College of Public Health and Human Sciences
Ignite Research Colloquium
The Research Accomplishments and Scientific Discoveries of CPPHS Postdoctoral Fellows

November 15, 2019

Welcome and Presentations
1:00 – 2:00 PM

Reception
2:00 – 2:30 PM
Ignite Agenda and Timeline

1:05 – 1:10  Welcome

1:10 – 1:45  7 presentations

1:45 – 2:00  Q&A

2:00 – 2:30  Reception & Networking
Presentations
Effect of digestion on functional activity of palivizumab in the infant gastrointestinal tract

Baidya Nath P. Sah, Benjamin R. Hauser, Jiraporn Lueangsakulthai, Bum Jin Kim, Brian P. Scottoline, Manoj K. Pastey and David C. Dallas
Gates Foundation Strategic Aims
“We believe that all children—no matter where they live—should not suffer or die from enteric infections such as diarrhea.

Our goals are to end diarrheal disease deaths in children under 5 by 2030.

500,000 children under age 5 die each year due to enteric and diarrheal diseases

Project Background
Potentially, antibodies specific to enteric pathogens could be administered orally to infants to prevent diarrheal infections.

However, to prevent infection, such antibodies would need to resist degradation within the gastrointestinal (GI) tract.

Introduction
Palivizumab, a recombinant IgG antibody specific to respiratory syncytial virus (RSV), was used in this study as a model study.

Project Goal
Determine the activity of palivizumab in infants across digestion.

Methods
The survival of the antibody was assayed via ELISA and RSV neutralization assay.
Neutralization capacity of antibody decreased during infant digestion.

Therapeutic dosage of oral antibodies must compensate for degradation.

Plaque Neutralization Assay (Purified antibody targeting RSV)

RSV Infection of HEp-2 Cells

Respiratory Syncytial Virus
Pharmacist prescription of hormonal contraception for low-income women in Oregon

NICHD-funded F32: Susannah Gibbs (PI), Marie Harvey & Denise Hynes (mentors)

>97% of all pill/patch claims prescribed by non-pharmacists in each year

<table>
<thead>
<tr>
<th>Measure</th>
<th>Receipt of any contraceptive method</th>
<th>Receipt of pill/patch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post*Intervention interaction term</td>
<td>0.98 [0.95-1.01]</td>
<td>0.99 [0.94-1.04]</td>
</tr>
</tbody>
</table>

No significant policy effect of receipt of contraceptive services generally or pill/patch specifically
Social and Behavioral Factors in Gonorrhea Vaccine Acceptability
Susannah Gibbs, Marie Harvey & Aleksandra Sikora

**Rationale**
Gonorrhea vaccine development is a national & global priority
Population-level effectiveness of a vaccine depends on acceptability
Views on a hypothetical gonorrhea vaccine for young adults are largely unknown

**Objective:** Assess gonorrhea vaccine acceptability and identify vaccine characteristics that will increase the probability of vaccine use

**Proposed methods**
Study populations: Young adults, healthcare providers, parents of adolescents
Mixed methods approach: Qualitative in-depth interviews and quantitative survey
Other recent and current work

Impact of Medicaid expansion on women of reproductive age in Oregon (PIs: Harvey & Luck)
  • Preventive reproductive care
  • Contraceptive services

Effect of Medicaid expansion on access to abortion services (PI: Harvey)
  • Validation of a claims-based measure of abortion services

Patterns of sexual activity and contraceptive use among young women in Michigan (dissertation)
The survival of palivizumab IgG and naturally occurring anti-respiratory syncytial virus F protein antibodies (slgA, IgA and IgG) across infant digestion as measured by anti-idiotype and RSV F protein-specific ELISA

Dr. Jiraporn Lueangsakulthai
Introduction

- Potentially, antibodies specific to enteric pathogens could be administered orally to infants to prevent diarrheal infections, particularly in developing countries where diarrhea is a major problem.

- However, to prevent infection, such antibodies would need to resist degradation within the gastrointestinal (GI) tract. Palivizumab, a recombinant IgG antibody specific to respiratory syncytial virus (RSV) fusion (F) protein, was used in this study as a model for examining the digestion of neutralizing antibodies to enteric pathogens in infants.

