Searching for Freedom: An Investigation of Form in Japanese Storytelling and Animation

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Area of Study: Cinema
Faculty Mentor: Robert Spahr

This project investigated characteristics of storytelling within Japanese animation known as anime, specifically looking at Attack on Titan. The story follows Eren and his childhood friends, Mikasa and Armin after their home is invaded by man-eating Titans. In efforts to save humanity, the trio join the Scout Regiment, an elite military force.

This research was important to help fill the gap between identifiable story characteristics within the Japanese visual medium from a filmmakers perspective and the plethora of existing scholarship solely focused on a theoretical framework.

The knowledge gained by this analysis will then be used in my creative activity, resulting in pre-production for a short film.

Methodology

Qualitative Research & Textual Analysis

Attack on Titan Season 1 (25 episodes)
1. Round 1: identified major themes, character development, and story structure
2. Round 2: Analyzed & time stamped specific findings from existing scholarship

Historical Research Methods

Analysis revealed that Attack on Titan presented three significant story themes along with other characteristics based on Japanese folklore and eastern and western art influences.

Themes
1. Cruelty, Oppression of man and world
2. Searching and Fighting for freedom against the cruel world
3. Hope, doubt, and defeat

Japanese Folklore Influences
1. Emphasis on spirituality
2. Religious elements
3. Fantastical elements

Art Influences
1. Asymmetrical
2. Nature is large, men are small

Application to Creative Activity

Influence on short story: Épuisée

Story premise: Oppression breeds rebellion
Story longline: Violet, a young woman obsessed with her high status, threatens to be destroyed by her hidden sentiments.

Conclusion

• Through textual analysis and historical research methods, AOT presented three significant story themes, a strong influence of folklore and eastern and western art that contribute to the story structure and aesthetics elements of the anime story which was then applied to my creative activity.

• This project brought a better understanding of the traditions of Japanese storytelling within anime and influenced by creative process for my short film.

• Further research can be done on manga (Japanese graphic novels) to better research story elements of Japanese visual storytelling mediums.

References

Politics Prevails: A Comparative Analysis of Trump and Biden’s Executive Actions on Mexican Asylum Seekers

Myla Croft and Dr. Stephen Bloom
Department of Political Science, Southern Illinois University Carbondale

Background

The Trump Administration (Issued more than 400 immigration policies)
- Zero Tolerance Policy
- Building a Wall
- Family Separation

The Biden Administration (Issued 300 and Overturned 254 Trump-era policies)
- Build, Strengthen, and Expand Central and North American countries
- Facilitate the reunification of families, eliminate barriers to immigration benefits and citizenship, and pausing construction on the southern border wall.

Previous Studies
- Political ideology influences who is admitted into the country (Miller, Holmes, Keith 2020)
- Republicans admit less asylees than Democratic presidents.
- Conservatives were supportive of family separation (Rowatt et. al, 2020)
- Immigration benefits and citizenship, and pausing away from Americans and using government resources

Key Terms

Dual Labor Market Theory: Analyzes how race, gender, and institutional factors affect the labor market.

Neoclassical Theory: Assumes immigrants are knowledge about the labor market of their host country and their decisions are primarily based on these factors.

World systems theory: Analyzes the power dynamic between industrialized and underdeveloped countries, as well as exploitation of resources from less developed countries.

Methodology

- Developed Spreadsheet of Trump and Biden’s Executive Orders & Proclamations
- Analyzed of Government Documents, Newspaper Articles & Immigration Laws

Immigration Laws

<table>
<thead>
<tr>
<th>Name</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Refugee Act of 1980</td>
<td>Set annual maximum of 50,000 refugees</td>
</tr>
<tr>
<td>Immigration Act of 1990</td>
<td>Established Temporary Protected Status to immigrants who were unable to return to their home country</td>
</tr>
<tr>
<td>Illegal Immigration Reform and Responsibility Act of 1996</td>
<td>Established a safeguard for any non-citizen who faced “forced abortion or involuntary sterilization, or persecution for failure or refusal to undergo such a procedure for other resistance to coercive population control</td>
</tr>
<tr>
<td>Convention Against Torture of 1994</td>
<td>No country shall return a person to their home country if they have a credible fear of persecution</td>
</tr>
</tbody>
</table>

