Gene-targeted microfluidic cultivation validated by isolation of a gut bacterium listed in Human Microbiome Project's Most Wanted taxa

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Supporting Text

All chemicals were purchased from commercial sources and used as received unless otherwise stated.

Homemade Reagents

A protocol for making GBSS buffer can be found on the Schmidt Lab website (1). For H_2Oc or PBSc, 0.2% cysteine was added and the solution was sterilely filtered through 0.22 µm membrane. 0.1 M $Fe(SCN)_3$ solution was sterilely filtered through 0.22 µm membrane (Fisher Scientific) and used as a red dye solution. Tetradecane (Fisher Scientific) was sterilely filtered through 0.22 µm membrane (Fisher Scientific). For assembling SlipChip for depositing PCR reagents, filtered tetradecane was degassed under house vacuum overnight. All plastic consumables and reagents were equilibrated in an anaerobic chamber for more than 24 hours before usage.

Anaerobic Chamber

A Coy lab anaerobic chamber equipped with dehumidifier was used in all anaerobic cultivation experiments. The hydrogen level was maintained at 3–4% and a relative humidity of 30%. The chamber was equipped with recirculating atmosphere filtration system (HePa) to maintain a sterile atmosphere.

Design and Fabrication of SlipChip

SlipChips for chip wash were fabricated as previously reported(2). Photomasks were designed in AutoCAD and ordered from CAD/Art Services, Inc. (Bandon, OR). Soda-lime glass plates with chromium/photoresist and chromium/gold/photoresist coating were purchased from Telic Company (Valencia, CA). The device contained 3,200 microwells for compartmentalization on one plate, and continuous loading channels on the other plate. The depth of wells was 90 µm measured using a profilometer (Dektak 150, Veeco, CA). Through holes were drilled with a 0.035" drill bit (Diamond ball 4F bit, Harvey Tool #74335-C4, Colmar Industrial Supplies, Wheeling, IL) before surface modification. Glass debris from drilling was removed by sonicating the chips in a 1:1 mixture of water and ethanol for more than one hour in a warm water bath. Prior to use, the SlipChips were cleaned with piranha solution, rinsed three times with millipore water followed by 200 proof ethanol, blow dried with nitrogen and silanized with dimethyldichlorosilane using a previously reported protocol (2). An acid piranha solution (caution: this is a corrosive mixture) is used to remove organic contaminants from substrates by mixing 3:1 (v:v) concentrated sulfuric acid (H_2SO_4) with 30% hydrogen peroxide (H_2O_2). Sulfuric Acid (Cat. #A300-212) and 30% Hydrogen peroxide (Cat. #H325-4) can be ordered through Fisher Scientific.

Silanized chips were stored at room temperature in a dessicant box (< 15% humidity, maintained with Drierite). When a glass SlipChip needed to be reused, it was cleaned with Piranha solution first, and then subjected to the same silanization procedure described above.

For the replica-SlipChip, the depth of the features measured by a contact profiler (Dektak 150, Veeco, CA) was 90 µm. The depth was 120 µm for wells, and 60 µm for loading channels of the SlipChip used for depositing PCR reagent wells. The lateral dimensions of cultivation and PCR reagent wells can be measured by photographs from a stereoscope, as shown in the accompanying paper (3).

Performing Chip Wash

The plates of SlipChip were assembled under a layer of tetradecane in a petridish and four binder clips (small binder chips, cat # 429-415, Office Depot) were applied to hold the devices together. The lubricating oil in the loading channel and wells was removed by repeated purging with vacuum for 3 to 5 times at an interval of 1-2 hours between each purging. For anaerobic culture, the SlipChip was placed into the anaerobic chamber for at least 24 hours prior to use. Aqueous solution was loaded onto SlipChip by pipetting, and the device was slipped to form compartments. The solution in the loading channel was removed by purging with a vacuum. In the case of anaerobic cultivation, a gas recirculation pump for atmosphere filtration system was used as a vacuum source. For chip wash experiments with microbial samples, the loading channel can be cleaned by repeated washing with GBSS or PBSc buffer solution to remove any residual microbial cells and prevent overgrowth of microbes in the loading channel. The continuous loading channels were used as gas exchange channels.

PBS buffer was loaded into the channel to remove the gas phase, and can be used for repeated washing in the case of microbial samples. The SlipChip was designed to collect the chip wash solution with a single outlet (Fig. S1). To collect the solution, 90 µL PBS buffer was injected into the SlipChip using an Eppendorf pipettor and collected into an Eppendorf pipette tip (1-200 µL, cat. No. 02-717-141, Fisher Scientific) and transferred into an Eppendorf tube. This process was repeated for three times. 90 µL tetradecane was loaded into the SlipChip to further remove the diluted aqueous solution. The solution was also transferred from the pipette tip into the Eppendorf tube.

It is important to keep the lubricating oil in the device from drainage during incubation at elevated temperature or for long-term culture. Loss of lubricating oil in the gap between the two glass plates causes cross-contamination among the confined wells, and cannot be used in the chip wash experiment because the washing buffer would flow through the gap and not into the collection outlet. To prevent loss of oil from the device, a piece of Kimwipe was briefly saturated with 1:1 (vol) mixture of water and tetradecane and then placed inside a Petri dish. The SlipChip was then placed into the Petri dish and Parafilm was used to seal the Petri dish. The Petri dish was then incubated at the desired temperature for microbial culture.

E. coli Preparation

The green fluorescent protein (GFP)-labeled *E. coli* RP 437 were obtained as a gift from Guillaume Lambert at Princeton University. *E. coli* RP 437 was purchased from CGSC (catalog #: 12122) and transformed with DsRed plasmid.

E. coli cells labeled with DsRed fluorescent proteins were enriched with 50 µg mL^{-1} of Ampicillin in LB at 37 ^{o}C overnight (12 hours) in a rotary shaking incubator (SI-600 Lab Companion, Jeio Tech) at 200 rpm. Overnight culture was then diluted 100-fold and cultured with 10 µg mL^{-1} of Ampicillin and 40 µmol L^{-1} IPTG in LB media for 3 hrs. Cells from 1 mL culture were then pelleted at 3000 ×g for 5 min and washed 3 times with 1 mL of ice cold 1× PBS buffer before use.

Quantifying the Recovery Efficiency of Chip Wash

To quantitatively test the recovery efficiency of this method, an aqueous solution of 200 nM Alexa Fluor 488 hydrazide (Invitrogen) in PBS buffer was injected into the device and subsequently collected by chip wash method, normalized to a volume of 500 µL, and quantified using a fluorospectrometer (Thermo scientific). 0.45 nM, 0.9 nM, 1.8 nM, 3.6 nM and 7.2 nM of Alexa Fluor 488 hydrazide solutions in PBS buffer were used to obtain a calibration curve. The loading volume of the device was calculated to be 18 µL. Therefore, the concentration of the recovered solution was divided by the concentration of 7.2 nM Alexa Fluor 488 hydrazide to calculate the recovery efficiency.

E. coli cells labeled with DsRed fluorescent proteins were prepared as described above, loaded onto SlipChip and collected immediately using chip wash method. The chip wash solution was normalized to a volume of 500 µL. 18 µL of the same solution was diluted to 500 µL and used as a control. The cells from chip wash solutions as well as the control solution were quantified using INCYTO C-Chip (DHC-N01) under Leica DMI6000 microscope (Leica Microsystems) with a 20 x/0.4NA Leica objective, TX2 filter and a Hamamatsu ORCA-ER camera with 1× coupler with an exposure time of 200 ms. Images were acquired and analyzed by using Metamorph imaging system version 6.3r1 (Universal Imaging). Recovery efficiency was calculated by dividing cell number in the recovered solution by the cell number in the control solution.

