1

Orphan Drug Pricing

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Background

A *rare disease* is one that affects fewer than 200,000 Americans at any given time.

An *orphan drug* is a pharmaceutical agent for a medical condition so rare that it would not be profitable to produce without government assistance.

- The median annual cost for an orphan drug in 2016 was over $32,000. Some are ridiculously expensive.
  - Glybera, treating familial lipoprotein lipase deficiency, is priced at $1.2 million per dosage. It is approved in Europe where this illness affects 1,200 people. It is not approved in the United States.

The *Orphan Drug Act of 1983* was written to spur ovation in rare disease treatment through incentives: ed market exclusivity, tax benefits, clinical subsidiaries, and exemptions for application fees by the Food and Drug Administration.

ing is complex, especially for orphan drugs. nd development, product and marketing costs igh. The supply chain from manufacturers, to s to pharmacies – and the payment chain harmacy Benefit Managers and insurance s complex with arrangements largely hidden It is difficult to determine the relationship s and prices.

mplicitly, companies tell a story about ns – a narrative. A typology of pricing was matched with narratives.

A Typology of Pricing Narratives

Price	Narrative
Low Price, Justified	- Drug can be used for other diseases (1) - Low cost of research and development (R&D) (2) - Success in development; few development failures (3) - Low cost production after R&D (4) - Competition among drugs (5)
Low Price, Unjustified	- Pricing below cost to eliminate competition, referred to as predatory pricing, illegal (6)
High Price, Justified	- High R&D cost (7) - Prices support continuing R&D (8) - Acquiring company increases price to support continuing R&D and new drug development (9) - Acquiring company brings drug to market through cost-spreading (10)
High Price, Unjustified	- Low R&D costs and low prices changed with acquisition (11) - Not even priced justifiably to begin with sometimes due to small drug companies selling to large markets increasing the price between sales (12)

Findings

- **Dysport**, for Cerebral Palsy, experienced sales declines due to importation issues in Brazil. Prices increased when Ipsen and Medicus found additional indications; blepharospasms, aesthetic and other. (1)
- **Rifaximi**, for hepatic encephalopathy, is losing money in production towards the orphan disease, though profitable due to indications for irritable bowel syndrome. (1)
- **Deflazacort**, for Duchenne muscular dystrophy, was developed by Marathon and criticized for its list price despite it being $20 or less out-of-pocket for consumers. The controversy forced the sale to a larger drug company that sold the drug for a similar price despite having more flexibility. (10)
- **Eloctate**, for hemophilia A, acquired by a larger company, though still not making a profit even at the exuberant marketed price of $20,000 due to competitors. (10)

This research was supported by the Entergy Workforce Training Grant.

Findings, continued

- **Ravicti**, for urea cycle disorders, [illegible] per 25mL, the developing company was able to [illegible] ing research and developing costs since there was [illegible] available. This original developing company, Hyperion, [illegible] assistance program in place and provided 80% off to customers that did not have insurance or chose not to use a government-sponsored drug plan. The company was then acquired by a larger company, Horizon Pharma providing it with more means to produce more and be capable to lower the price in the long haul which were stated as its intentions when the price was analyzed. (9)

Conclusions

A key finding is that some drugs fit justified typologies; however, there are also a few that fit typologies for unjustified high prices. Therefore, we need policy changes. Transparency may be necessary to hold companies accountable and allow the public to learn when prices compromise accessibility. Other reforms include prohibiting "pay for delay" tactics that stagnate the introduction of generics into the market and limiting patent extensions strictly due to an improvement or additional benefit in an altered form of a drug. Defining what constitutes as a rare disease more rigidly and decreasing coverage under the Orphan Drug Act could also result in lower prices. The ultimate solution to inaccessibility of high price drugs is unclear due to the complexity of rare disease pricing. However, there are steps that could be taken to improve the situation.

Much work remains to identify the narratives for orphan drug prices and to apply the typology.

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NIH NATIONAL CANCER INSTITUTE

Immune Profiles of Colorectal Cancer in African American and Caucasian Individuals

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LSUHSC + MOFFITT SPIRIT-CHD Southeast Partnership for Improving Research & Training in Cancer Health Disparities

2

Introduction

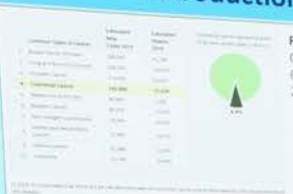

Figure 1. Estimated New Cases and Deaths from Colorectal Cancer in 2019 in the U.S.

Figure 2. Number of New Cases per 100,000 persons by Race/Ethnicity and Sex: Colorectal Cancer

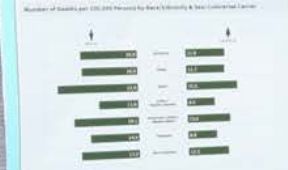

Figure 3. Number of Deaths per 100,000 Persons by Race/Ethnicity and Sex: Colorectal Cancer

- Recently, we have shown that African ancestry and pro-inflammatory haplotype the *IL8* gene, *-3737C/-1464G/-511T/-31C*, increases the risk of colorectal cancer (CRC).
- We hypothesize that that the degree and type of immune infiltration in CRC tissues of African American (AA) individuals is different from those of Caucasian American (CA)

Methods

- **NanoString.** 50 ng of total RNA from Tumor and adjacent non-tumor tissues from AA and CA individuals with CRC were used for the unbiased detection of 770 immune-related genes using the CancerImmune panel (NanoString). Detection was done in the SPRINT nCounter system at the Translational Genomics Core.
- **Cell population estimation.** Using the "cell type profiling" algorithm in the nSolver software v4.0 (NanoString), we determined the infiltration of different immune cell populations. Estimation of cell population is based on the expression of gene patterns specific to each population.
- **Real-time PCR.** To validate the immune cell infiltration, we used real-time PCR to determine the expression of their marker genes. We used primer-probes sets (TaqMan) from ThermoScientific to detect *S100A2* (PMN), *GZMB* (exhausted CD8 cells), *FOXP3* (T-regs) and *IL1B* as a marker of Th1 inflammatory responses. We used the -ΔΔCT method to determine the relative expression of those genes in tumor tissues using *GAPDH* as housekeeping gene.
- **Granzyme B and CD8 staining.** 5 µm slices of tumor tissues of CRC were mounted on charged glass slides. Antigen retrieval was performed followed by an immersion in 3% peroxide to block endogenous peroxidases and background block at room temperature. Anti-granzyme B and anti-CD8 antibodies were then added. The slides were rinsed with TBS buffer and MACH 4 polymer. We then added a chromogen then did a final wash with DI water and 1X TBS buffer. Imaging was captured on a Leica microscope.

Results

Figure 4. Differential Gene Expression between Tumor and Normal Colorectal Tissues of African American (AA) Individuals

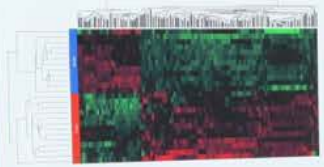

Figure 5. Differential Gene Expression between Tumor and Normal Colorectal Tissues of Caucasian American (CA) Individuals

Figure 6. Distribution of Significant Genes between African American (AA) and Caucasian American (CA) Colorectal Samples

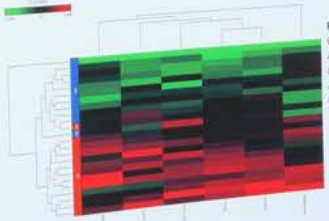

Figure 7. Common Genes of African American (AA) and Caucasian American (CA) Colorectal Samples

Results (cont.)

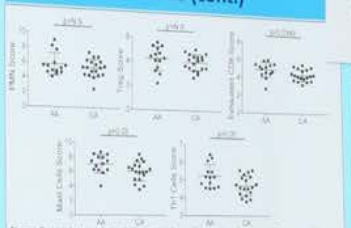

Figure 8. Validation of the Differential Gene Expression between Tumor and Normal Colorectal Tissues of African American (AA) and Caucasian American (CA) Individuals using nSolver software v4.0 (NanoString)

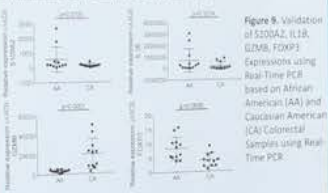

Figure 9. Validation of S100A2, IL1B, GZMB, FOXP3 Expressions using Real-Time PCR based on African American (AA) and Caucasian American (CA) Colorectal Samples using Real-Time PCR

Figure 10. Immunohistochemistry (IHC) of Colorectal Tissues with staining for CD8 on the top row and Granzyme B on the bottom row

Conclusions

- Our hypothesis was validated seen in not only clear separations of the common of the AA and CA genes but also in their immune expressions
- Our work highlights the importance of the immune response in CRC tissues an suggest a differential involvement of immune cell populations associated with AA and CA
- Additional analysis, including IHC staining on colorectal tissue samples for CD granzyme B, and other targets are warranted

This research project was supported by the National Institutes of Health (NIH), National Cancer Institute (NCI) Jenny Paredes, M.S.: NCI Diversity Supplement 3P20CA192994-02S2; Dr. Laura Martello-Rooney and Dr. Jennie Williams: 1P20CA192994-01A1, 3P20CA192 Dr. Jovanny Zabaleta: supported in part by P30GM114732 , 1P20GM121288-01, 1P20CA202922-01A1.

3

Evaluation of Makeshift Tourniquet Efficacy on a Simulated Model of an Exsanguinating Limb

LSU Health New Orleans School of Medicine

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Background

Methods and Materials

Validating the ELS

Procedure and Testing for Efficacy

Results

Conclusions

This research project was supported through the LSU Health Sciences Center, School of Medicine.

26

"Evaluation of the Efficacy of Various Types of Tourniquets Utilizing an Exsanguinating Limb Simulator Model"

[1]Rimi Mandal, [1]Sara Beaulieu, [2]Patrick Greiffenstein

[1]Tulane University, SUNo, LSU Health Sciences Center, School of Medicine, Department of Surgery (WC, Section of Trauma/Critical Care Surgery

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4

LSU Health New Orleans School of Medicine
Stanley S. Scott Cancer Center

Role of 4E-BP1 and the Unfolded Protein Response in Triple Negative Breast Cancer Cell Survival

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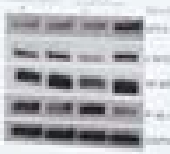
Introduction

Hypothesis

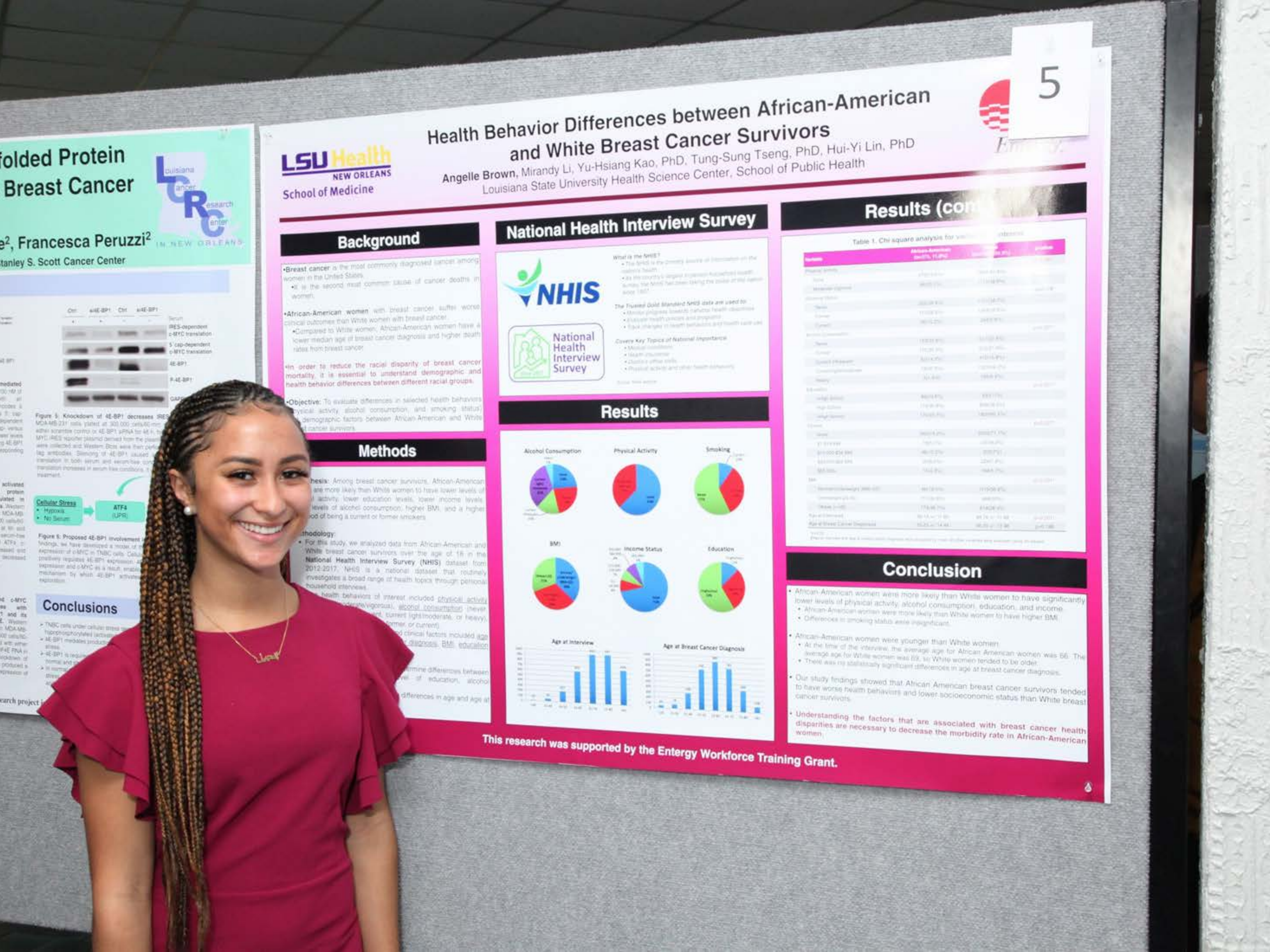
Methods

Results



Conclusions

This research project is supported by NIH P20GM121288 and P30GM118152



5
Health Behavior Differences between African-American and White Breast Cancer Survivors
Angelle Brown, Mirandy Li, Yu-Hsiang Kao, PhD, Tung-Sung Tseng, PhD, Hui-Yi Lin, PhD
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School of Medicine
Background
•Breast cancer is the most commonly diagnosed cancer among women in the United States.
•African-American women with breast cancer suffer worse clinical outcomes than White women with breast cancer.
•In order to reduce the racial disparity of breast cancer mortality, it is essential to understand demographic and health behavior differences between different racial groups.
Methods
National Health Interview Survey
NHIS
National Health Interview Survey
Results
Alcohol Consumption
Physical Activity
Smoking
BMI
Income Status
Education
Age at Interview
Age at Breast Cancer Diagnosis
Results (con
Table 1. Chi square analysis for
Conclusion
• African-American women were more likely than White women to have significantly lower levels of physical activity, alcohol consumption, education, and income.
• African-American women were younger than White women.
• Our study findings showed that African American breast cancer survivors tended to have worse health behaviors and lower socioeconomic status than White breast cancer survivors.
Understanding the factors that are associated with breast cancer health disparities are necessary to decrease the morbidity rate in African-American women.
This research was supported by the Entergy Workforce Training Grant.
folded Protein
Breast Cancer
Louisiana Cancer Research Center IN NEW ORLEANS
Francesca Peruzzi
Stanley S. Scott Cancer Center
Cellular Stress
• Hypoxia
• No Serum
ATF4
(UPR)
Conclusions

6

Characterization of Human Amniotic Fluid Stem Cells (hAFSCs)

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Tulane Center for Stem Cell Research & Regenerative Medicine

Introduction

- Amniotic fluid (AF) is an inexpensive and easily obtainable source of adult stem cells.
- Human amniotic fluid stem cells (hAFSCs) are now considered a new source for therapy because of their ability to differentiate into multiple cell lineages.
- Stem cells can be isolated from amniotic fluid collected in term from elected caesarean sections.
- Stemness is determined by adhering to a surface forming colonies, the ability to divide for multiple passages, and the ability to differentiate into multiple cell types.

