

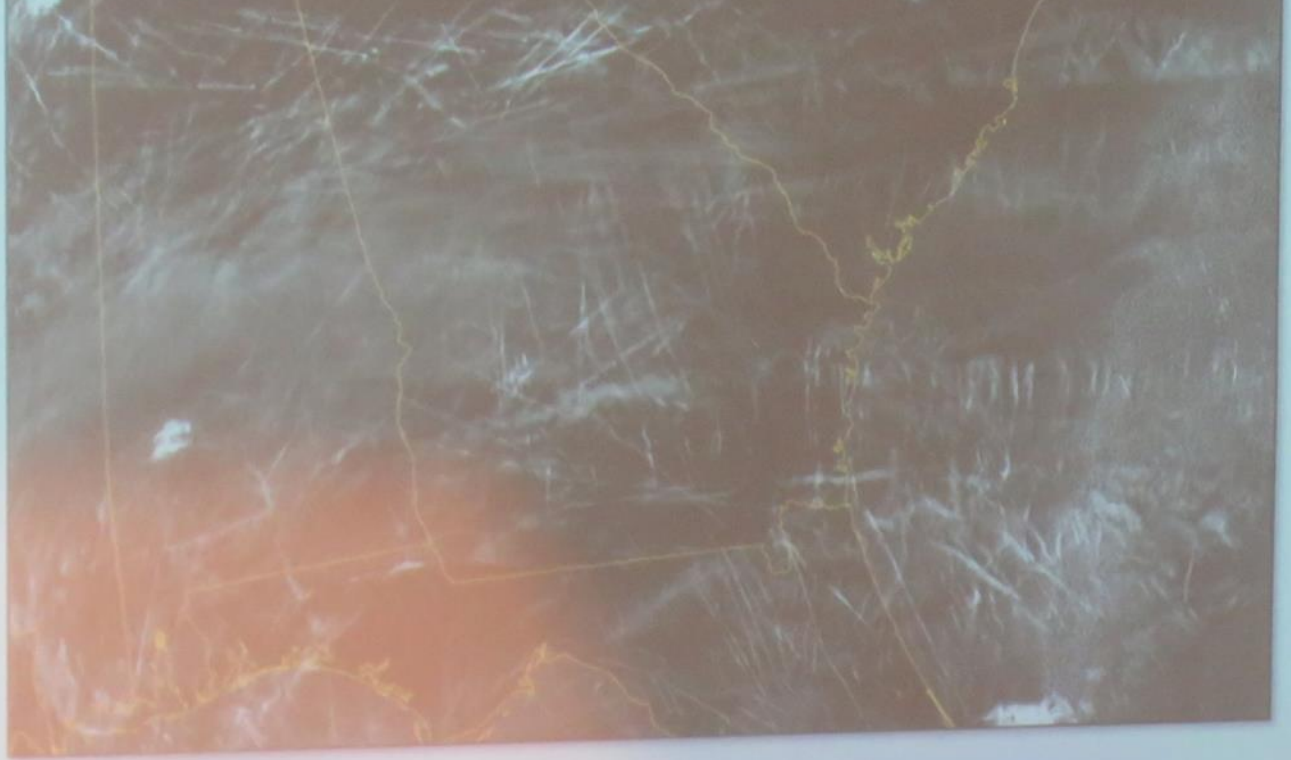
Trainee Research Day

November 4, 2019

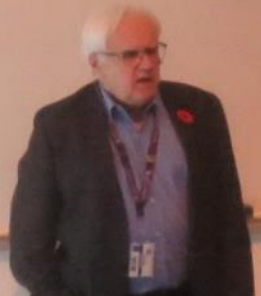






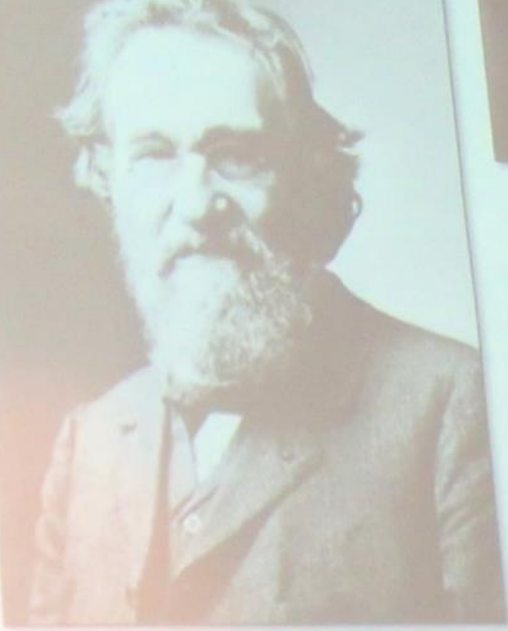


PA
KIC
Honey
Liquor





Louis Pasteur



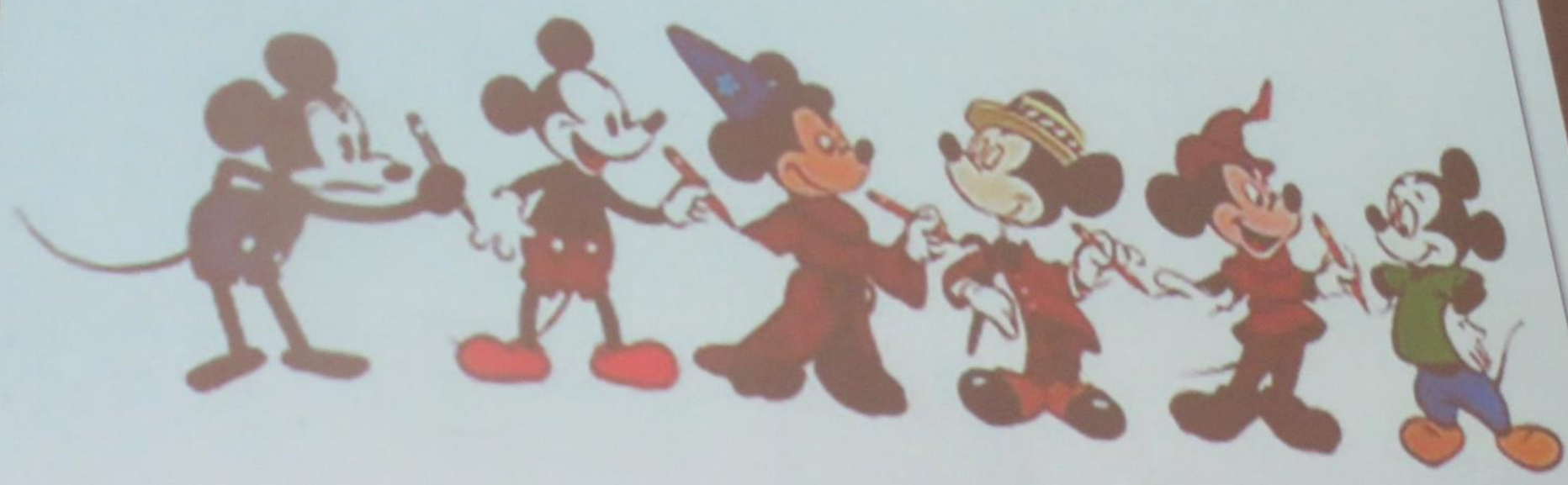
Charles Darwin



- Science is not about belief, but about skepticism
- Science starts from a body of accepted knowledge
- Science uncovers probabilities, not truths
- **Science is a social process**
- Science changes the world



The Evolution of Mickey Mouse



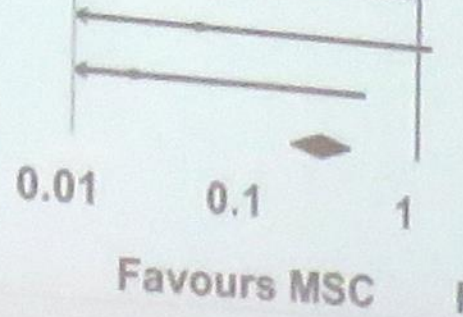
... et al. 2015

TOTAL

$R = 33\%$

Test for overall effect: $Z=6.27, p<0.00001$

3 / 10 10 / 10
234 / 504 337 / 446



Tunneling
Nanotubes



MSC



... of cardiovascular disease: the roles of
... of thrombosis: the roles of
Si Yang, Daniel MacKeigan, Miguel Nerves, and Heyu Ni

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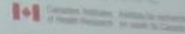
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Canadian
Blood
Services



CIHR IRSC



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EXIT



Last 12 Weeks:
RECALLS BLACK DEATH
"Flu" Five Times Deadlier Than World War.
LONDON, Dec. 18.—Canadian Press, via Reuters.—The Times' medical correspondent says that it seems reasonable to believe that about 8,000,000 persons perished from influenza pneumonia during the past 12 weeks. It has been estimated that the war caused the death of 20,000,000 persons in four and a half years.



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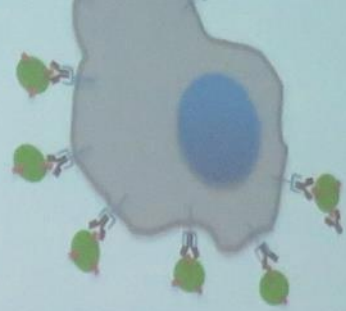


Michael's





Destruction in phagocytic system (spleen, liver)



2

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1 life lost every 2 hours





(8.9)
Observational

Trained personnel
present in live OR

complexities of live OR
Bias & Missed Events

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20g/day
Oats, barley,
psyllium, pulses,
eggplant, okra,
temperate climate
fruit



4 Plant Sterols
2g/day
Plant sterol
margarine/oil/
supplements



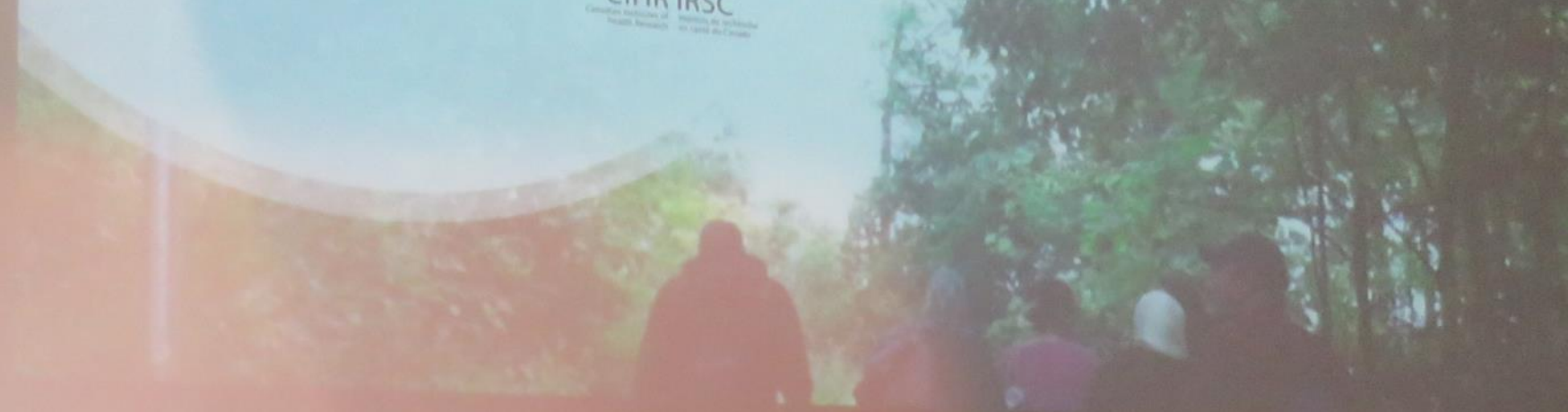
Chiavaroli L et al., Progresses in CVD, 2018
Jenkins DJ et al. Curr Opin Lipidol, 2000
Jenkins DJ et al., CMAJ, 2010



