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”

- 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
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 study a small project.

Task-specific odorant receptor expression in worker antennae indicates that sensory filters regulate division of labor in ants.
Most fantastic model paper. Super well-written.

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...