Methodology

Results

Flow Cytometry

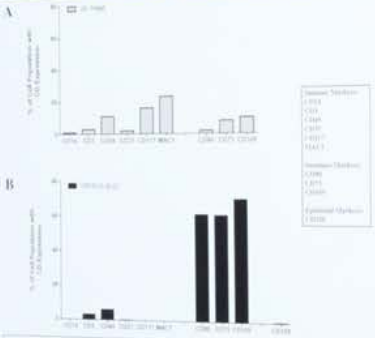

Figure 1: Flow Cytometry Analysis shows immunophenotypes of amniotic fluid samples as A. a pellet and B. cells that have been in culture for 2 passages (p2).

Proliferation

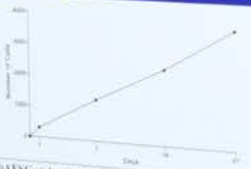

Figure 2: hAFSCs taken at p3 and stained with Alamar blue show the ability to self-renew and divide exponentially at days 1, 7, 14, and 21 of cell culture.

Colony Forming Unit Assay (CFU)

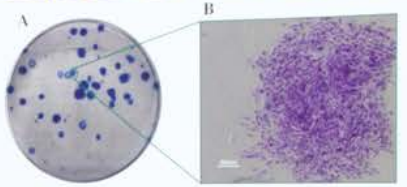

Figure 3: hAFSCs at p3 for CFU. A. Plate shows colonies stained with crystal violet at day 14. B. Morphology of a colony exhibits fibroblast-like cellular morphology.

Conclusions

The AF provides a novel source of stem cells with potential use in cellular therapy and regenerative medicine.

- Immune markers decrease with successive passages
- Stemness markers increase with sequential passages
- Cells have a fibroblast morphology
- Proliferation assay shows hAFSCs grow exponentially over a 21 day period

Future Direction

The continued goal of this study is to confirm stemness by differentiating hAFSCs into osteoblasts, adipocytes, and chondrocytes.

Acknowledgments

This research was supported by the Entergy Workforce Training Grant. Thanks to Katelynn Montgomery and team in Dr. Bruce Bunnell's lab.

7

Dopamine Signaling as a Non-Opioid Analgesic Strategy for Chronic Pain

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LSU Health NEW ORLEANS School of Medicine

NIH National Institutes of Health

NIAAA National Institute on Alcohol Abuse and Alcoholism

Introduction

Methods

Mechanical Hypersensitivity

Ventral Striatum Dopamine Signaling

Ventral Striatum Pre-Synaptic Signaling

Ventral Striatum Neuroinflammation

Ventral Striatum Post-Synaptic Signaling

Conclusions and Future Directions

This was supported through the LSU Health Sciences Center, School of Medicine, and the National Institutes of Health (NIH). We would like to thank the LSUHSC Department of Physiology, the Postbaccalaureate Research Education Program (PREP), and the Edwards lab.

8

LSU Health NEW ORLEANS School of Medicine

The Effects of Adolescent Alcohol Exposure on Stress-Related Pathways and Behaviors

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Introduction

Individuals who consume alcohol as adolescents have an increased risk of developing alcohol use disorder, but the mechanisms leading to increased vulnerability are unknown.

The BNST is involved in stress and negative affect induced alcohol relapse.

Previous work using a mouse model of intermittent alcohol vapor (AIE) demonstrated that adolescent alcohol enhances glutamate release and plasticity in the bed nucleus of the stria terminalis (BNST).

Testing the hypothesis that adolescent alcohol exposure activates involved in stress/ fear-related circuitry and produces long term fear conditioning.

Methods

...L/kJ mice were exposed to two four-day cycles of 16 hrs. ...apor chambers with 8hrs. of withdrawal, separated by ...ified days

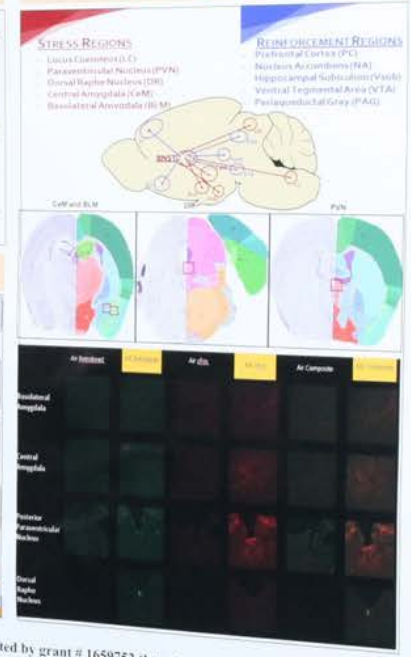
...subset of mice were injected with Green ...which tag neurons in brain regions that project to the ...Nissl 4-6 hrs. after acute withdrawal from AIE. ...hemistry was performed to identify co-labeling of ...ly gene c-Fos and cells labeled with tracer.

...of mice were also exposed to AIE and then ...ly consume alcohol in an intermittent two ...ength (escalating to 20% ethanol for 4 weeks).

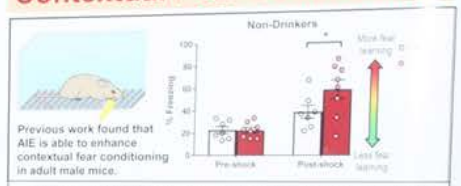
...ioral period, mice were tested in contextual ...mice received 6 low intensity (.4 mA, 1 sec) ...with a context. The amount of time spent ...after the shocks, as well as anxiety-like activity ...open field prior to shock, is recorded.

...meline

BNST Circuitry

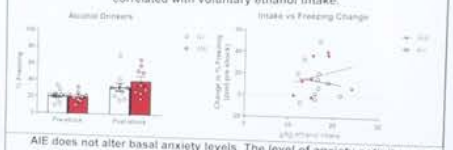


Contextual Fear Conditioning

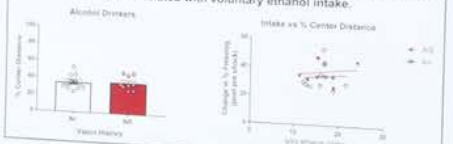


Previous work found that AIE is able to enhance contextual fear conditioning in adult male mice.

Voluntary alcohol drinking following AIE eliminates the enhanced fear conditioning seen in previous AIE experiments. The % freezing was not correlated with voluntary ethanol intake.



AIE does not alter basal anxiety levels. The level of anxiety activity was not correlated with voluntary ethanol intake.



Discussion

- Retrobeads were only strongly expressed in the dorsal raphe nucleus
  - This largely serotonergic projecting region has been implicated in depression & negative affect
  - Lack of retrobeads in other regions may be due to the use of a small, unilateral bolus
- AIE mice had extensive cFos in stress regions during withdrawal
  - This enhanced activity during withdrawal may contribute to a heightened fear response
- Enhanced fear activity is normalized by voluntary ethanol intake
  - Voluntary ethanol intake following AIE withdrawal may normalize increased activity in regions associated with stress and fear

...esearch project was supported by grant # 1659752 through the National Science Foundation (NSF) and NIAAA (K99/R00 AA022651), Research Experiences for Undergraduates (REU) Program

9

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A heterogeneous population of ventral tegmental area neurons project to the central amygdala

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Introduction

- 16 million Americans are diagnosed with Alcohol Use Disorder (AUD), according to the NIAAA.
- We believe that the circuit between the ventral tegmental area (VTA) and the central amygdala (CeA) plays a role in alcohol dependence.
- The CeA is a brain region associated with stress and is known to play an important role in alcohol dependence associated behaviors.
- The VTA is implicated in alcohol reward.
- One subpopulation of VTA neurons that projects to the CeA has been shown to become activated during alcohol withdrawal, indicating that this circuit plays a role in dependence.
- However, this circuit remains largely under-characterized.
- The goals of this research are to better characterize the expression profiles of these CeA-projecting VTA neurons.

Hypothesis

- Since early work in our lab has established that only about 30% of CeA-projecting VTA neurons are dopaminergic, it is hypothesized that a substantial amount of glutamatergic CeA-projecting VTA neurons will be observed.

Methods

Adult male Long Evans rats undergo surgery in which CTxB is injected into the CeA

Brain is sectioned, CeA injection site verified

RNAscope protocol is performed

Images are analyzed on fluorescent microscope

Mixed populations of VTA neurons project to CeA of naïve rats

Figure 1. 4x image of CTxB (green) in central amygdala (CeA). Nuclei are stained with DAPI (blue). BLA, basolateral amygdala.

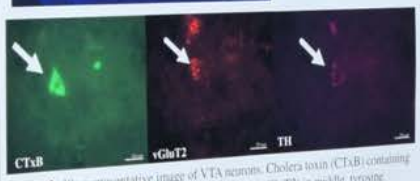

Figure 2. 40x representative image of VTA neurons. Cholera toxin (CTxB) containing neurons on right, vesicular glutamate transporter 2 (vGluT2) in middle, tyrosine hydroxylase (TH) on right. Arrow denotes cell containing all three.

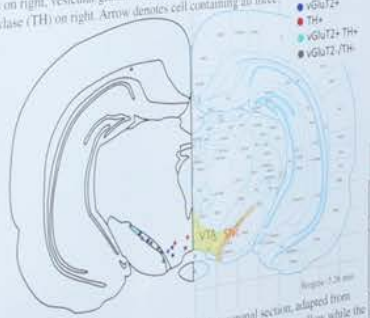

Figure 3. Map of the midbrain-containing coronal section, adapted from Paxinos and Watson (2004). The VTA is highlighted by the yellow while the substantia nigra *pars compacta* (SNc), which also sends projections to the CeA, is denoted by the orange. Left shows the representative position of CeA-projecting neurons. Data averaged from 1 section per rat, 3 rats.

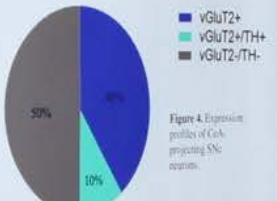

Figure 4. Expression profiles of CeA-projecting SNc neurons.

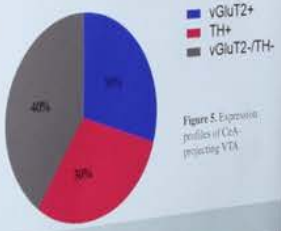

Figure 5. Expression profiles of CeA-projecting VTA

Conclusions

- A relatively large number of CeA-projecting neurons were found to be neither glutamatergic or dopaminergic. These are most likely GABAergic.
- There were no CeA projecting VTA neurons that were both glutamatergic and dopaminergic. This was different from expectations as previous studies have shown that around 30-50% of CeA-projecting dopamine neurons also express vGluT2. This could possibly be explained by the small sample size.
- As expected, around 30% of CeA-projecting VTA neurons were TH+.
- Future research will involve looking for GABA in addition to TH and vGluT2 as well as comparing naive and dependent rats.
- These findings help better characterize the expression profile of these CeA-projecting neurons and how they affect the CeA downstream.

This research project was supported through the LSU Health Sciences Center, School of Medicine.

10

9

10

Direct evidence of IF1 preserves ATP synthase during hypoxia

LSU Health NEW ORLEANS School of Medicine

Dean John Hendrix T. Dunn[1], Luther Lauterboeck[1], Qinglin Yang[2]
[1]Tulane University, New Orleans, LA
[2]LSUHSC Cardiovascular Center of Excellence, New Orleans, LA

LSU Health NEW ORLEANS School of Medicine

Introduction

mitoMaLion® is mitochondria specific

ATP production in MEF under normoxia and hypoxia

Methods

Summary and Conclusions

This research project was supported through the LSU Health Sciences Center, School of Medicine.

11

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ALCOHOL-MEDIATED DYSREGULATION OF MITOCHONDRIAL PROTEIN EXPRESSION IN SKELETAL MUSCLE OF SIV-INFECTED FEMALE RHESUS MACAQUES

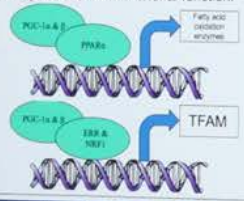
JE Elnaggar, DE Levitt, PE Molina, L Simon
Department of Physiology, Louisiana State University Health Sciences Center, New Orleans, LA

Entergy

Background

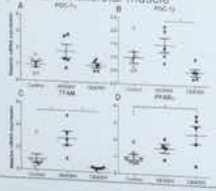
- Rates of heavy drinking in people living with human immunodeficiency virus (PLWH) is almost twice that in the non-HIV-infected population
- At-risk alcohol use contributes to skeletal muscle dysregulation
- Skeletal muscle is a highly metabolic tissue needed to regulate whole-body energy homeostasis
- Mitochondria are essential for skeletal muscle metabolic health
- People are living longer with HIV due to antiretroviral therapy, increasing risk for age-related comorbidities
- Skeletal muscle mitochondrial dysfunction with chronic at-risk alcohol could contribute to metabolic comorbidities in PLWH

Proteins implicated in mitochondrial function:



Preliminary Data

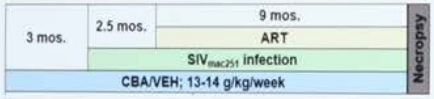
- Chronic binge alcohol dysregulates mitochondrial gene expression in skeletal muscle



Hypothesis

Chronic binge alcohol alters mitochondrial-related protein expression in skeletal muscle from SIV-infected, antiretroviral therapy-treated female rhesus macaques.

