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Proliferation of Adipose Derived Stem Cells Using a **Microgravity Bioreactor** School of Medicine

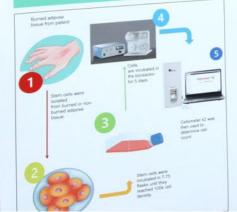
Luther Bishop, Jenna Dennis, BS, Abdul-Razak Masoud, PhD, Dr. Alison Smith, MD, PhD Louisiana State University Health and Science Center, Department of Surgery Dr.Smith Lab.

Introduction

- Around 11 million people worldwide are injured by burns yearly (i.e. flames, hot surfaces, chemical burns, etc..). 3
- The U.S. faces around 450,000 burn injuries per year. 2
- •~180,000 Americans succumb to their burn wounds.3
- · Culturing Adipose-Derived Stem cells from damaged tissue for stem cell therapy.
- · Adipose-Derived Stem Cells (ADSC) capable of multiple cell lineages, excrete growth factors, cytokines, and antioxidant factors.
- · The aim of this study was to measure proliferation of ADSCs derived from burn and non-burned patients cultured in a microgravity bioreactor.



Methods



Results

Table 1. Cell count prior to bioreactor incubation, after incubation and mean diameter.

CELL TYPE	Burn	Non-Burn
Initial Cell Count	~100,000 cells	~100,000 cells
Concentration	3.66 x 10^6 Or 3,660,000 Total cells after Incubation	2.24 x 10^6 or 2,240,000 Total cells after Incubation
Mean Diameter	8.4 microns	9.2 Microns

Conclusion

- Stem cells growth optimization was achieved as static flask incubation for a week, along with bioreactors rpm of 5-10 produce large quantity of cells.
- The damaged tissue stem cells had more growth within the bioreactor than the stem cells from healthy tissue.
- The bioreactor is an effective technology/tool for cell expansion and could be utilized for mass production of stem cells derived from damaged tissue in the future. DRL 2051440 through the National Science Foundation (NSF).

Future Directives

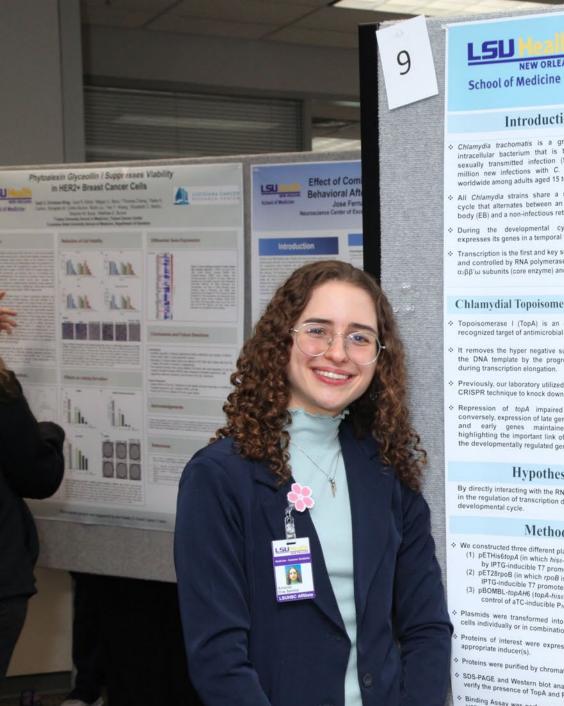
- · Only able to do I round of testing further trails will be needed to validate results.
- · Assessment of cell quality and function: assess phenotype, differentiation potential, cell marker expression.
- · Having a more comparable control: comparing growth with 10% media within the bioreactor, To compare with
- · Application to damaged tissue: ability of bioreactor-grown

Acknowledgments

- LSUHSC
- Department of Physiology, MS3 (Dr. Melina Lab)
- National Science Foundation
- · Research Experience for Undergraduates

References







Interplay between Topolsonieras Polymerase of Chlamydia trachomatis Amanda Baltar dos Santos, Li Shen.



Louisiana State University Health Sciences Center (LSUHSC) Department of Microbiology

Introduction

- Chlamydia trachomatis is a gram-negative, obligate intracellular bacterium that is the leading cause of sexually transmitted infection (STI), In 2020, ~128.5 million new infections with C. trachomatis occurred worldwide among adults aged 15 to 49 years.
- All Chlamydia strains share a unique developmental cycle that alternates between an infectious elementary body (EB) and a non-infectious reticulate body (RB).
- During the developmental cycle, C. trachomatis expresses its genes in a temporal fashion.
- Transcription is the first and key step of gene expression and controlled by RNA polymerase (RNAP) composed by $\alpha_2\beta\beta'\omega$ subunits (core enzyme) and a sigma factor (o).

Chlamydial Topoisomerase I (TopA)

- · Topoisomerase I (TopA) is an essential enzyme and recognized target of antimicrobial and anti-cancer agent.
- It removes the hyper negative supercoils generated on the DNA template by the progressing RNAP complex during transcription elongation.
- Previously, our laboratory utilized the recently developed CRISPR technique to knock down topA encoding TopA.
- Repression of topA impaired EB-to-RB transition; conversely, expression of late genes was downregulated, and early genes maintained their expression, highlighting the important link of DNA supercoiling and the developmentally regulated gene expression.

Hypothesis

By directly interacting with the RNAP, TopA participates in the regulation of transcription during the chlamydial developmental cycle

Methods

- We constructed three different plasmids:
 - (1) pETHis6topA (in which his6-topA is controlled by IPTG-inducible T7 promoter).
 - (2) pET28rpoB (in which rpoB is under the control of IPTG-inducible T7 promoter)
 - (3) pBOMBL-topAH6 (topA-hiss is under the control of aTC-inducible Prer promoter).
- Plasmids were transformed into the E. coli CodonPlus cells individually or in combination.
- Proteins of interest were expressed in the presence of
- Proteins were purified by chromatography techniques.
- SDS-PAGE and Western blot analysis were performed to verify the presence of TopA and RpoB.
- Binding Assay was performed to determine the

Results

Figure 1. Map of the plasmids used.

