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

Oregon State University

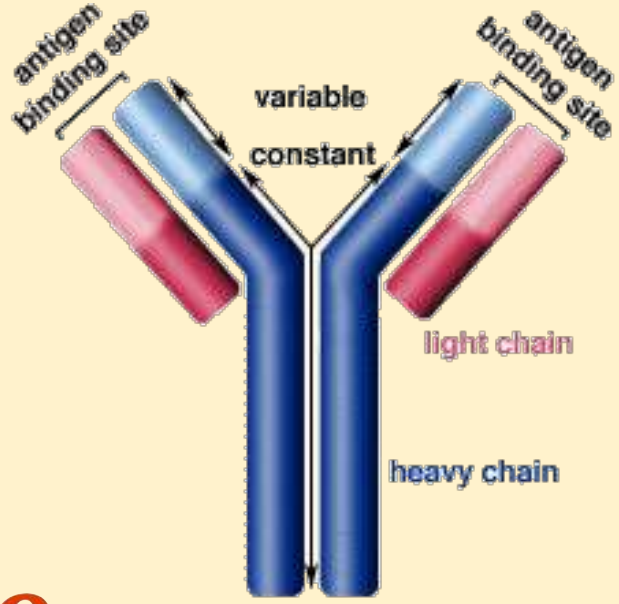
Ignite Agenda and Timeline

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



Oregon State University

Asst. Prof. David C. Dallas & his lab group

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.

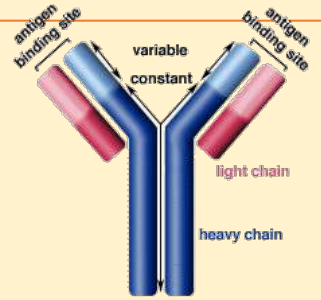
Our goals are to end diarrheal disease deaths in children under 5 by 2030.

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

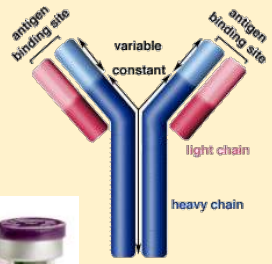
Palivizumab, a recombinant IgG antibody specific to respiratory syncytial virus (RSV), was used in this study as a model study.

Project Goal

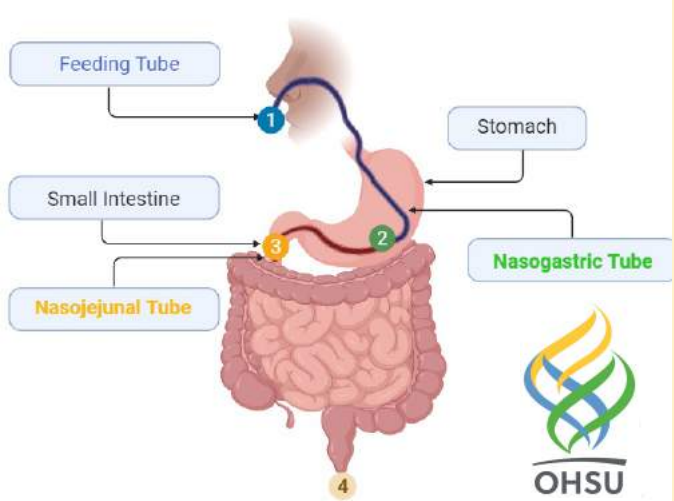
Determine the activity of palivizumab in infants across digestion.

Methods

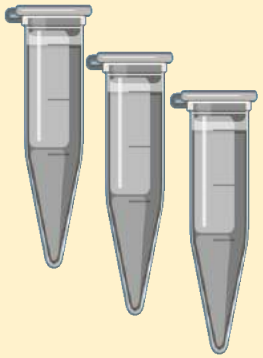
The survival of the antibody was assayed via ELISA and RSV neutralization assay.



Antibody (Palivizumab)



Infant Sample Collection

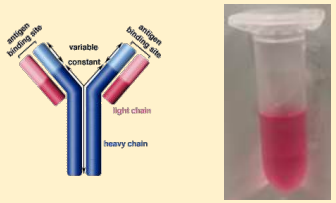


Feed, Gastric, Intestinal Samples

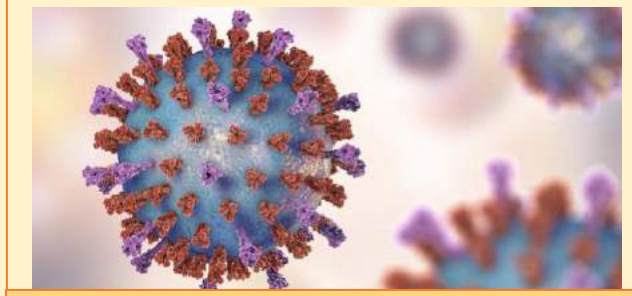
Protein G Column

MWCO Filtration

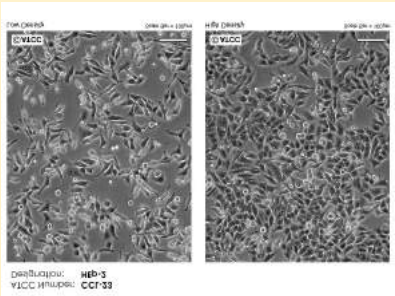
Extraction Process



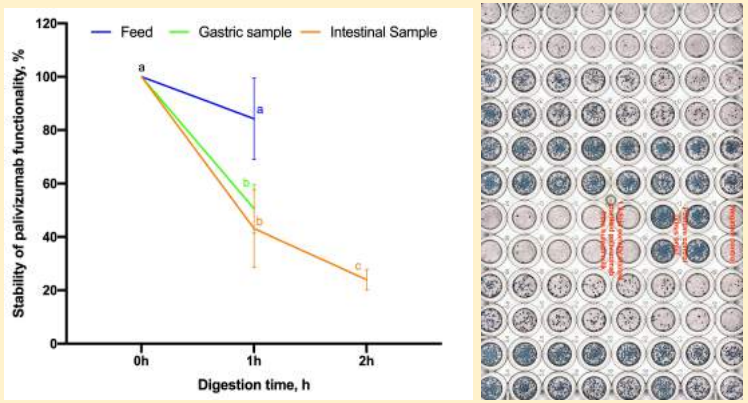
Extracted Antibody



Respiratory Syncytial Virus



RSV Infection of HEp-2 Cells

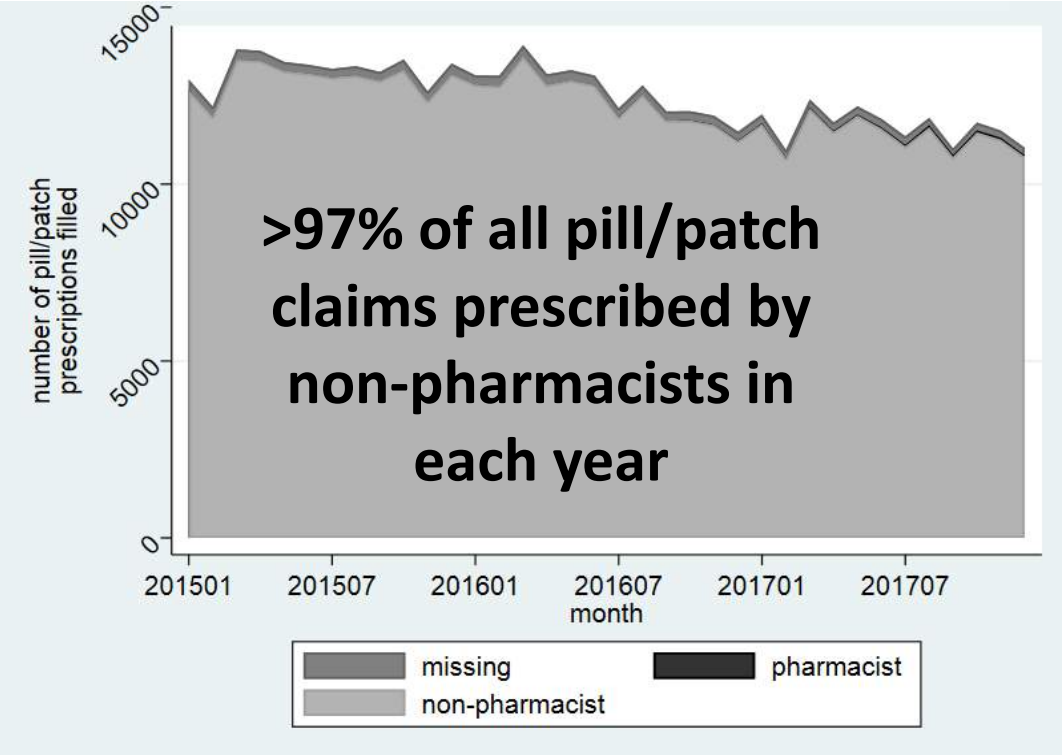


Plaque Neutralization Assay (Purified antibody targeting RSV)

- **Neutralization capacity of antibody decreased during infant digestion.**
- **Therapeutic dosage of oral antibodies must compensate for degradation.**

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

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



Measure	Receipt of any contraceptive method	Receipt of pill/patch
	aRR [95% CI]	aRR [95% CI]
Post*Intervention interaction term	0.98 [0.95-1.01]	0.99 [0.94-1.04]