Methods



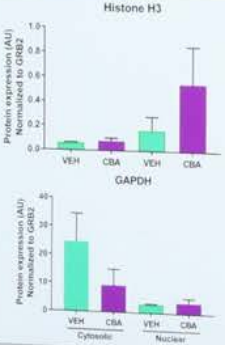
Study design: N≥10 female macaques

- Homogenize skeletal muscle
- extract proteins
- Measure protein concentration
- Western blot for PGC-1α & β, PPARα, & TFAM
- Normalize to GRB2

Cytosolic and Nuclear Fractions

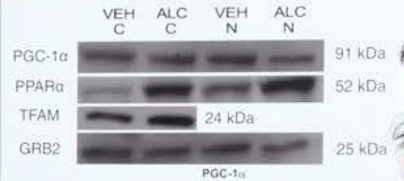
This indicates cytosolic and nuclear-enriched protein fractions

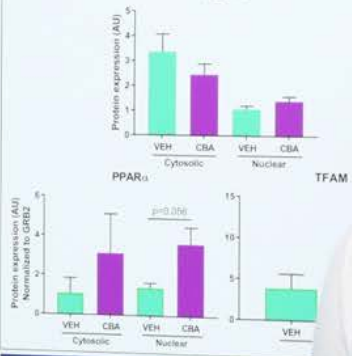
- Histone H3 found in the nucleus
- GAPDH found in the cytosol



This research was supported by the Entergy Workforce Training Grant and by NIH/NIAAA P60AA009803 (PM)

Protein Expression





Conclusion

- CBA did not alter PGC-1α, PPARα, or TFA expression
  - Trend for CBA to increase PPARα in nu
- Future studies include:
  - Measuring mitochondrial function inclu utilization
  - Measuring expression of proteins dow and TFAM
  - Assessing post-translational modifica

12

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The Effects of Traumatic Stress on Reactivity to Acoustic Stimuli in Rats with a History of Alcohol Consumption

Tivon M. Eugene, Connor Schratz, Lucas Albrechet-Souza, Nicholas W. Gilpin
Louisiana State University Health Sciences Center, Department of Physiology

Entergy

Introduction

- Post-traumatic stress disorder (PTSD) is marked by symptoms of avoidance, re-experiencing, and hyperarousal that develop subsequent to traumatic events.
- Not only are women twice as likely as men to develop PTSD, but they also experience different symptoms and comorbidities associated with PTSD.
- Alcohol Use Disorder (AUD) is commonly comorbid with PTSD; approximately a third of people with PTSD also meet the criteria for AUD. PTSD-AUD comorbidity is also associated with a decreased response to treatment, as well as a poorer prognosis when compared to individuals with only one of either of the disorders.

Objective

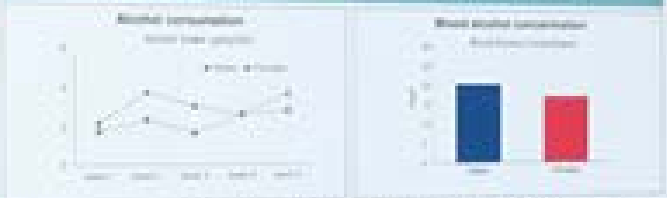
- The aim of the study is to evaluate if a history of alcohol-drinking affects reactivity to acoustic stimuli in male and female Wistar rats exposed to trauma.

Methods

- 2-Bottle Choice: Male and female rats were exposed to alcohol consumption over a period of 5 weeks using an intermittent two bottle choice model. During this period, 20% ethanol (EtOH) was given on Mondays, Wednesdays, and Fridays for a period of 24 h, and measured along with water consumption.
- Contextual Fear Aversion (CFA): Rats were then subjected to the CFA protocol (shown below) and classified as Avoidance or Non-Avoidance based on their stress reactivity as measured by avoidance of the predator odor (2,4-lutidine) paired context.

- Acoustic Startle Response (ASR): Two days post-stress, rats were tested for responsivity to acoustic stimuli through the use of the ASR. There were 50 trials in which the acoustic stimuli was randomly played at 80, 100, and 115 dB with 30 second intervals. Each decibel level was played a total of 10 times.

Results



Conclusions

- Overall, male rats displayed a tendency to increase reactivity to the acoustic stimuli, while female rats generally displayed a tendency to decrease reactivity when compared to their respective control groups in both rats with ethanol and without ethanol drinking, a history of alcohol consumption.
- Male rats with a history of alcohol consumption displayed greater reactivity to the acoustic stimuli.
- Ethanol-naive male rats with a history of alcohol consumption presented greater differences in reactivity in relation to the control group, in comparison to male rats without a history of alcohol consumption.
- These findings further highlight the existence of significant differences in the responses of males and females in response to stress, as well as suggest that alcohol consumption does affect reactivity to acoustic stimuli, largely by increasing the magnitude of the response.
- Future Directions: Investigate the neurobiology underlying the differences in stress reactivity between the sexes.

This research was supported by the Entergy Workforce Training Grant.

13

Characterizing Drug Resistant Virus in SIV-Infected Rhesus Macaque Treated with ART

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Department of Microbiology, Immunology, and Parasitology and
Comprehensive Alcohol Research Center, LSUHSC, New Orleans, LA

LSU Health NEW ORLEANS School of Medicine

Background and Rationale

- The SIV-infected rhesus macaque exposed to chronic binge alcohol (CBA) has proven to be a highly useful model for elucidating the effects of alcohol misuse on HIV disease.
- The use of antiretroviral therapy (ART) has significantly reduced the morbidity and mortality from HIV infections and now triple drug therapy is commonly used for treatment of people chronically infected with HIV.
- Drug resistant virus has been observed in ART treated SIV-infected animals with persistent viremia.
- Characterizing and understanding drug resistance (DR) to ART in the SIV-infected CBA macaque is important for the refinement of our model.

Objective

- The objective of this study was to evaluate viral expression in SIV-infected macaque model fed a Western diet and to compare the efficacy and development of drug resistance with ART-treated macaques from previous studies.

Study Design

Animal Cohorts Evaluated

Well-studied Model	Pilot Study Model
21 females (11 CBA; 10 VEH) and 14 males (7 CBA; 7 VEH)	5 females (3 CBA; 2 VEH)
Typical Macaque Diet (5% fat)	Western Diet (20% fat and 27% sucrose)
2 Drug ART Regimen- both reverse transcriptase inhibitors	3 Drug ART Regimen- 2 reverse transcriptase inhibitors and an integrase inhibitor
Injectable weight-adjusted dose: 20 mg/kg TDF and 30mg/kg FTC	Oral fixed dose (1/2 pill): 25 mg BIC, 100 mg FTC, and 12.5 mg TAF

Methods

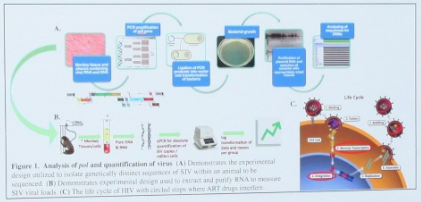

Figure 1. Analysis of *pol* and quantification of virus. (A) Demonstrates the experimental design utilized to isolate genetically distinct sequences of SIV within an animal to be sequenced. (B) Demonstrates experimental design used to extract and purify RNA to measure SIV viral loads. (C) The life cycle of HIV with circled steps where ART drugs interfere.

ART Viral Load

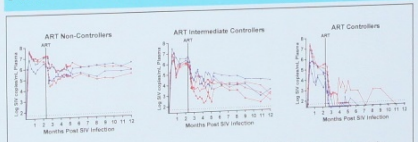

Figure 2. Mean plasma SIV RNA levels over the course of the male study in 7 SUC (blue) and 7 CBA-treated macaques (red). Initiation of ART is indicated by vertical line. Limit of SIV detection of 50 SIV copies per ml of plasma is indicated by dashed line. Plasma SIV RNA levels over time for individual controller animals, intermediate controller animals, and non-controller animals.

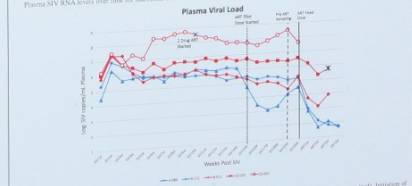

Figure 3. Mean plasma SIV RNA levels over the course of the pilot study in 2 VEH (blue) and 3 CBA-treated macaques (red). Initiation of ART-2 drug regimen for all animals is indicated by a black x. Pilot dosing of ART-3 drug regimen is indicated by a dotted vertical line. Initiation of ART-3 drug regimen for all animals is indicated by a solid vertical line. Set point at which cDNA was taken to sequence for analysis is indicated by a dashed vertical line and a black asterisk.

Drug Resistant Mutations

Table 1. Mutation Analysis of 14 Male Study

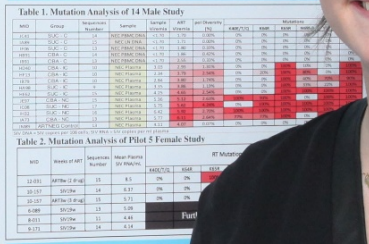

Table 2. Mutation Analysis of Pilot 5 Female Study

Comparison of W

Conclusions and

- In our 14 male study (and our 21 animal female
were observed.
- Intermediate and non-controllers all harbored dr
during ART was due to drug resistant virus. Non
resistant mutations.
- Our pilot study also showed a range of respons
demonstrate poor control even after ART initia
regimen, our preliminary analysis has not sho
- Drug resistant mutations that were previously
were also seen in one female (12-031) in the
prematurely due to high viral load.
- Comparisons of viral loads in our female a
has increased viral loads.
- Future studies will continue to monitor vir
mutations mapping to determine whether
response to ART.

This research project was supported through the LSU Health Sciences Center, School of Medicine and Comprehensive Alcoh

The Effects of Traum

Stimuli in Rats with

Tivon M. Eugene, Connor S
Louisiana State University

LSU Health NEW ORLEANS ool of Medicine

Introduction

aumatic stress disorder (PTSD) is marked by symptoms of avoidance, perienciing, and hyperarousal that develop subsequent to traumatic events. ly are women twice as likely as men to develop PTSD, but they also nce different symptoms and comorbidities associated with PTSD.

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bjective

a history of alcohol-drinking affects male Wistar rats exposed to trauma.

sed to alcohol consumption ottle choice model. During ays, Wednesdays, and ater consumption.

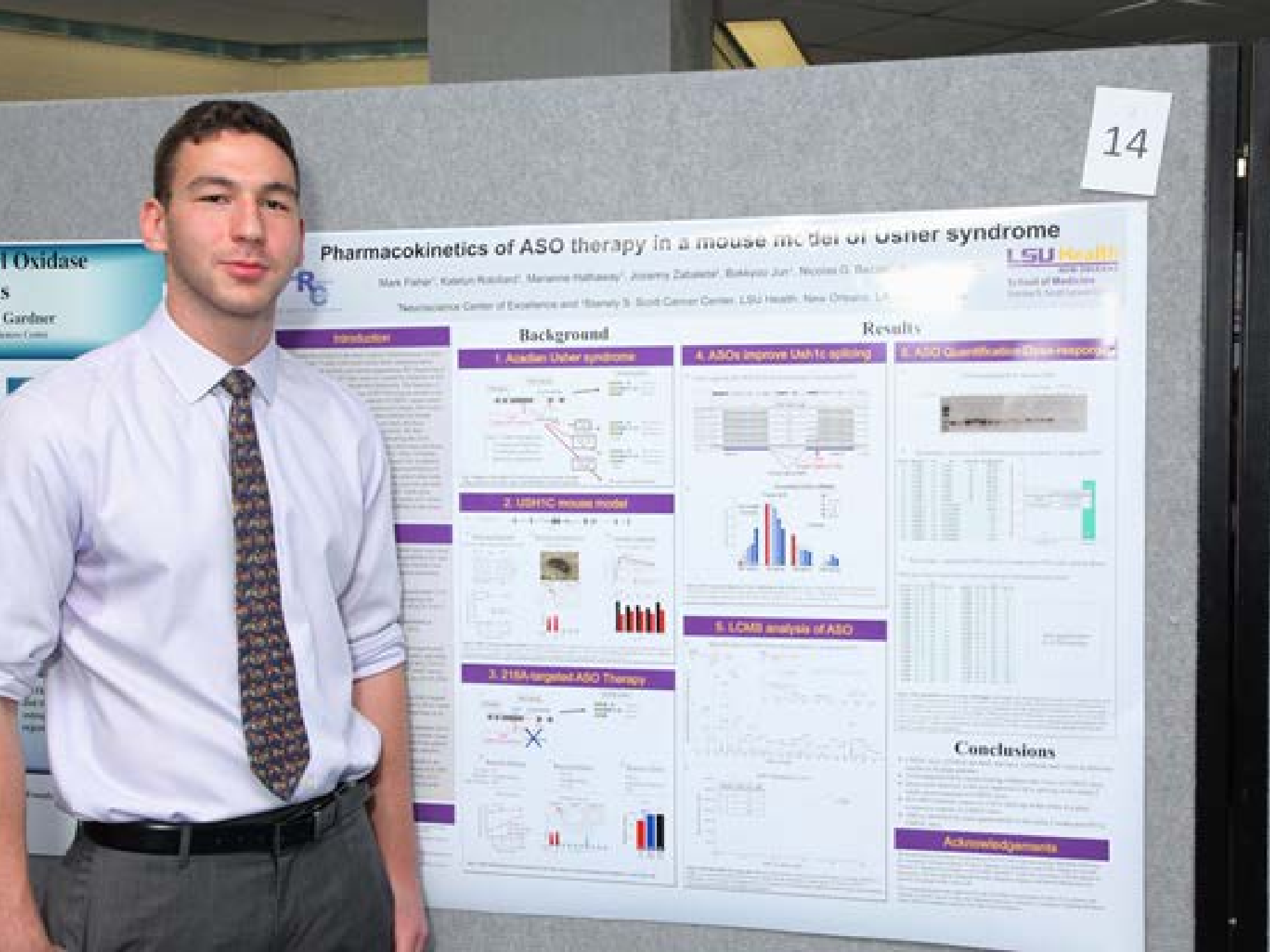
subjected to the CPA r Non-Avoiders based on f the predator odor (i.e.

Day 5

ASR. There 90, 105, and 115 otal of 10 times.