- (1)-(2) co-transformation of pET28rpoB and pETHis6topA
- (1)-(3) single transformation with pET28rpoB or pBOMBL-topAH6

Inducible expression of proteins

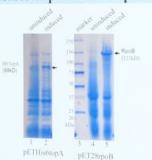


Figure 2. SDS-PAGE and Coomassie blue staining confirming inducible expression of topAH6 (left) and RpoB (right) in single transformed strains. Lane 1,4: uninduced; lane 2: aTC (200 µg/mL) induced, lane 3: marker; lane 5: IPTG (100mM)

Co-expression of proteins

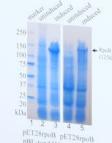


Figure 3. Comparing the levels of RpoB expression in co-transformed cells (left) to the single transformed cells (right) using SDS-PAGE and Coomassie blue staining. Plasmids used are as indicated

Lane 1: Marker: Lanes transformation; Lanes 4-5: single transformation.

Direct TopA-RpoB interaction

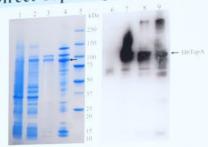


Figure 4. Verifying expression and presence of H6TopA using SDS-PAGE and Coomassie blue staining (left) and Western blot (right). Lanes 1,6: uninduced bacterial lysate; lanes 2,7: aTCinduced bacterial lysate; lanes 3,8: H6TopA bound Ni-NTA beads; lanes 4.9: H6TopA and RpoB complex; Lane 5: marker.

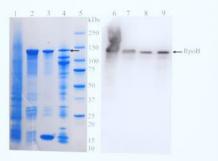


Figure 5. Verifying expression and presence of RpoB using SDS-PAGE and Coomassie blue staining (left), and Western blot (right). Lanes 1,6: uninduced bacterial lysate; lanes 2,7: IPTG-induced bacterial lysate; lanes 3,8: H6TopA bound Ni-NTA beads; lanes 4.9: H6TopA-RpoB complex; Lane 5: marker,

Conclusion and Future Research

- We successfully expressed and purified RpoB and TopA
- We observed higher expression of RpoB in the presence of
- His6-TopA can efficiently bind to RpoB producing a stable
- Future studies include to determine how direct interaction between TopA and RNAP may affect expression of highly transcribed genes in C. trachomatis.

References Shen et al. "Targeted repression of DNI

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Benavioral After Experimental Stroke In Aged Rats Jose Fernandez, Ludmila Belayev, Nicolas Bazan

Neuroscience Center of Excellence, Louisiana State University Health Sciences Center, New

Introduction

Stroke is the fifth leading cause of death and long-term health complications. Tissue plasminogen activator, most commonly known as tPA, is a potent blood thinner used for emergency stroke treatment and only an approved drug that should be administered within 4.5h of stroke onset, but still only 5.8% of patients qualify for this therapy. The percentage of elderly patients who have stroke is significantly higher than that of young patients who have stroke Therefore, it is important to study the effect of new treatments on neurobehavioral outcome in aged rats. Behavioral evaluation is important to confirm an initial deficit after middle cerebral artery occlusion (MCAo) surgery, chart progress, correlate with histopathology, as clinically relevant outcome measure, and to identify animals that need to be

Neuroprotectin D1 (NPD1; 10R, 17S-dihydroxy-4Z, 7Z, 11E, 15Z, 19Zdocosahexaenoic acid) is a potent lipid mediator synthesized on demand at the onset of uncompendsated oxidative stress to sustain homeostasis. It is a modulator of inflammation resolution that promotes cell survival and neurogenesis, inhibits leukocyte infiltration and pro inflammatory gene expression, attenuates edema formation, and reduces stroke volume after MCAo. It inhibits oxidative stressinduced caspase 3 activation and protects cells from oxidative stress-induced apoptosis. It also upregulates the anti-apoptotic proteins such as Bel-2 and Bel-xI. and decreases pro-apoptotic Bax and Bad expression. This was all discovered and

Resolvin D1 (RvD1; 7S,8R,17S-trihydroxy-4Z,9E,11E,13Z,15E,19Zdocosahexaenoic acid) is and important endogenous mediator that suppresses the inflammatory response. It decreases inflammatory cell migration in inflamed tissues, promotes phagocytosis of apoptotic cells, and reduces the expression of inflammatory factors, RvD1 was never studied in the MCAo stroke model. Still, it was demonstrated that DHA-derived D-series resolvins reduced inflammation in different disease models, such as kidney injury and cardiovascular and autoimmune

In this study, the effects of Neuroprotectin D1 and RvD1 are investigated in aged Sprague Dawley rats, to see if similar neuroprotective properties can be observed in comparison to a previous study in young Sprague Dawley rats (Reid et al., 2023. Cellular and Molecular Neurobiology)

Materials and Methods

imals:

uals used were Sprague-Dawley rats weighing 400-800 grams.

tague-Dawley rats (400-800g) are fasted overnight prior to the day of surgery but seque-Dawrey rats (400-800g) are tasted overnight prior to the day or surgery out-sed free access to water. The rats are anesthetized with isoflurane (3-15%), Nirous fe (70%), and Oxygen (30%). Then orally intubated and mechanically ventilated 1% isofturane and the same ratio of gasses. Cranial and rectal probes were 13% isotlurane and the same ratio of gasses. Cranial and recal probes were seed and in place throughout surgery to monitor temperature. Cushers were instead into the right femoral arrey and vein for blood surging and drug infusion. Afterial blood gases, plasma glacose, arterial blood pressure, and heartale were monitored and analyzed before and after the middle cerebral arrey occlusion.

