

4<sup>th</sup> International Conference on

# Clinical Microbiology and Microbial Genomics

October 05-07, 2015 Philadelphia, USA



## John G Thomas

West Virginia University, USA

### A walk with Louis Pasteur in the laboratories: His (1880), ours (2015) and future (2025)

“We live in a microbial world” was visibly unmasked by the Dutch Microscopist, Van Leeuwenhoek in 1674 and later correlated with diseases by Louise Pasteur in 1865 and Robert Koch’s postulates in 1884, emphasizing “one bug, one disease”, their laboratories providing significant insight into viable, culture-able microbes. The Russian scientist of the time held a different focus, “survival of the fittest” supporting co-operation rather than competition; Peter Kropotkin (1865) described an anti-Darwin theory of “We” and the importance of community (pre-Bio-films), while Elie Metchnikoff unmasked the importance of selected gut microbes in maintaining health (*Lactobacillus*) and the concept that colonizing viable microbes were important in prolonging life (pre-Probiotics). But the explosion of non-culture techniques in 1988, emphasized by environmentalist, initially, catalyzed a redefinition of our microbial co-ecosystem “Dual Citizenship”, the incredible diversity of non culture-able microbes while highlighting their genetic strength, the disruption due to antibiotics and the emerging Theme of “One Health : Animals, Humans, and the Globe . In all three phases, the impact upon diagnostic microbiology has been relentless, demanding new approaches and strategies. Diagnostic laboratories are emerging from Dr Pasteur with an “anti-Koch” theme, implementing new rapid technologies employing MALDI-TOF, BIO-FIRE and other molecular methods incorporating the laboratory focus of “Culture-OMICS”, reporting both viable and non-viable detection and simultaneous evaluation of a microbiota signature and patient health status. Here, we will compare and contrast with Dr Pasteur the explosion in diagnostic methods, describe the future laboratory and gather his insight focusing on two bio-film associated diseases: VAP and chronic wounds.

### Biography

John G Thomas is recognized as an “International Educator and Global Microbiologist”; being lectured in more than 43 countries while a Clinical Microbiologist in Pathology, Dentistry and Medicine for 51 years. His research emphasizes bio-films and medical devices including endotrachs and the connection between oral diseases, VAP and wound infections (“Intellectual Design”) with the recent integration of micro 3-D- bio printing using bio-plastics and unique prebiotics (Therapeutic Bacteria) for intervention. He has over 50 publications, multiple book chapters, significant grant support, pending patents and over 100 posters/abstracts at national and international meetings. His sabbatical at Cardiff University, Wales, UK (2007) was a driving influence. He has been a member of the ADA Scientific Advisory Committee for the last 8 years. As Faculty at 6 Universities during his career, he has received Alumni and University awards for research and International Student Mentoring; retiring from WVU in 2013 after 23 years as Professor Emeritus, he presently is expanding his research/teaching utilizing the advanced resources of the Allegheny Health Network in Pittsburgh, PA, Carnegie-Mellon University and Mass. Gen. Hospital, Boston, MA.

[jgthomas@hsc.wvu](mailto:jgthomas@hsc.wvu)

### Notes: