Poster Presentation Instructions

UNLV | UNDERGRADUATE RESEARCH

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Poster Presentation

Overview

- A poster presentation is essentially an overview of your research and everything that you have done thus far.
- We understand that research projects do not start and end on specific dates and therefore, **many of you will only have preliminary results.**
- For the final poster, you will need to include:
  - The UNLV logo
  - Your name and mentor's name
  - Grant acknowledgment (if applicable)
- Your research mentor MUST approve your poster presentation. This is an opportunity to learn and ask questions.

www.melanomaresearch.com.au/about-amrf/research-projects.html

Poster Layout Instructions

- It is highly recommended that you use PowerPoint to set up your poster.
- Templates can be found on the OUR website.
  - On PowerPoint:
    - In the **Design** tab, look to the far right and click on **Slide Size**, then **Custom Slide Size** to adjust to your desired dimensions.
    - You can change the **Layout** of the slide to **Blank** and then begin placing text boxes to create your format. In the **Insert** tab, click on **Text Box**. Click and drag the mouse on the slide to create the text box.
    - You can import media (images, charts, and icons) by clicking on the **Insert** tab and then **Pictures**. Browse to the location on your computer to find the file. You can also drag and drop media directly onto the slide.
- **Specifics:**
  - The recommended size is 36 inches (height) by 48 inches (width) and Landscape orientation
  - Title: Use at least 70 pt. font
  - Authors and Affiliations: Use at least 50 pt. font
  - Headings: Use at least 40 pt. font
    - Any text under the headings should be at least 24 pt. font.
    - Include:
      - Introduction
      - Objectives and Hypotheses
      - Methods
      - Results
      - Conclusions or Discussion
      - Acknowledgements

Poster Example

WRKY Regulation of Drought Response within *Oryza sativa*

Sandy Haneefzai, Anne Villacastin, Keeley Adams and Dr. Jeffery Shen

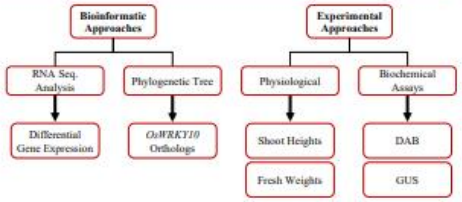
Abstract

Rice is a staple food of much of the world. With rising population growth alongside the impacts of climate change, it is essential to create more food sources for this changing planet. The *WRKY* superfamily is present across the plant domain and encodes for transcription factor proteins. These proteins are involved in plants' response to various biotic and abiotic stresses through the regulation of pathways. A previous study identified a member of the *WRKY* family as a potential regulator of drought response within rice. The gene, *WRKY10*, was studied in *Oryza sativa*, the common Asian rice, through bioinformatics and wet laboratory experiments. Through phylogenetic analysis, this study identified putative orthologs of *OsWRKY10* across several plant lineages. Additionally, RNA-Seq analysis showed that *OsWRKY10* is differentially expressed between well-watered and drought-treated rice plants. Wet laboratory-based experiments included physiological measurements along with biochemical and histochemical assays to examine the impact of differential expressions of *OsWRKY10* during drought conditions. The overexpression lines of *WRKY10* had increased water loss during drought compared to the wildtype. The overexpression line also exhibited the highest hydrogen peroxide content in the DAB biochemical assay, suggesting more cellular damage than the two other lines. The expression of the GUS-reporter gene was concentrated on the scutellum - the portion of the seed near the shoot. *OsWRKY10* is a negative transcription regulator in rice plants' response to drought and this classification can be used in creating rice lines that are more drought resistant.

Introduction

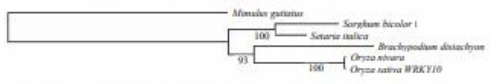
Rice is the main food source for areas the United Nations has projected to experience a population boom. As a submerged crop, rice is susceptible to drought, which these areas are also projected to experience. Identification of genes involved in rice's response to drought can lead to biotechnological improvements of the plant. Transcription Factors (TFs) are proteins that are involved in the coordination of gene expression, either promoting or repressing the gene. A member of the *WRKY* superfamily, *OsWRKY10*, has been linked to drought response in rice. Herein, we present evidence supporting the characterization of OsWRKY10 as a negative regulator in rice seedlings' response to drought.

