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
16S rRNA PCR strategy

**Primary PCR V6**
- **Adaptor**: ACACCTTTCCCCCAACGCGAAGAACCTTACC
- **Custom Sequencing Primer**: N60 AGGTGNTGCATGGCTGTCGAGATCGGAAGAGCACACGTCTGAACTCCAGTCACNNNNNN
- **Barcode Read Primer**: ADAPTOR
- **Region**: 972–990

**Secondary PCR V6**
- **Adaptor**: ACACCTTTCCCCAGAGTTTGATYMTGGCTCAG
- **Barcode Read Primer**: N312 ACTCCTACGGGAGGCAGCAGATCGGAAGAGCACACGTCTGAACTCCAGTCACNNNNNN
- **Region**: 1051–1069

**Secondary PCR V1V2**
- **Adaptor**: ACACCTTTCCCCAGAGTTTGATYMTGGCTCAG
- **Barcode Read Primer**: N312 ACTCCTACGGGAGGCCAGCACTCGGAAGAGGCCACACGTCTGAACTCCAGTCACNNNNNN
- **Region**: 7–27
- **Region**: 338–356

**Secondary PCR V1V2 with Universal Barcode Primer**
- **Adaptor**: ACACCTTTCCCCAGAGTTTGATYMTGGCTCAG
- **Barcode Read Primer**: N312 ACTCCTACGGGAGGCAGCAGATCGGAAGAGGCCACACGTCTGAACTCCAGTCACNNNNNN
- **Region**: 7–27
- **Region**: 338–356

The diagram illustrates the PCR strategy with custom sequencing and barcode read primers for 16S rRNA amplification.
fecal transplants: human -> pig
taxonomy

experiment 1
adult-Similac

experiment 2
infant-Similac

experiment 3
adult-solid

age (days)

Phylum-level classification (count)

- Actinobacteria
- Bacteroidetes
- Firmicutes
- Tenericutes
- Proteobacteria
- unclassified
- Verrucomicrobia

fecal transplants: human -> pig
taxonomy

experiment 1
adult-Similac

experiment 2
infant-Similac

experiment 3
adult-solid
fecal transplant: PCoA based on Unifrac distance

numbers indicate day post-inoculation
fecal transplant: effect of diet

experiment 1
adult-Similac

experiment 2
infant-Similac

experiment 3
adult-solid
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