Findings

- Order Suspending Introduction of Persons from Countries Where a Communicable Disease Exists
  - Order Date: 03/24/20
  - Order Suspending Introduction of Persons from Countries Where a Communicable Disease Exists
  - What? Implemented at the height of the pandemic; prohibits individuals without travel documentation from entering the country
  - Many health experts say the policy had no scientific backing
  - Political Parties Opportunity for Trump & the Republican party to restrict immigration
  - The Democrats are pro-immigration, however, public health was their primary concern
  - Ideology A federal judge appointed by Trump has blocked Biden’s ability to lift the Title 42 (citing a need to prevent “illegal migration and drug trafficking”)
  - Public Opinion While Biden’s immigration policies are inclusive, he continued to enforce the Title 42 for the public’s health & public approval during the height of the pandemic

Proclamation Date: 04/27/20
85 FR 23441
Suspension of Entry of Immigrants Who Continue to Present a Risk to the United States Labor Market During the Economic Recovery

- What? Suspension on entry to those who are outside of US who don’t have an immigrant visa and no travel documentation
- Political Parties Part of Trump’s zero tolerance policy
- Trump: Immigrants harm the labor market by taking jobs away from Americans and using government resources
- Biden: Believe immigrants benefit the labor market
- Ideology Trump: Immigrants harm the labor market by taking jobs away from Americans and using government resources
- Biden: Believe immigrants benefit the labor market
- Public Opinion Trump: Made a promise to implement restrictive laws
- Biden: Made a promise to overturning Trump-era policies during his campaign, Revoked this policy

Conclusion

- Both political parties use the economy as an excuse for restrictive immigration policies
- Political factors such as the state of the economy more than the economy
- Republicans are likely to support restrictive immigration policies regardless of the state of the economy
- If the economy was their primary concern, then Republicans would be more open to immigration
- Democrats are more likely to support pro-immigration policies

References


Acknowledgements

This research was supported by the McNair Scholars Program. A special thank you to Dr. Stephen Bloom and the Department of Political Science.
This project examines Chloé Zhao’s 2017 film *The Rider* and its place within the vast Western film genre.

Using genre theory, I will categorize the film into the Western and post-Western genres.

*From Billy the Kid to The Marlboro Man, the masculine cowboy image has been ingrained in American culture. The cowboy was set up to be the hero of the mythical West and Western films played a major role in the popularization of the legend. Sartons, jeans, and boots became the iconic cowboy image and his quest to tame the wild frontier became what has been termed “Frontier Mythology” or the belief that the West could be tamed by strong self-willed individuals.

The post-Western film reacts in opposition to this Western myth and showcases its ramifications in contemporary times.

*The Rider* acts as an example of both genres and in turn should not be labeled as one or the other, but instead compared in relation.

**Methodology**

- To successfully analyze *The Rider*, I will perform a qualitative textual analysis by selecting key scenes, repeated imagery, and themes from the film and discussing how these elements relate to the Western or Post-Western genres.
- The film was viewed a total of four times, which allowed for me to thoroughly assess the elements of the film.
- Some of the key factors I identified were the themes of cowboy masculinity, family, and the portrayal of the mythic qualities of the West.
- Other surface elements I will discuss will be the film’s handling of its setting, clothing, cinematic style, and character types.

**Findings**

Masculinity is not only a major theme in *The Rider*, but the Western genre as a whole. Classical Westerns tended to solely focus on the issues and power dynamics of men. *The Rider* does not stray far from this as the film contains scenes in which Brady, recovering from his recent injury, must deal with feelings of inadequacy as he is no longer able to participate in Rodeo. Pictured *Left* is a scene in which injured Brady challenges a young boy to a wrestling match that turns violent. *Right* provides an example of gun imagery within the film, a common symbol of masculinity within the Western genre.

The film often includes elements (clothing, character types, settings) that are related to the greater iconography of Western art and culture. Pictured *Left* is a scene from the film in which a group of cowboys share stories around a campfire, a common trope within the Western genre. Pictured *Right* is Charles Marion Russell’s late nineteenth century painting, *Cowboys Around Campfire at Night*.

The clash of mythical Western imagery and the film’s contemporary setting is major element of the film that carries the ideas of the post-Western. The film often juxtaposes images of the magic hour landscapes of the Badlands *Left* with the coldly lit interiors of Brady’s trailer, or the sanitized interiors of a hospital room *Right*.