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

Heather Hazzan, *Self Magazine*

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 (sIgA, IgA and IgG) across infant digestion as measured by anti-idiotype and RSV F protein-specific ELISA

Dr. Jiraporn Lueangsakulthai

Oregon State University

OHSU

BILL & MELINDA GATES foundation

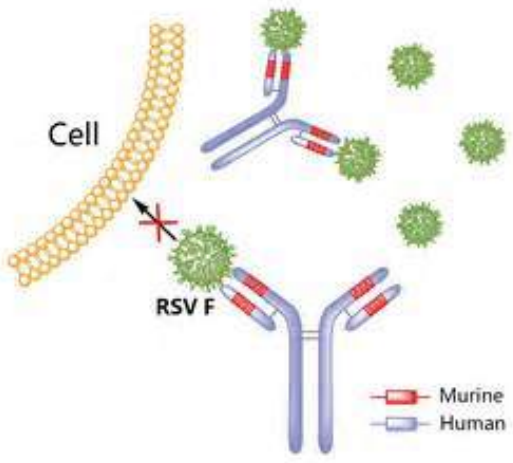
Introduction

- 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.

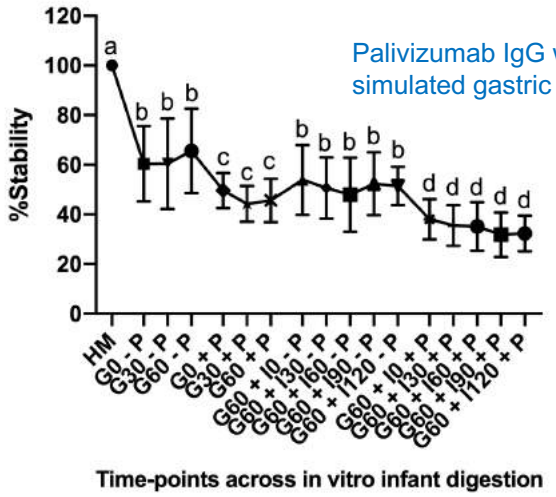
- The aim was to determine the activity of palivizumab in milk fed to infants across *in vivo* digestion.

- The survival of the antibody was assayed via an anti-idiotype 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.

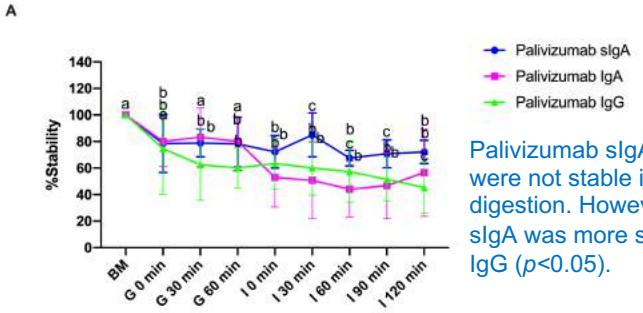


Palivizumab

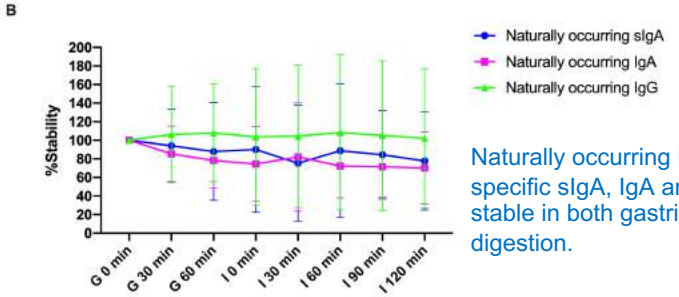
The survival of antibodies across in vitro infants gastrointestinal digestion by anti-idiotype and RSV F protein-specific ELISA using samples from 3 different donor milks



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

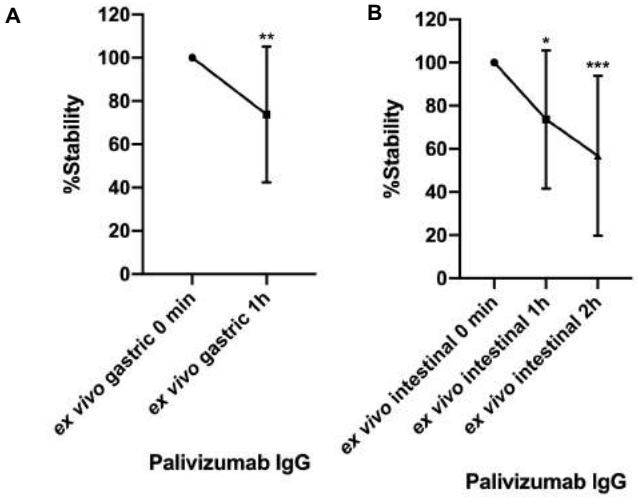


Palivizumab sIgA, IgA and IgG were not stable in gastrointestinal digestion. However, palivizumab sIgA was more stable than IgA and IgG ($p<0.05$).