This research was supported

- Stressed tendency (non-drin
- Male rats


14
Pharmacokinetics of ASO therapy in a mouse model of Usher syndrome
Introduction
Background
1. Acadian Usher syndrome
2. USH1C mouse model
3. 21bA-targeted ASO Therapy
Results
4. ASOs improve Ush1c splicing
5. LCMS analysis of ASO
Conclusions
Acknowledgements

15

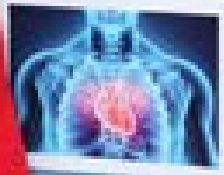
Estrogenic Regulation of Lysyl Oxidase in Cardiac Fibroblasts

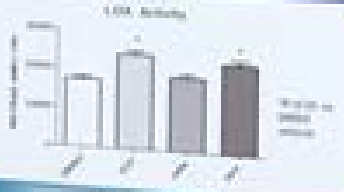
Tierra Foley, Nicholas Fried, Dr. Jason Gardner
Department of Physiology, Louisiana State University Health Sciences Center

Background

Methods

Ongoing Experiments





Hypothesis

Interpretation

Conclusion

This research project was supported by grant # 1659752 through the National Science Foundation (NSF)'s Research Experiences for Undergraduates (REU) Program

16

Effect of norepinephrine on REST expression and subcellular localization in cerebellar interneurons

LSU Health NEW ORLEANS School of Medicine

Jordyn Fong, Jessica Fawcett-Patel, and Siqiong June Liu

Department of Cell Biology and Anatomy, LSUHSC New Orleans, LA

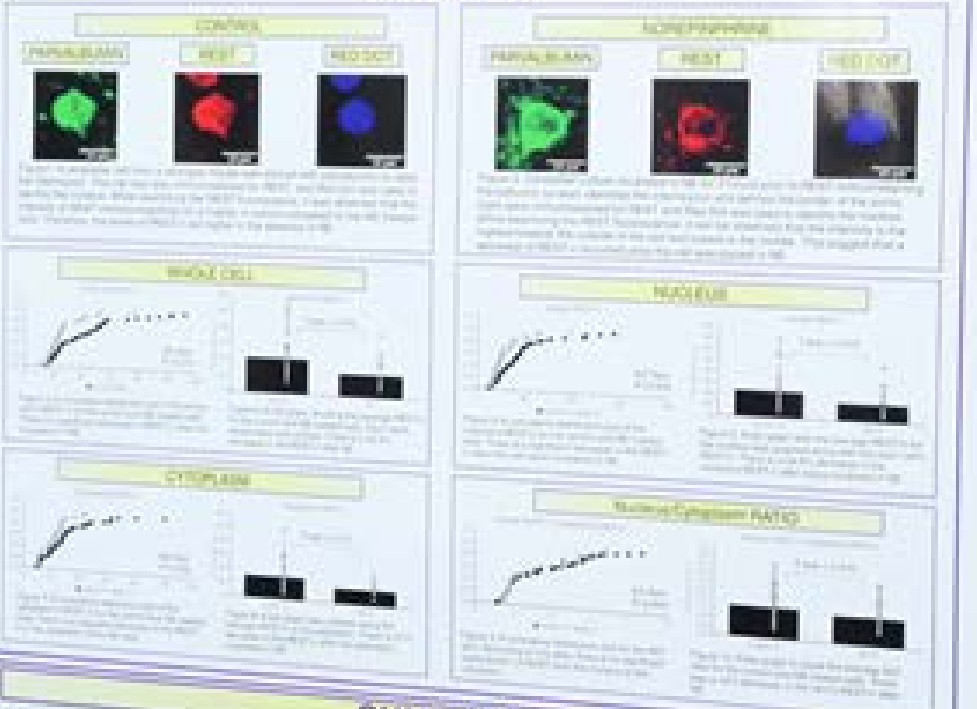
LSU Health NEW ORLEANS School of Medicine

INTRODUCTION

METHODS

REFERENCES

RESULTS



SUMMARY

This research project was supported through the LSU Health Sciences Center, School of Medicine.

17

18

Construction of a short-lived fluorescent protein genetic reporter.

Hassan A. Hassan[1], Li Shen MD, PhD[2]
[1]Xavier University of Louisiana, New Orleans, LA
[2]Department of Microbiology, Immunology, & Parasitology, LSU Health Science Center, New Orleans, LA

Abstract

Strains and plasmids used

Cloning Strategy

Map of plasmid

Agarose gel electrophoresis

Results

References

Identification of Isoform-Specific
Human Pathogenic Fungus Cryp

III. Virulence Factors

IV. Homology of Cin1 with ITSN

V. Construction of Cin1-L and

17

18

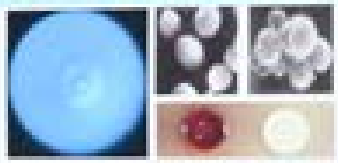
Identification of Isoform-Specific Intersectin Mutants in Human Pathogenic Fungus *Cryptococcus neoformans*.

Haley Hill, Ping Wang.

Department of Microbiology, Immunology, and Parasitology, Louisiana State University Health Sciences Center, New Orleans, LA, USA

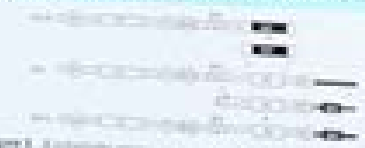
Introduction

III. Virulence Factors



IV. Homology of Cin1 with ITSN1

V. Construction of Cin1-L and Cin1-S



VI. Gel Electrophoresis

VII. DNA Chromatogram

Results

Conclusion and Future Directions

This research project was supported by [grant #] through the National Science Foundation (NSF)'s Research Experiences for Undergraduates (REU) Program

19

T. cruzi-induced Changes in Cardiac Endothelial Cells

LSU Health NEW ORLEANS School of Medicine

Rebecca Hinojosa[1], Douglas Johnston[2]

[1]University of Alabama, Tuscaloosa; [2]LSUHSC New Orleans IMP

Entergy

Introduction

T. cruzi induces classic EndMT regulators

Cell-specific/EndMT marker expression

Co-Culture Infection

Conclusions

Acknowledgements

This research was supported by the Entergy Workforce Training Grant.

20

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School of Medicine

Arginine-170 is Important in Stabilizing the Active Parkin Oligomer

Kariza Hossain, Jennifer Klein, Virginia Ronchi, Oygul Mirzalieva, and Arthur Haas.

Department of Biochemistry & Molecular Biology, Louisiana State University Health Sciences Center, New Orleans, LA

Introduction

Materials and Methods

Results

Figure 1. Activation of Parkin by PINK1

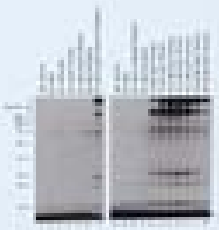


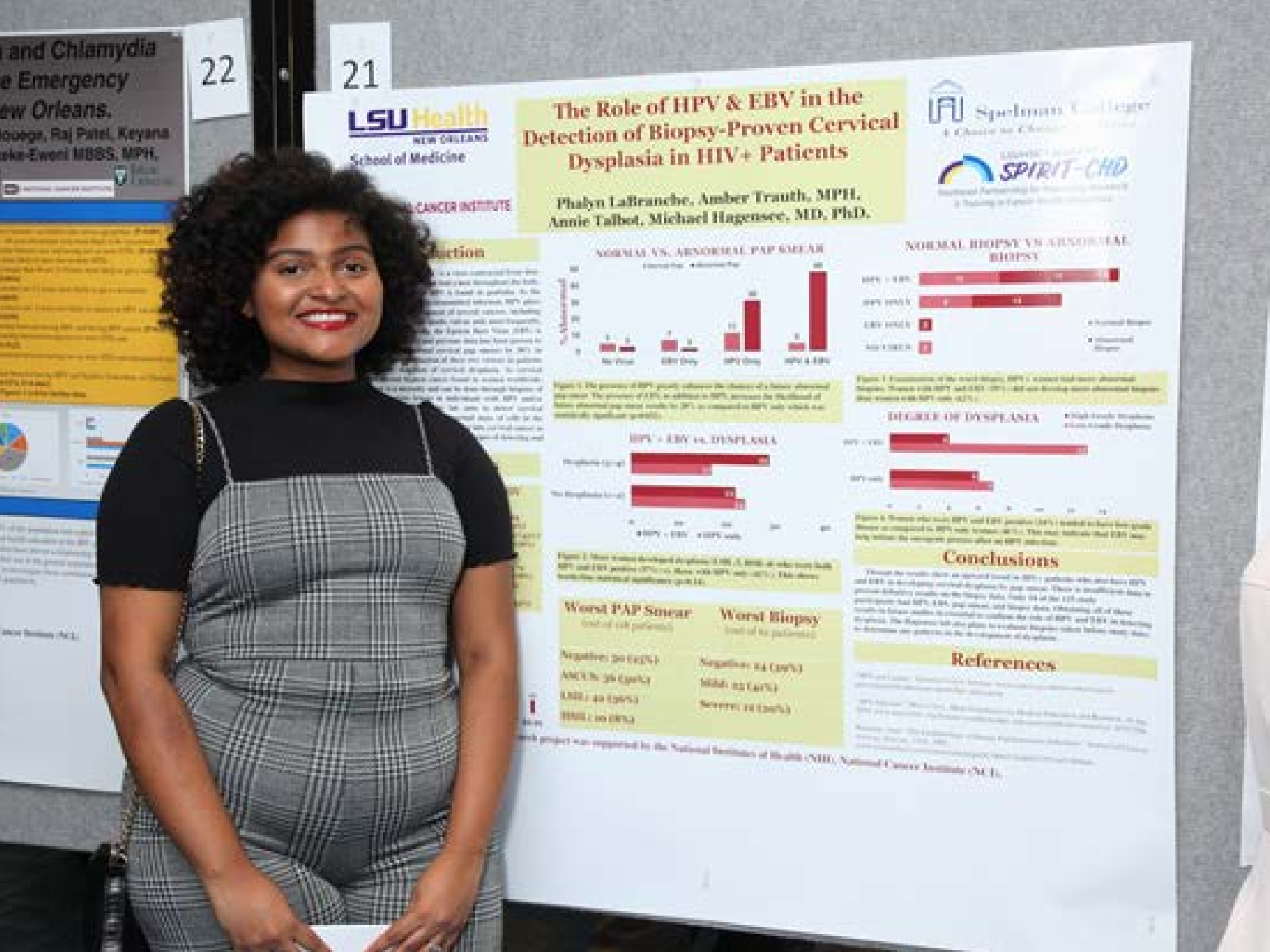
Figure 2. Substrate inhibition reveals two E2-ubiquitin binding sites

Figure 3. Hyperbolic inhibition of Parkin activity by Ubiquitin-like 1

Conclusions

References

This research project was supported by grant # [illegible] through the National Science Foundation [illegible] Research Experiences for Undergraduates (REU) Program


22
21
LSU Health
NEW ORLEANS
School of Medicine
The Role of HPV & EBV in the Detection of Biopsy-Proven Cervical Dysplasia in HIV+ Patients
Phalyn LaBranche, Amber Trauth, MPH, Annie Talbot, Michael Hagensee, MD, PhD.
SPIRIT-CHD
NORMAL VS. ABNORMAL PAP SMEAR
NORMAL BIOPSY VS ABNORMAL BIOPSY
HPV + EBV vs. DYSPLASIA
DEGREE OF DYSPLASIA
Conclusions
References
Worst PAP Smear
Worst Biopsy

22

21

HPV-related Cancers, HSV, Syphilis, Gonorrhea and Chlamydia Infections among HIV-Positive Patients at the Emergency Department of University Medical Center New Orleans.

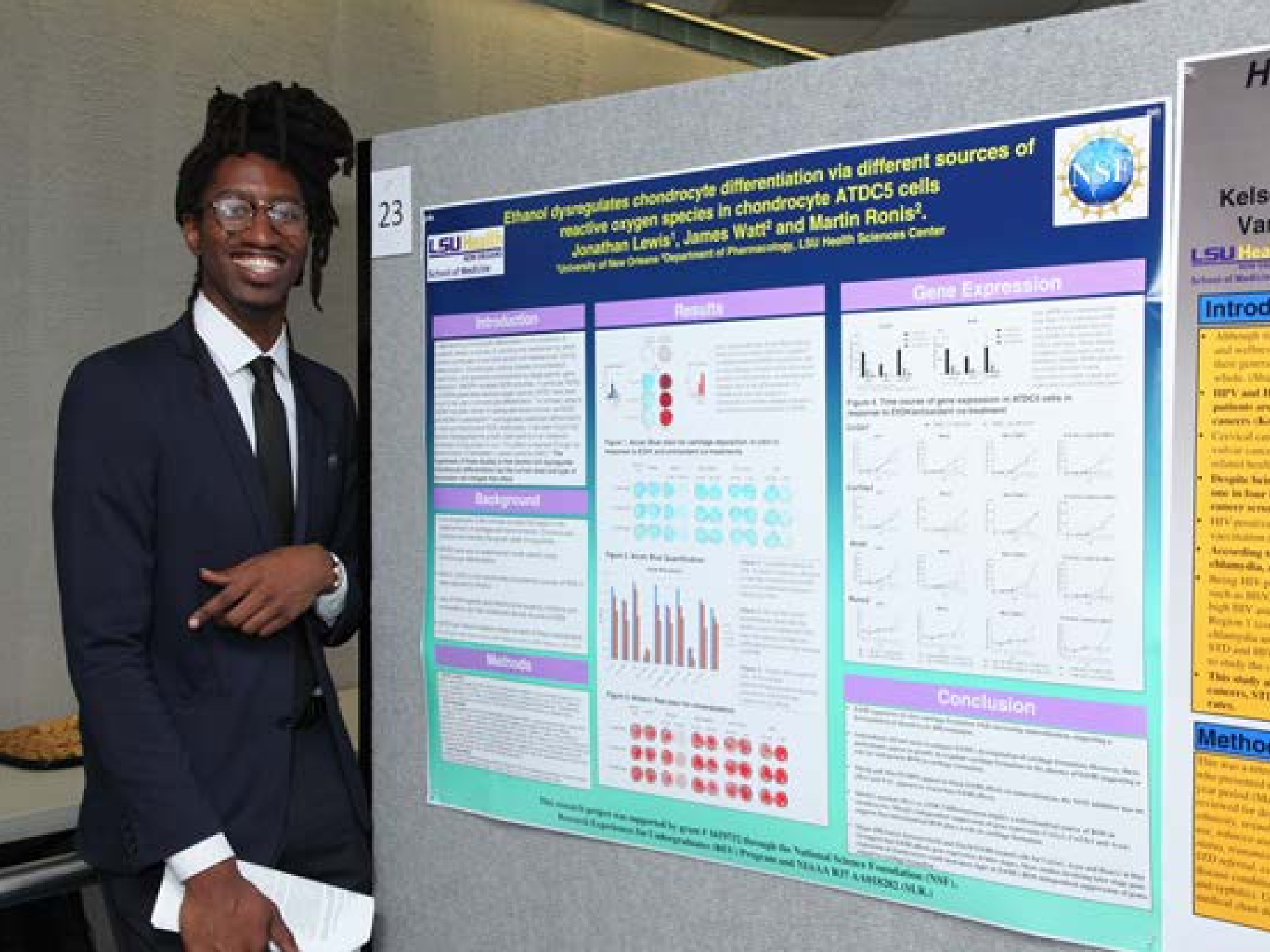
Kelsey Lain, Victoria Lulich, Evrim Oral, PhD, Chizoba Ogbuefi, Zion Rouege, Raj Patel, Keyana Varnado MD, Michael Okonenkwo MD, Stacy Rhodes MD, Kenayo Okeke-Eweni MBBS, MPH, Lisa Moreno-Walton MD, MS, MSCR, FAAEM
(MCNO Emergency Department, LSUHSC School of Medicine)

