ 2-3 Intro/Background Slides
- ▶ Aims/Hypothesis
- ▶ 2 slides Results (2 experiments?)
- ▶ 1 Discussion
- ▶ 1 Acknowledgement!!!! (Super Important)

WRITING TIPS

The background features a series of overlapping, semi-transparent geometric shapes, primarily triangles, in shades of blue and orange. These shapes are positioned on the right side of the page, creating a modern, abstract design. The text 'WRITING TIPS' is centered on the left side of the page in a bold, blue, sans-serif font.

Endnote

- ▶ HIGHLY ADVISED! CREATE A LIBRARY of REFS!
- ▶ Integrate it into your word document(s)!
- ▶ Build this over time w/ Annotations

Biggest Next Thing...

- ▶ What Experiments / Figures are needed!!!
 - ▶ Presentation more limited, possibly!!

Writing (Particularly Intro!)

- ▶ Avoid Jargon. Always spell out abbreviations.
- ▶ Avoid Distractors
 - ▶ Always make it focus on your work.
 - ▶ Avoid distracting unneeded information
 - ▶ Ex: isolation studies. If using college student volunteers, don't bring up that lack of education can influence social isolation- You aren't addressing it.

Let's Determine Intro from title....

- ▶ Let's study a small project.
- ▶ **Task-specific odorant receptor expression in worker antennae indicates that sensory filters regulate division of labor in ants**

- ▶ <https://www.nature.com/articles/s42003-023-05273-4>
- ▶
- ▶ Most fantastic model paper. Super well-written.

Look at Title...

- ▶ <https://www.nature.com/articles/s42003-023-05273-4>
- ▶ What do you need in the Introduction??
 - Authors start with broad introduction of whole field
 - Division of Labor (DOL) & where it is seen
 - DOL in insects (note narrowing!)
 - Intro to specializing and how it seems to take place
 - Molecular basis of DOL in insects (more narrow!!)
 - ORs, Pheromones, Membranes, Axons to Brain
 - Ors and evidence for role in specialization (lots of citations!!)
 - Intro to Current Model with Thresholds. Transition to GAP!
 - Thresholds and GAP! Brain? Look at Sensory filters before brain!
 - hypothesis that a sensory filter regulates inter-individual behavioral variation, and thus the DOL in social insects,
 - How approach the gap? Investigated transcriptional signals in the brain and antennae of workers that specialize in either brood care or foraging behavior in the ant *Temnothorax longispinosus*.
 - MODERN PAPERS: Summarize results at end of Intro!!!

Results

Each figure answers a question...

- ▶ Figure 1 - General gene differences
- ▶ Figure 2 - Odorant Receptor differences included

CONCLUSIONS!

- ▶ Summary
- ▶ How Hypothesis came out
- ▶ How Impacts literature / theories in field
- ▶ Next Steps...