Reagents and Equipment for PCR

Primers for PCR were ordered from Integrated DNA Technologies (Coralville, IA). SsoFast EvaGreen Supermix (2X) was purchased from Bio-Rad Laboratories (Hercules, CA). Bovine serum albumin solution (BSA) was purchased from Roche Diagnostics (Indianapolis, IN). PCR Mastercycler and in situ adapter were purchased from Eppendorf (Hamburg, Germany).

Using Chip Wash to Monitor Bacterial Growth with a Single Species Model System

E. coli cells labeled with DsRed fluorescent proteins prepared as described above were serially diluted to a final density of ~10^5 CFU/mL in 10 µg mL^{-1} of Ampicillin and 40 µmol L^{-1} IPTG in LB media or 1× PBS buffer that does not support growth of bacteria as a negative control and loaded onto SlipChip. SlipChip was incubated at 37 ^{o}C overnight. The solution was collected after cultivation using chip wash. Genomic DNA was purified from chip wash solutions using QiaAmp kit (Qiagen). For calibration, genomic DNA was purified from bulk liquid culture of *E. coli* cells labeled with DsRed fluorescent proteins, quantified by Quanti-it DNA high sensitivity quantification kit (Invitrogen), and serially diluted in AE buffer containing 0.01 mg/mL of BSA. The reaction master mixture for qPCR was prepared by mixing 10 µL of 2X SsoFast EvaGreen Supermix, 1 µL of forward and reverse primer (10 µmol L^{-1}), 1 µL of template solution and 8 µL of water (Fisher Scientific, BP 2470-1). qPCR was performed on the Eco real-time PCR machine (Illumina, Inc, San Diego, CA) with 27F(4) (5′-AGAGTTTGATCCTGGCTCAG -3′) and 534R (5) (5′-ATTACCGCGGCTGCTGG-3′) primers. We observed a 10,000-fold increase in DNA concentration (Fig. S1), suggesting that for this particular model system, non-growing cells contribute to 0.01% of the genetic material recovered from chip wash.

Performing Chip Wash and Plate Wash Experiment with a Two-Species Model System

Cells of *Clostridium scindens* (ATCC 35704) and *Enterococcus faecalis* (ATCC 49532) were separately enriched in Schaedler Anaerobe Broth (Oxoid) at 37^{o}C in an incubator (model# 10-140E, Quincy lab Inc) overnight (~ 16 hours) in anaerobic chamber (Coylab). The culture was diluted 100 fold and incubated at 37^{o}C for 5 hours (*E. faecalis*) and 8 hours (*C. scindens*). The cells were pelleted at 6000 ×g for 3 minutes and washed with PBSc for 3 times. Cell numbers of the two species were estimated for loading by cell counting using INCYTO C-Chip (DHC-N01) under Leica DMI6000 microscope (Leica Microsystems) with a 20 x/0.4NA Leica objective. The two species were mixed at 5:1 ratio (*C. scindens*: *E. faecalis*, confirmed by separately plating the two species) in Schaedler Anaerobe Broth at a final density of ~10^{5} CFU/mL, loaded onto SlipChip and incubated at 37^{o}C for 24 hours for growth. Genomic DNA extracted from 18 µL of the same solution containing mixture of cells using QiaAmp kit (Qiagen) was used as non-growth control. To perform plate wash, 4 µL of the same solution containing mixture of cells was plated on Schaedler Anaerobe medium with 2% (wt/vol) noble agar (Fisher Scientific) to achieve a final density of ~300 colonies (counted on day 3 after cultivation when both of the species reached saturation on an agar plate) to reduce interaction between colonies. The cultivar was collected by chip wash and plate wash. Plate wash was performed following a previously described protocol(6) with minor modifications. Cell scrapers (Fisher Scientific) were used to collect cultivar into 1 mL of GBSS buffer. 50 µL of the combined solution was centrifuged at 6000× g for 10 minutes to pellet the cells. Serial dilutions of genomic DNA from macroscale liquid culture of the two species quantified by Quanti-it DNA high sensitivity quantification kit (Invitrogen) were used to calibrate the qPCR machine. The reaction master mixture for qPCR was prepared by mixing 10 µL of 2X SsoFast EvaGreen Supermix, 1 µL of forward and reverse primer (10 µmol L^{-1}), 1 µL of template solution and 8 µL of water (Fisher Scientific, BP 2470-1). For plate wash, ~1 ng/ µL of genomic DNA was used for qPCR as we are interested in the relative ratio of *C. scindens* and *E. faecalis*. qPCR was performed on the Eco real-time PCR machine (Illumina, Inc, San Diego, CA) with ScinF4 (5′-CGTAACGCGCTCTTTCTTCG-3′) and ScinR4 (5′-CCTTCCTCCAGGTTCTCCCT-3′) for *C. scindens* and E.faecalis_F (5′-CGC TTC TTT CCT CCC GAG T-3′) and E.faecalis_R (5′-GCC ATG CGG CAT AAA CTG-3′). The two pairs of primers are specific to the targeting species, which was confirmed by qPCR.

We cultivated the two strains separately on SlipChip or on agar plates. To monitor bacterial growth on agar plate, cells were plated on Schaedler Anaerobe Agar separately, incubated at 37 ^{o}C and imaged every 24 hours with a Leica MZ 16 stereoscope. The plating experiment was set up with more than three plates for each species. For each time point, one plate was taken out of the anaerobic chamber for imaging and discarded. To image bacterial growth on the SlipChip, bacterial cells from each species were loaded onto a "replica-SlipChip" described in the accompanying paper(3) at a final density of ~10^{5} CFU mL^{-1} in Schaedler Anaerobe broth. The device was incubated for 24 hours to allow growth of bacteria. The microcolonies were imaged under Leica DMI6000 microscope (Leica Microsystems) with a 20 x/0.7NA Leica objective and a Hamamatsu ORCA-ER camera with 1× coupler under bright field.

On-chip Cultivation of *E. coli* and Splitting of the Microcolonies

E. coli cells were enriched with 50 µg mL^{-1} of Ampicillin in LB at 34 ^{o}C overnight (12 hours) in a rotary shaking incubator at 200 rpm to reach stationary phase. To synchronize cells, overnight culture of each species was then diluted 100-fold and cultured with 10 µg mL^{-1} of Ampicillin and 40 µmol L^{-1} IPTG in LB media for 3 hrs. 1 mL culture of cells were then pelleted at 3000 ×g for 5 min and washed 5 times with 1 mL of 1× PBS buffer. Cells were finally suspended in 10 µg mL^{-1} of Ampicillin and 40 µmol L^{-1} IPTG in LB media and cell suspension was serially diluted with 10 µg mL^{-1} of Ampicillin and 40 µmol L^{-1} IPTG with 0.5% of ultra-low gelling temperature Type IX-A agarose (Sigma-Aldrich) in LB media and mixed to a final density of 2×10^{4} and 2×10^{3} CFU mL^{-1} for *E. coli* strains with GFP and DsRed genes, respectively, and loaded onto replica-SlipChip as described in the accompanying paper(3). SlipChip was incubated at 34 ^{o}C for 3 hours and then split into two halves as described in the accompanying paper(3). The bottom half was kept on the holder for colony PCR and the top was preserved at 10 ^{o}C on Echo therm chilling plate (Torrey Pines Scientific, Carlsbad, CA) under oil in a Petri dish.