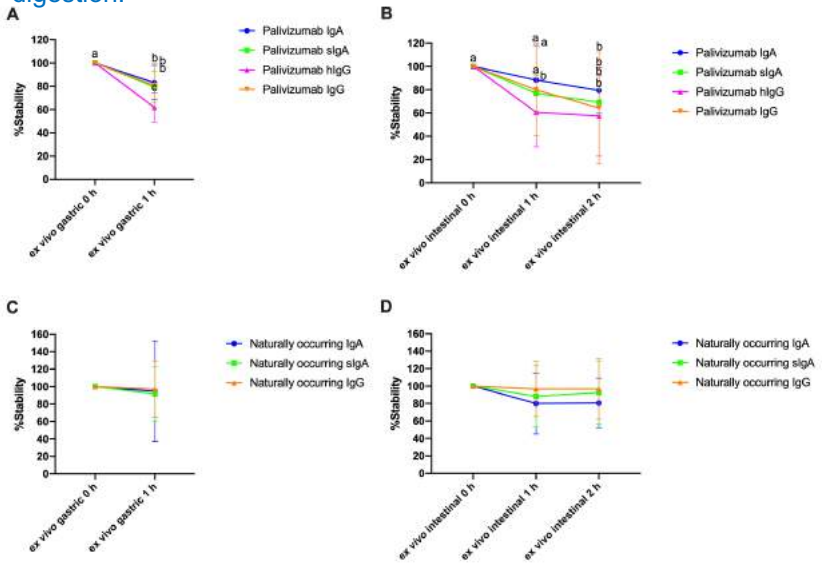


Naturally occurring RSV F protein-specific sIgA, IgA and IgG were stable in both gastric and intestinal digestion.

The survival of antibodies across ex vivo infants gastrointestinal digestion by anti-idiotype and RSV F protein-specific ELISA using samples from 3 different infants

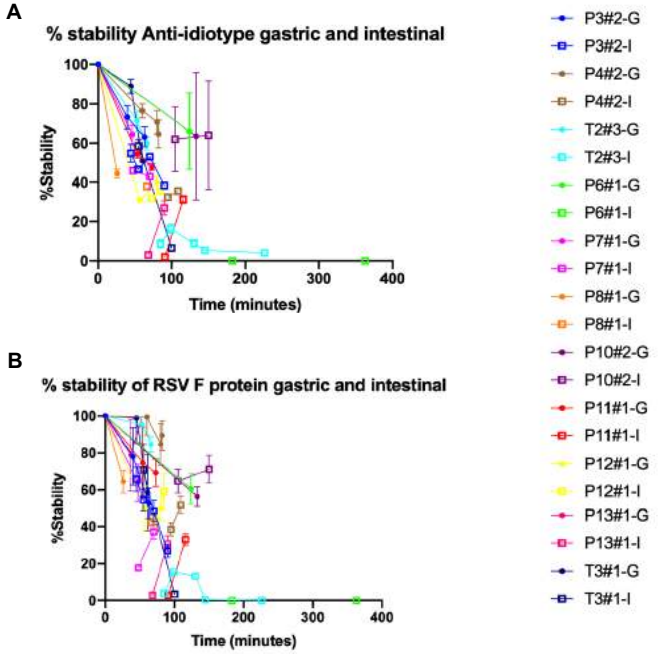


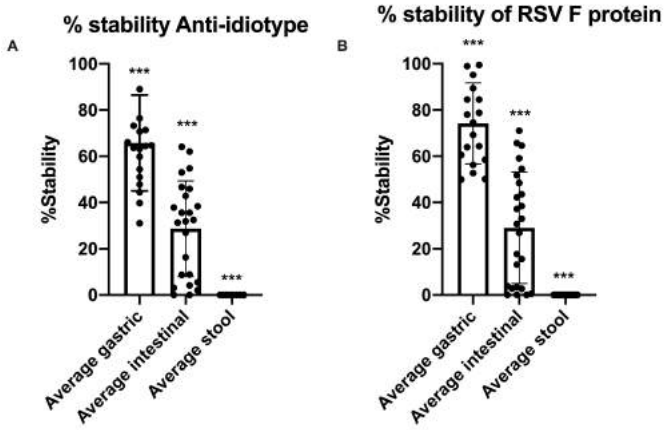
Palivizumab IgG was not stable in either ex vivo gastric or intestinal digestion.