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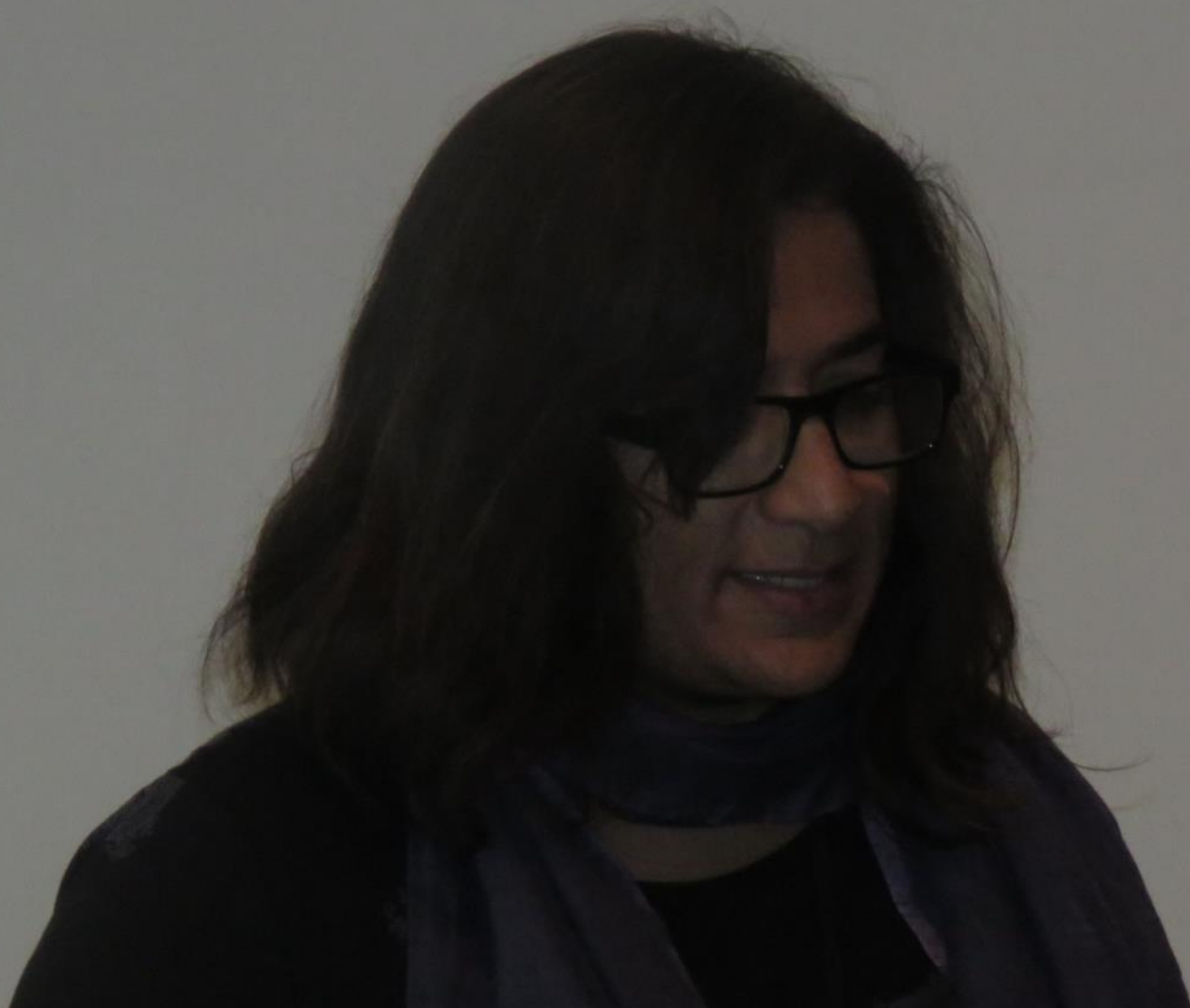


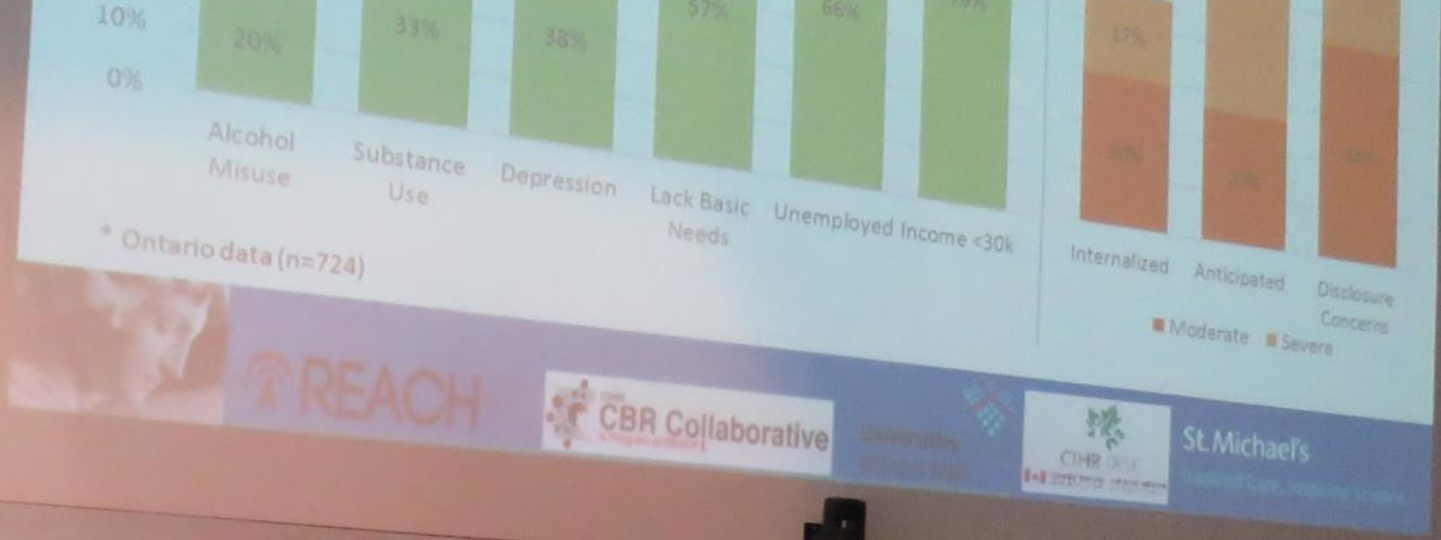
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First Steps to Nanomedicine: Assessing Interactions between Polystyrene Nanoparticles and Albumin Proteins

