GCTACG	GCTACG	GCTACG
GCTACG	GCTACG	GCTACG
GCTACG	GCTACG	GCTACG

Environment 1	Environment 1	Environment 1
Environment 1	Environment 1	Environment 1
Environment 1	Environment 1	Environment 1

GCTACG	GCTACG	GGATCG
GCTACG	GCTACG	GGATCG
GCTACG	GGATCG	CTACGT

Environment 1	Environment 1	Environment 1
Environment 1	Environment 1	Environment 1
Environment 1	Environment 1	Environment 1

CTACGT	GCTACG	GGATCG
CTACGT	GCTACG	GGATCG
GCTACG	GGATCG	GGATCG

Environment 2	Environment 2	Environment 1
Environment 2	Environment 2	Environment 1
Environment 2	Environment 2	Environment 2

GGATCG	GGATCG	GGATCG
GGATCG	GGATCG	GGATCG
GGATCG	GGATCG	GGATCG

Environment 2

Environment 2

Environment 2

Environment 2

Environment 2

Environment 2

Environment 2

Environment 2

Environment 2

GGATCG	GGATCG	CATAGC
GGATCG	GGATCG	CATAGC
GGATCG	CATAGC	CATAGC

Environment 3	Environment 2	Environment 2
Environment 3	Environment 3	Environment 2
Environment 3	Environment 3	Environment 2

CATAGC	CATAGC	CATAGC
CATAGC	CATAGC	CATAGC
CATAGC	CATAGC	CATAGC

Environment 3	Environment 3	Environment 3
Environment 3	Environment 3	Environment 3
Environment 3	Environment 3	Environment 3

CATAGC	CCGTCA	TACTCA
CATAGC	CCGTCA	TAGCTA
CATAGC	CCGTCA	TAGCTA

Environment 4	Environment 3	Environment 3
Environment 4	Environment 3	Environment 3
Environment 4	Environment 3	Environment 3

TAGCTA	GATTCA	GATTCA
TAGCTA	GATTCA	GATTCA
TAGCTA	GATTCA	GATTCA

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

CAATCG	CAATCG	GATTCA
AGACTG	CAATCG	GATTCA
	CAATCG	CAATCG

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

Environment 4

TAGCTA	GCTACG	CATAGC
GATTCA	GGATCG	CCGTCA
CAATCG	CTACGT	TACTCA

Family: Enterobacteriaceae

Phylum: Proteobacteria
Class: Gammaproteobcateria
Order: Enterobacteriales

Gram-negative, facultative anaerobes and many members of this family are a normal part of the gut flora found in the intestines of humans and other animals. Some produce endotoxins that when released into blood stream can cause systematic inflammatory response.

Genus: *Ruminococcus*

Phylum: Firmicutes
Class: Clostridia
Order: Clostridiales
Family: Ruminococcaceae

Gram positive, anaerobic and significant numbers in the intestines of humans. Found in the rumen of cattle, sheep and goats to help their hosts digest cellulose.

Family: Solibacteraceae

Phylum: Acidobacteria
Class: Solibacteres
Order: Solibacterales

Aerobic and able to deal with extreme variation in moisture, temperature and nutrient availability. Able to produce cellulose to form biofilms to aid in moisture retention and providing soil with aeration.

Family: Enterococcaceae

Phylum: Firmicutes
Class: Bacilli
Order: Lactobacillales

Gram-positive, facultatively anaerobic, or anaerobic. Associated with a wide range of ecological sources including plants, the gastrointestinal tract of insects, humans and other animals, and fermented foods.

Genus: *Bifidobacterium*

Phylum: Actinobacteria
Class: Actinobacteria
Order: Bifidobacteriales
Family: Bifidobacteriaceae

Usually called probiotics and are a natural part of the bacterial flora in the human body and have a symbiotic bacteria-host relationship with humans. Help promote digestion and boost immune system. Inhibit growth of pathogens.

Family: Syntrophobacteraceae

Phylum: Proteobacteria
Class: Deltaproteobacteria
Order: Syntrophobacterales

Gram negative and strictly anaerobic and representatives are found in wastewater treatment facilities and useful for degrading organic compounds like sulfate.

Family: Streptomycetaceae

Phylum: Actinobacteria
Class: Actinobacteria
Order: Actinomycetales

Gram-positive, aerobic bacteria. Adapted to a wide range of environmental conditions and habitats. Has produced more than a third of commercially available antibiotics.

Genus: *Corynebacterium*

Phylum: Actinobacteria
Class: Actinobacteria
Order: Actinobacteridae
Family: Corynebacteriaceae

Gram positive, aerobic and can be isolated from soil, water, blood and skin. Commonly found in human mucous membranes and skin.

Family: Flexibacteraceae

Phylum: Bacteroidetes
Class: Sphingobacteria
Order: Sphingobacteriales

Gram-negative and has been isolated from soil environments.

AGACTG		

Family: <u>Bacillaceae</u>

Phylum: Firmicutes
Class: Bacilli
Order: Bacillales

Gram positive and most strains are not pathogenetic. They are soil-borne organisms that can be found in surprisingly diverse environments

Adult Human Gut	Soil	
Infant Human Gut		
Pre-term Infant Human Gut		

	The soil has the greatest diversity of soil bacteria.	An adult human gut is similar to the infant gut but is not dominated by Actinobacteria
		The infant gut is similar to the adult human gut but is dominated by Actinobacteria.
		The pre-term infant gut is similar to the infant human gut but are dominated by Proteobacteria.