**References**


Mayer, Hervé. “Neo Frontier Cinema: Rewriting the Frontier Narrative from the Margins in Mook’s Cutoff (Kelly Reichardt, 2010), Songs My Brother Taught Me (Chloé Zhao, 2015) and *The Rider* (Chloé Zhao, 2017)” *Miranda* [Online], 18 [2019]. Online since 16 April 2019. URL: http://journals.openedition.org/miranda/16672.

Mapping Gene Flow and Biodiversity Across the Mississippi River Using Landscape Genetics and DNA Barcoding of Formicidae

By David Hernandez, Dr. Kamal Ibrahim
Southern Illinois University Dept of Biological Sciences

Abstract

The ability to quickly propagate as well as engineer the nutrient flow and other qualities of ecosystems makes ants excellent models of the diversity present in an environment. Using landscape genetics, we can visualize how the physical barriers of a location can affect the genetic diversity present by blocking or promoting gene flow. In the Mississippi River, landscape genetics has observed the river as both a hindrance and boon to the migration of different genes among populations. By looking at ants of the Camponotus genus we can assess another perspective of how the river and the recent human development around it affect the biodiversity. Ants were collected from different locations in Southern Illinois and Southeastern Missouri. This is done by extracting and amplifying the Cytochrome Oxidase I (COI) gene of the mitochondrial genomes and comparing their relatedness or diversity across the different locales they originated. We expect to see high diversity across the three different states connected to the Mississippi which confirms the notion of how large bodies of water can limit the migration of species.

Background

Landscape Genetics combines techniques from Landscape Ecology and Population genetics to answer questions regarding how a physical environment can affect gene flow and diversity. Ants can serve as a model for the diversity of other organisms such as plants and invertebrates. Organisms in the Mississippi River have been the subject of several studies in this area, but none have looked at the Middle Mississippi region which has high microbial diversity. Rivers have proven to be barriers to migration, but in some cases can also have no effect. Camponotus was chosen as it is commonly found in both Missouri and Illinois. This genus of ants that nest inside wood have been found to be both structural pests as well as beneficial to nutrient flow in agriculture and forest ecosystems. The objective of the study is to determine the effectivity of the Mississippi as a barrier to gene flow for these ants.

Methodology

60 ants were collected in sites around Southern Illinois and Missouri
• Coordinates of collections sites were mapped in ArcGIS
• DNA was extracted using the ThermoFisher DNA Purification Kit
• COI gene was amplified using DNA PCR
• COI was sent to the Roy J Carver Institute of Biotechnology for low-throughput sequencing
• Sequence data was visualized in Geneious
• Species were identified by matching COI sequences with data from GenBank and other gene databases
• Genetic distance was compared with ant populations on both sides of the river to determine if it influences diversity

Results

Throughout the different sites, we were able to collect and preemptively identify several species using morphology. After testing different tissue combinations of tissue DNA extractions, we determined that using either the legs or abdomen of a sample was enough to obtain a sufficient concentration of DNA while maintaining most identifying features for a voucher specimen. We also were successful in amplifying the COI region of the mitochondrial DNA using a primer originally intended for Lepidoptera DNA (LepF1). We expect to receive results from sequencing that confirm the hypothesis that the Mississippi River acts as a barrier to terrestrial diversity similar to the results of a study investigating army ants Eciton burchelli in Panama by Perez-Espona et al in 2012.

Conclusion

The majority of the samples collected we can conclude were from the Camponotus genus. We also may have collected samples from Camponotus or Solenopsis. Due to the ambiguity that can be found with morphology of the ants we can not fully conclude specific species. With the inconclusive identification we can argue for the importance for barcoding of species in this genus. One of the sites we collected from was a state park which did not have exact identifications of the different ants found in their grounds. We hope that the data will help educate tourists and visitors to the area.