Yahara Ceballos, David Gomez
Ph.D. Student, Department of Nanomedicine



Motivation:
Nanomedicine uses smaller objects or tiny devices which interact with the cellular functions normally used for drug. These nanoparticles are often used to deliver drugs such as anticancer drugs or "gene" which address them to a new target. The effect can be a kill.

To assure nanoparticles can be used to their full potential, a fundamental understanding of how they interact with proteins, and how these interactions affect their function, is required. This is achieved using a direct, quantitative method.

Background:
Nanoparticles have been used to deliver pharmaceuticals and antibodies, among others. It is important to understand if they interact with proteins. Though there are many examples, it is very important to understand the interaction between proteins and nanoparticles. This is because the interaction between proteins and nanoparticles can affect the function of the nanoparticles. This is the main reason for the development of nanoparticles, which are used to deliver drugs, genes, antibodies, and functional proteins.

Methods:
Nanoparticle Characterization: Dynamic Light Scattering (DLS), Zeta Potential, and Atomic Force Microscopy (AFM).
Protein Adsorption: Spectrophotometry, SDS-PAGE, and Western Blotting.
Protein Denaturation: Circular Dichroism (CD) and Fluorescence Spectroscopy.

Results:
Protein Adsorption: The results show that polystyrene nanoparticles adsorb proteins. The amount of protein adsorbed increases with the size of the nanoparticles and the concentration of the protein solution.
Protein Denaturation: The results show that polystyrene nanoparticles cause protein denaturation. The denaturation is more pronounced for larger nanoparticles and higher protein concentrations.

Conclusion:
The results show that polystyrene nanoparticles interact with proteins. These interactions can affect the function of the nanoparticles and the proteins. Therefore, it is important to understand these interactions to develop effective nanomedicine.

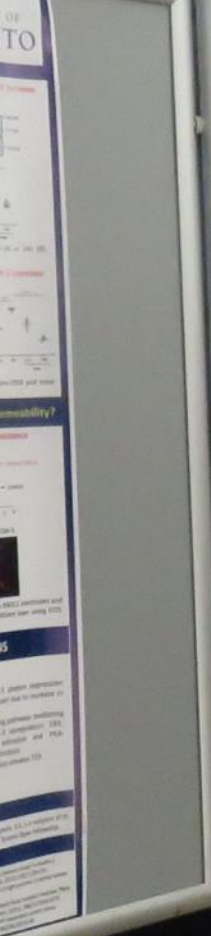
Figure 1: Schematic of nanoparticle-protein interaction. The diagram shows a polystyrene nanoparticle (PS-NP) interacting with an albumin protein. The PS-NP is shown as a sphere, and the albumin protein is shown as a complex of amino acid chains. The interaction is shown as the protein adsorbing onto the surface of the nanoparticle.

Figure 2: DLS results showing the size distribution of polystyrene nanoparticles. The plot shows the intensity of light scattered by the nanoparticles as a function of their size. The size distribution is centered around 100 nm.

Figure 3: Zeta potential results showing the surface charge of polystyrene nanoparticles. The plot shows the zeta potential (mV) as a function of the ionic strength (mM). The zeta potential is negative and becomes more negative as the ionic strength increases.

Figure 4: SDS-PAGE results showing the adsorption of albumin onto polystyrene nanoparticles. The gel shows the protein bands for the control (free albumin) and the nanoparticle-adsorbed albumin. The bands for the nanoparticle-adsorbed albumin are shifted compared to the free albumin, indicating protein denaturation.

Figure 5: CD results showing the denaturation of albumin by polystyrene nanoparticles. The plot shows the molar ellipticity (deg cm² dmol⁻¹) as a function of the wavelength (nm). The molar ellipticity is negative and becomes more negative as the wavelength increases. The results show that polystyrene nanoparticles cause protein denaturation, which is more pronounced for larger nanoparticles and higher protein concentrations.



RECONSTRUCTION OF THE LUNG WITH LUNG BUD ORGANOID ON THE GELFOAM SPONGE

Thimika Thandabalasingam B.Sc.^{1,2}, Pyungrak Kim B.Sc.¹, Yu Onedera M.D., Ph.D.¹, Haiho Zhang M.D., Ph.D.^{1,2,3}
¹Department of Abdominal and Critical Care Medicine, University of Toronto, Toronto
²Michael G. DeGroote Center for Research Innovation, University of Toronto, Toronto
³Department of Anesthesiology and Critical Care Medicine, University of Toronto, Toronto

Support Can. Inspiring Women

Introduction

To restore respiratory function by the reconstruction of the alveolar architecture, the precise structure of the distal lung organoid-like structure is essential for alveolar tissue. It could be a useful tool for alveolar reconstruction to understand the appropriate structure of alveolar organoid-like (LBO) on organoid-like (LBO) on the gelatin sponge (GS) scaffold. In this study, we investigated the effect of GS on LBO growth and development. We also evaluated the effect of GS on LBO growth and development. We also evaluated the effect of GS on LBO growth and development.