Middle Cerebral Artery Occlusion:

To induce a stroke, a nylon suture coased with poly-1-lyxine is inserted in the external racrid artery and carefully, maneuvered so that it eventually reaches the middle cerebral artery to block MCA (Belower et al. 1996). Occlusion was confirmed by performing a neurobehavioral test sixty minutes after MCA occlusion (MCAs) on a scale of 0-12 (0-no deficit, 12-maximal deficit). Only those with a high-grade deficit cell of 0-12 (0-no deficit, 12-maximal deficit) only those with a high-grade deficit (>10) were used. The suture is introduced for 2 hours and then removed.

Treatments:
There were two treatment groups, Vehicle and NPD1-RND1. The vehicle (IV, 0.9%, There were two treatment groups, Vehicle and NPD1-RND1. The vehicle (IV, 0.9%, as aline, 1 m.l./kg, +10% ethanol 1. m.l./kg, n=9) or NPD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered 15 administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered 15 administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered 15 administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAo. RvD1 (IV, 222µg/kg, n=5) was administered at 3 hours after MCAO.

Neurological Testing:

Behavioral testing is being used as a clinically relevant outcome measure and to defend a minus and south process of the second of th

Neurological Evaluation

Neurological Evaluation of Rat in MCAo Model

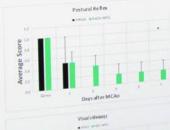


Statistical Analysis two-group comparisons: A value of p=0.05 was considered statestically significant

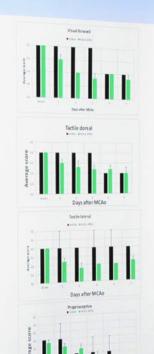
Results



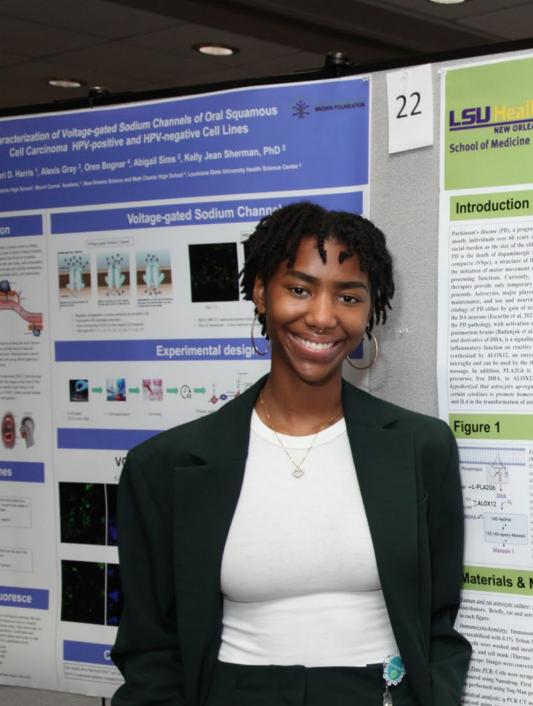
Egent. 1. Intal Neurological Score: NPB1 + (RD) improved until averaginal score during 7 days serviced period compared in which group. Testal securality exerce (normal-6, massard deficia-12) shoring 60 nm of MCAs and days 1, 2, 5, 5 and 7 shor MCAs. All restatorests improved that second-goal scores compared to the vehicle group, Days are many 8 SSM, m-5-10 per group's (rpBi-68, states) 4 store.







14



IL4 and IL6 induce pro-survival reactivity and ALOX12 activation in human astrocytes. Bailey Haynes^{1,2}, E. Tendayi Mpofu¹, Tonya Chaney^{1,3}, Marbella

Maristany^{1,4}, Jorgelina Calandria PhD¹

¹Louisiana State University Health Sciences Center, Neuroscience Center of Excellence, New Orleans, LA, ²Vanderbilt University. Nashville, TN, ³Xavier University, New Orleans, LA, ⁴The Willow School, New Orleans, LA

Results

Parkinson's disease (PD), a progressive neurodegenerative disease that affects mostly individuals over 60 years of age, represents a growing economic and social burden as the size of the elderly population increases. The hallmark of PD is the death of dopaminergic (DA) neurons in the substantia nigra pars compacta (SNpc), a structure of the midbrain that is crucial for modulating the initiation of motor movement among other specific cognitive and emotion processing functions. Currently, there is no cure for PD and palliative therapies provide only temporary relief of symptoms as neurodegeneration proceeds. Astrocytes, major players in energetic neuronal support, synaptic maintenance, and ion and neurotransmitter homeostasis, contribute to the etiology of PD either by gain of toxic function or loss of survival support for the DA neurons (Escartin et al. 2021). There is an inflammatory component in the PD pathology, with activation of microglial cells and astrocytes noticed in postmortem brains (Badanjak et al, 2021). Maresin 1 (Mar1), a bioactive lipid and derivative of DHA, is a signaling molecule that was shown to exert its antiinflammatory function on reactive microglial cells (Yin et al, 2019). Mar1 is synthesized by ALOX12, an enzyme expressed in astrocytes, neurons, and microglia and can be used by the three types of cells to convey a pro-survival message. In addition, PLA2G6 is highly expressed in SNpc, providing the precursor, free DHA, to ALOX12 to be converted to Mar1 (Fig.1). We hypothesized that astrocytes up-regulate and release Maresin-1 in response to certain cytokines to promote homeostasis. Here we uncover the effects of 11.6 and 1L4 in the transformation of astrocytes into pro-survival mode.

