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## Unlearning the learned about wound management and bio-films: Re-establishing the microbial library within

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Chronic wounds are one of the most costly health care issues, affecting 6.5 million patients at an annual cost of US \$25 billion, focusing on a growing aged population. Multiple interventions emphasizing silver gauze have not altered QOL issues or reduced significant collateral damage of MDR sepsis and *C. difficile*. In 2012, we introduced and evaluated the SMarT probiotics matrix concept, where a bi-phasic strategy harmonizes an ecologic approach of Minimal Intervention (MI) disruption while restoring microbial architecture and tissue engineering. The emergence of Probiotic therapy had been catalyzed by recent advances in microbiota and metagenomics, particularly dentistry where we initially evaluated probiotics in endodontic. In the discovery (*in vitro*) phase 2013/4, 3 pools of probiotics were evaluated for anti bio-film, anti-planktonic activity, ultimately creating a “designer symbiotic” combination against 3 wound pathogens: *Staph. aureus*, *C. albicans* and *P. aeruginosa*. In application (*in vivo*) phase (2015/16), the “designer symbiotic” is being evaluated using a rabbit wound mode infected with the same strains, complimenting bio-burden wound reduction and site closure/tissue regeneration bellow “critical colonization” with a combined silver dressing/silver gels “suite platform” enforcing “site-saturation”. The wound/tissue environment will be strengthened utilizing delivery of the symbiotic via bio-degradable, bio-plastic scaffolding with barrier activity enhanced by form fitting gauze individually constructed with 3-D printing using plasma as the ink.

### 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.

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