Methods

Human embryonic stem (hES) cells were cultured on feeder cells and differentiated into embryonic stem (ES) cells. ES cells were cultured on GS scaffold. The effect of GS on LBO growth and development was evaluated. The effect of GS on LBO growth and development was evaluated.

Results Cont'd

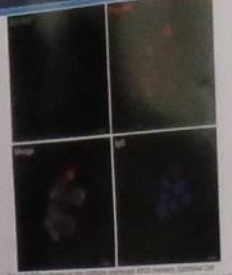


Figure 1. LBO growth on the control (Control) and GS scaffold (GS). Scale bar: 100 μm. Image from left to right: Control, GS, LBO, LBO.



Figure 2. Histological images of LBO growth on GS scaffold. Scale bar: 100 μm. Image from left to right: Control, LBO.



Figure 3. LBO growth on GS scaffold. Scale bar: 100 μm. Image from left to right: Control, GS.

Results Cont'd



Figure 4. Histological images of LBO growth on GS scaffold. Scale bar: 100 μm. Image from left to right: Control, LBO.

Conclusions and Future Directions

- Conclusions**
- The Gelatin sponge can support LBO growth and development into MSCs.
 - A rat model of emphysema has been developed.
 - Delivery of the Gelatin sponge has been determined feasible in emphysemic rats.
- Next Steps**
- Cells cultured on the Gelatin sponge will be characterized quantitatively.
 - Feasibility of delivering cellularized Gelatin sponges into emphysemic rats will be assessed.

Significance

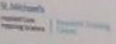
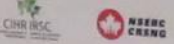
The Gelatin sponge, in combination with iPSC-derived LBOs, may promote alveolar reconstruction in emphysema patients.

References

- Shih PL, et al. Lung volume reduction for emphysema. *Lancet Respir Med.* 2017;5(2):147-156.
- Barkauskas CE, et al. Type 2 alveolar cells are stem cells in adult lung. *J. Clin. Invest.* 2013;123(7):3025-3036.
- Chen YW, et al. A three-dimensional model of human lung development and disease from pluripotent stem cells. *Nat Cell Biol.* 2017;19(5):542-549.

Acknowledgements

iPSCs were provided by Smoek Laboratory (Columbia University, NY) upon agreement with Dr. Sumita d'Souza at the Icahn School of Medicine in Mount Sinai, NY.



Systematic review of the impact of chronic tetracycline class antibiotics on antimicrobial resistance in host normal flora

Robinson Truong¹, Vincent Tang², Troy Greenan³ & Cornell H.S. Tan^{1,2,3*}

¹Division of Infectious Diseases, St. Michael's Hospital
²Centre for Urban Health Solutions, St. Michael's Hospital
³Division of Infectious Diseases, University of Toronto
*Division of Infectious Diseases and Department of Medicine, University of British Columbia
Contact: Robinson.Truong@unlifehealth.ca

Keenan Research Summer Student Program

Results

Figure 1. PRISMA Flow Chart

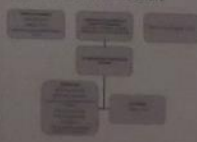


Table 1. Criteria for Assessing Risk of Bias

Study	1	2	3	4	5	6	7	8	9	10
Study 1										
Study 2										
Study 3										
Study 4										
Study 5										
Study 6										
Study 7										
Study 8										
Study 9										
Study 10										

Table 2. Assessment of Risk of Bias of Included Studies

Study	1	2	3	4	5	6	7	8	9	10
Study 1										
Study 2										
Study 3										
Study 4										
Study 5										
Study 6										
Study 7										
Study 8										
Study 9										
Study 10										

Table 3. Impact of Tetracyclines on Minimum Inhibitory Concentration

Study	1	2	3	4	5	6	7	8	9	10
Study 1										
Study 2										
Study 3										
Study 4										
Study 5										
Study 6										
Study 7										
Study 8										
Study 9										
Study 10										

Table 4. Impact of Tetracycline on Cross-Resistance

Study	1	2	3	4	5	6	7	8	9	10
Study 1										
Study 2										
Study 3										
Study 4										
Study 5										
Study 6										
Study 7										
Study 8										
Study 9										
Study 10										

Table 5. Impact of Tetracycline on STI Incidence

Study	1	2	3	4	5	6	7	8	9	10
Study 1										
Study 2										
Study 3										
Study 4										
Study 5										
Study 6										
Study 7										
Study 8										
Study 9										
Study 10										

Conclusions

- Oral tetracyclines minimally affects tetracycline and non-tetracycline resistance in subgingival, skin and GI flora, and is moderately efficacious at reducing STI incidence
- Next step is to summarize findings based on the burden of resistant isolates and microbial composition
- Our project will complement current clinical trials of doxycycline PPEP and inform clinicians and researchers of how much the use of these antibiotics as PPEP may add to the existing threat of AMR

Acknowledgements

- RT and VT are supported by the Keenan Research Summer Student Program
- DMST is supported by New Investigator Awards from the CDR and OHTN

References

1. [Reference 1]

2. [Reference 2]

3. [Reference 3]



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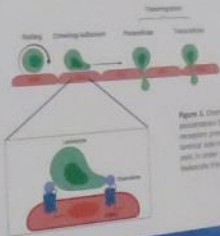
Expression and Function of DARC in Endothelial Cells

Negar Khosraviani, Nikki Zamani, Madelene Abramian, Changsen Wang, Warren Lee
¹ Department of Laboratory Medicine and Pathobiology, University of Toronto, Toronto, Canada
² Keenan Research Centre for Biomedical Science, St. Michael's Hospital, Toronto, Canada



Background

The Duffy Antigen Receptor for Chemokines (DARC) was originally identified on erythrocytes as a receptor for *Plasmodium vivax*, and later observed to be present on endothelial cells of the postcapillary venule¹. The function of endothelial DARC has not been well established. Currently, it has been shown to play a role in leukocyte recruitment and transmigration². However, there is limited research due to loss of DARC expression in cultured endothelial cells³.