Future Modifications

• Increase sample size by sampling per colony rather than per location
• Extend study to Kentucky to evaluate effect of Ohio River and Confluence
• Extend study further north and south along the Mississippi River
• Investigate using Cytochrome Oxidase II as a barcoding region
• Look at using Control Region for population genetics study
• Investigate the possible application of microsatellites or Single Nucleotide Polymorphisms into population diversity study

References

Pérez-Espona, S., McClean, J. E., & Franki, N. (2012). Landscape genetics of a top neotropical predator: Molecular ecology, 21(41), 5969-5989

Acknowledgements: I would like to thank Dr. Kamal Ibrahim and Philip C. Williams for their advice on the different steps of this research project as well as for rendering the map on ArcGIS. I would also like to thank Dr. Edward Heit for allowing me to use the DNA purification reagents for sequencing. I am also appreciative of the McNair’s Scholars Program for encouraging me to push forward despite all the difficulties of the project.

Figure 1. Ant sample collected in Paducah KY
Figure 2. Ant sample collected in Carbondale IL
Figure 3. Map of collection sites in Illinois and Missouri
Figure 4. Map from Perez-Espona et al 2012 showing the sites from which ants were collected and which haplotypes were found in those sites.
Figure 5. Three ants believed to be Camponotus pennsylvanicus collected from IL, MO, and KY from left to right
Figure 6. Diagram of Hymenopteran mitochondrial genome from a honeybee
The Relationship between Remediation, Self EAQ Practice, and Assigned EAQ with the HESI Specialty Scores.

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Abstract
Passing the NCLEX-RN (National Council Licensure Examination for Registered Nurses) is the final and most important step in becoming a Registered Nurse. Many nursing schools use the program HESI (Health Education Systems, Inc.) to help students prepare for successful completion of this exam. This exam is a strong indicator of a student’s ability to pass the NCLEX. This project examined the relationship between remediation, self EAQ and assigned EAQ, and HESI scores. This research presupposes that Nursing students that have higher scores on the HESI and spend more time studying will have a greater execution than the ones who took less time to prepare.

Introduction
• The goal of this study is to be able to focus on the variables Self EAQ Practice, remediation, and assigned EAQ practice to see the relationships with each student’s specialty HESI score at the end of the course.
• Specialty HESI score is an examination given at the end of each course to predict if the student is in a good standing to pass the given information on their licensure exam.
• Elsevier Adaptive quizzing (EAQ)
• Remediation is practice given to students after their first attempt at the HESI score focused on their feeble knowledge on specific topics
• Viewing relationships that can help a student perform better is important to expand further knowledge on those variables.
• HESI specialty scores are significant since they are a predictor whether the student is at a good standing to be able to take their licensure exam.
• Licensure is important in the Nursing career because if you can’t receive your registered license then you cannot practice in nursing.

Methodology
Study Area
The present study compares the relationships from data that was collected from Southern Illinois University Carbondale BSN Nursing Program. Access to the students assigned EAQ scores, remediation, and self study time was granted. A descriptive statistic approach was taken assess average scores on each variable.

Participants
The targeted participants were taken from SIU’s Accelerated Program Class of 22, Traditional Program Class of 2023 and Traditional Program Class of 2024.

Demographics
Class of 2023 total of 23 students (19 Females, 4 Males).
Class of 2022 total of 18 students (15 females, 3 males).
Class of 2024 total of 30 students (29 females, 1 male)

Results
This chart is focused on the course NUR 310 and demonstrates the average of two specialty scores given with the factors which are Self EAQ, Assigned EAQ, and remediation.

FIGURE 1 NUR 310

This chart is focused on the course NUR 400 and demonstrates the average of two specialty scores given with the factors which are Self EAQ, Assigned EAQ, and remediation.

FIGURE 2 NUR 400

This chart is focused on the course NUR 450 and demonstrates the average of one specialty score given with the factors which are Self EAQ, Assigned EAQ.

FIGURE 3 NUR 450

Discussion
• The results from Figure 1 demonstrated that Class of 23 and the Accelerated Program scored lower on their second attempt while Class of ’24 showed improvement between HESI 1 and HESI 2. Possible reasons for scoring lower could include the students first score was high enough for the grade they wanted in the course, which decreased their drive on the second attempt.
• Figure 2: This course was focused on Class of ’23 and Accelerated Program and they both improved their scores on the second attempt. It is likely that HESI 2 scores increased due to faculty encouragement to compete remediation and self EAQ. Assigned EAQ were not used by faculty in this cycle.