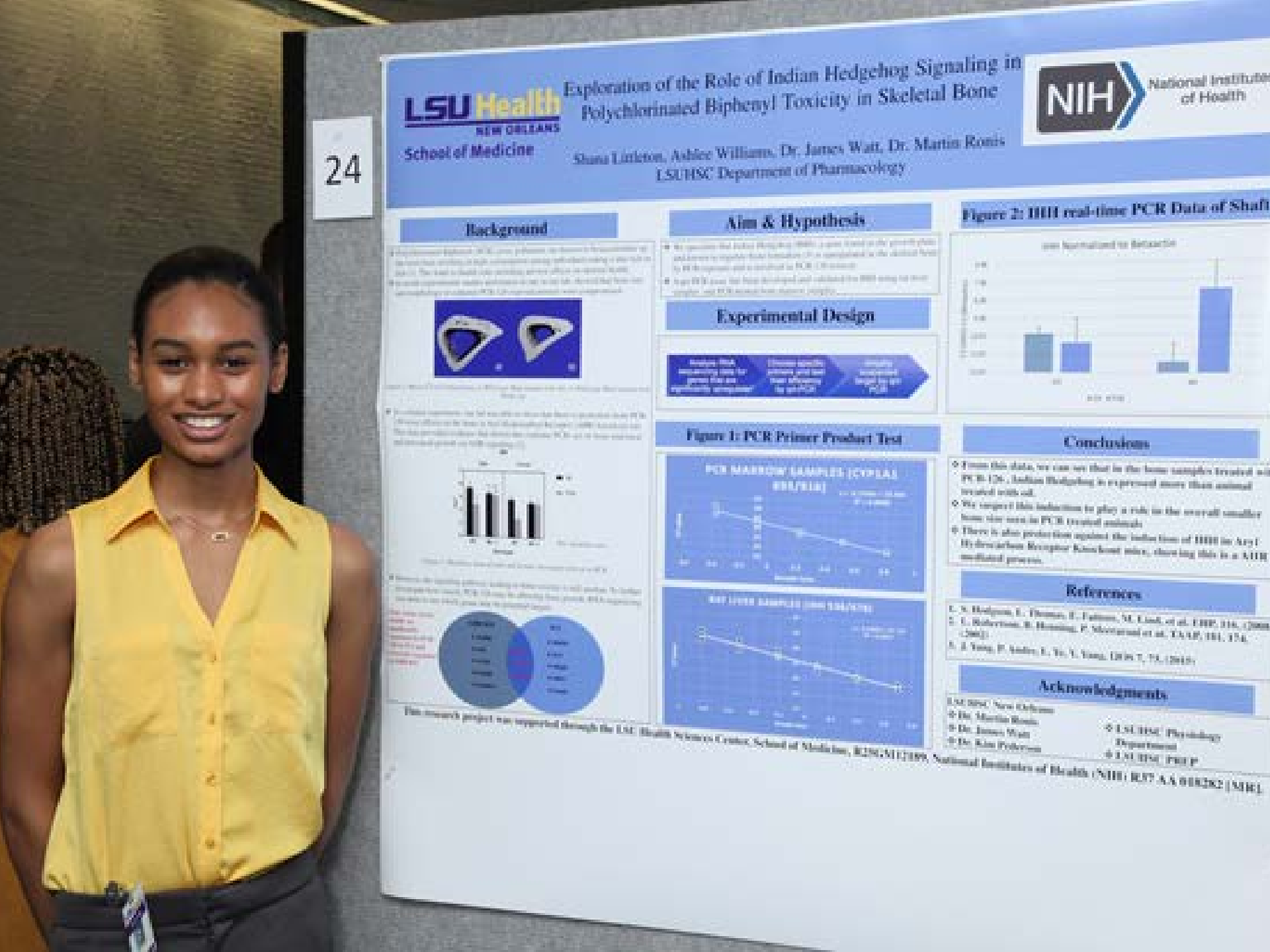
Introduction

Data & Results

Discussion

project supported by the National Institutes of Health (NIH). National (Heart) Institute (NHLBI)


23
Ethanol dysregulates chondrocyte differentiation via different sources of reactive oxygen species in chondrocyte ATDC5 cells
Jonathan Lewis[1], James Watt[2] and Martin Ronis[2].
[1]University of New Orleans [2]Department of Pharmacology, LSU Health Sciences Center
LSU Health New Orleans School of Medicine
NSF
Introduction
Background
Methods
Results
Gene Expression
Conclusion
Introd
Metho


24
LSU Health NEW ORLEANS
School of Medicine
Exploration of the Role of Indian Hedgehog Signaling in Polychlorinated Biphenyl Toxicity in Skeletal Bone
Shana Littleton, Ashlee Williams, Dr. James Watt, Dr. Martin Romis
LSUHSC Department of Pharmacology
NIH
National Institutes of Health
Background
Aim & Hypothesis
Experimental Design
Figure 1: PCR Primer Product Test
Figure 2: IHH real-time PCR Data of Shaft
Conclusions
References
Acknowledgments

Voluntary Ethanol Consumption and Alterations in Reward Circuitry in Ethanol Exposed Adolescent Male Mice

LSU Health New Orleans School of Medicine

Ben Litchfield, Taylor Collins, Connor Hoisington, Chelsea Kaplan, Tiffany Wills

LSU Health Sciences Center Department of Cell Biology and Anatomy, New Orleans, LA

STAMPS SCHOLARS

Background

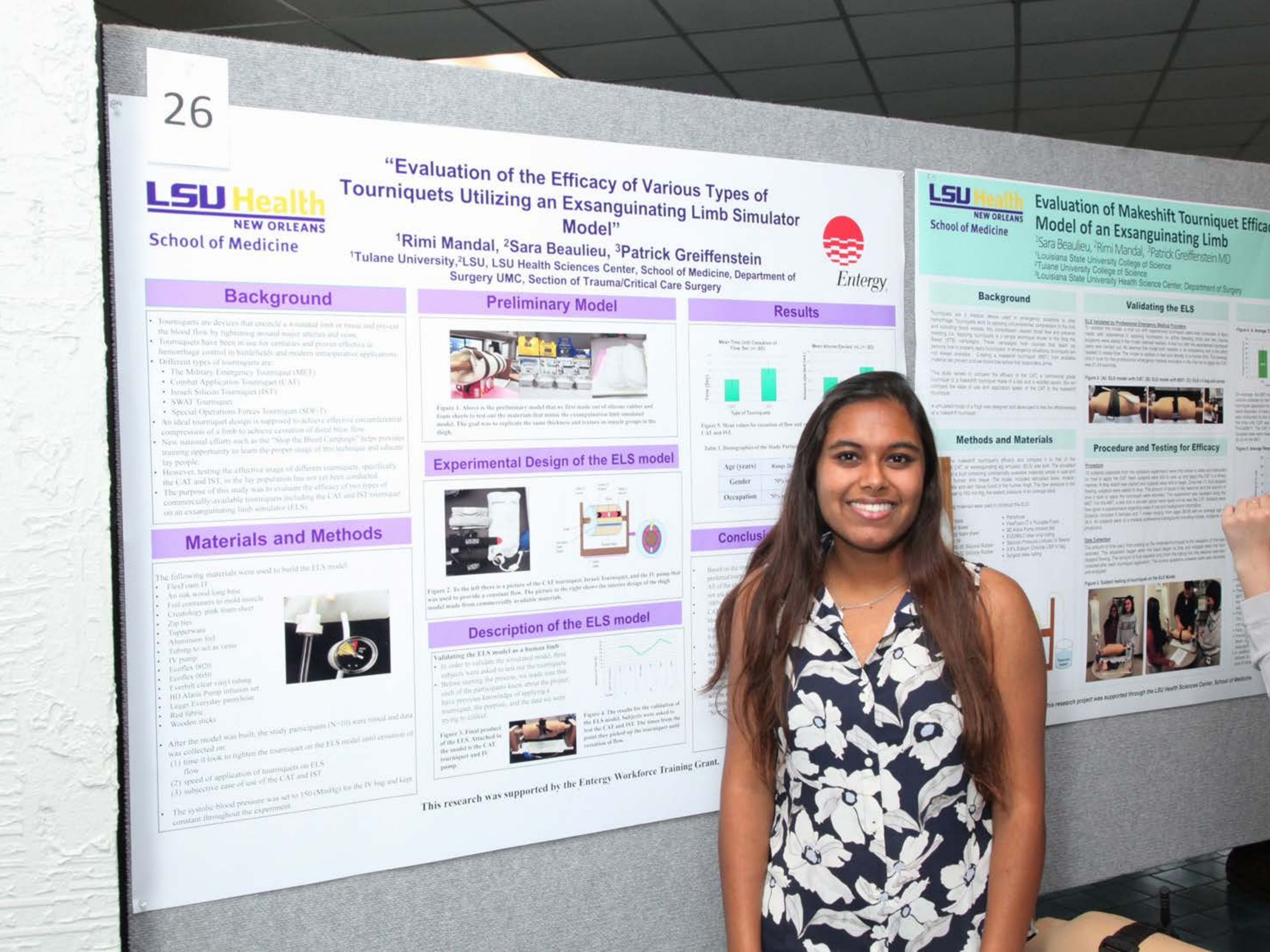
Methods

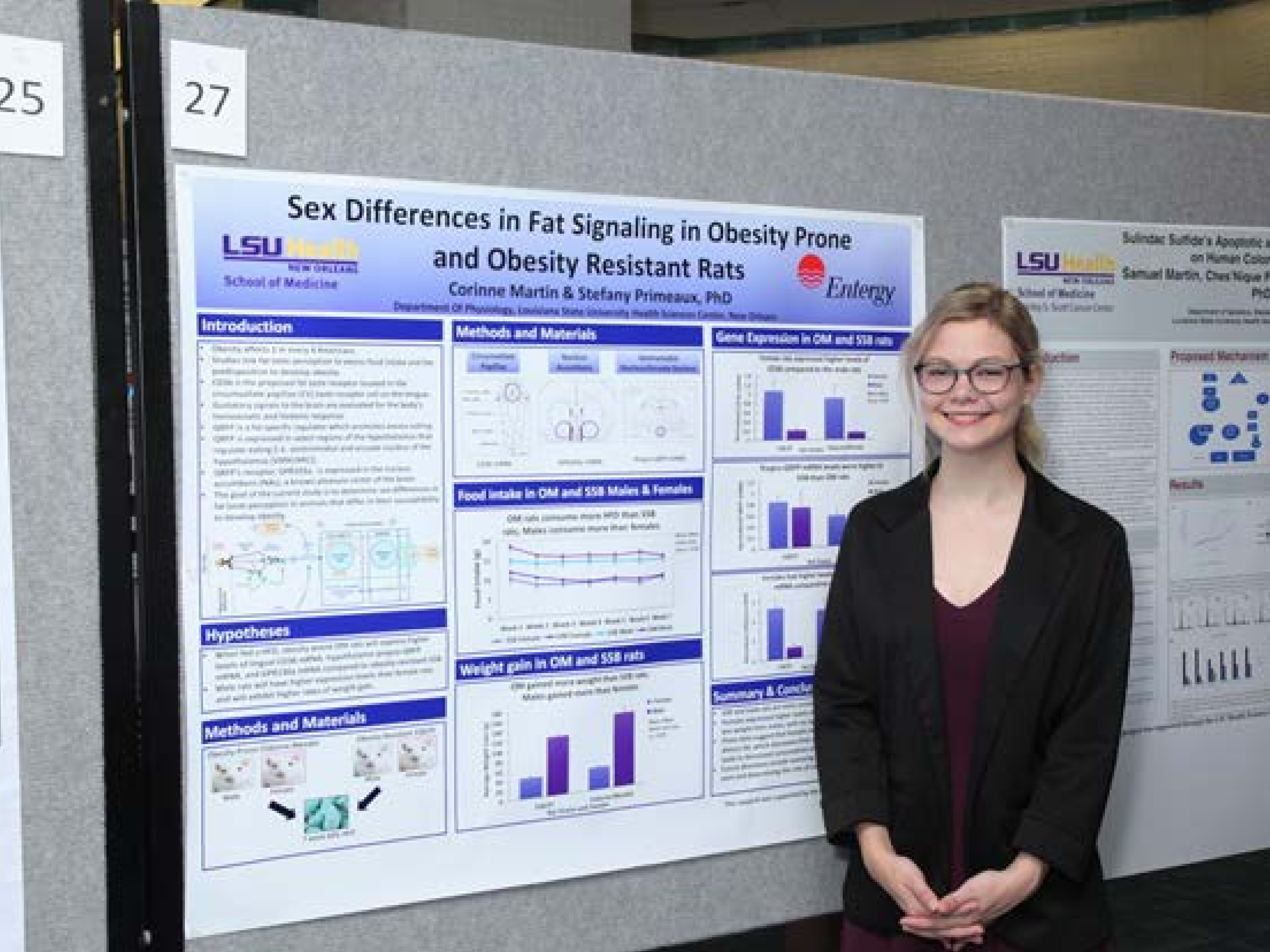
Mesolimbic Circuitry

Two-Bottle Choice

Conclusions

This research project was supported through the LSU Health Sciences Center, School of Medicine and NIAAA (R90 [illegible] AA025431)


26
LSU Health
NEW ORLEANS
School of Medicine
"Evaluation of the Efficacy of Various Types of Tourniquets Utilizing an Exsanguinating Limb Simulator Model"
1Rimi Mandal, 2Sara Beaulieu, 3Patrick Greiffenstein
1Tulane University,2LSU, LSU Health Sciences Center, School of Medicine, Department of Surgery UMC, Section of Trauma/Critical Care Surgery
Entergy
Background
Preliminary Model
Results
Experimental Design of the ELS model
Materials and Methods
Description of the ELS model
This research was supported by the Entergy Workforce Training Grant.
LSU Health
NEW ORLEANS
School of Medicine
Evaluation of Makeshift Tourniquet Effica
Model of an Exsanguinating Limb
Background
Validating the ELS
Methods and Materials
Procedure and Testing for Efficacy


25
27
Sex Differences in Fat Signaling in Obesity Prone and Obesity Resistant Rats
LSU Health
NEW ORLEANS
School of Medicine
Corinne Martin & Stefany Primeaux, PhD
Entergy
Introduction
Methods and Materials
Gene Expression in OM and S5B rats
Food intake in OM and S5B Males & Females
Hypotheses
Weight gain in OM and S5B rats
Methods and Materials

28

Sulindac Sulfide's Apoptotic and Anti-proliferative Effects on Human Colon Cancer Cells

Samuel Martin, Ches'Nique Phillips PhD, Yaguang Xi MD PhD.

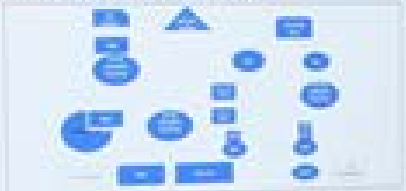
Department of Genetics, Stanley S. Scott Cancer Center,
Louisiana State University Health Sciences Center, New Orleans, LA

LSU Health NEW ORLEANS
School of Medicine
Stanley S. Scott Cancer Center

Introduction

Materials and Methods

Proposed Mechanism



Results

Results

Conclusions

This research project was supported through the LSU Health Sciences Center, School of Medicine, Stanley S. Scott Cancer Center

29

Workplace Wellness and Cancer Screening

Alina Mohiuddin[1], Douglas LeBlanc[2], MPH, Mikal Giancola[2], MPH, Donna L Williams[2], DrPH

Loyola University New Orleans[1], LSUHSC-NO School of Public Health[2]

Background

Description

Methods

Results

Discussion

References

This research project was supported through the LSU Health Sciences Center, School of Medicine, Stanley S. Scott Cancer Cen

31

30

Electrophysiological Techniques to Study Neurological Activity in the CA1 Region of the Hippocampus

LSU Health NEW ORLEANS School of Medicine

Samantha Morin[1], Katelyn Gurley[2], Theodore Weyand[2]

[1]Tulane University Department of Neuroscience,

[2]Louisiana State University Health Sciences Center Department of Cell Biology and Anatomy

LSU Health NEW ORLEANS School of Medicine

Introduction

Electrode Fabrication

Surgical Implantation

Behavioral Task

Data Analysis

Conclusion

Data Recording

Results

This research project was supported through the LSU Health Sciences Center, School of Medicine.