Depositing PCR Reagents on SlipChip

The reaction master mixture was prepared by mixing 100 µL of 2X SsoFast EvaGreen Supermix, 1 µL of forward (DSR_F, 5′-GGACGGCTCCTTCATCTACA-3′, 100 µmol L^{-1}) and reverse primer (DSR_R, 5′-GGTGATGTCCAGCTTGGAGT-3′, 100 µmol L^{-1}), 10 µL of 10 µg mL^{-1} BSA solution, and 68 µL of 2.5% (w/v) ultra-low gelling temperature agarose in water. This mixture was then loaded onto the SlipChip for depositing PCR reagents described in the SI of the accompanying paper (3) by replacing tetradecane in loading channels and this SlipChip for depositing PCR reagent was split to obtain 1,000 droplets deposited on one half of the SlipChip.

Combining the Replica-SlipChip with the PCR Chip

The PCR chip preloaded with PCR reagents was taken off the holder and combined with the bottom piece of the replica chip by aligning through-holes with the pins. A binder clip (5/32' inch capacity, 1/2' inch size, officemax, Itasca, IL) was used to clamp the two plates together, allowing the combined SlipChip to be removed from the holder and the oil without misalignment.

Fluorescence Imaging of PCR Results and *E. coli* with GFP and DsRed Fluorescent Proteins

Fluorescence images were acquired with a Leica DMI6000 microscope (Leica Microsystems) with a 10 x/0.4NA Leica objective and a Hamamatsu ORCA-ER camera with 1× coupler. An L5 filter with an exposure time of 500 ms was used to collect images. For quantitative analysis, fluorescent intensity of a fluorescence reference slide for L5 filter was recorded and used for background correction. Images were acquired and analyzed by using Metamorph imaging system version 6.3r1 (Universal Imaging) and ImageJ by the National Institutes of Health (http://rsb.info.nih.gov/ij/download.html). Processing was applied equally to the entire image.

Preparation of M2GSC Medium

This protocol is adapted from reference (7).

1L M2GSC medium contains the following ingredients:

10 g of casitone, 2.5 g of yeast extract, 4 g of $NaHCO_3$, 2 g of cellobiose, 2 g of soluble starch, 300 mL of rumen fluid, 2 g of glucose, 1 g of cysteine, 0.45 g of K_2HPO_4, 0.45g of KH_2PO_4, 0.9 g of $(NH4)_2SO_4$, 0.9 g of NaCl, 0.09 g of $MgSO_4$ $7H_2O$, 0.09 g of $CaCl_2$, 15 g of Agar Noble and 1 mg of resazurin.

Preparation of M2LC medium

We prepare the basal medium containing: 10 g of casitone, 2.5 g of yeast extract, 4 g of $NaHCO_3$, 2 g of cellobiose, 2 g of soluble starch, 2 g of glucose, 1 g of cysteine, 0.45 g of K_2HPO_4, 0.45g of KH_2PO_4, 0.9 g of $(NH4)_2SO_4$, 0.9 g of NaCl, 0.09 g of $MgSO_4$ $7H_2O$, 0.09 g of $CaCl_2$, 15 g of Agar Noble and 1 mg of resazurin in 700 mL of water.

We mixed 70 μL of the basal medium with 30 μL supernatant of autoclaved luminal sample.

Handling Frozen Stock Solutions of Bacterial Samples in an Anaerobic Chamber

10 µL aliquots of homogenized brush samples and ~50 µL aliquots of homogenized luminal samples were stored in -80 ^{o}C freezer. For cultivation, the brush sample was transferred from the freezer to an anaerobic chamber on dry ice with GasPak systems.

Microbial Cultivation from the Biopsy with M2GSC Medium and Performing Plate Wash

An aliquot of cecum brush sample was serially diluted in GBSS buffer. 18 µL of the 10^4 dilution was plated onto four M2GSC agar plates (4.5 µL for each plate) yielding ~250 colonies per plate after three days of incubation at 37 ^{o}C (model# 10-140E, Quincy lab Inc) in an anaerobic chamber (Coylab). Plate wash was performed following a previously described protocol (6) with minor modifications. Cell scrapers were used to collect cultivar into 1 mL of GBSS buffer. The plate wash solutions from four plates were combined into a single tube and mixed by vortexing. 50 µL of the combined solution was centrifuged at 6000× g for 10 minutes to pellet the cells. Genomic DNA was extracted using QiaAmp kit (Qiagen) and quantified by Quanti-it DNA high sensitivity quantification kit (Invitrogen). The experiment was carried out in triplicates. The volume of autoclaved luminal fluid was not enough to prepare plate medium; therefore we did not perform the bulk culture the sample with M2LC medium on agar plates.

Microbial Cultivation from the Biopsy with M2LC and M2GSC Medium and Performing Chip Wash

An aliquot of cecum brush sample was serially diluted in GBSS buffer and then in M2LC. 10^4 dilution of the brush sample was loaded onto a 3,200 well SlipChip (loading volume of 18 µL and is consistent with sample used the plate wash) and incubated (model# 10-140E, Quincy lab Inc) for three days at 37 ^{o}C in an anaerobic chamber (Coylab). Chip wash was performed and the chip wash solution was centrifuged at 6000× g for 10 minutes to pellet the cells. Genomic DNA was extracted using QiaAmp minikit (Qiagen) and quantified by Quanti-it DNA high sensitivity quantification kit (Invitrogen). The experiment was carried out with triplicate devices.

Designing Primers for 16S V1V3 rRNA Gene for Miseq High Throughput Sequencing

We chose high-throughput sequencing for three reasons: First, high-throughput sequencing can be used to profile the community at great depth, and is cost-effective and less labor-intensive than cloning of universally amplified PCR product and Sanger sequencing; Second, compared with testing with primers targeting different groups of microbes, high-throughput sequencing is intrinsically multiplexed and can be used to detect multiple targets simultaneously. This feature is well suited for the “Most Wanted” list, as 45 high priority targets are defined for human gut microbiome. Third, designing and validating primers or probes for specific targets at the resolution of individual OTUs for a complex community from short reads can be challenging for non-experts, and high-throughput sequencing can be used to retrieve the target of interest before the effort for designing target-specific primers.

The primers for variable region V1V3 of 16S rRNA gene was designed similar to that of V4 region of 16s rRNA gene (8, 9). Primer Prospector (10) was used to design the linker region with reference sequences from Greengenes (11) February 2013 release. Possible interactions between barcodes and new pad and linker regions that may yield secondary structures were also screened with Primer Prospector.

16S rRNA Gene Library Construction for Miseq High Throughput Sequencing

The library was prepared according to published protocol. 20 ng of genomic DNA extracted from chip wash solution with M2LC medium or plate wash solutions with M2GSC medium were used in each 50 µL reaction mix. The mixture contained X µL of template DNA (adjusted to 20 ng), (13.5-X) µL of H_2O (Fisher Scientific, BP 2470), 20 µL of 5 Primer Hot MasterMix (5 prime: cat # 2200410), and 1 µL of Primer mix (10µM of Forward primer and barcoded Reverse primer). The PCR reaction was set up in triplicates and PCR product was purified by Agencourt AmPure XP beads (Beckman Coulter Inc, A63881) followed by Qiaquick PCR purification kit (Qiagen). The purified PCR product was pooled in equal molar quantified by Kapa library quantification kit (Kapa Biosystems, KK4824) and sent for sequencing at GenoSeq Core of UCLA (Los Angeles, CA).

Data Analysis for High Throughput Sequencing of 16S V4 rRNA Gene

OTUs were chosen *de novo* with mothur (12) to identify candidate targets. The results were summarized as an OTU (Operational taxonomic unit) table. The OTU table from chip wash M2LC medium and plate wash with M2GSC medium was sub-sampled to 12599 reads per sample and summarized at genus level using QIIME (13). The relative abundance of each OTU from the two methods is presented in Fig. S4.

