May 8th, 10:30 AM - 12:00 PM

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

V6: Illumina HiSeq2000
100-nt single-end sequencing

V1V2: Illumina HiSeq2500
150-nt single-end sequencing
16S rRNA PCR strategy

**Primary PCR V6**

- **Adaptor**: ACACCTTTCCCCCAACGGAAGAACCCTTACG
- **N60 genomic region**: 972–990
- **Custom sequencing primer**: AGGTGNTGCATGGCTGTCGAGATCGGAAGAGCACACGTCTGAACTCCAGTCACNNNNNN
- **Barcode read primer**: N60

**Secondary PCR V6**

- **Adaptor**: ACACCTTTCCCCAGAGTTTGATYMTGGCTCAG
- **N312 genomic region**: 338–356
- **Barcode read primer**: N312

**Secondary PCR V1V2**

- **Adaptor**: ACACCTTTCCCCAGAGTTTGATYMTGGCTCAG
- **N312 genomic region**: 7–27
- **Barcode read primer**: N312

**Secondary PCR V1V2 with universal barcode primer**

- **Adaptor**: ACACCTTTCCCCAGAGTTTGATYMTGGCTCAG
- **N312 genomic region**: 338–356
- **Barcode read primer**: N312

**Secondary PCR V1V2 with universal barcode primer**

- **Adaptor**: ACACCTTTCCCCAGAGTTTGATYMTGGCTCAG
- **N312 genomic region**: 7–27
- **Barcode read primer**: N312
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 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
<table>
<thead>
<tr>
<th>Name</th>
<th>Contribution</th>
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<tbody>
<tr>
<td>Quanshun Zhang</td>
<td>sample prep, animal experiments</td>
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<tr>
<td>Alex Walker</td>
<td>DNA extraction, library prep</td>
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<td>Kevin Huynh</td>
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