Figure 1



Figure 1: Proposed synthetic pathway of Maresin 1 (Marl) in astrocytes. DHA is hydrolyzed by PLA2G6 from membrane phospholipid. L-PLA2G6 activity is modulated by Calmodulin (CaM) (Zhou et autrocytes, 145-HpDHA is converted enzymatically what is not enzymatically transformed, will be converted to 14-HDHA spontaneously. Because Mar1 works at very low concentrations endogenously, 14was activated. Thus, by LC-MS/MS, we measure free DHA (L-PLANGE activity), 14-HDHA (ALOX12

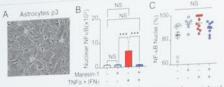
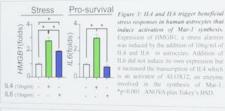


Figure 2: Marl restores p65 status in astrocytes undergoing phenotypes changes induced by TNFa and IFNy. A) Bright field image of rat astrocytes passage 3 (p3) used in the periments B-C) Quantification of nuclear NFkB/p65 (intensity B, number of cells C) for 24 hours in the presence or absence of 200nM Mar1, and immunostained using anti-p65 (Genetex cattl GFX102090). ***p=0.0001. ANOVA plus Tukey's HSD.



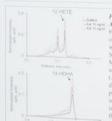


Figure 4: IL4 and IL6 enhance the activity of ALOXI2 in human astrocytes in culture. Human astrocytes were incubated with 10ng/ml of IL4 or 10ng/ml of IL6 for 24 hours. Lipids were extracted from the medium with Waters 186 Sep-Pak C18 cartridges and processed by LC-MS MS. The chromatograms were normalized using the internal standard (Arachidonic Acid (AA) d8) and overlapped to appreciate the differences in the peak heights. 12-HETE is the product of lipoxygenation of ALOX12 taking as substrate arachidonic acid (AA) while 14-HDHA is the stabilization of peroxide in carbon 14 of the DHA (14-HpDHA), the product of the same enzyme when the substrate is DHA (Fig. 1).

Materials & Methods

man and rat satisfies culture: primary cultures of astrocytes (Cell Applications Inc., San Diego, CA) were cultured following media and directions provided by a man gastropic canner; primary custures of astrocytes (Cell Applications Inc., Nan Diego, CA) were custured romowing means and unrections province by ask finger.

See Early, rat and astrocyte cultures were thawed and plated at passage 2 and expanded up to passage 5. The cells were plated and treated as described ask finger.

anagrachemistry: Immunostaining took place as follows: cells were fixed using 4% paraformaldehyde solution for 20 min, washed with PBS and meabilized with 0.1% Tribo-X. After blocking with 13% BKA and too. In the contrast of the contrast sancytecomory: Immunostatining took place as follow: cells were fixed using 4% paraformaldehyde solution for 20 mm, washed with 1% RSA and 10% Donkey normal serum, primary culture was added overnight in humid chambers at 40 mm and the same hour with the contract of the same hour with the contrac is seen wished and incubited for one hour with secondary antibody conjugated with Alexa-fluor 555, DAPI (Thermo Fisher cast D1306) was used for an editional control of the cast Clouds for the cast D1306) was used for the cast D1306 of the cast D1 as are some an incurate for one note with secondary antibody conjugated with Alexa-Huor 555, DAFT CINETION FISHER CARE CIRCLE AND ASSESSED ASSESSED ASSESSED FOR A SECONDARY CINETION FISHER CARE CIRCLE AND ASSESSED ASSESSED ASSESSED FOR A SECONDARY CINETION FISHER CARE CIRCLE AND ASSESSED ASSESSED ASSESSED ASSESSED AS A SECONDARY CINETION FISHER CARE CIRCLE AND ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED ASSESSED AS A SECONDARY CIRCLE ASSESSED AS A SECONDARY CIRCLE ASSESSED AS A SECONDARY CIRCLE ASSESSED ASSESS Hone PCR: Cells were scraped using RLI buffer and processed for total RNA extraction using RNA cass; plus kit (Oiagen, Germanfawn, AID). Total PNA

Conclusions

*TNFa and IFNy induced the activation of NFkB/p65 and Mar-I prevented the transcription factor nuclear translocation.

-IL4 increased the transcription of IL6 in human astrocytes.

·IL6 increased the transcription of HMGB1 but not its own expression.

·II.6 also activated ALOX12 that was noticed in the augmented production of 14-HDHA and 12-HETE, products of the enzyme from two different substrates: Docosahexaenoic acid and Arachidonic acid.

Overall, IL4 induced the expression of IL6 which activates the synthesis of Mar-1 via activation of ALOX12.

Future Directions

In future studies we will determine the mechanisms by which IL6 induces activation of ALOX12 and if that counteracts the inflammatory effects of TNFa and INFy.

References

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Acknowl

Evaluation of PFC-MdT Circuit Deletion on Behavioral Measures of Cognition and Alcohol Consumption L5U Health Nicolas Kapusta¹, Grace Qian², Faith Maxwell², Michael C. Salling²

Department of Cell Biology and Anatomy, LSU Health Sciences Center²

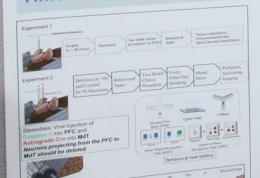
Introduction

- Excessive alcohol consumption during adolescence increases the likelihood of developing Alcohol Use Disorder (AUD) and other behavioral deficits associated with prefrontal cortex (PFC)
- Our previous studies using slice electrophysiology have shown the mouse PFC to mediodorsal thalamus (MdT) circuit to be selectively vulnerable to adolescent drinking behaviors. The PFC→MdT circuit is known to mediate working memory and response inhibition3.4. These behaviors have been shown to be affected by adolescent alcohol consumption in humans and rodents5,6
- The behavioral effects of adolescent alcohol consumption may be also captured by related tasks including the elevated plus maze (EPM), open field task novel object recognition task (NORT), switched object recognition task (SORT), and Y-Maze. The SORT has been previously associated with PFC and MdT function via lesion studies7
- Deficits in behaviors related to cognitive function and PFC integrity are risk factors for developing AUDs8
- A fuller understanding of how PFC circuitry is impacted by adolescent alcohol in preclinical models may open the door for new treatment strategies.

