

Developing the Undergrad Thesis Proposal, hesis Presentation & Written Document

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

► Can write for MARC, COS Res/Thesis Experience, and Honors College Credit...

► INSTITUTIONAL!

- <u>https://sciences.utsa.edu/student/dir.html</u> "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

UTSA Maximizing Access to Research Careers

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

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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

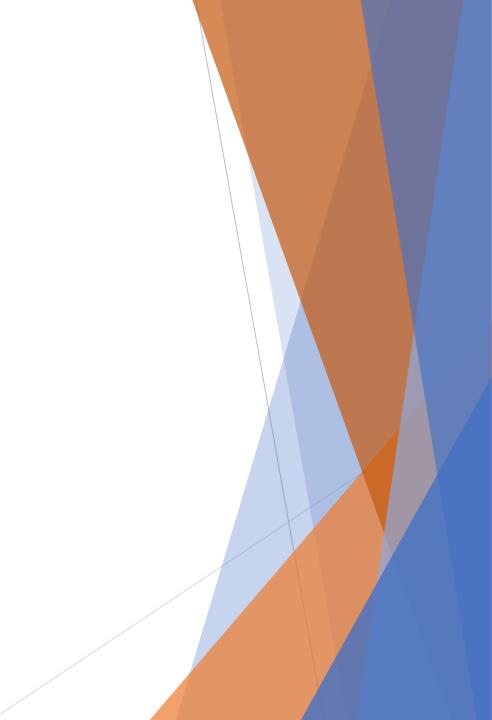
Endnote

- ► 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!!



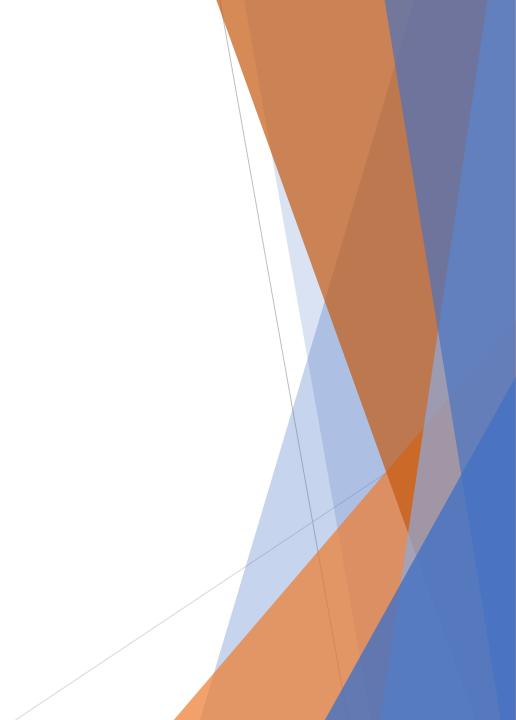
Writing (Particularly Intro!)

- Avoid Jargon. Always spell out abbreviations.
- Avoid Distractors
 - Always make it focus on your work.
 - Avoid distracting uneeded 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.



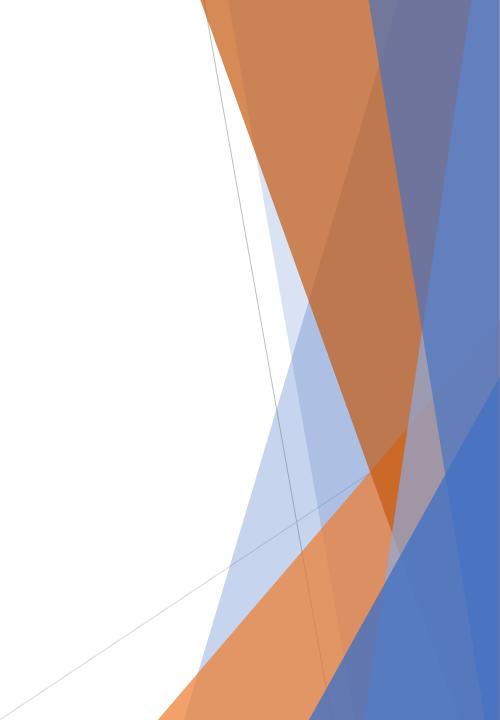
Look at Title...

- 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...