Hypothesis

Our lab discovered that incubation of endothelial cells with whole blood induces DARC expression⁴. Therefore, we hypothesize that the microenvironment of endothelial cells influences the expression of DARC in endothelial cells of the postcapillary venule.

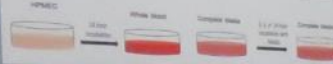
Objective Aims:

- 1) Elucidate the mechanism by which blood induces DARC expression in endothelial cells *in vitro*.
- 2) Elucidate the regulation of DARC protein and mRNA levels

1. Haddley, T., et al. (1994). *J. Clin. Invest.*, 94, 985-991.
 2. Pflanzner, M., et al. (2009). *Immunology*, 121(1), 101-108.

Methodology

Human Pulmonary Microvascular Endothelial Cells (HPMEC) used for all experiments



Results

Mechanism of Induction:

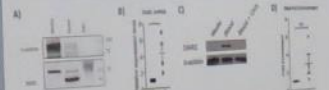


Figure 1. Western DARC protein and expression in cells incubated with whole blood (WB) or control media (C) for 24 or 48 hours. Western blot analysis of DARC protein levels in HPMEC cells treated with WB or C for 24 or 48 hours. RT-PCR analysis of DARC mRNA levels in HPMEC cells treated with WB or C for 24 or 48 hours. GAPDH is used as a loading control.

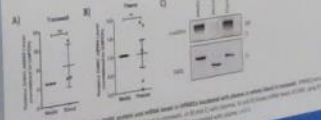


Figure 2. Western DARC protein and expression in cells incubated with whole blood (WB) or control media (C) for 24 or 48 hours. Western blot analysis of DARC protein levels in HPMEC cells treated with WB or C for 24 or 48 hours. RT-PCR analysis of DARC mRNA levels in HPMEC cells treated with WB or C for 24 or 48 hours. GAPDH is used as a loading control.

Conclusion

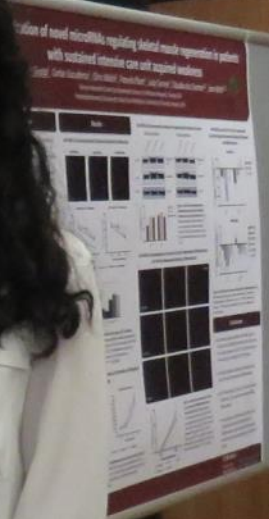
- DARC expression in endothelial cells is possibly induced by direct contact with blood. This suggests cell-cell interaction may be necessary for induction.
- DARC protein and mRNA are unstable and they are degraded upon removal of blood.
- DARC is not degraded through the proteasome pathway and is degraded by matrix metalloproteinases.

Acknowledgments

Thank you to all members of the lab and to the support of the NSERC CRSN.

References

3. Lachy, D., et al. (2011). *Blood*, 117(21), 4164-4170.
 4. Luban, A., et al. (2010). *Cell Physiol and Molec*, 193A-193 B.



Vegetarian diet, growth, and serum lipids in childhood: A prospective cohort study

Laura J. Elliott, Jonathan L. Maguire, Catherine S. Birken, Charles D.G. Kacoun-Sherman, David J. Jenkins, on behalf of the TARGET Kids! Collaboration, St. Michael's Hospital, University of Toronto, and The Hospital for Sick Children

INTRODUCTION

- Vegetarian diets are becoming increasingly popular. Diets rich in plant-based foods are associated with improved cardiovascular and metabolic health.
- Present the vegetarian diet as a viable alternative to the standard Western diet.
- Free studies have evaluated the relationship between diet and childhood growth and health outcomes.

OBJECTIVES

- To examine the relationship between diet and height and weight in 10 years of age.
- To examine the relationship between diet and serum lipids in 10 years of age.
- To determine whether the relationship between diet and serum lipids is modified by sex and BMI.

Study Design and Population

- Prospective cohort study.
- Participants were recruited from 2008-2010.
- Exposure - Vegetarian Diet.
- Follow-up period of 10 years.

Outcomes

- BMV and weight**
- Weight and length/height were measured at baseline and 10 years of age.
- Metabolic, anthropometric, lipid, physical activity, and engagement**
- Metabolic health outcomes related to health and development.



METHODS

Study 1: Cross-sectional study assessing the relationship between diet and BMI, weight, and serum lipids in 10 years of age.

Variable	Vegetarian (n=100)	Non-vegetarian (n=100)
Age	10.0 (0.5)	10.0 (0.5)
Weight (kg)	28.5 (5.0)	29.5 (5.5)
Height (cm)	145.0 (10.0)	146.0 (10.0)
BMI (kg/m ²)	17.0 (2.0)	17.5 (2.5)
Serum lipids (mmol/L)	1.5 (0.5)	1.8 (0.6)

RESULTS

Variable	Vegetarian (n=100)	Non-vegetarian (n=100)
Weight (kg)	28.5 (5.0)	29.5 (5.5)
Height (cm)	145.0 (10.0)	146.0 (10.0)
BMI (kg/m ²)	17.0 (2.0)	17.5 (2.5)
Serum lipids (mmol/L)	1.5 (0.5)	1.8 (0.6)

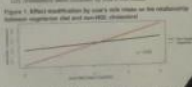


Figure 1: BMI (kg/m²) over 10 years in the relationship between vegetarian diet and BMI, weight, and serum lipids.



Figure 2: Serum lipids (mmol/L) in 10 years of age in the relationship between vegetarian diet and serum lipids.

NON-NUTRITIVE SWEETENERS AND COMPARABLE DIET: A SYSTEMATIC REVIEW AND META-ANALYSIS

St. Michael's Hospital, University of Toronto

INTRODUCTION

Non-nutritive sweeteners (NNS) are used to sweeten foods and beverages without the calories of sugar. This systematic review and meta-analysis evaluated the relationship between NNS consumption and health outcomes.