Methods



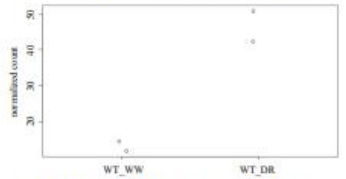
Results

Figure 1. Phylogenetic Tree of Orthologs of *OsWRKY10*



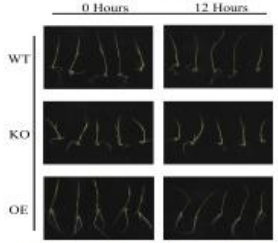
Orthologs of WRKY10 are found in several plant species. This phylogenetic tree was constructed from the identification of putative orthologs of *OsWRKY10* across other plant lineages (64 species) [10]. Putative orthologs were identified via bidirectional BLASTp[7] and full protein sequences were aligned in MUSCLE within the MEGA 7.0 Program[6]. Phylogenetic analysis was conducted via RAxML within the CIPRES Portal[8]. Visuals were displayed through iTOL[9].

Figure 2. Expression of *OsWRKY10* in Drought



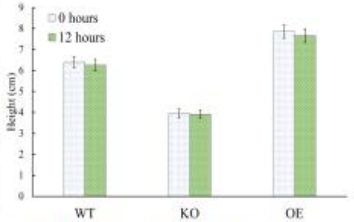
Expression of *OsWRKY10* is upregulated in drought treated rice plants. Through RNA seq analysis[11] the gene is expressed more in response to drought treatment of 45-day old rice plants compared to its well-watered counterparts. Sequencing data that was used in this analysis was available from the Sequence Read Archive (SRA) under PRJANA272723.

Figure 3. Scans of Drought Treated Seedlings



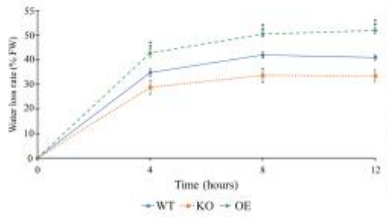
Five seedlings or one replicate group from each line before and after drought treatment. The Java-based processing program, ImageJ, was used to measure the seedlings' shoot heights from this scans.

Figure 4. Shoot Heights of Seedlings



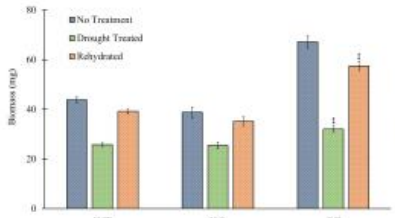
The difference between initial height and post-treatment height was biggest in the OE line. The heights of the drought treated two-week old rice seedlings were measured before and after drought treatment.

Figure 5. Water Content During Drought Treatment



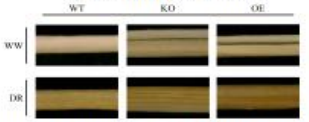
The OE lost water at the fastest rate and the KO lost water at the slowest rate. The fresh weights of the two-week old seedlings were taken at 0, 4, 8, and 12 hours of drought treatment. These masses were used to calculate the water loss rate. The OE line exhibited a higher rate of water loss than the WT. The KO line exhibited a lower rater of water loss compared to the WT. The asterisk indicates significant difference from the WT by Student's *t*-test (*P<0.05; **P<0.01).

Figure 6. Biomass of Seedlings



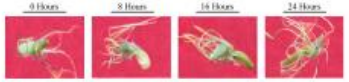
All three lines did not reach their initial weights after recovery. The mass of two-week old seedlings were measured before drought treatment, after 12 hours of drought treatment, and 12 hours of rehydration. The asterisk indicates significant difference from the WT by Student's *t*-test (*P<0.05; **P<0.01).

Figure 7. DAB Biochemical Assay



Reactive oxygen species levels is highest in the OE and lowest in the KO. 3,3'-Diaminobenzidine (DAB) assay[15] was used to detect the presence of hydrogen peroxide, the presence of which will result in brown stains. Results of the DAB biochemical assay showed the OE being stained browner than the WT and KO.

