

KEY POINTS/BOOKMARKS

E. Restorative Microbiology and “Nutraceuticals”. PROBIOTICS

- Establish a standardized pre/probiotic strategy based on published research, expanding to complement antibiotic therapy.
- Understand manufactures vary significantly in quality of probiotics and measurement of dose at times of use.
- Probiotics have changed from an adjunctive care to a therapeutic strategy.
- The Metagenomics defines the genetic strength of microbiota a non-structured (organ system) that requires stewardship by Minimal Intervention for optimal effectiveness.
- Probiotics are temporary colonizers that do not establish a recalcitrant biofilms community
- Matching (Microbial Clock) this Rubic's Cube is the solution for optimum probiotic efficacy, including the patient Enterotype, 1,2 or 3 (GUT Signature)
- An ideal Synbiotic (Combinations of selected probiotics) will probably have 3-5 microbes , based on biobilm stability and stress maintenance via Diversity and Resilience (D/R). Designer Probiotics or Intelligent Probiotics will self manage, self treat and self-monitor infections attributable to biofilms .

- Recognizing the importance of commensal microbes and non pathogens , *Sacchromyces bulardi* should be a key component of any probiotic particularly following ABX Rx.
- Generally, synbiotics should use a combination of microbes emphasizing bioburden reduction and immunomodulation; presently biofilm producing probiotics have highlighted Predatory Probiotics (Tb) and Tumor homing or detection of altered metabolic states in mutagenesis.(*Bifidobacterium*)