Conclusion
• The mean and the average were taken to compare the time spent preparing for the specialty score at the end of the courses.
• The results of the study suggest that the more time that is taken preparing the course and completing the given material, the higher you tend to score.
• Some classes took less time spent studying and were able to score higher than the rest. There is not enough evidence to suggest that it guarantees you a high score but does intend for you to receive more practice.
• Results also demonstrated that not always did students score higher in the second opportunity. This could relate to the students achieving the HESI recommended score (900 or above) and not trying their second opportunity or simply deciding not to retake it. As new faculty are hired, they are encouraged to use the resources available to assist the students prepare for the HESI.

References
Lewis, C. C. (2008). Predictive accuracy of the HESI exit exam on NCLEX-RN pass rates and effects of progression policies on nursing student exit exam scores. Southern Online Journal of Nursing Research, 8(2)

Acknowledgements
This project was funded in part by the SIU McNair Scholars Program. This project wouldn’t have been possible without the help and support of: Dr. Kelli D. Whittington, Ms. Rhetta Seymour, Jocelyn Ortiz, Fanny Mazona, and of course, my beloved parents: Jose Luis Montoya & Sonia Ibarra.
Double Jeopardy: Black Women’s Struggle to Control Their Bodies

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Faculty Mentor: Dr. Pamela Smoot, School of History and Philosophy

Abstract

For more than 400 years, the legacy of slavery has been deeply embedded in the U.S. healthcare system creating disparities that gravely affect African American women. Before the Civil War, race, gender, and social status subjected enslaved Black women to poor health, sexual exploitation, and medical experimentation. This study carefully examines maternal mortality, and the role institutional racism plays in Black women controlling their own bodies. It also suggests ways in which they can navigate the healthcare system to receive fair and equitable medical treatment.

Objective

To identify and explain health disparities, reproductive oppression, and maternal mortality among Black women.

Introduction

- Since the inception of American slavery, most enslaved Black women labored tirelessly in the fields from sun-up to sundown and without consideration from the slave owner for their health.
- Dietary deficiencies, lack of food, despicable living conditions and no medical care contributed further to poor health leading to illness and often death, especially during pregnancy.
- In the twenty-first century as in slave era, inadequate healthcare for Black women continues to negatively impact their lives in three ways: the refusal of many White medical practitioners to professionally address the symptoms described by the patient, being treated in a condescending manner, and losing the right to make decisions about their bodies.

Findings

- African captive Ottobah Cugoano stated "It was common for the dirty filthy sailors to take the African women and lie upon their bodies."
  - Crew members regularly raped enslaved African women who were unable to protect themselves. Women who were impregnated and survived the Middle Passage realized that they had no control of their bodies as they were forced to bear children.

- Thomas Jefferson wrote, "I consider a woman who brings a child every two years as more profitable than the best man of the farm. What she produces is an addition to the capital."
  - Prior to the British outlawing the Atlantic slave trade in 1808 making the importation of slaves illegal, enslaved men were preferred. Slave owners introduced slave breeding to acquire more slaves and to increase their wealth. The women became more valuable, because of their reproductive ability.

- Dr. James Marion Sims states, "Then I made this proposition to the owners of the negroes: If you will give me Anarcha and Betsey for experiment, I agree to perform no experiment or operation on either of them to endanger their lives, and will not charge a cent for keeping them, but you must pay their taxes and clothe them."
  - He used female slaves to advance reproductive medicine and enslavers used physicians for methods to insure enslaved Black women produced a labor force.

- The Relf v. Weinberger complaint reads “It was the next morning that both children, Minnie and Alice, were placed under a general anesthetic and surgically sterilized. At no point prior to the operation did a physician discuss the nature and consequences of the surgery with their parents to which they were about to be subjected.”
  - Sterilization took away Black women’s right to choose to have children.

- Cori Bush says, “Everyday Black women die because the system denies our humanity.”
  - During two pregnancies, she informed each doctor about experiencing pain, but was brushed off. The first doctor said, “Oh, You’re fine. Go home and I’ll see you next time.” The baby was born premature, but survived. The second pregnancy revealed the same complications. The other doctor, said, “Just go home. Let it abort. You can get pregnant again because that’s what you people do.”

Conclusion

- Laws enacted on the state and federal levels of government have resulted in reproductive abuses against Black women thereby affecting their maternal well-being.
- Institutional racism allowed for the bodies of Black women to fuel the nation’s economy during slavery, creating an implicit bias among White medical professionals about the reproductive health of these women two centuries later.