31

30

Of Mice and Many Repeats:
Tissue Specific Expansion in a Friedreich Ataxia Mouse Model

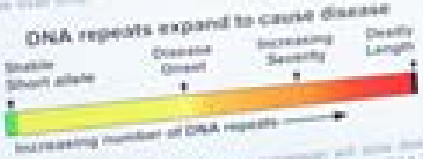
Nalja S. Nelson, Jennie C. L. Roy, Caroline Burroughs, Ashley Henderson, and Ed Grabczyk
Department of Genetics, Louisiana State University Health Sciences Center

Entergy

Introduction

Friedreich Ataxia

Repeat Expansion



FRDA Mouse Model

They Gain in the Brain

YG8 Mouse Model Tissues Expand at Various Rates

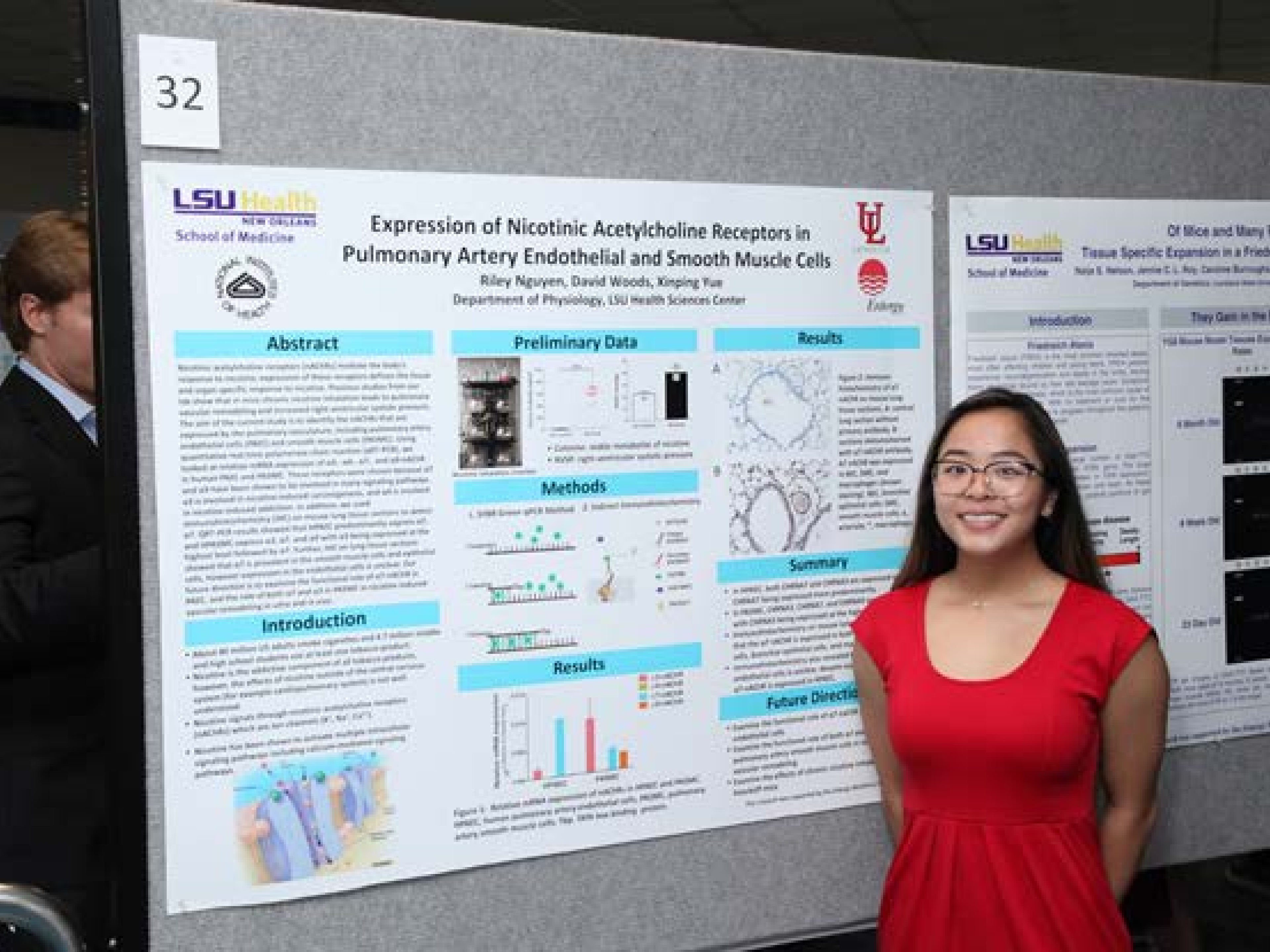
Ear Today, Growing Tomorrow?

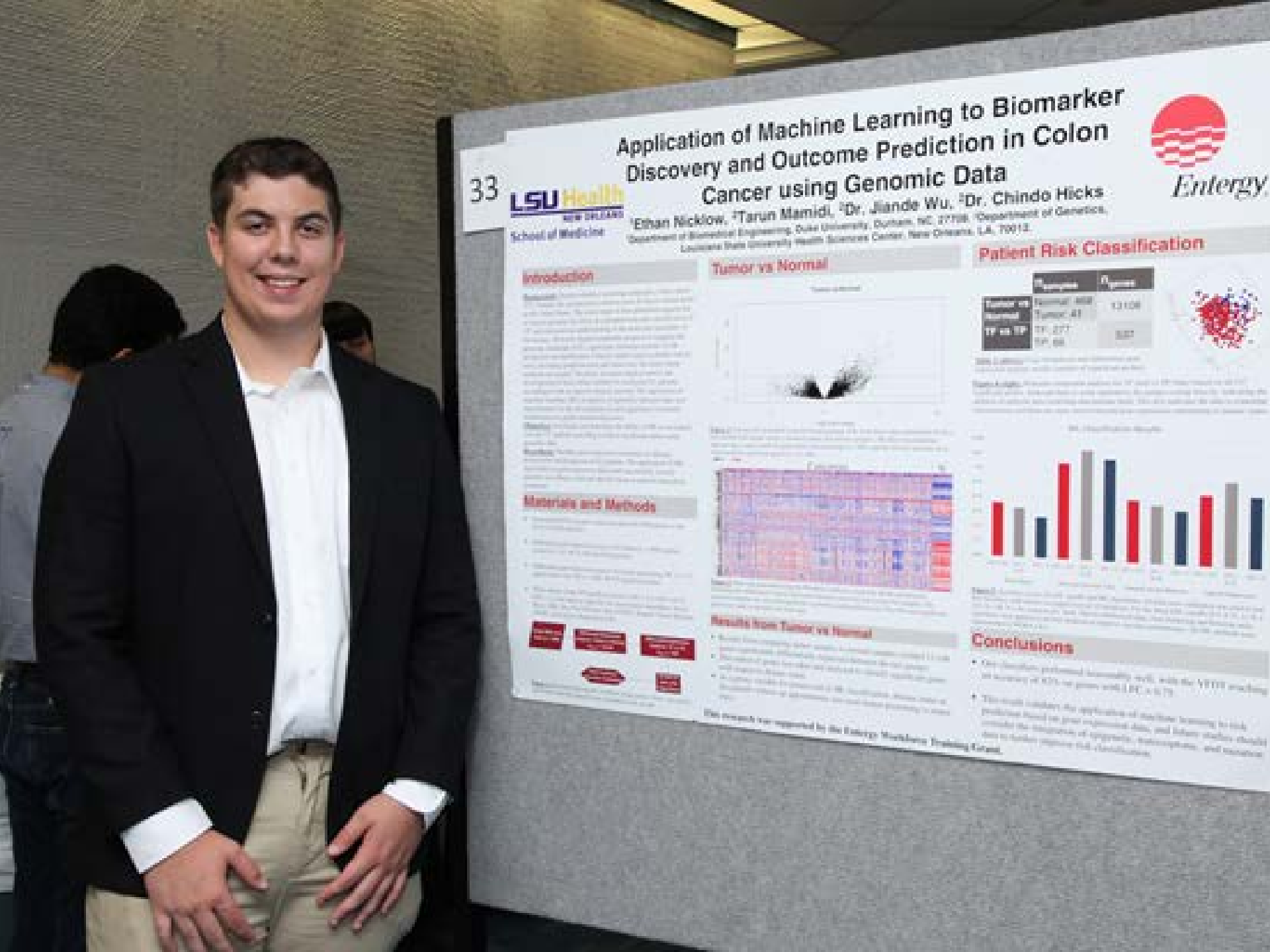
Ears Expand Minimally

Discussion

What We Found

This research was supported by the Entergy Workforce Training Center.


32
LSU Health
NEW ORLEANS
School of Medicine
Expression of Nicotinic Acetylcholine Receptors in Pulmonary Artery Endothelial and Smooth Muscle Cells
Riley Nguyen, David Woods, Xinping Yue
Department of Physiology, LSU Health Sciences Center
Abstract
Preliminary Data
Methods
Results
Introduction
Results
Summary
LSU Health
NEW ORLEANS
School of Medicine
Introduction


33
Application of Machine Learning to Biomarker Discovery and Outcome Prediction in Colon Cancer using Genomic Data
LSU Health NEW ORLEANS
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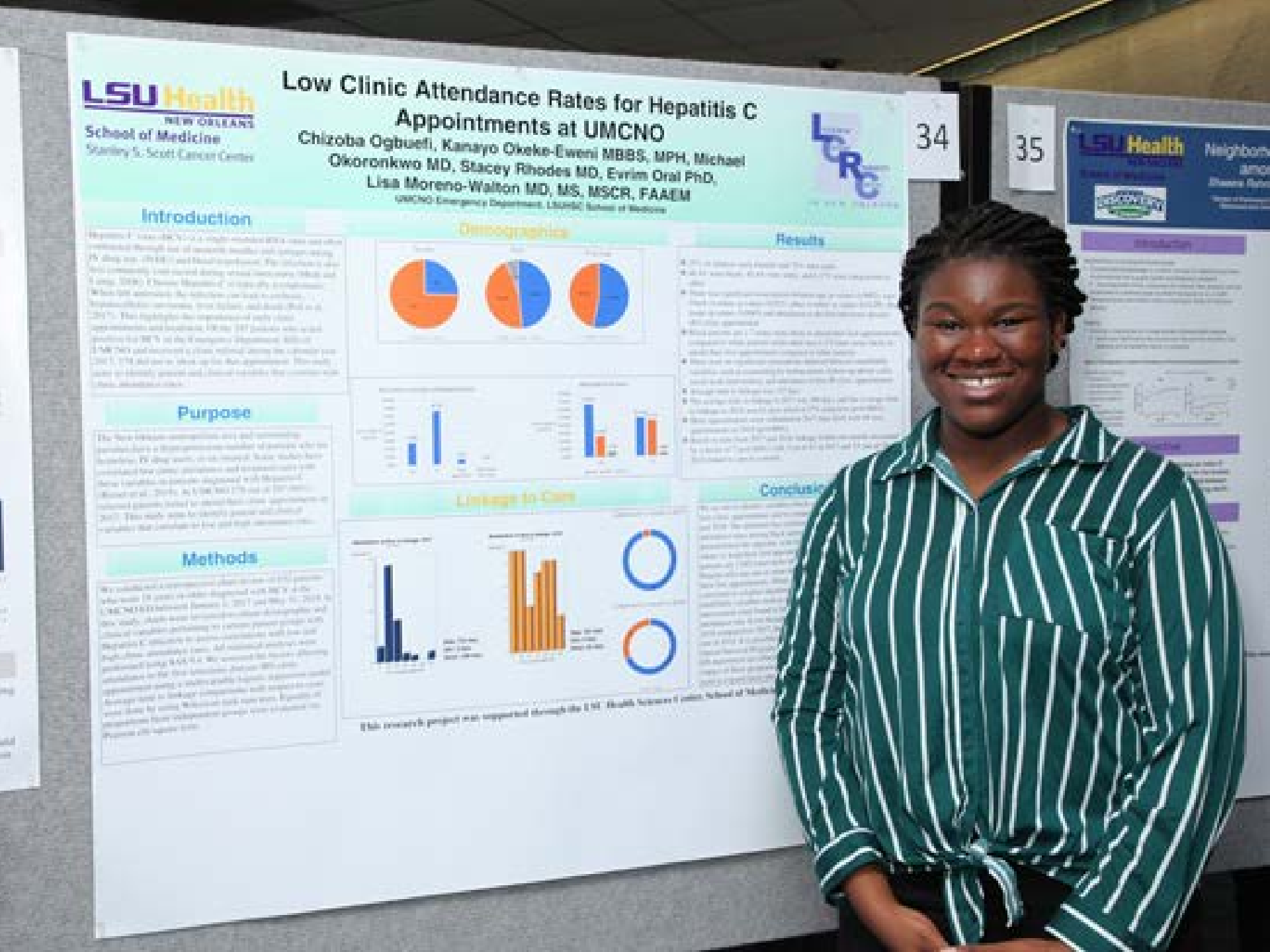
Entergy
Introduction
Tumor vs Normal
Patient Risk Classification
Materials and Methods
Results from Tumor vs Normal
Conclusions


LSU Health
NEW ORLEANS
School of Medicine
Stanley S. Scott Cancer Center
Low Clinic Attendance Rates for Hepatitis C Appointments at UMCNO
Chizoba Ogbuefi, Kanayo Okeke-Eweni MBBS, MPH, Michael Okoronkwo MD, Stacey Rhodes MD, Evrim Oral PhD, Lisa Moreno-Walton MD, MS, MSCR, FAAEM
UMCNO Emergency Department, LSUHSC School of Medicine
LCRC
34
35
Introduction
Purpose
Methods
Demographics
Linkage to Care
Results
Conclusion

34

35

LSU Health New Orleans School of Medicine

Neighborhood Concentrated Disadvantage and Smoking among Young Adults in Greater New Orleans

Shawna Rahman[1], Stephen Kantrow, MD[2], Ryan Keen, MD[2], Denise Dance, PhD[3]

[1] Tulane University Health Sciences Academy

[2] Section of Pulmonary/Critical Care and Allergy/Immunology, Department of Medicine, Louisiana State University Health, New Orleans, LA

[3] Behavioral and Community Health, Exercise Program, School of Public Health, Louisiana State University Health, New Orleans, LA

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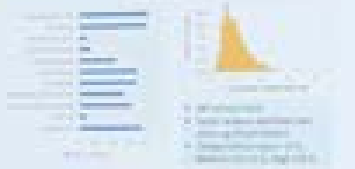
Introduction

Objective

Data and Methods

Results



Results

Discussion

This research was supported by the Entergy Workforce Training Grant.