Data Analysis for High Throughput Sequencing of 16S V1V3 rRNA Gene

2×250 bp paired end reads were assembled using PANDASeq (14) and de-replicated with usearch (15). The de-replicated reads were sorted by abundance and clustered at 97% identity. Chimeric reads were detected using UCHIME (16) with both *de novo* and reference-based methods. The filtered reads were then searched against the HMP's "Most Wanted" list for targets within the identity of 97% using usearch v6.0.293. Alignment of the sequence from chip wash with the sequence of OTU158 from the most wanted list is shown in Fig. S5. Detailed scripts are provided in the SI below.

Using qPCR to Quantify Bacterial Genomic DNA from the Total Bacteria and OTU158

Primers for PCR were ordered from Integrated DNA Technologies (Coralville, IA). SsoFast EvaGreen Supermix (2X) was purchased from Bio-Rad Laboratories (Hercules, CA).1.5 ng purified gDNA was used to prepare the reaction mixture of a total volume of 30 µL. Water (Fisher Scientific, BP 2470) was used as negative control. Universal primers for the V4 region of 16S rRNA gene (515F, 5′-GTGCCAGCMGCCGCGGTAA-3′, 806R, 5′-GGACTACHVGGGTWTCTAAT-3′) were used to quantify total bacterial load, and OTU158 specific primers (158F, 5′-AGA ATC TAC TGA AAG AGT TTT CGG A-3′, 158R, 5′-TTC TAG AGG TAC CGT CTT CTG CT-3′) were used to quantify the concentration of OTU158. The mixture was split into 3 aliquots and loaded onto the Eco real-time PCR machine (Illumina, Inc, San Diego, CA). Reactions were incubated for 2 min at 98 °C, followed by 40 cycles of 5 s at 98 °C, 3 s at 60 °C. Data analysis was performed using Eco software.

Using Splitting Technology and the On-chip PCR Method to isolate the bacterium: isolate microfluidicus 1

An aliquot of cecum brush sample was serially diluted in GBSS buffer and then in M2LC medium. 10^4 dilution of the brush sample was loaded onto a 1,000 well replica-SlipChip (3) and incubated (model# 10-140E, Quincy lab Inc) for two days at 37 ^{o}C in an anaerobic chamber (Coylab). The replica-SlipChip was split as described in the accompanying paper (3), and on-chip PCR was performed and analyzed as described above with the following modification: The PCR reaction master mixture was prepared by mixing 150 µL of KAPA 2G Robust Hot Start Readymix (KAPA BIOSYSTEMS), 1.5 µL of forward and 1.5 µL of reverse primer (100 µmol L^{-1}), 15 µL of 10 µg mL^{-1} BSA solution, and 94.5 µL of 2.5% (w/v) ultra-low gelling temperature agarose in water, and 7.5 µL of 40X SYBR green (Sigma-Aldrich). The staining of cell material with SYBR green was observed and could be used to estimate the number of microcolonies grown on device could be estimated . Microbes from the PCR-positive wells on the plate for sample preservation was retrieved as described in the accompanying paper (3), and plated on M2GSC plate. After two days of incubation, the cluster of colonies was used for both colony PCR and streaking additional plates.

16S rRNA Gene Analysis for isolate microfluidicus 1

Genomic DNA for PCR amplification was isolated using QiaAmp kit (Qiagen) following the manufacturer's protocol with the following modification. We added a bead-beating step using lysing matrix B (MP Biomedicals 6911-500) that was shaken using a Mini-Beadbeater-16 (BioSpec Products, Inc.) for 1 min. The 16S rRNA gene was amplified by PCR using AccuPrimer Pfx DNA polymerase (Invitrogen). Primers 8F (5′-AGAGTTTGATCCTGGCTCAG-3′) and 1492R (5′-GGTTACCTTGTTACGACTT-3′) (17) were used for PCR amplification. PCR amplification was performed by Biorad thermocycler with 2 min incubation at 95 ^{o}C, followed by 34 cycles at 95 ^{o}C for 15s, 55 ^{o}C for 30s and 68 ^{o}C for 90s. Amplified PCR product was cloned into TOPO vector (Invitrogen) and transformed into TOPO10 *E. coli* cells (Invitrogen) on LB/Amp+ medium. The plates were incubated at 37 ^{o}C overnight and single colonies were picked for liquid culture. Plasmids were purified from cells using Qia miniprep kit (Qiagen). Plasmid DNA was then amplified by PCR with the same protocol as described above using M13F/M13R primers (Invitrogen). PCR products were purified using Qia quick PCR purification kit (Qiagen).

Sequencing PCR Products and Data Analysis

PCR products were sequenced by Laragen, Inc. (Culver City, CA) using T3 and T7 as sequencing primers (Invitrogen). The paired-end reads were assembled in Seqman Pro (DNASTAR) and manually trimmed to remove the adapters and PCR primers in Microsoft Word. 15 assembled sequences were aligned using muscle (18) and usearch (15).

TEM

TEM was performed in the Jensen laboratory electron microscopy facility at the California Institute of Technology with 200 mesh formvar/ carbon grids on TECNAI 120 keV TEM (FEI, Hillsboro, OR) equipped with a Gatan 2k by 2k CCD camera for image acquisition.

Optical Microscopy

Optical microscopy of the isolate was obtained by suspending the cells in PBS buffer and imaged using a 63×/1.2 NA Leica objective with a Leica DMI6000 microscope (Leica Microsystems) and a Hamamatsu ORCAER camera.

Ribosomal Database Project (RDP) classification of 16S rRNA gene of OTU158

Taxonomic assignment of the sequencing results for OTU158 (isolate microfluidicus 1) was generated using the online RDP classifier with 16S rRNA training set 9. The results are summarized below:

Classification on sequence of OTU158 retrieved from high throughput sequencing of V4 region of 16S rRNA gene:
Bacteria(100);Firmicutes(100);Clostridia(100);Clostridiales(100);Ruminococcaceae(100); Oscillibacter(100);

Classification on sequence of OTU158 retrieved from high throughput sequencing of V1V3 region of 16S rRNA gene:
Root(100);Bacteria(100);Firmicutes(100);Clostridia(100);Clostridiales(100);Ruminococcaceae(100);Oscillibacter(99);

Classification on sequence of two types of full length 16S rRNA gene of isolate microfluidicus 1 from Sanger sequencing:
Root(100%) Bacteria(100%) Firmicutes(100%) Clostridia(100%) Clostridiales(100%) Ruminococcaceae(100%) Oscillibacter(75%);
Root(100%) Bacteria(100%) Firmicutes(100%) Clostridia(100%) Clostridiales(100%) Ruminococcaceae(100%) Oscillibacter(84%);

Numbers in parentheses give the classification confidence level; threshold is 80%.

Phylogeny

Phylogenetic analyses of 16S rRNA gene sequences were performed using the software package ARB(19) as well as MrBayes (20). Automatic alignments of sequences obtained from our culture as well as from reference strains were manually refined within ARB. A consensus tree was constructed based on maximum-likelihood (ML) calculation (using the Hasegawa, Kishino and Yano substitution model), and by collapsing all nodes with parsimony bootstrap (5,000 iterations) support ≤50% or Bayesian support below ≤70%. Conditions for Bayesian inference were as follows: 2 parallel runs; 1,000,000 tree generations; sample frequency 100; final split frequency 0.007; potential scale reduction factor 1.006; burnin of 25% of sample. For phylogenetic analyses only sequences of cultured members of the *Clostridia* for which the 16S rRNA sequence was available were considered. Using a manually designed sequence filter we excluded highly variable in-del positions from the analysis, resulting in 1,371 alignment positions for tree calculations.

