Microbiome- emerging field of study

We have 4-9 Million Unique non-redundant genes in/on a human. There is a new vision of human beings- think of ourselves as “supraorganism”- genes of human and our flora/bacteria we harbor.

-European and American group have programs for this research.

Dysbiosis- we have the wrong mix of flora and are out of balance. Can be corrected with prebiotics (chemicals oral or topical ingestion to feed good flora), probiotics (the flora themselves), antibiotics.

Genome of normal flora is “plastic”/”fluid”

Influences of modern life on the gut microbiota: vaccines, c-section, better sanitation, antibiotics, sedentary life style, processed foods/dietary changes…

Microbiome is characteristic to individual- can be used in forensic analysis. However, is that protected by HIPPA? Do the police need a search warrant to get that data? What are the limitations with technology and our health?

Mental health: depression and anxiety are related to gut bacteria.

What if health and life insurance gets priced by microflora that we carry? Rate jumps with the risk associated.

Applications of data: pharmacomicrobiomics: composition tied to the efficacy of pharmaceuticals, predictor of health risks, customized pre/probiotics, etc…

Two major ways to get microbiome sequence data: 16S rRNA sequencing- tells us identity of organisms present but we cannot match all sequences to identified bacteria. WG5 can identify gene as present but does not tell us what it does or if it is active. **MANY LIMITATIONS**

Other ways to study microbiome: transcriptomics, metabolomics, proteomics