LSU Health NEW ORLEANS School of Medicine

PLA2G6 and α-synuclein Interaction in Human RPE Cells

Catherine Rockwell[1], Sophia Marathonitis[2], Sayantani Bhattacharjee[1], Jorgelina Calandria[3].

Louisiana State University[1], Tulane University[2], Louisiana State University Health Sciences Center, Neuroscience Center of Excellence[3].

LSU Health NEW ORLEANS School of Medicine

36

Introduction

MO-ATG1 increased the expression of PLA2G6 and PLA2G4A mRNAs

Dysregulation of PLA2G6 activity affects its colocalization with SNCA

MO-ATG2 increases L/S PLA2G6/PLA2G6

MO-ATG1 induces the colocalization of PLA2G6 and SNCA

Conclusions

References

This research project was supported through the LSU Health Sciences Center, School of Medicine.

37

LSU Health NEW ORLEANS School of Medicine

Purification and Functional Analysis of Monoclonal Antibodies Protection Against *C. auris* Invasive Infections

Claudia Rodriguez, Abby Adams, Jonothan Colon, Karen Eberle, Dr. Hong Xin
Department of Microbiology, Immunology, and Parasitology | LSUHSC New Orleans, LA

Introduction

Methods

Immunoassay Methods

Results

Flow Cytometry and Fluorescent Staining

Conclusions

This research project was supported by grant # 1659732 through the National Science Foundation - NSF, Research Experience for Undergraduates - REU | Pro

38

Dieting Apps: What's Under the Hood?

Brayden W. Rohr & Lauri O. Byerley
Department of Physiology, LSU Health Sciences Center, New Orleans, LA 70112

Introduction

Results

Apps Selected

Monetization Features

Other Features

Database Utilized for Food Composition

Food Input Features

Conclusion

This research was supported by the Entergy Workforce Training Fund.

LSU Health NEW ORLEANS School of Medicine

Disparities in Motor Vehicle Collision (MVC) among Pediatric Patients

Zion Rouege, Stacey Rhodes MD, Evrim Oral PhD, Nick Sausen MD, Kanayo Okeke-Eweni MBBS, MPH, Lisa Moreno-Walton MD

UMCNO Emergency Department, LSUHSC School of Medicine

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39

38

Introduction

Motor vehicle collisions are collisions between a vehicle and a pedestrian, animal, road debris, or another vehicle. Each year 1.25 million people lose their lives in motor vehicle collisions (MVC). An estimated 4.5 million people were severely injured in a motor vehicle collision in 2019. Motor vehicle collisions are one of the three leading causes of death in pediatric patients in the United States. The goal of this study is to discover trends in demographics and information regarding the use of protective devices, severity of injuries, surgery rates, and length of stay at the University Medical Center New Orleans (UMCNO). The research can potentially lessen disparities in motor vehicle collision rates, length of stay, and trends in imaging (X-rays, CT scans, and MRIs).

Methods

The Louisiana Trauma registry was used to obtain information on patients between the ages of birth to 18 years who were in a MVC that met the criteria for a level 1 trauma activation at UMCMO. The charts for all patients meeting criteria were reviewed in EPIC. Variables collected included race, age, date of admission and discharge, gender, injury severity score (ISS) and use of protected devices. All data was de-identified and then analyzed using Statistical Analysis System (SAS) 9.4. Relationships between categorical variables were assessed using Pearson's chi-square or Fisher's exact tests. We also performed Wilcoxon rank sum tests in complex independent groups.

Objectives

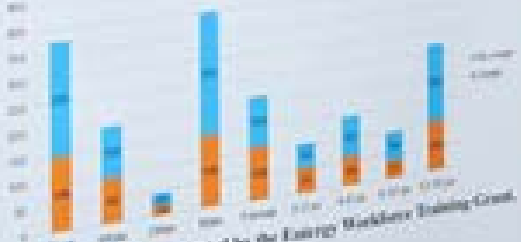
- To assess the severity of injury in pediatric patients involved in a Motor Vehicle Collision (MVC).
- To assess surgery rates across gender, age, and race.
- To assess hospital length of stay across Pediatric MVC patient groups.
- To assess the use of protective devices in pediatric motor vehicle collision patients.

Demographics

Surgery Rates

Protective Devices

Restraint Usage by Race, Gender, and Age



Results

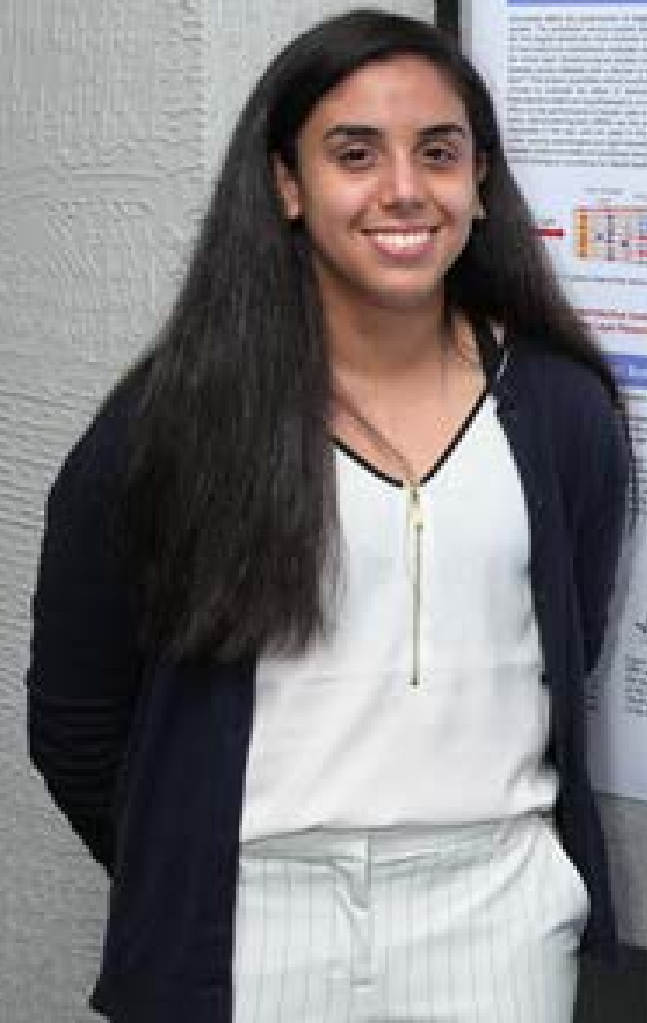
This research was supported by the Entergy Workforce Training Grant.

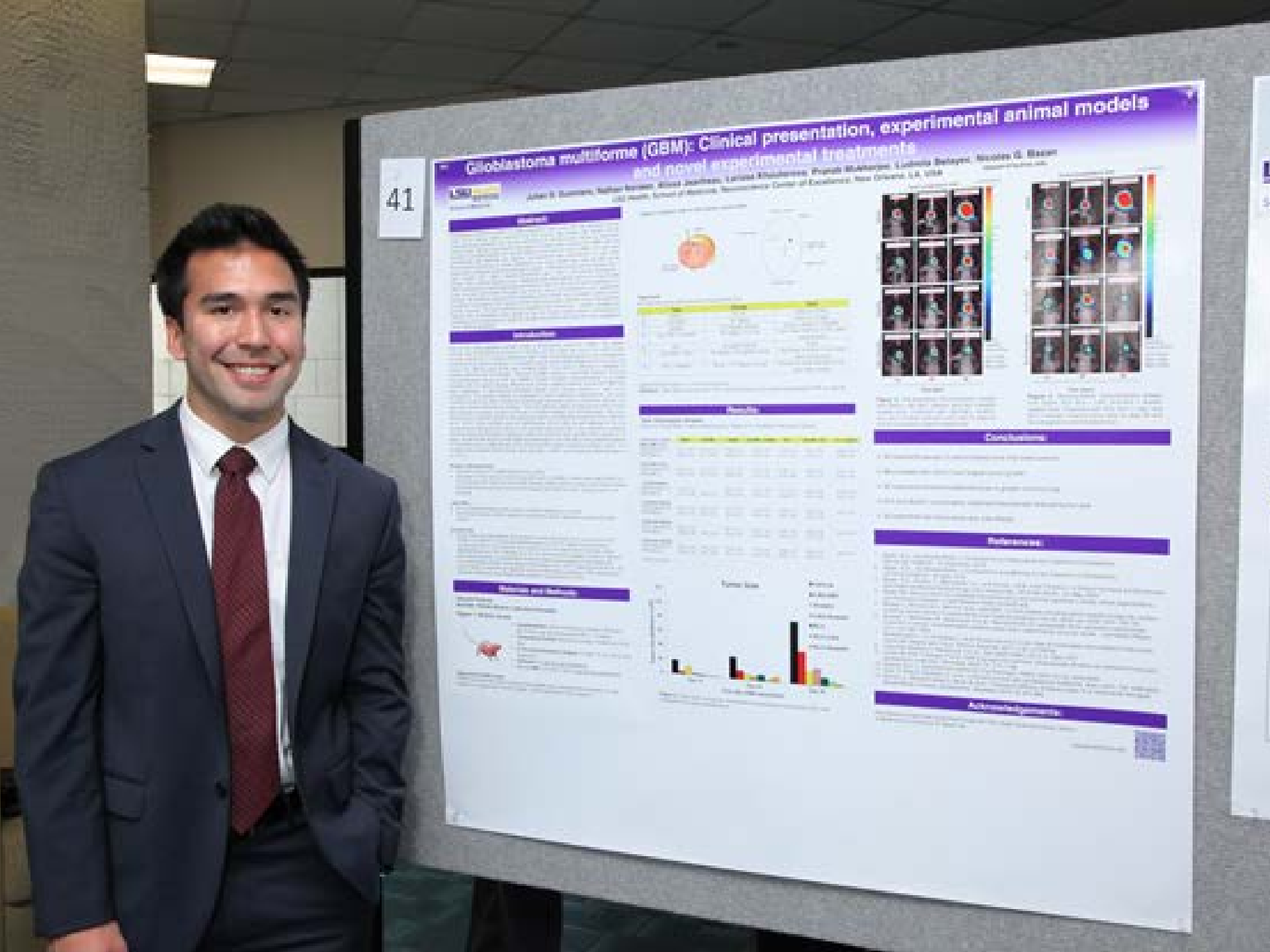
40

Retinal Sensitivity in Hormonally Modulated *Hyla cinerea* Using Electrophysiological Techniques

[1]Ashley Santana, [1,2]Whitney Walkowski M.S., [1,2]Hamilton Farris PhD

[1]Neuroscience Center of Excellence, [2]Department of Cell Biology and Anatomy, LSU Health, New Orleans, LA




41
Glioblastoma multiforme (GBM): Clinical presentation, experimental animal models and novel expedimental treatments

The Protein S LG1+2 Domain Contributes Significantly to Inhibition of Factor IX$_a$

LSU Health New Orleans School of Medicine

Amber Sylvain, Sabyasachi Chatterjee, PhD, and Rinku Majumder, PhD
LSU Health Science Center.

42

43

Introduction

Circular Dichroism (CD)

Isothermal Titration Calorimetry (ITC)

ITC Data

Objectives

Which of the two Laminin G like domains—of not both—are responsible for binding to and inhibiting coagulation FIXa?

This research project was supported by grant # 1xxxx1 through the National Science Foundation (NSF)'s Research Experiences for Undergraduates (REU) Program

42

43

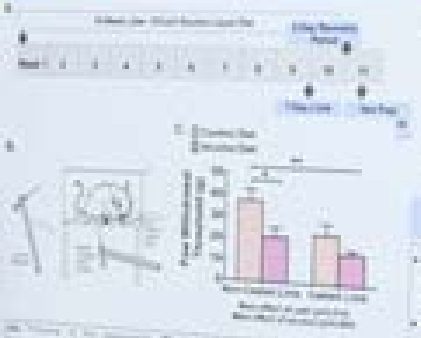
Neuroadaptations in Estrogen Signaling in an Animal Model of Complex Regional Pain Syndrome & Alcoholic Neuropathy

Amy P. Urbina, Jessica A. Cucinello, Kimberly N. Edwards, Liz Simon, Scott Edwards

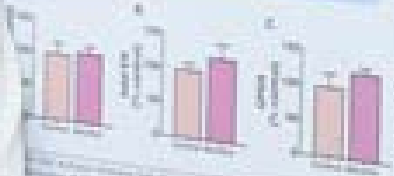
Department of Physiology, LSU Health Sciences Center- New Orleans
Tulane University

