A Pig Model of the Human Gastro-intestinal Tract

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COLLABORATIVE RESEARCH OPPORTUNITIES WITH TUFTS CUMMINGS SCHOOL OF VETERINARY MEDICINE (TCSVM)

Moderator: Dr. Sawkat Anwer, PhD, DMVH, Tufts Cummings School of Veterinary Medicine (TCSVM)

Presenter: Dr. Giovanni Widmer, PhD, TCSVM
16S amplicon sequencing

V1V2: Illumina HiSeq2500
150-nt single-end sequencing

V6: Illumina HiSeq2000
100-nt single-end sequencing

Mean information entropy
in 50 bp window

Position in 16S rRNA gene
16S rRNA PCR strategy

primary PCR V6

ADAPTORACACTCTTTCCCCCAACGCAGAAGACCTTACGN_{60}AGGTGNTGCATGGCTGTCGAGATCGGAAGAGCACACGTCTGAACTCCAGTCACNNNNNNADAPT

972-990

1051-1069

cust. sequencing primer

secondary PCR V6

barcode read primer

secondary PCR V1V2

ADAPTORACACTCTTTCCCCCAGAGTTTGATYMTGGCTCAGN_{312}ACTCCTACGGGAGGCAGCAGATCGGAAGAGCACACGTCTGAACTCCAGTCACNNNNNNADAPT

7-27

338-356

secondary PCR V1V2 with universal barcode primer
fungal transplants: human -> pig

taxonomy

experiment 1
adult-Similac

experiment 2
infant-Similac

experiment 3
adult-solid

age (days)

phyllum-level classification (count)

Actinobacteria
Bacteroidetes
Firmicutes
Tenericutes
Proteobacteria
unclassified
Verrucomicrobia
fecal transplant: PCoA based on UniFrac distance

numbers indicate day post-inoculation

Lozupone et al., BMC Bioinformatics 2006
fecal transplant: effect of diet

**Experiment 1**
Adult-Similac

**Experiment 2**
Infant-Similac

**Experiment 3**
Adult-solid
Quanshun Zhang  sample prep, animal experiments  
Alex Walker  DNA extraction, library prep  
Kevin Huynh  DNA extraction, library prep  
Rachel Sora  animal care  
Patty Boucher  animal care  
Albert Tai  Tufts Genomics Core  
Kip Bodi  Tufts Genomics Core  
Huyen Bum Kim  data analysis  
Durwood Marshall  UIT support