Figure 8. GUS Histochemical Assay



The expression of *OsWRKY10* during drought is concentrated on the scutellum. The GUS histochemical assay was done on three-week old transgenic seedlings of *OsWRKY10* tagged with the GUS reporter gene and driven by *OsWRKY10's* native promoter. The seedlings were subjected to drought treatment for a total of 24h and GUS staining was observed every 8h.

Conclusion

- Identified *OsWRKY10* orthologs from across 64 plant species and constructed a phylogenetic tree exhibiting the evolutionary history.
- During drought conditions, the overexpression of *OsWRKY10* led to increased water loss compared to the WT. This difference was statistically significant. The KO line experienced less water loss compared to the WT.
- The DAB assay show evidence of increased levels of hydrogen peroxide in the OE compared the WT and KO, which suggested a higher amount of cellular damage
- Result of the GUS stain suggested that the expression of *OsWRKY10* to be concentrated on the portion of the seed near the shoot. This area is mitotically active during germination.

Acknowledgment

I like to give special thanks to Anne Villacastin, Keeley Adams, and the Shen Lab for their help and guidance. I would also like to thank Dr. Shen for giving me the opportunity to learn and work in his lab under his mentorship. The project was supported by a grant from NSF-NSHE UROP. This project's contents are solely the responsibility of the authors and do not necessarily represent the official views of NSF.

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Poster Example

Babies' preference for Infant-Directed Speech is an indicator for later language development.

Janelle M. Salcedo, Evelyn Flores, Karli M. Nave, Erin E. Hannon
Department of Psychology, University of Nevada, Las Vegas

UNLV Music Lab

UNLV

BACKGROUND

- Infants prefer to listen to Infant-directed speech (IDS) over Adult-directed speech (ADS) (Cooper & Aslin, 1990). However, the size of this effect has been inconsistent in the literature.
- We participated in Experiment 1 of the Many Babies Project, a multi-lab replication effort that worked collaboratively to replicate the IDS preference across different infant age groups and testing methods (The ManyBabies Consortium, 2019).
- Secondly, we are participating in a follow-up Many Babies study examining the relation between IDS preference and later language development

RESEARCH QUESTIONS

1) Do 3- to 6- month-old infants prefer Infant-directed speech (IDS) or Adult-directed speech (ADS)?
2) Is the degree of preference for IDS related to infants' later language development, at 18-months old or 24-months old?

METHODS

- **Experiment 1:**
  - n = 22
  - Procedure: Single screen preference paradigm
  - Stimuli: 8 IDS and 8 ADS sentences (randomized)
  - IV: Speech Type (IDS or ADS)
  - DV: Looking time (s)

Experiment 2:
- n = 13
- Procedure: MacArthur Bates Communicative Development Inventory (MB-CDI)
- Testing Points: 18 months & 24 months
- IV: IDS Preference from Exp. 1
- DV: Vocabulary (MB-CDI)

Figure 1. Experiment set-up for preference LT procedure.

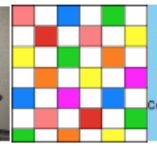

Figure 2. Exp. 1 visual stimulus

Figure 3. Exp. 2 testing procedure using the online MB-CDI.

RESULTS

Experiment 1

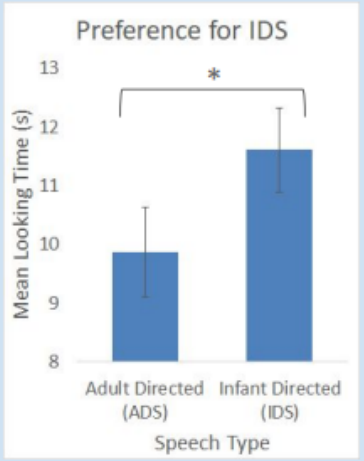

Figure 4. Results from Experiment 1. Mean looking time (in seconds) plotted as a function of speech type. Results demonstrate a significant main effect of speech type, such that infants looked significantly longer at Infant-directed speech compared to Adult-directed speech, t(22) = 4.356, p<.001.