Fluorescence *in situ* Hybridization

16S rRNA targeted FISH was carried out following established protocols (21). In brief, formaldehyde- and ethanol-fixed samples were hybridized at 46°C with FAM- and Cy3-labeled oligonucleotide probes for 16 hours in a formamide-containing humid chamber. To test whether cell wall digestion leads to an increase in fluorescence detection and/or labeling intensity, before hybridization samples were pre-treated with either (i) 10 mg mL^{-1} lysozyme in TE buffer (1 h at 37°C in a humid chamber); (ii) 15 µg mL^{-1} proteinase K in TE buffer (10 min at room temperature, *i.e.* 23°C) followed by 0.01 M HCl (10 min at 23°C); or (iii) a 1:1 mix of acetone:methanol (15 min at 23°C). Formamide concentrations in the hybridization buffer were as recommended: 20-35% for probe mix EUB338 I-III (22, 23) and control probe NonEUB338 (24); 35% for probe Arch915 (25); 20% for probe EUK516 (22). The two newly designed probes Clostr183-I (AAA GAT CAT GCG ACC TCT) and Clostr183-II (AAG AAT CAT GCG ACC CCT) were hybridized at 15% (at concentrations >20% we did not observe any fluorescence signal). Via competition for the same binding site, these probes are able to distinguish between the two 16S rRNA gene sequence types obtained from our culture. After hybridization, slides were washed for 10 min in pre-warmed washing buffer at 48°C. Then, they were dipped into pre-cooled deionized water (4°C) and dried using pressurized air. Slides were mounted with DAPI/Citifluor and analyzed using an Olympus BX51 epifluorescence microscope. Fluorescence images were analyzed using the software provided by the microscope manufacturer and ImageJ by the National Institutes of Health (http://rsb.info.nih.gov/ij/download.html). No unspecific labeling was observed when control probe NonEUB338 (9) was applied to our samples.

Whole Genome Sequencing

The genome of isolate microfluidicus 1 was sequenced on Illumina Hiseq 2000 and assembled using a combination of velvet (26) and GapCloser (27). We obtained 83 contigs with N50 length of 131 kbp.

Scripts for Identifying Targets from “Most Wanted” list from paired-end Miseq reads

File name: get_target_all

```
#!/bin/bash
#file created on Dec 2, 2012
#Author= “Liang Ma”
#Email= liangma.chem@gmail.com
# usage example:  get_target_all ~/Downloads/reads/
#set environmental variables
#usearch program
export u=/Users/Liang/scripts/usearch/usearch6.0.293_i86osx32_lm
#reference database for UCHIME
export UCHIME_REFUDB=/Users/Liang/scripts/Database/gold.fa
# fasta file of consensus sequence from most wanted list, high priority group
export MostWanted=/Users/Liang/scripts/Database/MostWanted.fa
export scriptsHome=/Users/Liang/scripts
# $1 is the folder containing fastq files with paired end reads
cd $1
for file in $(ls| grep .*R1.*\.fastq)
do
FN=$(echo $file|grep -o .*R)
FileR="$FN"2_001.fastq
#assemble reads with pandaseq
pandaseq -f $file -r $FileR -o 10 > "$FN.fa"
$u -derep_fulllength $FN.fa -output "derep_$FN.fa".fa –sizeout
readname='results'
mkdir -p $FN$readname
cd $FN$readname
$scriptsHome/get_target1 ../"derep_$FN.fa.fa"
cd $1
done
```

File name: get_target1

```
#!/bin/bash
#file created on Dec 2, 2012
#Author= “Liang Ma”
#Email= liangma.chem@gmail.com
# usage example: get_target1 reads.fa
if [ x$1 == x ] ; then
	echo Missing FASTA filename >> /dev/stderr
	exit 1
fi
if [ x$UCHIME_REFUDB == x ] ; then
	echo Must set \$UCHIME_REFUDB >> /dev/stderr
	exit 1
fi
if [ x$MostWanted == x ] ; then
	echo Must set \$MostWanted >> /dev/stderr
	exit 1
fi
# Sort by decreasing size
$u -sortbysize $1 -output bysize.fa
#cluster at 97% identity
$u -cluster_smallmem bysize.fa -id 0.97 -sizein -sizeout -centroids 97.fa
# Chimera filter with UCHIME de novo
$u -uchime_denovo 97.fa -chimeras ch.fa -nonchimeras nonch.fa -uchimeout denovo.uchime
# Chimera filter with UCHIME ref
$u -uchime_ref nonch.fa -db $UCHIME_REFUDB -nonchimeras filtered.fa -strand plus -uchimeout ref.uchime
# find hits with MostWanted list
$u -usearch_global filtered.fa -db $MostWanted -id 0.97 -strand plus -fastapairs mostwanted.fastapairs
```

> Sequence of rrnA of 16S rRNA gene of isolate microfluidicus 1

```
GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGAGAATCTACTGAAGGAGGATTCGTCCAACGGAAGTAGAGGAAAGTGGCGGACGGGT
GAGTAACGCGTGAGGAACCTGCCTTGAAGAGGGGGACAACAGTTGGAAACGACTGCTAATACCGCATGACGCATAGGGGTCGCATGATTCTTATGCCA
AAGATTTATCGCTTCAAGATGGCCTCGCGTCTGATTAGCTAGTTGGCGGGGTAACGGCCCACCAAGGCGACGATCAGTAGCCGGACTGAGAGGTTGAA
CGGCCACATTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGGGCAATGGGCGCAAGCCTGACCCAGCAACGCCGCG
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CGCGGTAATACGTAGGTGGCAAGCGTTGTCCGGATTTACTGGGTGTAAAGGGCGTGCAGCCGGGTCTGCAAGTCAGATGTGAAATCCATGGGCTCAAC
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GAATTGACGGGGGCCCGCACAAGCGGTGGATTATGTGGTTTAATTCGAAGCAACGCGAAGAACCTTACCAGGGTTTGACATCCTGCTAACGAAGTAGA
GATACATTAGGTGCCCTTCGGGGAAAGCAGAGACAGGTGGTGCATGGTTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGC
AACCCCTATTGTTAGTTGCTACGCAAGAGCACTCTAGCGAGACTGCCGTTGACAAAACGGAGGAAGGTGGGGACGACGTCAAATCATCATGCCCCTTA
TATCCTGGGCTACACACGTAATACAATGGCGGTCAACAGAGGGAAGCAAAGCCGCGAGGCAGAGCAAACCCCCAAAAGCCGTCCCAGTTCGGATTGT
AGGCTGCAACTCGCCTGCATGAAGTCGGAATCGCTAGTAATCGCGGATCAGCATGCCGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCA
CACCATGAGAGTCGGGAACACCCGAAGTCCGTAGCCTAACCTGAAAAGGAGGGCGCGGCCGAAGGTGGGTTCGATAATTGGGGTG
```