METHODS

Searches were conducted in PubMed, Embase, and Cochrane. Studies were included if they reported on the relationship between NNS consumption and health outcomes.

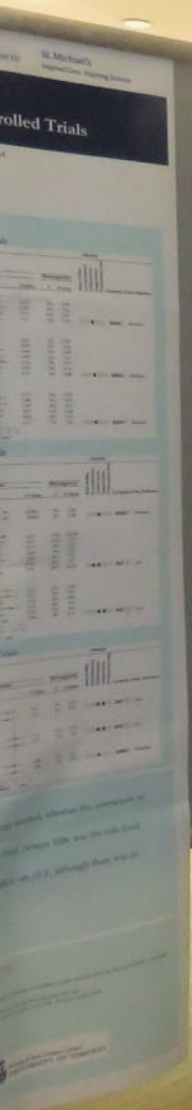
RESULTS

The meta-analysis found that NNS consumption was associated with a higher risk of obesity and metabolic syndrome.

Outcome	Relative Risk (95% CI)
Obesity	1.15 (1.05, 1.25)
Metabolic Syndrome	1.10 (1.00, 1.20)

CONCLUSIONS

NNS consumption is associated with a higher risk of obesity and metabolic syndrome. Further research is needed to clarify the relationship between NNS and health outcomes.



A man in a maroon sweater is pointing at the poster and talking to two women. One woman has long blonde hair and is wearing a dark jacket. The other woman has dark hair and is wearing a light-colored sweater. They are standing in a hallway with wooden floors and recessed ceiling lights.



The Regulation of Occludin by miR193b-5p in Influenza-Induced ARDS

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Inspiring Science.

UNIVERSITY OF TORONTO

L.J. Zhang^{1,2}, H. K. Verhaeghe¹, A. M. Sauer¹, A. M. Zetterstrom¹, M. Kim¹, P. J. Pappas¹, T.A. Wainwright¹, Y. J. Minamide¹, C.J. Casbon¹, S. K. Kim¹, P.M. Hsueh¹, C.C. Chiu^{1,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100}

INTRODUCTION

ARDS is a leading cause of death in the ICU. The pathogenesis of ARDS is complex and involves multiple organ systems. We have previously shown that miR193b-5p is upregulated in ARDS and regulates occludin expression.

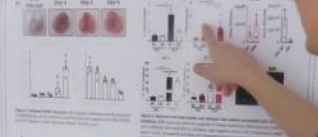
AIMS

To determine the role of miR193b-5p in the regulation of occludin in ARDS.

METHOD

ARDS patients were recruited from the ICU. Blood and bronchoalveolar lavage (BAL) fluid were collected. miR193b-5p levels were measured by qPCR. Occludin levels were measured by Western blot.

RESULTS



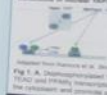
CONCLUSIONS

miR193b-5p regulates occludin expression in ARDS.

Institute of
UNIVERSITY

Abstract

ARDS is a leading cause of death in the ICU. The pathogenesis of ARDS is complex and involves multiple organ systems. We have previously shown that miR193b-5p is upregulated in ARDS and regulates occludin expression.



CONCLUSIONS

miR193b-5p regulates occludin expression in ARDS.



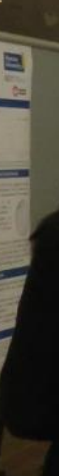
First Steps to Nanomedicine: Assessing Interactions between Protein-coated Nanoparticles and Albumin Receptors

Abstract: Nanoparticles (NPs) are used in drug delivery, diagnostics, and imaging. However, their interactions with albumin receptors (ARs) are not well understood. This study aims to assess the interactions between protein-coated NPs and ARs.

Methods: Protein-coated NPs were synthesized and characterized. Their interactions with ARs were studied using surface plasmon resonance (SPR) and fluorescence resonance energy transfer (FRET).

Results: The study shows that protein-coated NPs interact with ARs. The interaction is dependent on the protein coating and the NP size.

Conclusion: The study provides insights into the interactions between protein-coated NPs and ARs, which is important for the development of nanomedicine.



University of Alabama at Birmingham
Faculty and Staff

[List of names]

Surgeon management preferences for patella fractures in elderly, low-demand patients: a cross-sectional survey

Garrett F. Davidson PhD, David Wassenaar MD, Amir Khudbin MD, Patrick Henry MD, Emil Schemitsch MD, Milena Vízente RN, Aaron Nauth MD
 St. Michael's Hospital, Toronto, Ontario, Canada

Background
 Patella fractures in elderly, low-demand patients with a displaced comminuted fracture are challenging to manage. The degree of displacement, comminution, and articular surface involvement are key factors in determining the management strategy. The purpose of this study was to determine surgeon management preferences for patella fractures in elderly, low-demand patients.

Table 1. Characteristics of Survey Respondents (n=112)

Characteristic	n (%)
Age	
< 40	10 (9)
40-50	18 (16)
50-60	27 (24)
60-70	31 (28)
70-80	17 (15)
> 80	9 (8)
Gender	
Male	57 (51)
Female	55 (49)
Specialty	
Orthopedic	71 (63)
Emergency	11 (10)
General Surgery	11 (10)
Other	19 (17)
Years since residency	
< 5	12 (11)
5-10	21 (19)
11-15	21 (19)
16-20	21 (19)
> 20	27 (24)

Results
 Most respondents (84%) preferred non-operative management for patella fractures in elderly, low-demand patients with a displaced comminuted fracture. The degree of displacement, comminution, and articular surface involvement were the most important factors in determining management strategy. The majority of respondents (78%) preferred non-operative management for patella fractures in elderly, low-demand patients with a displaced comminuted fracture.