Experiment 2

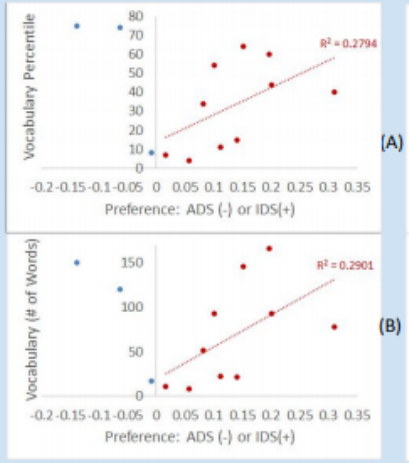

Figure 5. Results at 18 months old (n=13). A) Relation between degree of IDS preference and vocabulary percentile. B) Relation between degree of IDS preference and number of words known.

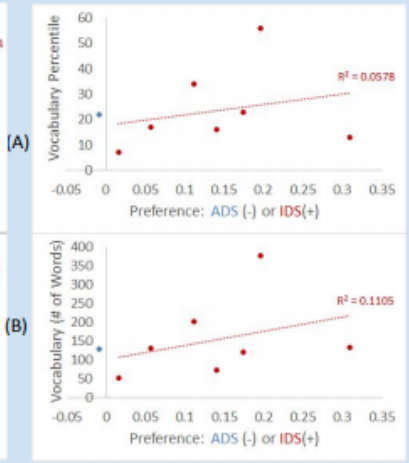

Figure 6. Results at 24 months old (n=8). A) Relation between degree of IDS preference and vocabulary percentile. B) Relation between degree of IDS preference and number of words known.

CONCLUSIONS

Experiment 1:
- Infants at 3- to -6 months show a significant preference for Infant-directed speech (IDS) over Adult-directed speech.

Experiment 2:
- At 18-months, the degree to which babies preferred IDS was a positive predictor for vocabulary development.
- At 24-months, the relation between earlier IDS preference and vocabulary was still positive, but not as strong.

FUTURE DIRECTIONS

- Complete MB-CDI data collection for infants at age 24 months.
- Investigate the relation between preference for IDS and other language abilities, such as phonology.

References:
-Cooper, R. P. and Aslin, R. N. (1990) Preference for Infant-directed Speech in the First Month after Birth. *Child Development, 61*: 1584-1595.
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Acknowledgements:
Thank you to the UNLV Infant and Child Music Lab and the families who participated. Thank you to the research assistants and graduate assistants who helped with data collection, with a special thanks to Lindsey Hierro for helping with the organization and management of Experiment 2 data collection.

Poster Example

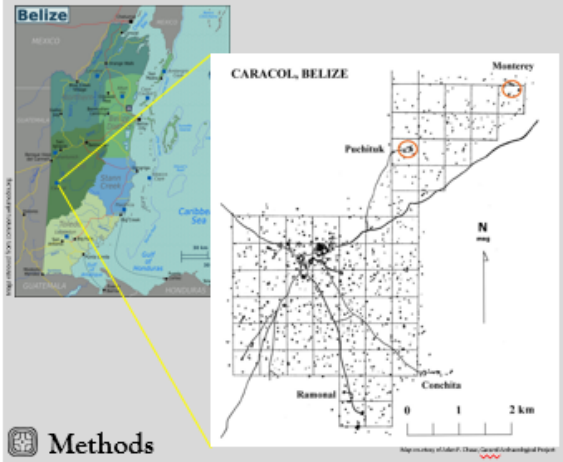
Excavating Monterey In The Ancient Maya City of Caracol

Mayra Arzate, Arlen F. Chase
Department of Anthropology, University of Nevada, Las Vegas

UNLV

Abstract

Five and a half kilometers distant from the Caracol site epicenter lies an area known as "Monterey," named after a Maya residential group in this vicinity that was dug in the 1990s; the name is now applied to the public architecture in this location and used for close-by residential groups. Archaeological investigations in the area of Monterey at the ancient Maya city of Caracol, Belize was carried out in 2019 by excavating multiple edifices that consisted of public buildings and residential groups. The research conducted was part of the 35th field season of the Caracol Archaeological Project.



Methods

- Excavation units/axial trenches were set up at six structures investigated:

-Pebble Group (Residential)- C219B: small eastern/central pyramid, C219C: northern building, C219D: far eastern building.
-Monterey Public Architecture Group- C220B: large hillside eastern pyramid, C220C: playing field for a Maya ballcourt
-Boulder Group (Residential)- C221B: eastern building and supporting platform trenched to bedrock.