> Sequence of rrnB of 16S rRNA gene of isolate microfluidicus 1

```
GACGAACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGAGAATCTACTGAAAGAGTTTTCGGACAATGGAAGTAGAGGAAAGTGGCGGACGGGT
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CGGCCACATTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGGGCAATGGGCGCAAGCCTGACCCAGCAACGCCGCG
TGAAGGAAGAAGGCTTTCGGGTTGTAAACTTCTTTTAAGAGGGAAGAGCAGAAGACGGTACCTCTAGAATAAGCCACGGCTAACTACGTGCCAGCAGC
CGCGGTAATACGTAGGTGGCAAGCGTTGTCCGGATTTACTGGGTGTAAAGGGCGTGCAGCCGGGTCTGCAAGTCAGATGTGAAATCCATGGGCTCAAC
CCATGAACTGCATTTGAAACTGTAGATCTTGAGTGTCGGAGGGGCAATCGGAATTCCTAGTGTAGCGGTGAAATGCGTAGATATTAGGAGGAACACCA
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GAATTGACGGGGGCCCGCACAAGCGGTGGATTATGTGGTTTAATTCGAAGCAACGCGAAGAACCTTACCAGGGTTTGACATCCTGCTAACGAAGTAGA
GATACATTAGGTGCCCTTCGGGGAAAGCAGAGACAGGTGGTGCATGGTTGTCGTCAGCTCGTGTCGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGC
AACCCCTATTGTTAGTTGCTACGCAAGAGCACTCTAGCGAGACTGCCGTTGACAAAACGGAGGAAGGTGGGGACGACGTCAAATCATCATGCCCCTTA
TATCCTGGGCTACACACGTAATACAATGGCGGTCAACAGAGGGAAGCAAAGCCGCGAGGCAGAGCAAACCCCCAAAAGCCGTCCCAGTTCGGATTGT
AGGCTGCAACTCGCCTGCATGAAGTCGGAATCGCTAGTAATCGCGGATCAGCATGCCGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCA
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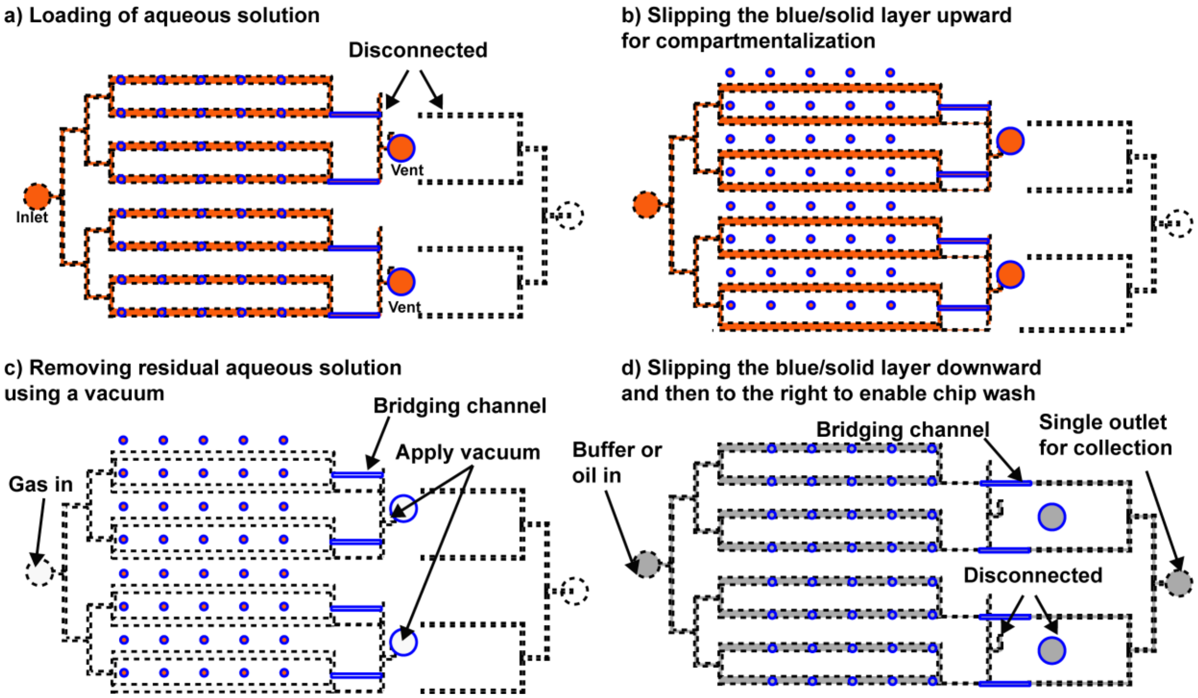

a) Loading of aqueous solution

b) Slipping the blue/solid layer upward for compartmentalization

c) Removing residual aqueous solution using a vacuum

d) Slipping the blue/solid layer downward and then to the right to enable chip wash

Fig. S1 Illustration of operation of the device showing how the bridging channels, vents and outlet for collection were used during chip wash. This schematic drawing uses a simplified design with fewer wells to illustrate the principle.

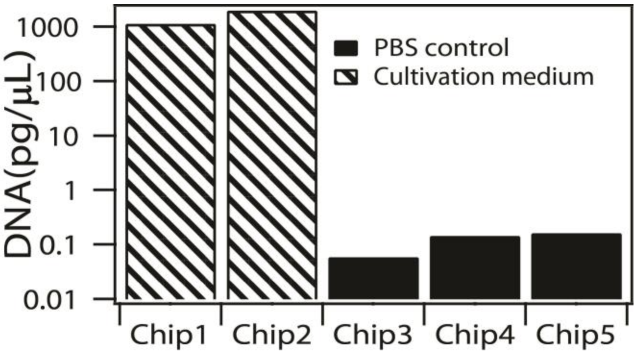


Fig. S2 Validation of the chip wash method with a model microorganism, *E. coli*. *E. coli* cells were loaded onto SlipChip with either medium for cultivation or a PBS buffer that does not support growth of cells. The cultivar was collected by chip wash method and DNA was extracted and quantified using qPCR. A 10,000-fold increase in the amount of DNA was observed between the condition that supports growth of *E. coli* vs. the non-growth control.

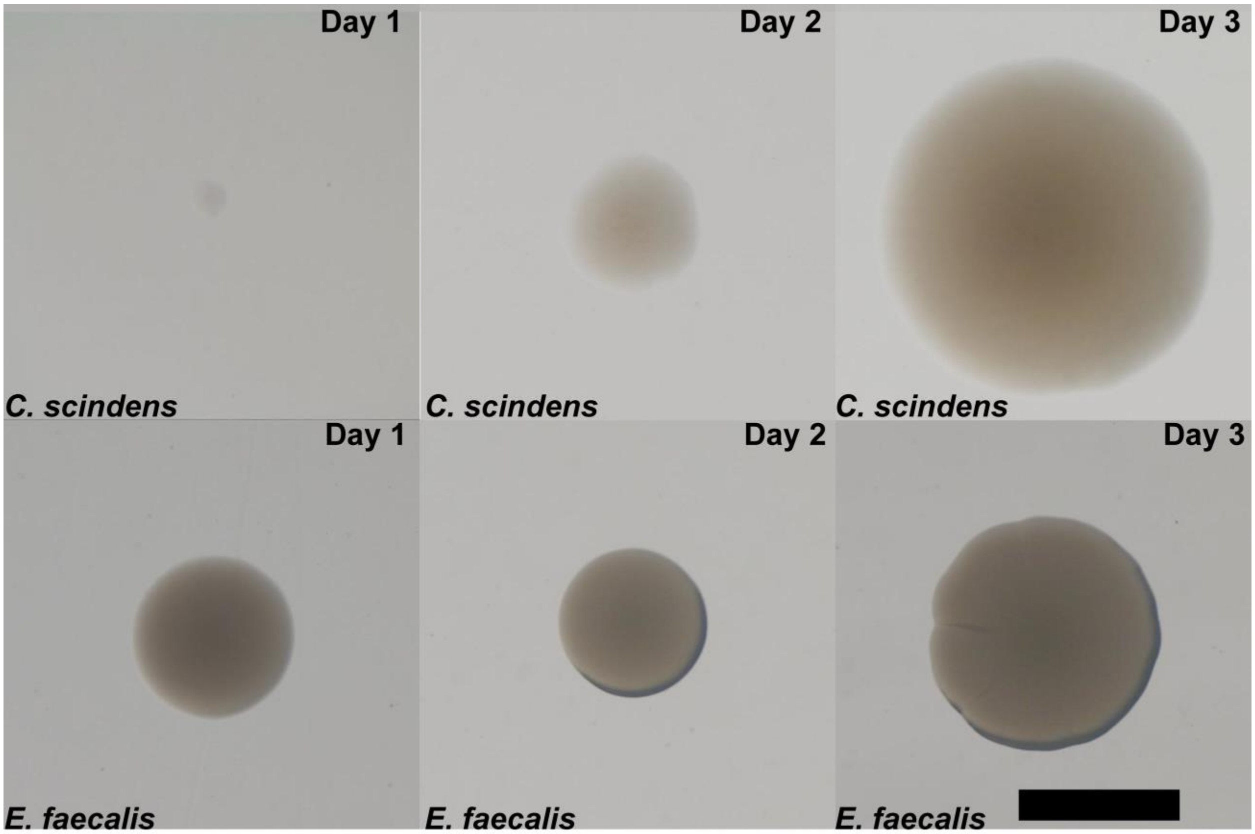


Fig. S3 Photograph showing time series of growth of *Clostridium scindens* and *Enterococcus faecalis* on agar plate. Scale bar is 1 mm.

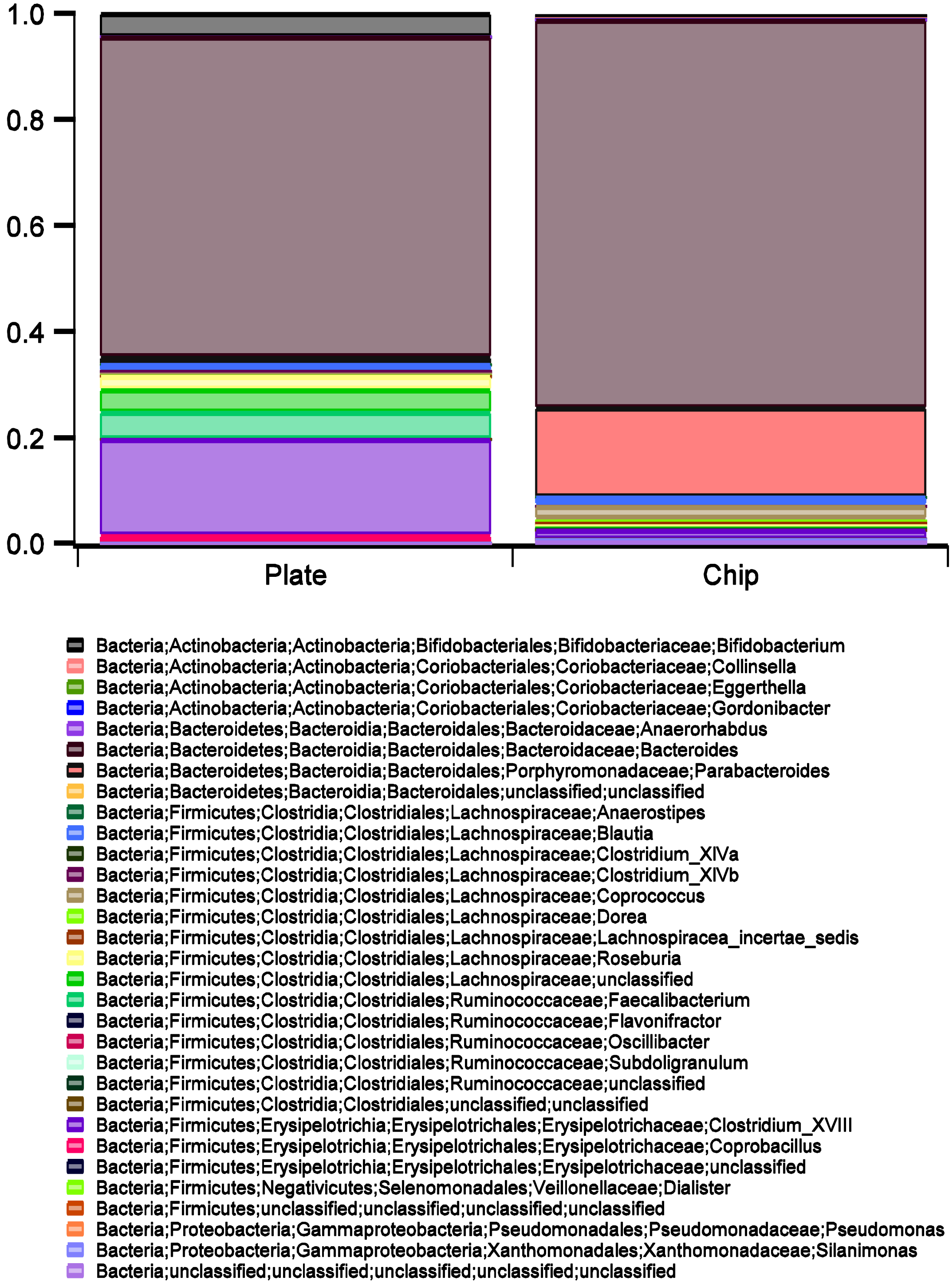
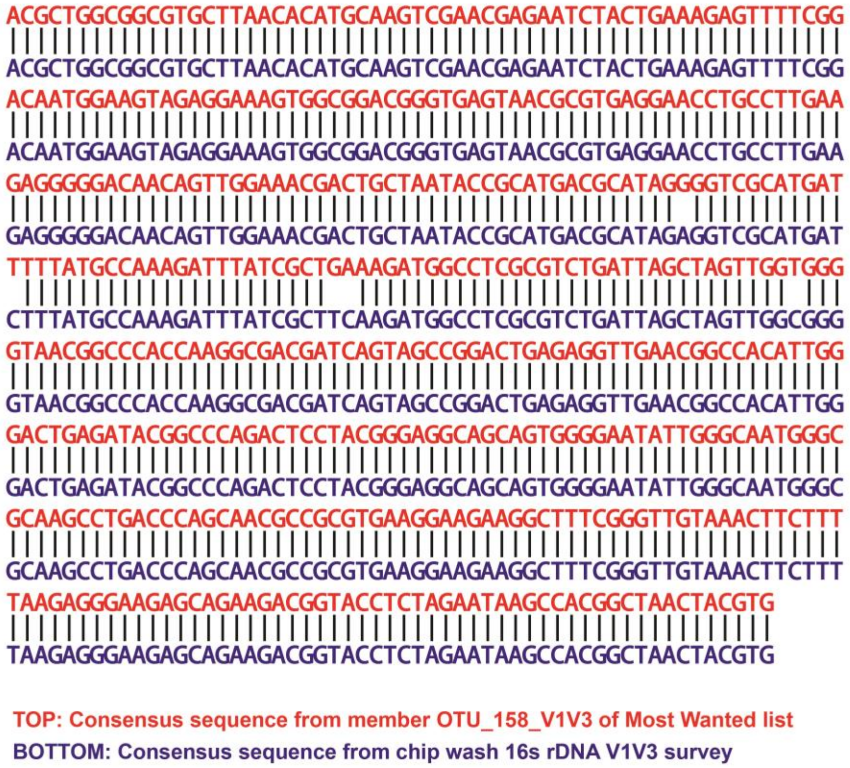


Fig. S4 Bar chart of relative abundance of OTUs grouped at genus level from 16S rDNA V4 high throughput sequencing of chip wash cultivar with M2LC and plate wash cultivar with M2GSC. We observed that more *Clostridium XIII* and *Bifidobacterium* can be observed from the plate wash solution, while some members such as *Gordonibacter*, *Anaerostipes*, *Oscillibacter* and *Silanimonas* can only be observed from chip wash method.