Hypothesis

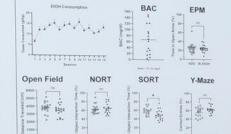
Deletion of the PFC→MdT circuit during adolescence will produce a similar behavior profile to adolescent alcohol drinking and result in increased alcohol consumption in adulthood.

Timeline and Methods



Results

Experiment 1: Behavioral task findings after adolescent alcohol



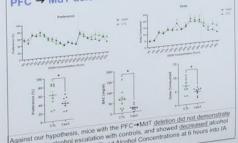
Previously our lab, mice drinking alcohol during adolescence have previously shown behavior deficits on the SORT but not other tasks (unpublished)

Experiment 2.1: Behavioral task analyses after PFC → MdT deletion

EPM	Open Field	NORT	SORT	Y-Maze
10 10 10 10 10 10 10 10 10 10 10 10 10 1		2 m 1 m 2 m 1 m 2 m 2 m 2 m 2 m 2 m 2 m		2 2 2 1 1 2 2 2 1 1 2 2 2 2 2 2 2 2 2 2
-				show improved

Against our hypothesis, mice with the PFC→MdT deletion show improved function on the SORT (Figures 3.1 and 3.2) and Y-Maze Task (Figure 4)

Experiment 2.2: Alcohol consumption after PFC → MdT deletion



Results



Green Fluorescent Protein displays PFC → MdT neurons that would have been deleted in the experimental mice

Conclusions

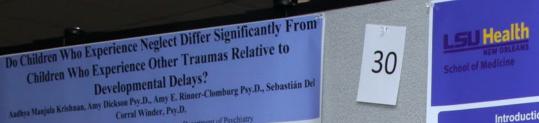
- Adolescent alcohol impaired SORT task recognition memory consistent with PFC and MdT lesion studies.
- Deleting the PFC→MdT circuit did not affect anxiety, locomotor or NORT task performance
- However, deleting the PFC→MdT circuit also show improved performance on SORT and Y-maze tasks.
- Deleting the PFC→MdT circuit did not increase alcohol consumption in adulthood during escalated alcohol consumption. It did decrease alcohol consumption, preference, and BACs at 6 hours into an intermittent alcohol session

Future Directions

- Additional characterization of PFC →MdT circuitry
- In vivo recording of PFC →MdT using fiber photometry following adolescent alcohol drinking

References





Developmental Delays?

Figure 1: Association between Traumatic

Experience and Developmental Delays

Figure 2: As Experience a

Andrea Tow Tow

ny Health Sciences Center, Department of Psychiatry

iscussions:

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Analysis Z (p+33);

Characterizing Genetic Mutations in Familial Lung Cancer: Insights & Implications

Carley Kronlage, Angelle Bencaz MSPH, and Diptasri Mandal PhD

LSUHSC Department of Genetics



Introduction

Background:

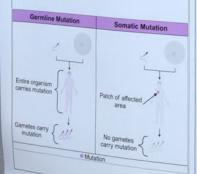
- Lung Cancer (LC) is the leading cause of cancer-related deaths worldwide
- First-degree relatives of LC patients have a 1.51 times higher risk of developing LC
- Less than 20% of smokers develop LC · suggests that genetics play a key role
- Difficult to pinpoint a list of specific genetic mutations that cause LC
- · Caused by a combination of both genetic and environmental risk factors
- → Multiple genes are responsible
- Identifying genetic mutations aids in determining the best treatment options
 - 4 Precision Medicine (PM): specific drugs can target specific genetic mutations
 - → PM can help LC patients avoid generalized harmful treatments like chemotherapy

Gaps:

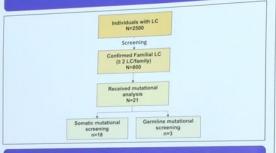
- Identified genetic mutations linked to LC susceptibility need further validation
- More research is required to confirm findings across different populations

Objective:

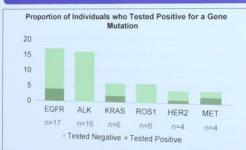
Characterize genetic mutations in familial LC cases



Methods



Results



Individuals	Mutation Type	Age of Diagnosis	Relatives with LC		Smoking
#1	EGFR	55	Section 2012	Histology	History
#2	EGFR		5	adenocarcinoma	S(ex)
#3		62	4	squamous cell	S(ex)
# 3	EGFR	51	5	adenocarcinoma	
	EGFR	62			N
#4	KRAS	65		adenocarcinoma	
#5	KRAS		9	adenocarcinoma	S(ex)
	INIVAS	75	2	adenocarcinoma	
# 0				ad-	S(ex)
#6	MET	87	2	adenosquamous	
#7	MET	63	2	carcinoma	N
		03	3	adenocarcinoma	
				amorarcinoma	S(ex)



Conclusions & Future Directions

Interpretations of Results

- Prevalence of the EGFR and ALK gene mutations amongst study participants varied by about 5% each from what they were reported to be in literature
- Those with EGFR mutation
- 4 Higher number of relatives with LC
- 4 Earlier age of onset
- . Different types of mutations were observed: exon 19 deletion, exon 20 insertion, and p.T790M mutation
- No participants tested positive for the ALK mutation despite being one of the most common genes tested for