- Palivizumab (sIgA, IgA, hIgG and IgG; Synagis®) were not stable in ex vivo gastrointestinal digestion.
- Naturally occurring breast milk RSV F protein-specific sIgA, IgA and IgG were stable in both gastric and intestinal 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

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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

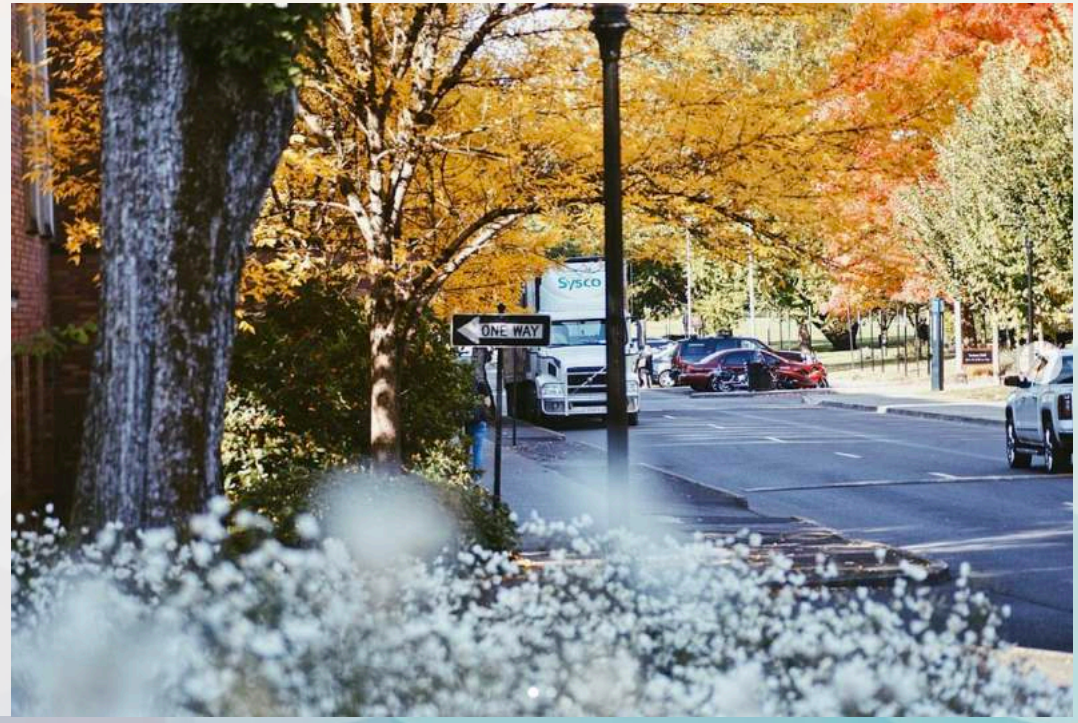
OSU

Longitudinal data

- Growth modeling
- Stata

Bridging the gap: research & policy

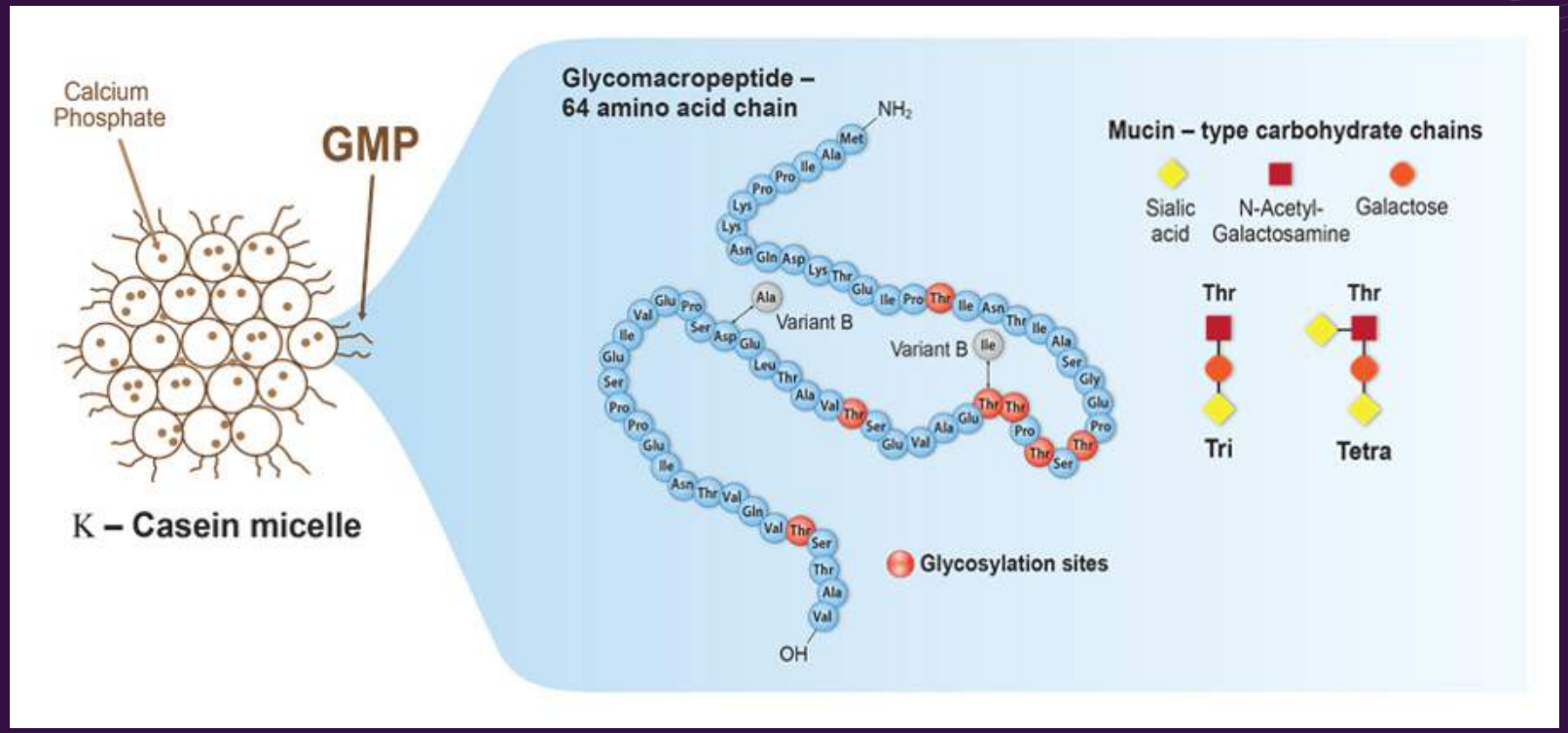
- Translating research for policymakers / public