Recommendations

- Increasing the number of Black midwives and preferably female physicians specializing in OB/GYN.
- Organizing and facilitating efforts to educate stakeholders, the public, and medical providers on how to improve the healthcare of black women and to combat cases of maternal mortality.
- National awareness of The Black Maternal Health Monnibus Bill should be publicized to allow Black women to take advantage of the programs and services available.

References

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Blake, William O. The History of Slavery and the Slave Trade. “Slave Sales & Auctions: African Coast & the American Slavery Images.” http://www.slaveryimages.org/slaveryimages/2439. (Figure 2)

Acknowledgements

This project was supported in part by the SIU McNair Scholars Program. A special thanks to my mentor, Dr. Pamela Smoot, Rhetta Seymour and the McNair Graduate Assistants.

Methodology

- In the completion of this study, primary sources included slave narratives, government documents, reports, newspaper clippings, documentaries, interviews, and an autobiography. Secondary sources for the project consisted of scholarly books, journal articles, and biographies.
Novel Activator of Biomedical MechanoSensor

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Introduction

Mechanotransduction describes the ability of cells to detect, integrate, and convert mechanical stimuli into biochemical signals that directly influence biological functions. Mechanosensitive ion channels (MSCs) are well characterized biological force sensing systems that initiate a process of mechanotransduction. Recent publications have shown that the human bodies physiological response and processes more influenced by mechanosensors, proteins on the cellular membrane that relay messages to regulate function and control through, more than we have previously observed (1).

Piezo1 is an MSC that has just recently been cloned, making it available for elucidation of its molecular properties and physiological roles in the body. Previous studies have shown neuroinflammation to regulate Piezo1 and cause neurodegenerative diseases or injuries to these systems. While in this condition of neuroinflammation, support cells to the neurons physiological functions are affected (2-4). Our approach is to replicate the previous results caused by neuroinflammation and introduce a new Novel Activator to modulate Piezo1 functionality (5).

We hypothesize that our new migration method will yield more precise images and results. We also predict treating Piezo1 will hinder astrocyte migration in both LPS and Novel activator treatments.

Materials & Methods

Cell Culturing: C8-S (ATCC® CRL-2535™) astrocytes cells were grown in a T-25cm² culture flask with Lonza™ BioWhittaker™ DMEM with 4.5 g/L Glucose, with L-Glutamine (Catalog number: BW12-604F) supplemented with 10% FBS and incubated at 37°C under 5% CO₂. For cell migration experiments the cells were seeded in a micro-Insert 4 Well chamber in a µ-Dish 35 mm from ibidi (Cat.No:80406) and the dishes were coated with poly-d-lysine (PDL) and cultured for 6-8 hours in the incubator.

Wound Healing Assay

Previous Method: 2hr
New Method: 3hr

Treatment: After second media wash the C8-S astrocytes were treated with 100 ng/ml of Lippopolysaccharide (LPS) and 1.4g/ml of Novel Piezo1 activator (NPA).

Cell Migration Analysis: Using the Wound Healing Size Tool ImageJ Plugin as presented by (6) we were able to compute the gap width in µm. Astrocyte migration velocity was found using the following formula: \( \text{Velocity} = \frac{\text{Gap Width}}{\text{Migration Time}} \), where \( \text{Gap Width} \) = gap width at 0h, \( \text{Gap Width}_{24} \) = gap width at 24h, and \( t_{24} \) = time of when the last image was taken (in hrs). In our case \( t_{24} = 24 \)hrs.

Statistical Analysis: Data analysis was performed with GraphPad Prism 9 between two groups using unpaired t-test. * \( p<0.05 \), ** \( p<0.01 \), and *** \( p<0.001 \) is considered significant.

Results

Previous Results #1: Effects of Piezo1 activator on C8-S astrocyte migration

Figure 1. A) Representative images of wound healing assay after treatment of inhibitor (GsMTx4) or traditional activator (Yoda1) of Piezo1 MSC for 0h, 12h, and 24h. B) Summary of experiments. Treatment of GsMTx4 or Yoda1 increased and decreased cell migration, respectively.