Limitations

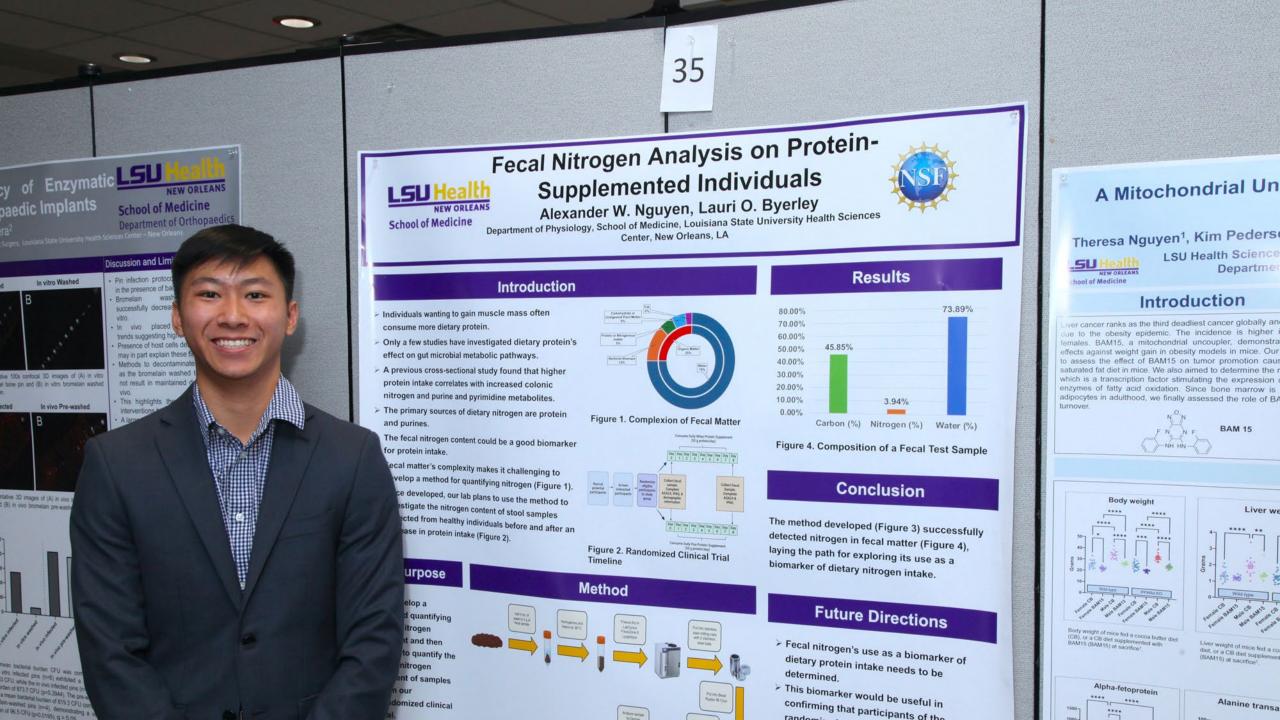
- No standard screening panels for mutational
- Only included Caucasians
- Only 21 participants had mutational analysis

Future Directions

- How PM can be applied in the presence of multiple genetic mutations
- Whether somatic or germline mutations of a gene more commonly occur
- How the presence of certain gene mutations affects LC prognosis
- Average age of LC onset in patients with a germline mutation
- Common genetic mutations in never smokers
- How patients can posses certain germline mutations but never develop LC

Acknowledgements

We express our gratitude to the



ecal Nitrogen Analysis on Protein-Supplemented Individuals

Alexander W. Nguyen, Lauri O. Byerley

Figure 2. Randomized Clinical Trial

partment of Physiology, School of Medicine, Louisiana State University Health Sciences Center, New Orleans, LA



Introduction

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Results



A Mitochondrial Uncoupler, BAM15, Inhibits Liver Tumor Promotion in the High Fat Diet Enriched in Saturated Fat Theresa Nguyen¹, Kim Pedersen¹, Tomislav Jelesijevic³, Christopher Axelrod², Elizabeth Zunica², John Kirwan²,

LSU Health Sciences Center, Department of Pharmacology¹; Pennington Biomedical Research Center, Baton Rouge Department of Comparative Biomedical Studies, LSU School of Veterinary Medicine, Baton Rouge³



Ronis

Introduction

er cancer ranks as the third deadlest cancer globally and is on the rise due to the obesity epidemic. The incidence is higher in males than females. BAM15, a mitochondrial uncoupler, demonstrated protective effects against weight gain in obesity models in mice. Our objective was o assess the effect of BAM15 on tumor promotion caused by a high saturated fat diet in mice. We also aimed to determine the role of PPARo which is a transcription factor stimulating the expression of rate-limiting enzymes of fatty acid oxidation. Since bone marrow is enriched with dipocytes in adulthood, we finally assessed the role of BAM15 on bone







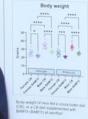


Multiple small liver nodules

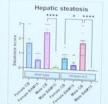
Methods

- Wild type (wt) C578L/6J and PPARe knockout (KO) mice.
- . From weeks 4-10, mice were fed a high saturated fat diet with cooca butter as a saturated fat
- . At 10 weeks of age, mice were either continued the CB diet or were fed a CB diet supplemented with a 0.1% (w/w) BAM15 (BAM15 diet)
- . The mice were sacrificed at 30 weeks of age with recording of visible liver tumors and collection of serum and tissues.
- · From the serum, severity of liver tumorigenesis was determined by ELISA of the tumor stem cell marker alpha-fetoprotein (AFP) and liver injury by a kinetic enzymatic assay of alanine
- Serum markers for bone synthesis (Procollagen 1A1) and bone resorption (CTX-1) were assessed by ELISA.
- RNA was isolated from randomly selected subsets of mice and RNA. TapeStation analysis.
- Gene expression was determined by qRT-PCR assays.