IN VITRO AND IN VIVO DIGESTION OF GLYCOMACROPEPTIDE BY LC-MS/MS

Jeewon Koh

Research Interests

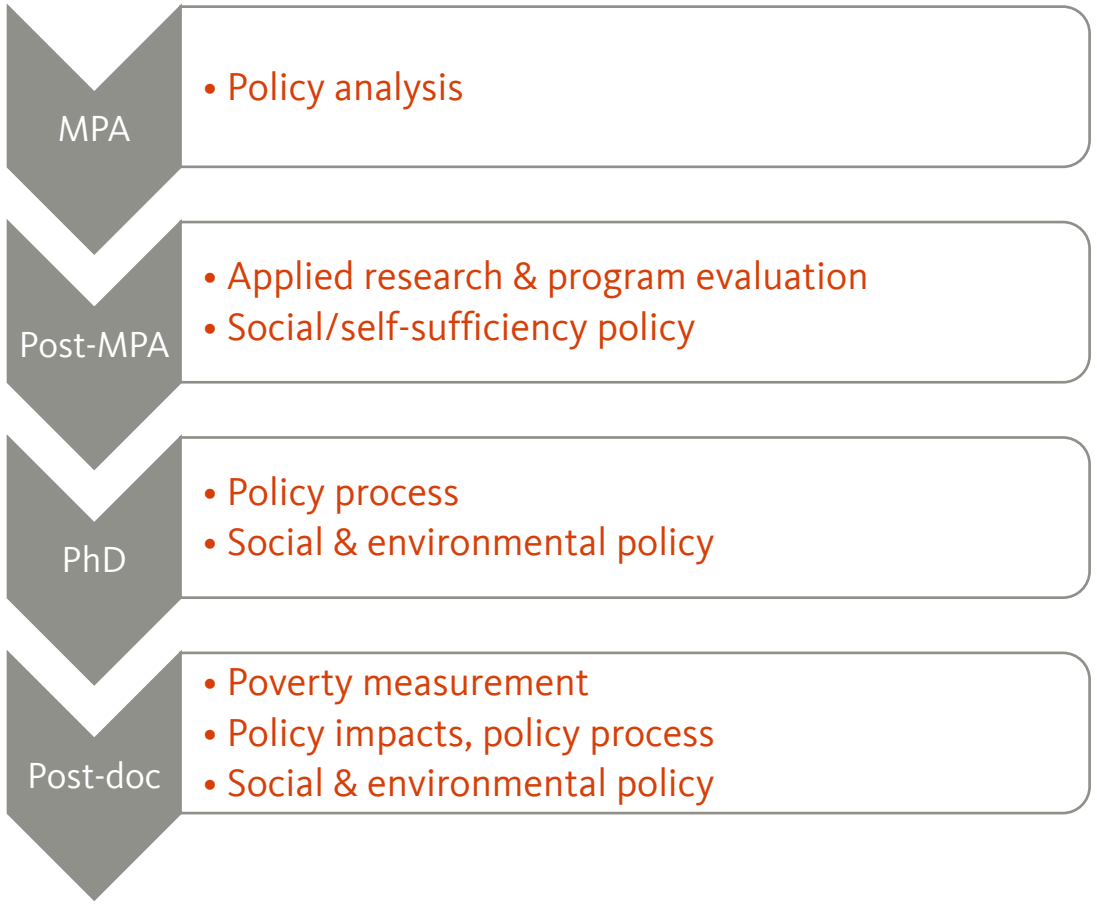


- In vitro and in vivo digestion of glycomacropeptide
- Mass spectrometry

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 CHANGE

Policy Impacts

DV: Individual or community change