- Analysis of artifacts: ceramic, lithic and groundstone was conducted along with study of architectural features to determine use of the buildings and estimate time periods of when they were constructed and occupied.

Results

Operation	Structure	Axial Trench	Key Artifacts Recovered	Architecture Findings
Pebble- C219B	Small Eastern/ Central Pyramid	11.2 m x 2 m	Ceramics, metate/mano, atlatl biface point, shell, limestone bar, quartz	Stairway, stucco floors, bench, door jambs, construction wall
Pebble- C219C	Northern Building	6.3 m x 2 m	Ceramics, metate/manos, olivella shell, obsidian	Fragments of stairs, partial stucco floor
Pebble- C219D	Far Eastern Building	5.1 x 2 m	Ceramics, lithics, groundstone, cave stone	Limestone cut step, plastered floor
MPA- C220B	Large Eastern Pyramid	2.2 m x 2 m (basal) 6.6 m x 2.3 m (summit) Total length trench: 16.2 m	Ceramics, lithics, groundstone, shell, burned charcoal, 2 lip-to-lip bowls, 1 ceramic lidded barrel with contents: 3 flamingo-tongue shells, shell beads and jadeite beads	Two rooms, stone-base walls, door jambs, sequential series of plastered floors (architectural renovations)
MPA- C220C/C220D	Maya Ballcourt	8.7 m x 1 m (N) 7.3 m x 1 m (S)	Ceramics, lithics, central plain ballcourt marker	Ballcourt field
Boulder- C221B	Eastern Building	7.6 m x 2 m	Ceramics, lithics, groundstone, burned charcoal, bone, limestone bar	Supporting platform trenched to bedrock, construction walls

Images

Discussion

The excavations produced findings in architecture from all the buildings at Monterey. Some showed a long construction history while others represented single-phase constructions placed directly on bedrock. Recovered ceramic, lithic, and groundstone artifacts (including a stone ballcourt monument) were also an important part of being able to interpret the investigations in terms of the time period of occupation and the various construction efforts.

Conclusions & Future Research

- The 2019 research demonstrated that Monterey was constructed and used from the Late Preclassic through the Terminal Classic Periods.
- The amount of construction effort represented in these data at the time of the Maya collapse around C.E. 900, showed that the outlying population of Caracol was still thriving just before the city's final abandonment.
- Future research on this site will consist of analyzing collected charcoal samples through radiocarbon dating sent to a special laboratory. Recovered samples were from sub-operations C220B and C221B.

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Audience Questions

- Questions can be nerve-racking, however, an engaging presentation should encourage discussion and follow-up questions.
- Listen attentively and paraphrase the question back to them if you need more clarification.
- Spend some time when preparing beforehand to think of possible questions that would be asked.
- **It is okay to not know the answer to a question!** It is *not* okay to "fake" an answer to a question.
  - You can say something like… "I actually do not know the answer to that, but it's a great question and I will look into it.

Delivery

Speak loudly and clearly

Be concise and complete in your explanations

Talk through each slide, but do not read off the slide

Don’t go too quickly

Be aware of your audience

Repeat key points

Limit jargon and explain any uncommon abbreviations

Look professional

Avoid distractions by emptying your pockets, clearing your presentation space, and focusing on your audience

If you provide handouts, distribute them before or after the talk – not during

Face your audience, not the screen

Prepare beforehand

Practice is crucial for a successful presentation

Rehearse by yourself and in front of friends

Time your talk

Rehearsing will decrease nervousness

Show enthusiasm for your research!

Symposium Information

- Poster presenters have an 8 minute time slot:
  - 6 min for their poster
  - 4 min for Q&As
  - 3 min for judges to fill out notes
  - 2 min for transition
- Students are responsible for printing their own posters.
- However, the Office of Undergraduate Research offers a first-come, first-served Poster Printing Grant to cover these costs.
- Please encourage your mentor to attend your presentation.

References

- https://www.apa.org/science/about/psa/2014/02/presenting
- http://mcnair.ucsb.edu/documents/HowtoCreateaResearchPresentation_000.pdf
- https://services.unimelb.edu.au/__data/assets/pdf_file/0005/470075/Presenting_your_research_Update_051112.pdf
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