Results



NEW ORLEANS School of Medicine







Procollagen 1A1 N-propeptide

Fabp4

BAM15 led to significantly (P-0.05) lower body weight and weight of gonedat fat pads. At 5 is of this implication (Prot 05) lower body weight and weight oil ground life that a supplied oil ground protection of the protection





Method

ure 3. Fecal Nitrogen Method

search project was supported by Award Number: DBI-2051440 through Research Experiences for Undergraduates (REU)



School of Medicine

Comparative Analysis of Cognitive Function in Patients with Parkinson's Disease and Multiple Sclerosis

Sarah Rasul¹, Shannin Moody PhD², Devier Deidre PhD³

¹Xavier University of Louisiana, ^{2,3}LSUHSC-NO Department of Neurology



Education

0.24

0.16

0.126

0.003**

Pearson r

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SDMT

SDMT

relation between for

School of Public Hea

Background

- HCV and HBV are viral inflammation
- Food insecurity is define adequate food that nutri
- HCV and HBV-infected million and 1.2 million n Food insecurity (FI) is al
- the rates from 10.4% to Correlation between FI a immunodeficiency virus)
- Link between HBV/HC
- Injection drug use (ID!
- FI may prompt IDU
- IDU may serve as a
- This study focuses FI, HCV, and prov the population

Conclusion & Future Directions

- The groups differed by age (the PD group was older) but were well matched by level of education

Pearson r

SDMT

- The groups did not differ on the MoCA The MS group performed better on the SDMT compared to the PD group, though this difference disappeared when raw
- scores were adjusted for age and education The groups did not differ on KD raw scores, however, who adjusted by age using normative data.

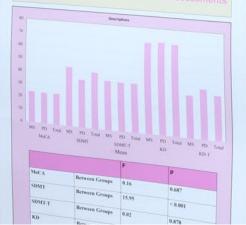
Multiple Sclerosis (MS) is an autoimmune disorder where the immune system attacks the protective myelin sheath that covers nerve fibers, causing communication problems between the brain and the rest of the body. MS can cause permanent damage or deterioration of the neurons in the central nervous system. The exact cause of MS is unknown though symptoms can include pain, tremor, changes in vision, fatigue, difficulty moving, and cognitive decline though these symptoms can vary from one patient to another. Parkinson's disease (PD) is a neurological disorder that is caused by the death of cells in the substancia nigra that relay the neurotransmitter dopamine primarily to basal ganglia, a group of brain regions important for motor and other functions. Symptoms of PD include tremor, rigidity bradykinesia, and can include cognitive decline. PD treatment focuses on managing mptoms. MS and PD are neurological disorders racterized by progressive neurological decline can then leads to cognitive impairment.

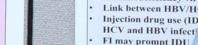
with Parkinson's disease (PD) and multiple MS) were included in our study to evaluate itive performance. They completed screenings using several logical assessments. The Montreal Assessment (MoCA) examined language, and attention. The Symbol Digit s Test (SDMT) screens for information ng speed, attention and visual scanning.

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\$6.54.00 J.	Construction of the Constr

Demographics

		MS Gro	IS Group) Group		f P-	P-Value
	Mea	n SE		Mean	SD			
Age	45.9	12.	9	66.8	9.1	87.8	<0	0.001
Education	14.4	2.8		14.9	2.4	1.1	0.	293
			MS Group		PD Grou		roup	р
		Frequen	cy	Percent	Frequ	iency	Perce	nt
Gender Male		19		17.6	26		65.0	
Female		89		82.4	14		35.0	
Race African, A		48		44.7	2		5.0	
Caucasian		58		53.7	38		95.0	
Ethnicity Hispanic		1		0.9	1		2.5	
Non-Hispan	nic.	106		98.1	39		97.5	

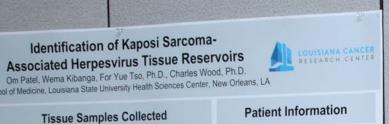




HBV/HCV

Methods

- The data used **National Health** 2015-2020
- The eligibility be adults over or HCV infecti have not rece
- The total sam Primary predi
- Several other
- Primary outco Statistical An code for 4



Meninges and

Immunofluorescence Assay (IFA)