IVs:

- Policy
- Demographics
- Implementation
- Contextual factors

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:

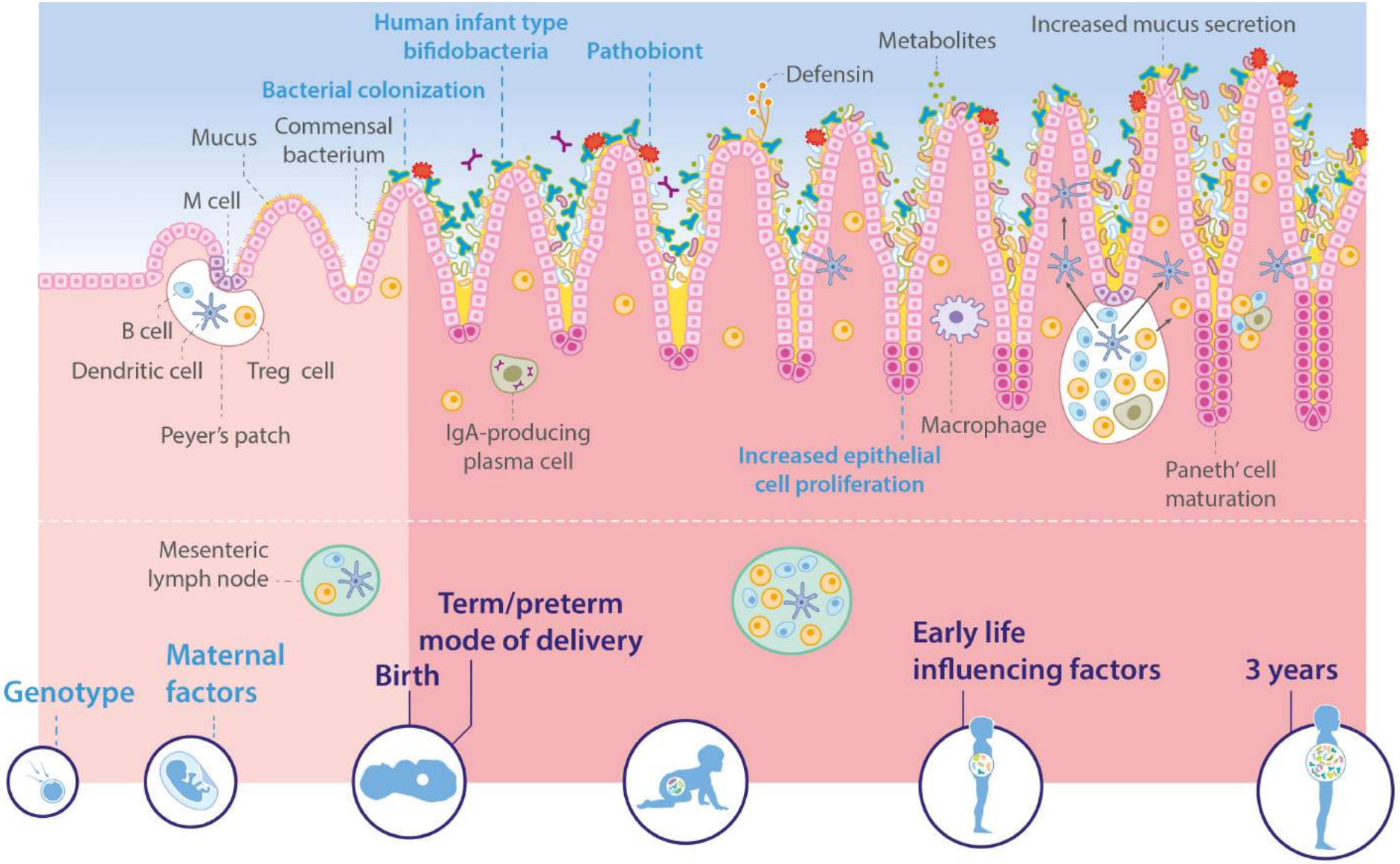
- Self-sufficiency/social policies (e.g., Oregon poverty measure; state EITC)
- Environmental/energy policies (e.g., response to extreme weather events)