```
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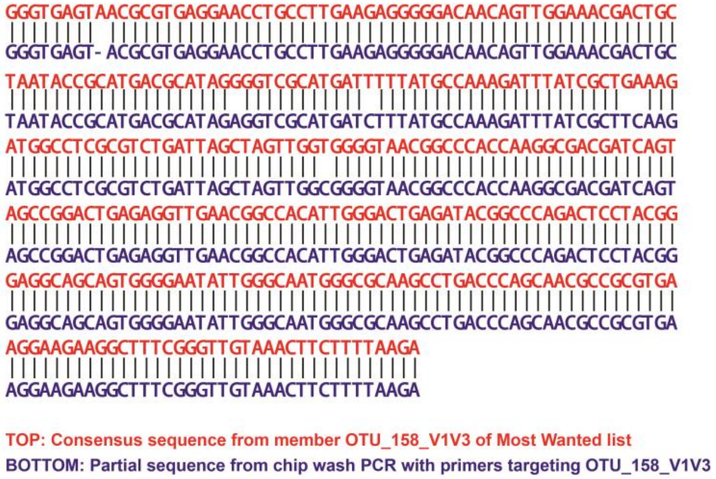
ACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGAGAATCTACTGAAAGAGTTTTCGG
ACAATGGAAGTAGAGGAAAGTGGCGGACGGTGAGTAACGCGTGAGGAACCTGCCTTGAA
|||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
ACAATGGAAGTAGAGGAAAGTGGCGGACGGTGAGTAACGCGTGAGGAACCTGCCTTGAA
GAGGGGACAACAGTTGGAAACGACTGCTAATACCGCATGACGCATAGGGGTCGCATGAT
||||||||||||||||||||||||||||||||||||||||||||||| |||||||||||
GAGGGGACAACAGTTGGAAACGACTGCTAATACCGCATGACGCATAGAGGTCGCATGAT
TTTTATGCCAAAGATTTATCGCTGAAAGATGGCCTCGCGTCTGATTAGCTAGTTGGTGGG
 ||||||||||||||||||||||  ||||||||||||||||||||||||||||||| |||
CTTTATGCCAAAGATTTATCGCTTCAAGATGGCCTCGCGTCTGATTAGCTAGTTGGCGGG
GTAACGGCCCACCAAGGCGACGATCAGTAGCCGGACTGAGAGGTTGAACGGCCACATTGG
||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
GTAACGGCCCACCAAGGCGACGATCAGTAGCCGGACTGAGAGGTTGAACGGCCACATTGG
GACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGGGCAATGGGC
||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
GACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGGGCAATGGGC
GCAAGCCTGACCCAGCAACGCCGCGTGAAGGAAGAAGGCTTTCGGGTTGTAAACTTCTTT
||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
GCAAGCCTGACCCAGCAACGCCGCGTGAAGGAAGAAGGCTTTCGGGTTGTAAACTTCTTT
TAAGAGGGAAGAGCAGAAGACGGTACCTCTAGAATAAGCCACGGCTAACTACGTG
|||||||||||||||||||||||||||||||||||||||||||||||||||||||
TAAGAGGGAAGAGCAGAAGACGGTACCTCTAGAATAAGCCACGGCTAACTACGTG
```

TOP: Consensus sequence from member OTU_158_V1V3 of Most Wanted list

BOTTOM: Consensus sequence from chip wash 16s rDNA V1V3 survey

Fig. S5 Identifying OTU158 from high throughput sequencing of V1V3 region of 16S rRNA gene of the chip wash solution. The sequence retrieved from high throughput sequencing aligned well with the consensus sequence of OTU158 from HMP's "Most Wanted" list.



