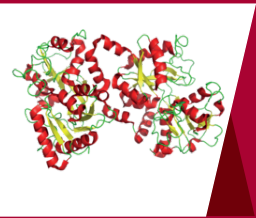




UNIVERSIDAD PERUANA  
CAYETANO HEREDIA



# 14<sup>th</sup> International Conference on Lactoferrin Structure, Function and Applications

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November 4-8, 2019  
Lima, Peru



# PROGRAM

## Lactoferrin Conference Sponsors



## Members of International Scientific Committee on Lactoferrin

### Top



Bo Lönnerdal  
*University of California Davis, USA (President)*

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Nidia León-Sicarios  
*Universidad Autónoma de Sinaloa, Mexico*

Theresa J. Ochoa  
*Universidad Peruana Cayetano Heredia, Peru*

Anthony Schryvers  
*University of Calgary, Canada*



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### Silver



Hans Vogel  
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*Institute of Experimental Medicine, Saint-Petersburg, Russia*

### Ivory

Connect Through Life



Jianhua Wang  
*Chinese Academy of Agriculture Sciences, P.R. China*

## Local Organizing Committee

Theresa J. Ochoa, MD (Chair)

Jaime Zegarra, MD

Elsa Chea, MD

Maribel Riveros, MSc

Hayde Guzmán

## Other members of the Local Organizing Committee

Anika Eca, Karina Mendoza, David Durand, Takashi Watanabe, Maria Pinedo and Susan Mosquito

Members of the Pediatric Infectious Diseases Laboratory (LIP), Instituto de Medicina Tropical *Alexander von Humboldt*, Universidad Peruana Cayetano Heredia, Lima, Peru.

## Honorary Members

Alejandro Bussalleu, Vice-Rector of Research, Universidad Peruana Cayetano Heredia, Peru.

Fabiola Leon-Velarde, Director of the National Council of Research and Technology (CONCYTEC), Peru.

Modesto Montoya, Professor Universidad Nacional de Ingenieria, National Academy of Science, Peru.

## Special issue in Biochemistry Cell Biology

Selected papers from the 14th International Conference on Lactoferrin will be published in a Special issue on "Lactoferrin" in *Biochemistry Cell Biology* (BCB)

Associate Editor. Hans J. Vogel  
(vogel@ucalgary.ca)

Guest Associate Editor. Theresa J. Ochoa  
(Theresa.J.Ochoa@uth.tmc.edu)

## Welcome

As Chair of the Organizing Committee of the 14th International Conference on Lactoferrin Structure, Function and Applications, I welcome you all to this year's conference. The International Conference on Lactoferrin takes place every two years, and this is the first time the conference is in South America. We are excited to host it in Lima, Peru in collaboration with Universidad Peruana Cayetano Heredia (UPCH).

This is an opportunity for scientists around the globe to gather and discuss new research on human and bovine lactoferrin structure, biochemical properties, biological functions, and clinical applications. Recently, there have been several new and controversial studies on the field, which makes this a great scenario to discuss the studies, their strengths and limitations, and contributions to science and patient care.

We have put together an interesting and nourished program with 23 distinguished invited speakers from all over the world, experts on different lactoferrin topics. The Program covers lactoferrin immunomodulating activity, cell proliferation and differentiation, natural and synthetic peptides, bacterial interactions, lactoferrin characterization, bioavailability and bioequivalence, and several potential therapeutic applications on human health and wellness. The Program has a Special Symposium on Neonatal Sepsis and two sessions on clinical studies of lactoferrin in children and adults looking at its effect on infections, iron status and other applications.

We are proud to announce that this year we were able to give 14 Student Awards for students and post-doctoral fellows to attend the meeting and present their research. It is our goal to encourage more young investigators to be part of the growing international lactoferrin scientific community.

A special thanks to our Sponsors, whose support is crucial for the Conference, and to the members of the Local Organizing Committee that have worked very hard to put together a great conference.

We hope this will be an interesting and scientifically exciting meeting, and that you will also see and enjoy our beautiful country.

Sincerely,

Theresa J. Ochoa, MD  
Chair, 14th International Conference on Lactoferrin  
Director, Instituto de Medicina Tropical Alexander von Humboldt  
Universidad Peruana Cayetano Heredia

## Program

08:00-09:15 Registration

09:15-09:20 Theresa Ochoa  
*Welcome*

### LACTOFERRIN: IMMUNOMODULATING ACTIVITY

**Moderator: Theresa Ochoa**

09:20-09:50 Bo Lönnerdal (USA)  
*Biological activities of the human milk lactoferrin-osteopontin complex.*

09:50-10:10 Caroline Barros\* (Brazil)  
*Bovine lactoferrin inhibits the fibrillization of prion protein.*

10:10-10:30 Jacob Byrne\* (Australia)  
*Lactoferrin promotes house dust mite protease-induced gut damage: implications for allergic disease development.*

10:30-11:00 **COFFEE BREAK**

### LACTOFERRIN: IMMUNOMODULATING ACTIVITY

**Moderator: Bo Lönnerdal**

11:00-11:30 Sebastian Peter Galuska (Germany)  
*Lactoferrin interacts with polysialic acid: MacGyver gets a dynamic tool.*

11:30-12:00 Jeffrey Actor (USA)  
*Lactoferrin treatment alters macrophage phenotypes and permits drug penetration to the mycobacterial granuloma.*

12:00-12:30 Erick Nonnecke (USA)  
*Investigating the in vivo roles of lactoferrin in innate immunity and early development using a knockout mouse model*

12:30-12:50 Håvard Jenssen (Denmark)  
*Bovine lactoferricin alters cellular movement, cytokine profile, and microbiome structure leading to enhanced wound healing ex vivo and in vivo*

12:50-14:50 **LUNCH**

\* Student Award winner

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## LACTOFERRIN: CELL PROLIFERATION AND DIFFERENTIATION

**Moderator: Maricarmen Planas**

- 14:50-15:20 Alexey Sokolov (Russia)  
*Study of the effect of lactoferrin and lactoferrin-oleic acid complex on tumour growth in mice.*
- 15:20-15:40 Cátia Santos-Pereira\* (Portugal)  
*Lactoferrin is selectively cytotoxic for highly metastatic cancer cells by inhibiting plasmalemmal V-ATPase.*
- 15:40-16:00 Vanessa Rocha\* (Brazil)  
*Effect of bovine lactoferrin on human prostate tumorigenic cell lines.*

**16:00-16:30 COFFEE BREAK**

## LACTOFERRIN: CELL PROLIFERATION AND DIFFERENTIATION

**Moderator: Jianhua Wang**

- 16:30-17:00 Antimo Cutone (Italy)  
*Native and iron-saturated bovine lactoferrin differently hinder migration in a model of human glioblastoma by reverting epithelial-to-mesenchymal transition-like process and inhibiting interleukin-6/STAT3 axis*
- 17:00-17:20 Ninive Rodriguez\* (Mexico)  
*Human and bovine lactoferrin mediate different cell processes in breast cancer cells.*
- 17:20-17:40 Izamar Arredondo\* (Mexico)  
*Antitumor activity of bovine lactoferrin and its derived peptides against HepG2 (liver cancer) and Jurkat (leukemia) cell lines.*

**17:40-19:00 BREAK**

## KEYNOTE LECTURE AND WELCOME RECEPTION

- 19:00-19:40 Hans Vogel (Canada)  
*Lactoferrin 80 years and counting.*

**19:40-21:00 WELCOME CEREMONY AND RECEPTION**



## LACTOFERRIN: NATURAL AND SYNTHETIC PEPTIDES

**Moderator: Hans Vogel**

- 09:00-09:30 Antonius (Toon) Leigtenberg (Netherlands)  
*LFchimera and its constituent LFCin and LFampin peptides, an overview.*
- 09:30-10:00 Nidia León-Sicarios (Mexico)  
*Lactoferrin and lactoferrin peptides against multidrug resistant bacteria.*
- 10:00-10:20 Diana Ramirez \* (Mexico)  
*Bovine lactoferrin and lactoferrin derived peptides exert anti-cancer activity against endometrial and cervical cancer cell lines.*
- 10:20-10:40 Julieth Roman \* (Colombia)  
*Peptide derived from bovine lactoferrin incorporated into pullulan nanofibers exhibits antibacterial activity*

**10:40-11:10 COFFEE BREAK**

## LACTOFERRIN: NATURAL AND SYNTHETIC PEPTIDES

**Moderator: Nidia León-Sicarios**

- 11:10-11:40 Hans Vogel (Canada)  
*Antibiofilm activity of lactoferrin-derived synthetic peptides.*
- 11:40-12:10 Jianhua Wang (China)  
*Fatty acid conjugation enhances the activities of antimicrobial peptides and study on topically therapeutic efficacy in mice infected by staphylococcus hyicus.*
- 12:10-12:30 Da Teng (China)  
*Improved antibacterial activity of a marine peptide-N2 against intracellular Salmonella typhimurium by conjugating with bLFCin6.*
- 12:30-12:50 Robert Beverly \* (USA)  
*Tracking the release and survival of human lactoferrin peptides across the infant.*

