# Diet & geography shapes the indigenous tribal gut microbiome

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#### Introduction

- Indigenous lifestyle describes human evolutionary history and studying them can help us gain deeper insights in host-microbiota co-evolution.
- Advantages of studying Indigenous populations : Subsistence Lifestyle, Low migration, **Endogamy, Traditional Food** and **Endemic.** Indigenous microbial diversity – **Undiluted** Microbial gene pool

# Methodology

- Stringent inclusion exclusion criteria to
  - target healthy adults (10/tribe, 1:1 sex ratio)
- Fecal sample as representative of gut

microbiome. DNA extraction using QIAGEN DNA Kit.



• Factors affecting the gut microbiome include diet, geography, climate, lifestyle,

antibiotic exposure, host genetics, immune system, hygeine, age etc.

- Tribes sampled : Warli, Madia, Gond, Kabui, Purigpa, Balti, Brokpa and Boto. All tribes have different ethnic origin, biogeography, language systems, cultural practices yet consume traditional diet daily.
- **Study Design & Sample collection**

ater for 16S rDN



- Gut microbiome composition determined by
- **16S rRNA gene sequencing** (V4 region) on

Illumina MiSeq platform and metabolic

potential by **metagenome sequencing** 

Bioinformatic analysis using DADA2 pipeline

# Results

### **1. Geography influences gut microbiome composition**



#### 2. Gut microbiome composition, Diet selects for taxa







#### 3. Core taxa and functional landscape of gut microbiome





**Key Highlights** • Unique lifestyle, food habits and environment contribute for a unique gut microbiome of Indian indigenous tribal community.

- High Abundance of *Prevotella* complex in the tribal gut microbiome. Emphasizes the need to study dominance of *Prevotella* in the Indian gut.
- Tribal microbiome provides for an untapped microbial reservoir of indigenous microbes with higher presence of VANISH taxa.
- Diet and geography selectively drives for the abundance of gut associated taxa. Core microbiome is population specific even within the same biogeography
- Understanding microbes associated with traditional Indian populations will be important to develop population-specific health interventions



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