Antimicrobial Peptides: Yesterday, Today, and Tomorrow

A 1-day virtual meeting dedicated to the 20 anniversary of the antimicrobial peptide database (APD)

October 6, 2023 (Friday), Omaha, Nebraska, USA

Chairs:
Guangshun Wang, Ph.D., Professor (University of Nebraska Medical Center)
Charles Bevins, PhD, Professor (UC Davis School of Medicine)
Monique van Hoek, PhD, Professor (George Mason University)

Opening remarks
8:00 a.m.-8:30 a.m.
Kenneth Bayles (Vice Chancellor for Research, UNMC)
Joseph Khoury (Chair, Department of Pathology and Microbiology, UNMC)
Robert Hancock (University of British Columbia, Canada)

Session I: Database, design and prediction of antimicrobial peptides
Moderator: Monique van Hoek and Weiwei Zhang

8:30 a.m-8:50 a.m. Keynote Speaker 1
Guangshun Wang (University of Nebraska Medical Center, USA)
The antimicrobial peptide database as a tool for antimicrobial development

9:00 a.m-9:20 a.m.
Gajendra P S Raghava (Indraprastha Institute of Information Technology, India)
Machine learning based models for designing therapeutic peptides from the antimicrobial peptide database

9:30 a.m-9:50 a.m.
Jun Wang (Chinese Academy of Sciences, China)
Deep learning prediction of antimicrobial peptides from human gut microbiome

9:50 a.m.-10.00 a.m. Symposium break

Session II: Promising antimicrobial leads and mechanisms of action
Moderator: Gus Wang and Chuck Bevins

10:00 a.m-10:20 a.m. Keynote Speaker 2
Kim Lewis (Antimicrobial Discovery Center, Northeastern University, USA)
Novel peptide antibiotics with unusual modes of action

10:30 a.m-10:45 a.m.
Berthony Deslouches (University of Pittsburgh, USA)
Precision design of cationic peptides to overcome bacterial resistance to conventional antibiotics

10:50 a.m-11:05 a.m.
Evan Haney (Asep Medical, Canada)
Development of AMPs into antibiofilm agents: An industrial view

11:10 a.m-11:25 a.m.
Michaela Wenzel (Chalmers University of Technology, Sweden)
Membrane active antimicrobial peptides: Beyond pore-forming
11:30 a.m-11:45 a.m.
Renee Fleeman (University of South Florida, USA)
Proline-rich antimicrobial peptides: heat-shock proteins, ribosomes, and more?

11:50 a.m-12:40 p.m.  Lunch break 50 min

Special Event
12:40 p.m.-12:55 p.m. Sandip Bhattacharyya, PhD., Scientific Review Officer (NIH/NIAID, USA)
NIAID grantsmanship

Session III: Microbiota, antimicrobial peptides and human diseases
Moderator: Chuck Bevins and Sujata Chaudhari

1:00 p.m-1:20 p.m.  Keynote Speaker 3
Nita Salzman (Medical College of Wisconsin, USA)
The microbiota-antimicrobial peptide axis and novel antimicrobial strategies

1:30 p.m-1:45 p.m.
Bruno Lemaitre (École Polytechnique Fédérale de Lausanne, Switzerland)
Antimicrobial peptides and its role in insect aging and lifespan

1:50 p.m-2:05 p.m.
Delphine Destoumieux-Garzón (University Perpignan Via Domitia, France)
Salt-resistant big defensins regulate oyster microbiota
2:10 p.m.-2:25 p.m.
Bart Thomma (University of Cologne, Germany)
Antimicrobial peptides shape plant microbiota

2:30 p.m.-2:45 p.m.
Eugene B. Chang (University of Chicago, USA)
A new class of Paneth cell antimicrobial peptides that maintain Candida gut commensalism and innate immunity

2:50 p.m.-3:00 p.m. Symposium break

Session IV: Sunlight, vitamin D, human cathelicidin and antimicrobial role
Moderator: Monique Van Hoek and Gus Wang

3:05 p.m.-3:25 p.m. Keynote Speaker 4
John H White (McGill University, Canada)
Vitamin D, human LL-37 and the antiviral connection

3:35 p.m.-3:50 p.m.
Jingwei Xie (UNMC, USA)
Topical delivery of immunomodulating compounds and LL-37 derived peptides for wound management

3:55 p.m.-4:10 p.m.
Nuch Tanphaichitr (U Ottawa, Canada)
Development of human LL-37 and related peptides into a spermicide/microbicide
4:15 pm: Conference Awards and Closing Remarks