Table 2. Treatment preferences for varying fracture patterns in elderly, low-demand patients with an articular fracture (%)

Fracture Pattern	Non-operative (%)	Operative (%)
Displaced comminuted	84	16
Displaced non-comminuted	78	22
Non-displaced comminuted	71	29
Non-displaced non-comminuted	64	36

Conclusion
 Most respondents (84%) preferred non-operative management for patella fractures in elderly, low-demand patients with a displaced comminuted fracture. The degree of displacement, comminution, and articular surface involvement were the most important factors in determining management strategy.

Discussion & Future Steps
 Consensus surrounding the degree of displacement management in this population is lacking. Recommendations included a need for further studies and standards in managing these fractures.

Figure 1. Degree of displacement worsening (opposed) elderly low-demand patients with an articular fracture



Figure 2. Factors influencing treatment decision



Table 3. Common complications following operative or non-operative management in elderly, low-demand patients

Complication	Operative (%)	Non-operative (%)
Non-operative	100	100
Operative	100	100

78% of surgeons perceive a need for studies to reduce non-operative management in this population.

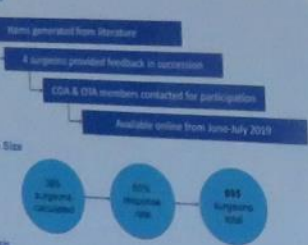
Surgeon management preferences for patella fractures in elderly, low-demand patients: A cross-sectional survey

St Michael's Hospital

Authors: K. Chandhoke BHSc, David Wasserstein MD, Amir Khoshbin MD, Patrick Henry MD, Emil Schemitsch MD, Milena Vicente RN, Aaron Nauth MD, St Michael's Hospital, Toronto, Ontario, Canada

Patella fracture incidence increases with age, with elderly women the highest prevalence. The most common mechanism of injury is low-energy trauma, such as falls. Treatment indicated for displaced fractures, non-operative is reserved for minimally displaced fractures with intact extensor mechanism. Age is an independent risk factor for patellar fractures, and is associated with poor outcomes following ground-level fall injuries, shown to contribute to failure of fracture fixation, advanced age, comorbidity, comorbidities (diabetes, vascular disease). Retrospective review found patients >65 years of age having a higher complication rate following operative management. Orthopaedic studies have challenged traditional surgical management of patella fractures in elderly, low-demand patients. It is anticipated that an osteoporotic fracture in recent literature, patella fracture prevalence is expected to rise with an aging population.

Current management practices and surgeon considerations for treating patella fractures in elderly (>65 years), low-demand patients



Statistical analysis: Fisher's exact tests used to compare differences across surgeons. Results summarized as proportions and stratified for analysis. Analysis performed on R Statistics programme (R Foundation for Statistical Computing, Vienna, Austria).

Results

Table 1. Characteristics of Survey Respondents (n=115)

	n	%
Age		
<40 years	26	22.6
41-60 years	26	22.6
61-80 years	33	28.7
>81 years	30	26.1
Sex		
Male	100	87.0
Female	13	11.4
Fracture not in eye	1	0.8
Practice Location		
Canada	83	71.8
International	21	18.4
Practice Type*		
Academy Hospital affiliated with a University	75	65.2
Community Public Hospital	41	35.3
Community Private Hospital	7	6.1
Years of Independent Practice		
Current fellow	2	1.7
< 5 years	32	27.8
6 - 15 years	30	26.1
16 - 25 years	22	19.1
> 25 years	29	25.2
Postgraduate Training†		
Lower extremity	35	30.4
Trauma	62	53.9
Sports medicine	23	20.0
No training	11	9.6
Other	30	26.3

General consensus that non/minimally-displaced fractures should be conservatively managed (indicated by 80% of respondents), while displaced fractures require operative intervention (85% of respondents)

Table 2. Treatment preferences for varying displaced fracture patterns in elderly, low-demand patient with an intact extensor mechanism (%)

	Other with V- wires and TBs	Stress fixation	Plate and screw fixation	Staples and TBs	Other fixation (K-wire, Autoclave)	Non-operative
Transverse	62.4	1.0	4.0	51.3	3.0	16.2
Vertical	6.1	27.6	7.1	12.2	4.1	46.9
Comminuted	36.7	2.0	9.2	13.3	10.2	29.8
Pole	17.2	2.0	2.5	6.1	47.5	25.3

- Surgeons with both lower extremity and trauma fellowships were less likely to select surgery for displaced fractures (p=0.0208)
- Younger surgeons (<40 years of age) were less likely to treat displaced transverse, comminuted, and superior/inferior pole fractures operatively in comparison to older surgeons (all p<0.05)
- p-value approaching significance in the following relationships:
 - Lower extremity fellowship trained surgeons were less likely to select surgery for displaced transverse fractures (p=0.0588)
 - Canadian surgeons were less likely to treat displaced vertical fractures operatively in comparison to International surgeons (p=0.0546)

No agreement on the degree of displacement

Figure 1. Degree of displacement was not agreed upon by elderly, low-demand patients with an intact extensor mechanism



Figure 2. Factors influencing management preferences

- Open wounds
- Compromised soft tissue
- Intact extensor mechanism
- Patient compliance
- Number and size of fragments
- Fracture path
- Comminution
- Age
- Sex
- Function

Table 3. Management preferences for displaced fractures in elderly, low-demand patients

- Displacement
- Refracture



Research

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November 2019







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November 2019




- Oral Presentation Winner – Clinical/ Health Science Category
- Oral Presentation Runner Up – Clinical/ Health Science Category





PERSUASION CODES

5 things



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The image shows three women standing behind a wooden podium. The podium has a silver panel with the St. Michael's logo and tagline. On the podium, there is a computer monitor, a microphone, and a printer. To the right of the podium, there is a table covered with a blue cloth, holding several colorful gift bags. The background is a large whiteboard.



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EXIT



PASSPORT CODES

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Kypae "5 Things"





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notes