Previous Results #2: Effects of LPS on C8-S astrocyte migration

Figure 2. C8-S astrocyte migration under neuroinflammation condition. A) Representative images after LPS treatment for 0h, 12h, and 24h. B) Summary of experiments. Treatment of LPS decreased C8-S astrocyte migration.

New method for C8-S astrocyte migration

Figure 3. Ibid method for C8-S astrocyte migration. Representative images of wound healing assay for 0h, 14h, and 24h using ibidi 4-wall chamber.

Effect of Novel Piezo1 activator on C8-S astrocyte migration

Figure 4. A) Representative images of C8-S astrocyte migration under treatment of novel Piezo1 MSC activator. B) Summary of experiments. Novel Piezo1 activator inhibits astrocyte migration.

Summary & Conclusions

We tested the new approach of cell migration by using ibidi culture-insert 4 well in µ-Dish 35mm:

- To verify the effect of LPS on C8-S astrocyte migration.
- To discover the effect of Novel Piezo1 activator on C8-S astrocyte migration.

We found that:

- ibidi yielded better cell quantity and higher precision measurements.
- Unlike traditional Piezo1 activator, Yoda1, astrocytic motility is reduced by novel Piezo1 activator.

These results suggest that new Piezo1 activator plays a key role in astrocyte migration.

Acknowledgments

Andres Womac, Donggyeon Yu, Jasmine Jayasi, Austin Kearns, and Chilman Bae, PhD
Funding: SIUC McNair Scholars Program, Dr. Chilman Bae’s SIU Faculty Start-Up Fund
Expression Patterns of the Cilia Protein, RPGRIP1L, During Pituitary Gland Development

Aaryana Stringfellow, Biological Sciences
Buffy Ellsworth Ph.D., Department of Physiology, SIU School of Medicine

Introduction
RPGRIP1L is a cilia protein that plays a role in regulation of primary cilia. We are determining the expression patterns of this protein in the pituitary gland. This experiment will focus on the spatial and temporal expression patterns.

Methodology

Results

Discussion

Acknowledgements

Supporting Information

Sources

Figure 1
Image A shows the structure of the primary cilia and B shows the SHH signaling in the primary cilia. Primary cilia play a role in transducing or regulating signaling pathways. These pathways are important to the development of many essential organs such as the liver, eyes, and kidneys. RPGRIP1L is a protein located in primary cilia at the transition zone. An important signaling pathway in primary cilia is the Sonic Hedgehog signaling pathway. When SHH does not happen in the primary cilia it can lead to sever brain defects. (Park, Jang, & Lee, 2019). RPGRIP1L has been found to have a role in regulating the pathway. When SHH does not happen in the primary cilia it can lead to sever brain defects. (Park, Jang, & Lee, 2019).

Figure 3
This figure shows how the RNAscope in situ hybridization works, and the general procedure that was followed from the RNAscope kit. Image borrowed from the RNAscope® Fluorescent Multiplex Kit User Manual.

Figure 4
An image of an e16.5 mouse embryo stained for growth hormone. The growth hormone is localized in the anterior lobe and is indicated with the red color.

Figure 5
A) Sagittal section of a mouse pituitary gland at e14.5 with a magnification of 20X. B) Sagittal section of a mouse pituitary gland at e16.5 with a magnification of 20X. C) Positive control and D) negative control images from a e16.5 mouse embryo. In A and B the images Rpgrip1l is indicated by the green color. In C and D the positive control is represented by the green color.

Figure 2
The pituitary gland is a gland in the brain which primary function is to regulate growth, reproduction, and other endocrine functions. It also helps to relay signals from the hypothalamus to target organs. The emergence of the different pituitary cell types is marked by the expression of different proteins such as Tshb in the emergence of thyrotropes at e14.5, and Gh for the differentiation of the somatotrophs. The SHH protein can act as a morphogen to induce different cell fates, and it is likely that SHH plays a role in cell proliferation and cell-type determination.

Figure 6
The pituitary gland is a gland in the brain which primary function is to regulate growth, reproduction, and other endocrine functions. It also helps to relay signals from the hypothalamus to target organs. The emergence of the different pituitary cell types is marked by the expression of different proteins such as Tshb in the emergence of thyrotropes at e14.5, and Gh for the differentiation of the somatotrophs. The SHH protein can act as a morphogen to induce different cell fates, and it is likely that SHH plays a role in cell proliferation and cell-type determination.

SOURCES