**12:50-14:30 LUNCH**

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## LACTOFERRIN – BACTERIAL INTERACTIONS

**Moderator: Trevor Moraes**

- 14:30-15:00 Anthony Schryvers (Canada)  
*Bacterial lactoferrin receptors – An evolutionary perspective.*
- 15:00-15:20 Julia Espíndola \* (Brazil)  
*Sequence diversity of lactoferrin receptors in Moraxella bovis and Moraxella bovoculi.*
- 15:20-15:40 Clement Chan \* (Canada)  
*Probing the function of CopB in bacterial iron uptake.*
- 15:40-16:00 Uriel Angulo \* (Mexico)  
*Bovine lactoferrin affects eDNA of Streptococcus pneumoniae biofilms; implications in biofilm architecture and transformation*

**16:00-16:30 COFFEE BREAK**

## LACTOFERRIN – BACTERIAL INTERACTIONS

**Moderator: Anthony Schryvers**

- 16:30-17:00 Trevor Moraes (Canada)  
*Overcoming the antimicrobial properties of lactoferrin: Roles for the bacterial surface lipoprotein Lbp.*
- 17:00-17:30 Maria Lepanto (Italy)  
*Effect of bovine lactoferrin on invasion and intracellular survival of adherent-invasive Escherichia coli LF82 as well as on bacteria-induced DNA damage in differentiated human enterocytes.*
- 17:30-17:50 Luigi Rosa \* (Italy)  
*Lactoferrin and oral pathologies: a therapeutic treatment.*
- 17:50-18:30 POSTER SESSION**

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2019

## LACTOFERRIN CHARACTERIZATION, BIOAVAILABILITY AND BIOEQUIVALENCE

**Moderator: Vadim Vasilyev**

- 09:00-09:30 Marian Kruzel (USA)  
*The systemic effects of dietary lactoferrina.*
- 09:30-09:50 Lourdes Sanchez (Spain)  
*Effect of technological treatments on bovine lactoferrina.*
- 09:50-10:10 Travis Kirpatrick (USA)  
*An LC-MS/MS method for quantifying lactoferrin concentration in plasma.*
- 10:10-10:30 Maxim Kiryuhijn (Singapore)  
*Template-assisted encapsulation of lactoferrin: effect of a template on lactoferrin loading efficiency.*

**10:30-11:00 COFFEE BREAK**

## LACTOFERRIN APPLICATIONS

**Moderator: Anthony Schryvers**

- 11:00-11:30 Hiroyuki Tsuda (Japan)  
*Application of bovine lactoferrin in remissive human inflammatory bowel diseases.*
- 11:30-12:00 Vadim Vasilyev (Russia)  
*Lactoferrin rescues cognitive functions in the offspring of rats subjected to hypoxia in pregnancy.*
- 12:00-12:20 Jaroslaw Aronowski (USA)  
*Lactoferrin-based approach to reduce brain damage after intracerebral hemorrhage (ICH).*
- 12:20-12:40 Estefania Massa \* (Argentina)  
*Lactoferrin: potential role in the reproductive process.*
- 12:40-14:30 LUNCH**
- 15:00 CITY TOUR**

## SYMPOSIUM ON NEONATAL SEPSIS AND LACTOFERRIN

**Moderators: Jaime Zegarra and Theresa Ochoa**

- 09:00-09:10 Theresa Ochoa  
*Introduction: aims of the symposium.*
- 09:10-09:30 Mohan Pammi (USA)  
*Randomized controlled trial evidence for the use of lactoferrin in neonatal sepsis.*
- 09:30-09:50 Janet Berrington (UK)  
*ELFIN: the UK preterm lactoferrin trial.*
- 09:50-10:10 William Tarnow-Mordi (Australia)  
*Lactoferrin infant feeding trial (LIFT) in very low birth weight infants: a pragmatic RCT.*
- 10:10-10:30 Theresa J. Ochoa (Peru)  
*The NEOLACTO trials: pooled analysis of individual patient data.*
- 10:30-11:00 COFFEE BREAK**
- 11:00-11:20 Nicholas Embleton (UK)  
*Mechanisms affecting the gut of preterm infants in the ELFIN lactoferrin trial (MAGPIE).*
- 11:20-11:40 David Kaufman (USA)  
*Optimizing Lactoferrin Dosing in Preterm Infants: Have we been studying the correct doses?*
- 11:40-12:00 Stéphane Sizonenko (Switzerland)  
*Lactoferrin for the developing brain: ready for clinical trial?*
- 12:00-12:30 Mohan Pammi (USA)  
*Discussion and conclusions.*
- 12:30-14:30 LUNCH**



## LACTOFERRIN AND INFANT FORMULA

**Moderator: Bo Lönnerdal**

- 14:30-15:00 Staffan Berglund (Sweden)  
*The LIME study: Clinical effects of bovine lactoferrin and lower iron content in infant formula.*
- 15:00-15:20 Shutaro Kubo (Japan)  
*Effects of lactoferrin-fortified formula on acute respiratory and gastrointestinal illnesses in children aged 12-32 months: A randomized, double-blind, placebo-controlled trial.*
- 15:20-15:40 Maria Björmsjö (Sweden)  
*The LIME study: Iron status effects of bovine lactoferrin and lower iron content in infant formula.*
- 15:40-16:00 Martine Van Gool (Netherlands)  
*Analytical challenges towards an international reference method for the analysis of lactoferrin in infant formula.*
- 16:00-16:30 COFFEE BREAK**
- LACTOFERRIN AND INFECTIOUS DISEASES**
- Moderator: Nidia León-Sicarios**
- 16:30-17:00 Stéphane Sibley (Canada)  
*Prevention of nosocomial infections in critically ill patients with lactoferrin.*
- 17:00-17:20 Hirotsugu Oda (Japan)  
*Effect of lactoferrin on prevention of infectious diseases in winter: a randomized, double-blinded, placebo-controlled trial.*
- 17:20-17:40 Christiane Wobus (USA)  
*Antiviral effects of bovine lactoferrin on human norovirus.*
- 17:40-18:00 Stuart Irwin (New Zealand)  
*Parenteral Lactoferrin in Hardware Related Infection.*
- 18:00-19:00 POSTER SESSION**
- 19:00-22:00 GALA DINNER**



## LACTOFERRIN AND INFECTIOUS DISEASES

*Moderator: Hans Vogel*

- 09:00-09:20 Eric Cox (Belgium)  
*Lactoferrin to combat enterotoxigenic Escherichia coli infections using a piglet model.*
- 09:20-9:40 Yesenia Filio (Peru)  
*Metagenomic analysis of altered gut microbiota after the administration of bovine LF as preventive treatment against diarrhea.*
- 09:40-10:00 Daisy Vanromay (Belgium)  
*Ovotransferrin against Chlamydia psittaci respiratory disease in poultry: from the lab to the farm.*
- 10:00-10:20 Sayuri Nakamura (Mexico)  
*Recombinant human lactoferrin induces apoptosis, cell cycle disturbs and cytoskeleton disorganization in breast cancer cells.*

## CONCLUDING REMARKS

- 10:20-10:40 Jianhua Wang (China)  
*Presentation of the 15th Lactoferrin Conference.*
- 10:40-10:50 Theresa Ochoa  
*Concluding remarks.*
- 10:50-11:20 **COFFEE BREAK**

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2019

## Genevieve Spik Award and Student Awards

The Organizing Committee is very pleased to announce the winners of the Student Awards of the 14th International Conference on Lactoferrin:

STUDENT AWARDS	
Uriel Angulo Zamudio	Universidad Autónoma de Sinaloa Culiacán, Sinaloa, México
Izamar G. Arredondo -Beltrán	Universidad Autónoma de Sinaloa Culiacán, Sinaloa, México
Caroline Barros	Instituto Federal do Rio de Janeiro IFRJ RJ, Brazil
Robert Beverly	Oregon State University Corvallis, USA
Jacob Byrne	The University of Western Australia Perth Australia
Clement Chan	University of Calgary Calgary, Canada
Julia Espíndola	Federal University of Santa Maria Santa Maria, Brazil
Estefanía Massa	Universidad Nacional de Rosario Rosario, Santa Fe, Argentina
Diana A. Ramírez-Sánchez	Universidad Autónoma de Sinaloa Culiacán Sinaloa, México
Vanessa Rocha	Instituto Biomedico, UNIRIO RJ, Brasil
Ninive Rodríguez	CINVESTAV-IPN Mexico City, Mexico
Julieth Roman	Universidad Nacional de Colombia Bogota, Colombia
Luigi Rosa	Sapienza University of Rome Rome, Italy
Cátia Santos-Pereira	University of Minho Braga, Portugal

After the oral presentations one young scientist will be selected for the Genevieve Spik Award.





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50  
AÑOS

INSTITUTO DE MEDICINA TROPICAL  
**ALEXANDER VON HUMBOLDT**  
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