ch project was supported by the Louisiana Cancer

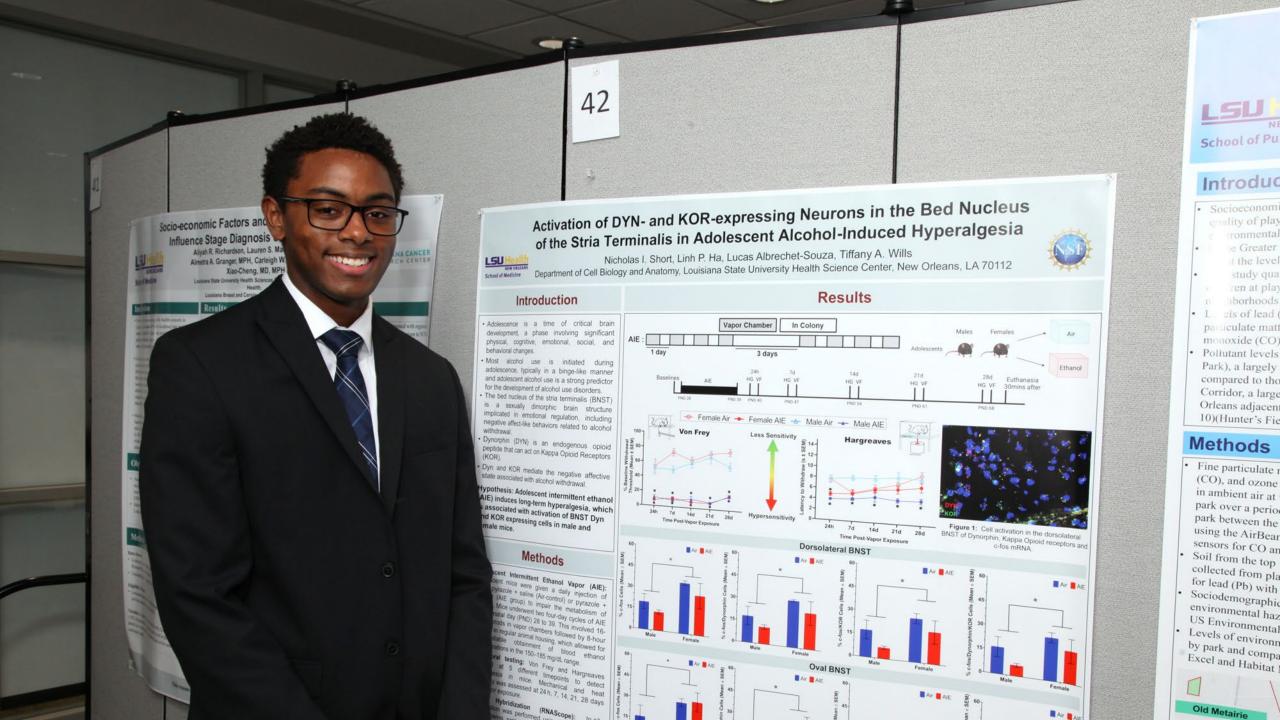
Patient Age

Patient Sex

Pulmonary embolism Cause of Death Anatomical Lymph Nodes. HIV serol Tonsillar

66 years old

Female



Socioeconomic and Environmental Disparities Across Playgrounds in the Greater New Orleans Area NEW ORLEANS School of Public Health

Gabrielle White, Saheba Cuccia, MS, Adrienne Katner, DEnv, Daniel Harrington, ScD



- Socioeconomic disparities in the environmental quality of playgrounds are a widely recognized environmental justice problem across the US.
- In the Greater New Orleans area, little is known about the levels of pollution in public parks.
- This study quantified pollution risk factors for children at playgrounds in minority vs. non-minority neighborhoods in the Greater New Orleans area
- Levels of lead (Pb) in soil, and concentration of fine particulate matter (PM2.5), ozone (O3) and carbon monoxide (CO) in air were measured.
- Pollutant levels in a park in Old Metairie (Pontiff Park), a largely high-income non-minority area, were compared to those in parks throughout the Claiborne Corridor, a largely low income, minority area in New Orleans adjacent to the Claiborne Expressway (I-10)(Hunter's Field, Lemann Park, Lafitte Greenway).

Methods

- Fine particulate matter (PM2.5), carbon monoxide (CO), and ozone (O3) concentrations were measured in ambient air at various locations throughout each park over a period of 30 minutes to 2 hours at each park between the hours of 10:00 am and 2:00 pm using the AirBeam sensor for PM2.5, and Aeroqual sensors for CO and O3
- Soil from the top 1-2 inches of surface were collected from play areas in each park and analyzed for lead (Pb) with a SciAps XRF.
- Sociodemographic, health outcome and other environmental hazard data were mapped using the US Environmental Agency's (EPA) EJ Screen
- Levels of environmental hazards were summarized by park and compared to standards using Microsoft Excel and Habitat Map. Claiborne Corridor

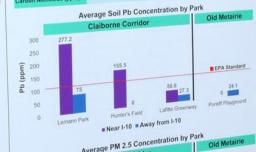
Results

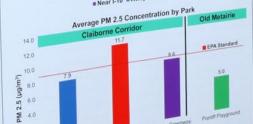
Sociodemographics & Toxic Release Estimates (EPA EJ Screen)



Air	&	Soil	Mon	itoring	Data

Summary	C	Old Metairie		
Avg. (Std. Dev.) sample size	Lemann Park	Lafitte Greenway	Hunter's Field	Pontiff Playground
Soil lead (ppm)	240.4 (158.6) n=11	42 (41.5) n=16 9.6 (1.6)	169.2 (176.9) n=9 14.5 (6.7)	24.1 (28.8) n=14 2.0 (1.1)
PM2.5 (ug/m3)	8.8 (0.7) n=57 0.01 (0.06)	n=122 2.4 (3.6)	n=70	n=34 0.005 (0.006) n=69
Ozone (ppm)	n=54	n=108	0,573 (1.4) n=85	0.03 (0.07) n=8
Carbon Monoxide (ppm)				





Summary & Comparisons to Health & gulatory Standards

- Playgrounds in the minority neighborhood of Claiborne Corridor had higher pollutant levels compared to the playground in the non-minority neighborhood of Old Metairie.
- · Average PM2.5, ozone, and carbon monoxide levels were higher in Claiborne Corridor parks vs. levels in Pontiff Playground.
- · Soil samples taken near the interstate had consistently higher lead levels than samples taken in areas away from the interstate, which suggests that interstate traffic was the source.
- · Average soil lead levels in only two parks in Claiborne Corridor exceeded EPA's Soil Lead Standard (100 ppm)
- · The highest soil lead levels were in Hunter's Field (under I-10), where nine samples exceeded 100 ppm and four samples exceeded 400 ppm, with a maximum of 624 ppm.
- · Ozone levels in Lafitte Greenway were 2.4 ppm, exceeds EPA's annual average standard of 0.070 ppm.

Conclusions

- Based on our findings, children in minority Claiborne Corridor neighborhoods face disproportionately higher exposure to pollution than those in high income areas.
- Children are more susceptible to health effects from environmental pollutants.
- For example, children with growing and developing lungs breathe in significantly more air per unit body weight than adults.
- Exposure to lead can result in neurodevelopmental disorders resulting in cognitive delays and behavioral problems
- Exposure to air pollution can result in health conditions such as asthma, and later life chronic diseases such as bronchitis, COPD, lung cancer,
- Federal, state, and local actions must be taken to remediate pollution and reduce exposure in these