Omics approaches for the study of infant intestinal ecosystem in response to human milk peptides

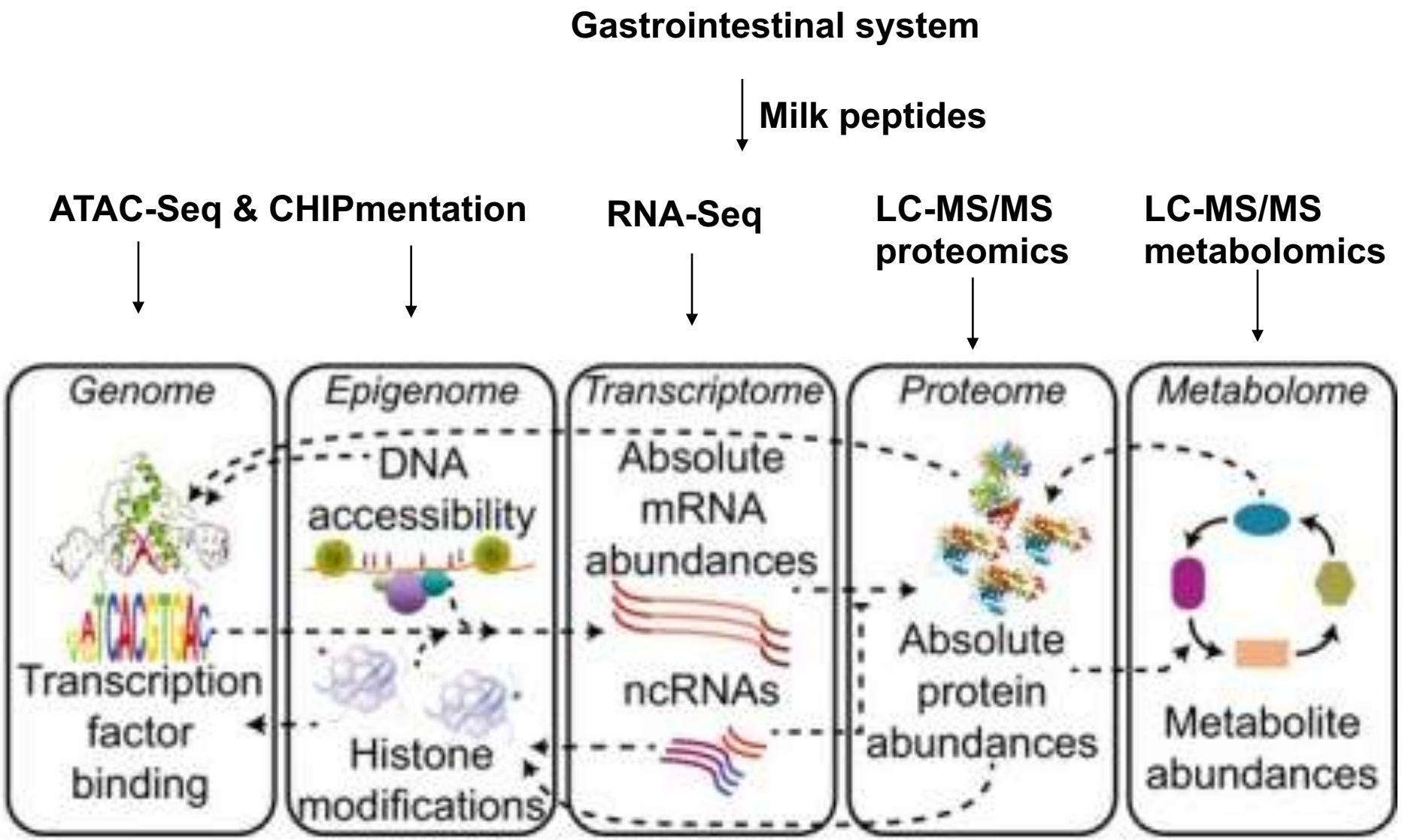
Ningjian Liang

November 15th, 2019

Normal gut, microbiota and immune development



Omics approach to reveal complexity of infant intestinal ecosystem in response to milk peptides



Q & A

Thank you – Please join us at the reception!