Introduction

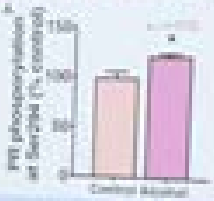
Behavioral Analysis



Alterations in Estrogen Signaling



Alterations in Progesterone Signaling



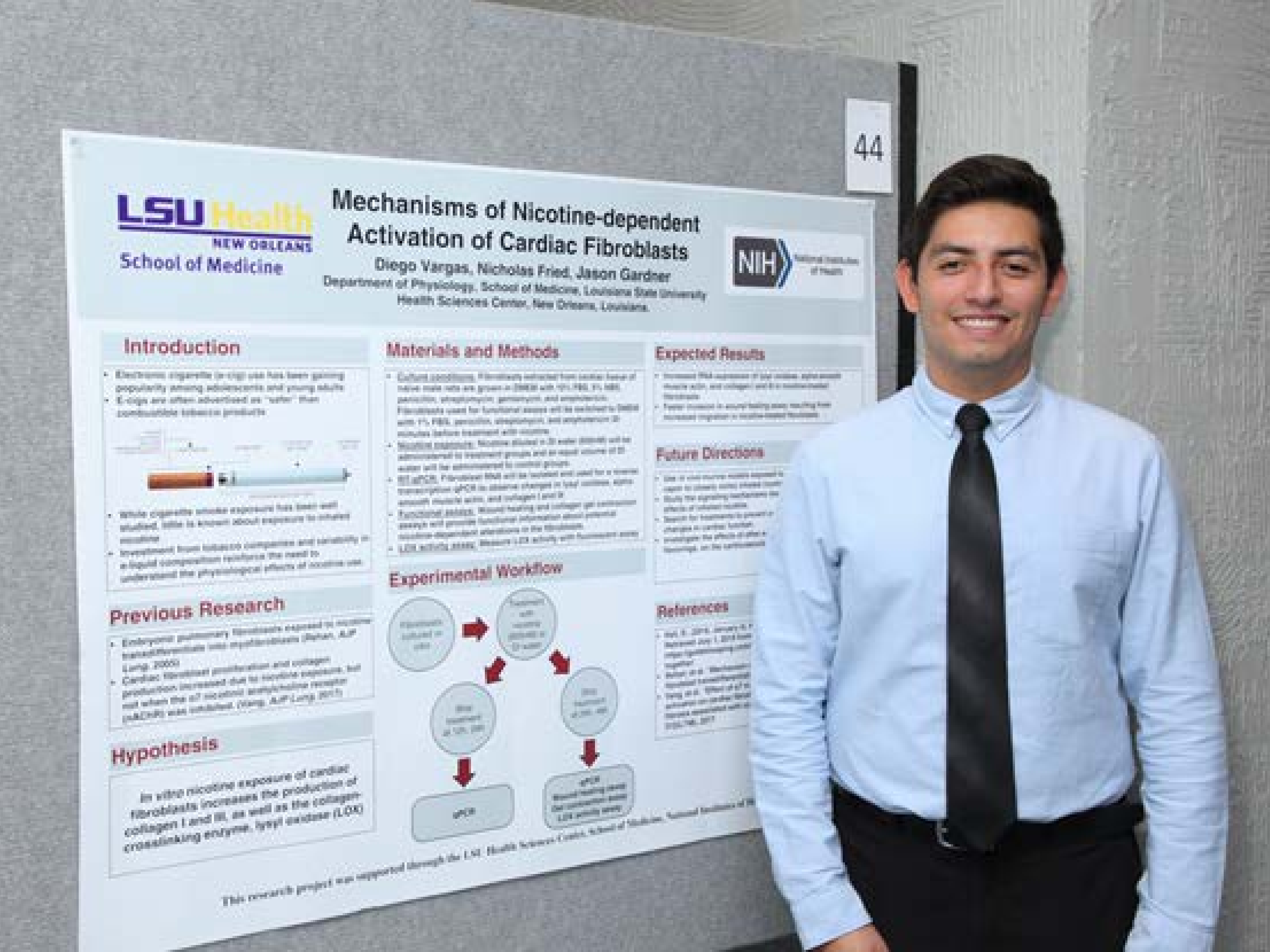
Conclusions

- Behavioral data demonstrate that chronic alcohol intake increased pain sensitivity in our model of CRPS.
- Although the difference in the expression of several estrogen receptors was not statistically significant, there was a general trend for alcohol to increase the expression of total ER and GPER.
- An alcohol bout did lead to an increase in progesterone receptor phosphorylation at Serine 294 in the cingulate cortex.

Future Directions

- Future analysis will investigate other pain-related brain regions, including the prefrontal cortex and central amygdala.
- Because pain and motor information travels contralateral, future research will investigate if neuroadaptations to alcohol and CRPS are lateralized in the motor cortex in accordance with the injured limb.
- To determine associations between pain-like behavior and estrogen/progesterone signaling, we will analyze correlations between paw withdrawal thresholds and protein expression.

Supported by grant # 1547CC through the National Science Foundation (NSF).


44
LSU Health
NEW ORLEANS
School of Medicine
Mechanisms of Nicotine-dependent Activation of Cardiac Fibroblasts
Diego Vargas, Nicholas Fried, Jason Gardner
Department of Physiology, School of Medicine, Louisiana State University Health Sciences Center, New Orleans, Louisiana.
NIH National Institutes of Health
Introduction
Materials and Methods
Expected Results
Future Directions
Previous Research
Experimental Workflow
References
Hypothesis
In vitro nicotine exposure of cardiac fibroblasts increases the production of collagen I and III, as well as the collagen-crosslinking enzyme, lysyl oxidase (LOX)

45

LSU Health NEW ORLEANS
School of Medicine

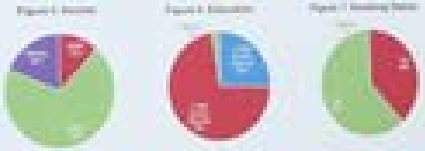
Differences in Patient-Provider Communication Between Smokers and Non-smokers

Brian Washington, Jr., Mirandy Li, BS, Qingchao Yu, PhD, Ty-Runel Bryant, MPH
Michael D. Celestin, Jr., MA, CHES, NCTTS
Louisiana State University Health Science Center, School of Public Health

Introduction

Methods

Results



Results (cont.)

Conclusion

This research was supported through the LSU Health Sciences Center, School of Medicine.

47

46

Higher SIV Levels Are Observed in Blood and Tissue Reservoirs of ART-Treated Female Macaques Exposed to Chronic Binge Alcohol

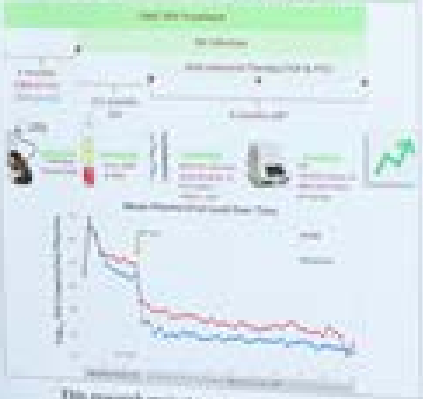
Anita Waye, Nedra Lacour, Angela Amedee, PhD.

Louisiana State University Health Sciences Center Comprehensive Alcohol Research Center and Department of Microbiology, Immunology, & Parasitology

INTRODUCTION

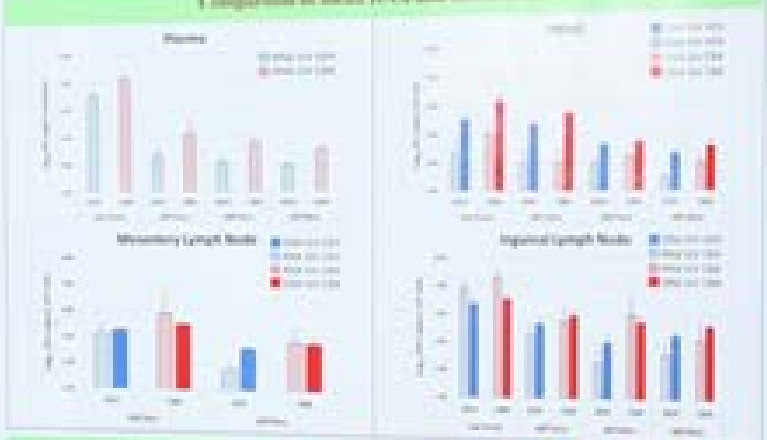
HYPOTHESIS

STUDY DESIGN & METHODS



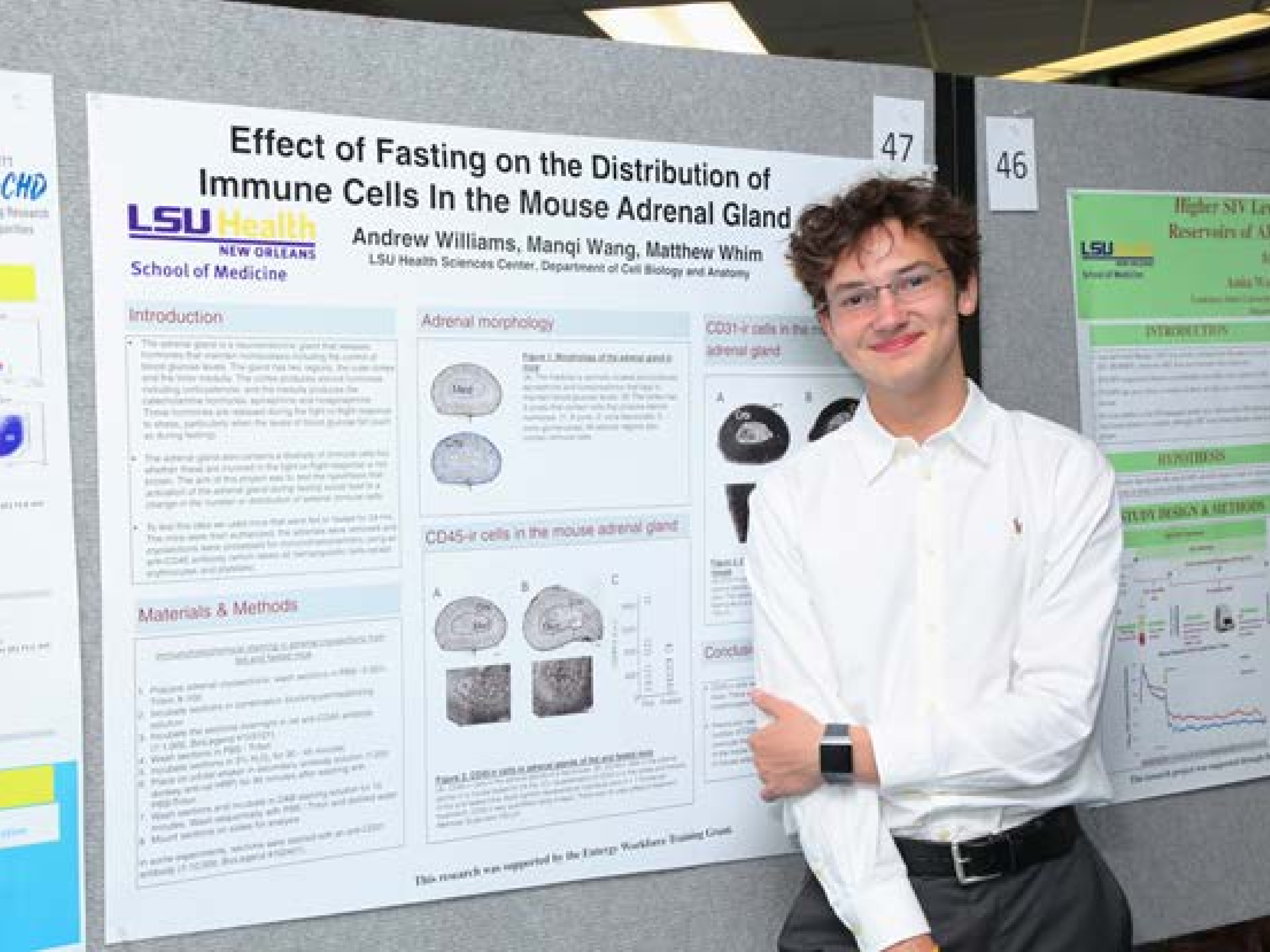
RESULTS

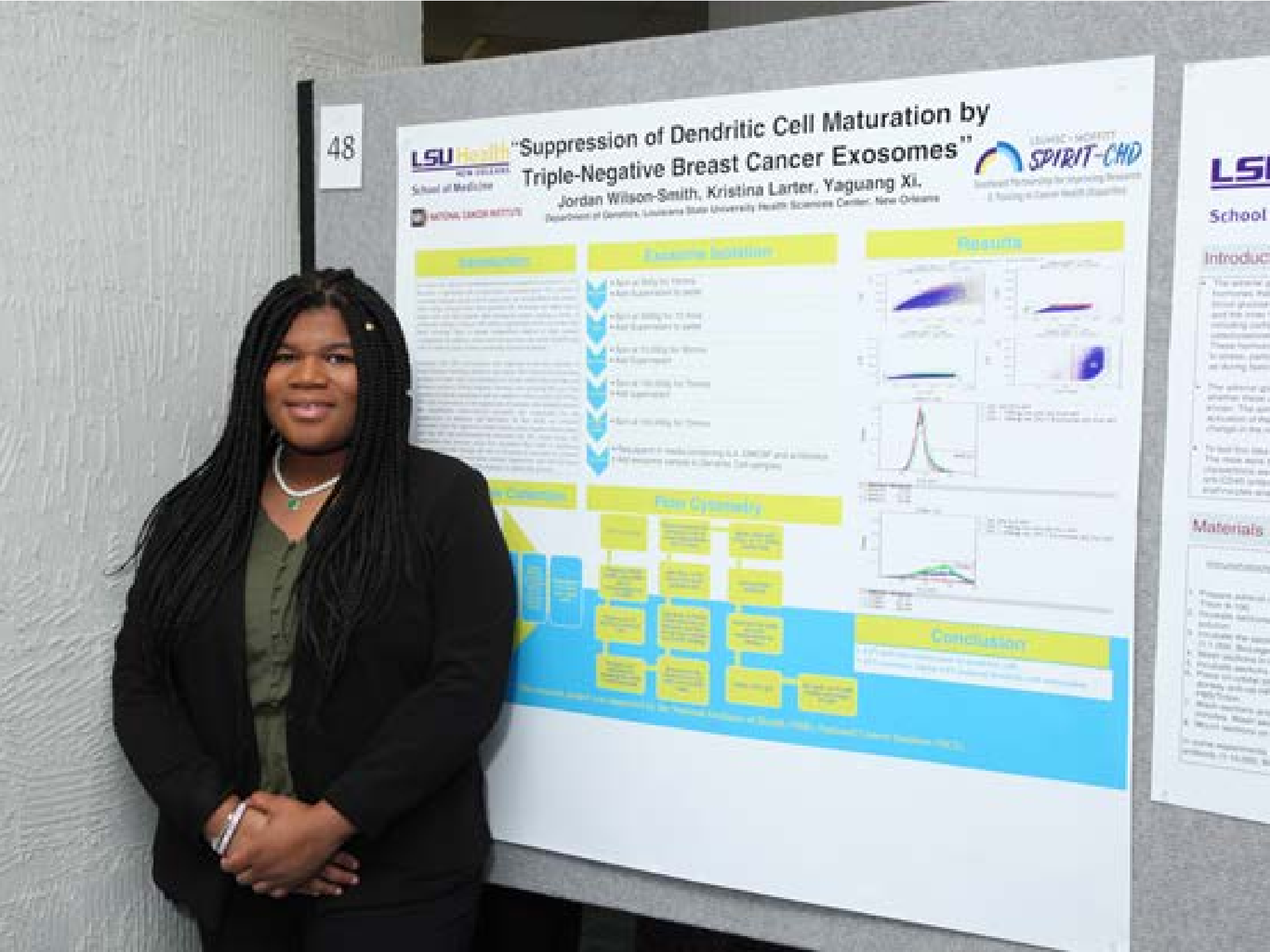
Comparison of acute DNA and RNA Levels



CONCLUSION & FUTURE DIRECTIONS

This research project was supported through the LSU Health Sciences Center School of Medicine, National Institutes of Health (NIH) & LSUHSC CARE.


47
46
Effect of Fasting on the Distribution of Immune Cells In the Mouse Adrenal Gland
LSU Health
NEW ORLEANS
School of Medicine
Andrew Williams, Manqi Wang, Matthew Whim
LSU Health Sciences Center, Department of Cell Biology and Anatomy
Introduction
Adrenal morphology
CD45-ir cells in the mouse adrenal gland
Materials & Methods
This research was supported by the Entergy Workforce Training Grant.


48
"Suppression of Dendritic Cell Maturation by Triple-Negative Breast Cancer Exosomes"
Jordan Wilson-Smith, Kristina Larter, Yaguang Xi,
Department of Genetics, Louisiana State University Health Sciences Center, New Orleans
LSU Health New Orleans
School of Medicine
SPIRIT-CHD
Exosome Isolation
Results
Flow Cytometry
Conclusion
Materials