陳怡原 Yi-Ywan Margaret Chen

Appointment: Professor

Laboratory: Bacterial Genetics Research Laboratory

Phone: 03-2118800 ext 3352

Fax: 03-2118700

Email: mchen@mail.cgu.edu.tw

Education

1988-1993	Ph.D., University of Texas Health Science Center at San Antonio, USA
1985-1987	M.S., University of Georgia at Athens, USA
1980-1984	B.S., Fu-Jen Catholic University, Taiwan

Research Interests

Dental plaque is one of the most successful biofilms in the human body and is essential for the development of chronic infections such as dental caries and periodontal diseases. Studies in recent years have demonstrated a clear link between periodontal diseases and systemic conditions such as coronary heart disease and stroke, and a higher risk of preterm low birth-weight babies. My research interests primarily focus on the molecular mechanisms regulating the physiology and virulence expression of oral bacteria in response to environmental conditions, and the development of therapeutic strategies for controlling oral infections. To accomplish this, a variety of microbiological, biochemical, and molecular biology technologies are employed. These include the use of continuous chemostat culture system to tightly control growth parameters of bacteria, coupled with the use of genetically-engineered bacteria and gene fusion technology, which allows for a detailed analysis of gene expression in response to specific stimuli. Systemic approaches including proteomic analysis is also employed. The first specific project focuses on molecular analysis of the differential expression of urease in *Streptococcus salivarius*, and the impact of urea catabolism in the physiology and ecology of plaque microbes. The second specific project focuses on the regulation of virulence genes expression in *Streptococcus parasanguinis* and *Streptococcus mutans* in response to environmental cues and the impact of these responses in the pathogenic capacity of these bacteria. We are particularly interested in the process of biofilm formation and how the biofilm lifestyle affects the physiology and virulence capacity of the microbes. The third specific project focuses on the molecular and functional analyses of the twitching motility of *Streptococcus sanguinis*, the only streptococcal species expressing this phenotype.

Recent Publications (2014-2018)

1. J. Geng, S-C. Huang, Y-Y. Chen, C-H Chiu, S. Hu, and **Y. M. Chen***. 2018. Impact of growth pH and glucose concentrations on the CodY regulatory network in *Streptococcus salivarius.* BMC Genomics 19:386.
2. W-C. Chou, S-C. Huang, C-H. Chiu, **Y. M. Chen***. 2017. YMC-2011, a temperate phage of *Streptococcus salivarius* 57.I. Appl. Environ. Microbiol. 83(6): e03186-16.
3. **Y. M. Chen***, Y-Y. Chen, J-L. Hung, P-M. Chen, J-S. Chia. 2016. The GlnR Regulon in *Streptococcus mutans* is differentially regulated by GlnR and PmrA. PLoS ONE 11(7): e0159599.
4. **Y. M. Chen***, Y-Y. Chen, J-L. Hung, P-M. Chen, J-S. Chia. 2016. The GlnR Regulon in *Streptococcus*

mutans is differentially regulated by GlnR and PmrA. PLoS ONE 11(7): e0159599.

5. S-C. Huang, and**. Y. M. Chen***. 2016. Role of VicRKX and GlnR in pH dependent regulation of the *Streptococcus salivarius* 57.I urease operon. mSphere 1: e00033-15.
6. C-J. Chang, C-S. Lin, C-C. Lu, J. Martel, Y-F. Ko, D. M. Ojcius, S-F. Tseng, T-R. Wu, **Y. M. Chen**, J. D. Young and H-C. Lai. 2015. *Ganoderma lucidum* reduces obesity in mice by modulating the composition of the gut microbiota. 2015, Nat. Commun. 6:7489
7. T-W. Chen**,** R-C. Gan**,** Y-F. Chang**,** W-C. Liao**,**T. H. Wu**,** C-C. Lee**,**P-J. Huang**,** C-Y. Lee**, Y. M. Chen,** C-H. Chiu**,** and P. Tang. 2015. Is the whole greater than the sum of its parts? De novo assembly strategies for bacterial genomes based on paired-end sequencing. BMG Genomics **16**:648
8. S-C. Huang, R. A. Burne and **Y. M. Chen***. 2014. The pH-dependent expression of the urease operon in *Streptococcus salivarius* is mediated by CodY. Appl. Environ. Microbiol. 80: 5386-5393.
9. C-J. Chang, **Y. M. Chen**, C-C. Lu, C-S. Lin, J. Martel, S-H. Tsai, Y-F. Ko, T-T. Huang, D-M. Ojcius, J-D. Young, H-C. Lai. 2014. *Ganoderma lucidum* stimulates NK cell cytotoxicity by inducing NKG2D/NCR activation and secretion of perforin and granulysin. Innate Immun. 20:301-311.
10. K-Y. Huang, **Y. M. Chen**, Y-K. Fang, W-H. Cheng, C-C. Cheng, Y-C. Chen, T. E. Wu, F-M. Ku, S-C. Chen, R. Lin, P. Tang. 2014. Adaptive responses to glucose restriction enhance cell survival, antioxidant capability, and autophagy of the protozoan parasite *Trichomonas vaginalis*. Biochemica et Biophysica Acta. 1840: 53-64.