- The aim was to determine the activity of palivizumab in milk fed to infants across *in vivo* digestion.

- The survival of the antibody was assayed via an anti-idiotypic ELISA and RSV F protein-specific ELISA, quantitative mass spectrometry. Concentrations were controlled for any dilution or concentration that occurred in the digestive system by supplementing the feed with indigestible polyethylene glycol-28 (PEG-28) which was quantified via mass spectrometry.
The survival of antibodies across in vitro infants gastrointestinal digestion by anti-idiotype and RSV F protein-specific ELISA using samples from 3 different donor milks

- Palivizumab IgG was not stable in either simulated gastric or intestinal digestion.

Naturally occurring RSV F protein-specific sIgA, IgA and IgG were stable in both gastric and intestinal digestion.

- Palivizumab (sIgA, IgA, hIgG and IgG; Synagis®) were not stable in ex vivo gastrointestinal digestion.

The stability percentage of palivizumab across in vivo infants gastrointestinal digestion by anti-idiotype and RSV F protein-specific ELISA using samples from 11 different infants

- Palivizumab was degraded in the infant gastrointestinal tract

- The concentration of palivizumab survival across in vivo infants gastrointestinal digestion between anti-idiotype and RSV F protein-specific ELISA were correlated.
SELF-REGULATION: TIES TO IMAGINATION & ACADEMIC ACHIEVEMENT IN EARLY CHILDHOOD

ALLIE NANCARROW

11/15/19
Self-regulation & imagination
- Pretense intervention: does pretense style matter?
- Stress responses during mild social, cognitive, and emotional challenges via electrocardiogram and skin conductance

Self-regulation & school readiness
- Power PATH dual-generation socioemotional intervention
- Red Light, Purple Light!
- Head Toes Knees Shoulders – Revised
- School readiness

Self-regulation & context
- Family environment
- Parents
OSU

Longitudinal data
- Growth modeling
- Stata

Bridging the gap: research & policy
- Translating research for policymakers / public
IN VITRO AND IN VIVO DIGESTION OF GLYCOMACROPEPTIDE BY LC-MS/MS

Jeewon Koh
Research Interests

- In vitro and in vivo digestion of glycomacropeptide
- Mass spectrometry
Expertise/assistance I seek from other scholars

• Proteomics
• Peptidomics
• Metabolomics
• Protein fermentation
Policy Process and Policy Impact: Two Sides of the Same Coin?

Correlational and set-theoretic methods:

- Quantitative (e.g., multivariate, decomposition, diff-in-diff)
- Qualitative (e.g., comparative small-n)
- Mixed (e.g., fuzzy set Qualitative Comparative Analysis)
Policy Process and Policy Impact: Two Sides of the Same Coin?

**Policy Process**

**DV:** Policy Change  
**IVs:**  
- Evidence  
- Policy actors  
- Framing/narrative  
- Focusing Events  
- Values/beliefs  

**Policy Impacts**

**DV:** Individual or community change  
**IVs:**  
- Policy  
- Demographics  
- Implementation  
- Contextual factors  

**POLICY CHANGE**  
**POLICY FEEDBACK**
Policy Process and Policy Outcomes: Two Sides of the Same Coin?

Broad research agenda:
1) How do communities influence state and local policy decisions?
2) What are the impacts of those decisions?
3) How do impacts feed back to influence the policy process?

Substantive areas:
• Self-sufficiency/social policies (e.g., Oregon poverty measure; state EITC)
• Environmental/energy policies (e.g., response to extreme weather events)
Omics approaches for the study of infant intestinal ecosystem in response to human milk peptides

Ningjian Liang
November 15\textsuperscript{th}, 2019
Normal gut, microbiota and immune development
Omics approach to reveal complexity of infant intestinal ecosystem in response to milk peptides

Gastrointestinal system

Milk peptides

ATAC-Seq & CHIPmentation

RNA-Seq

LC-MS/MS proteomics

LC-MS/MS metabolomics

Genome

Epigenome

Transcriptome

Proteome

Metabolome

Transcription factor binding

DNA accessibility

Histone modifications

Absolute mRNA abundances

ncRNAs

Absolute protein abundances

Metabolite abundances
Thank you – Please join us at the reception!