```
GGGTGAGTAACGCGTGAGGAACCTGCCTTGAAGAGGGGGACAACAGTTGGAAACGACTGC
|||||||| |||||||||||||||||||||||||||||||||||||||||||||||||||
GGGTGAGT-ACGCGTGAGGAACCTGCCTTGAAGAGGGGGACAACAGTTGGAAACGACTGC
TAATACCGCATGACGCATAGGGGTCGCATGATTTTTATGCCAAAGATTTATCGCTGAAAG
|||||||||||||||||||| ||||||||||| ||||||||||||||||||||||  |||
TAATACCGCATGACGCATAGAGGTCGCATGATCTTTATGCCAAAGATTTATCGCTTCAAG
ATGGCCTCGCGTCTGATTAGCTAGTTGGTGGGGTAACGGCCCACCAAGGCGACGATCAGT
|||||||||||||||||||||||||||| |||||||||||||||||||||||||||||||
ATGGCCTCGCGTCTGATTAGCTAGTTGGCGGGGTAACGGCCCACCAAGGCGACGATCAGT
AGCCGGACTGAGAGGTTGAACGGCCACATTGGGACTGAGATACGGCCCAGACTCCTACGG
||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
AGCCGGACTGAGAGGTTGAACGGCCACATTGGGACTGAGATACGGCCCAGACTCCTACGG
GAGGCAGCAGTGGGGAATATTGGGCAATGGGCGCAAGCCTGACCCAGCAACGCCGCGTGA
||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
GAGGCAGCAGTGGGGAATATTGGGCAATGGGCGCAAGCCTGACCCAGCAACGCCGCGTGA
AGGAAGAAGGCTTTCGGGTTGTAAACTTCTTTTAAGA
|||||||||||||||||||||||||||||||||||||
AGGAAGAAGGCTTTCGGGTTGTAAACTTCTTTTAAGA
```

TOP: Consensus sequence from member OTU_158_V1V3 of Most Wanted list

BOTTOM: Partial sequence from chip wash PCR with primers targeting OTU_158_V1V3

Fig. S6 Validating species specific primers for OTU158 by Sanger sequencing. The sequence retrieved from Sanger sequencing aligned well with the consensus sequence of OTU158 from HMP's "Most Wanted" list.

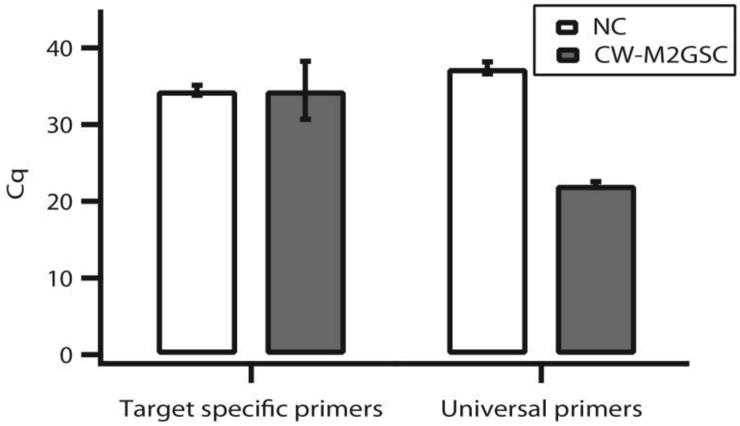


Fig. S7 qPCR with target specific primers (left) showing that the target was not present in chip wash solution of M2GSC nor in the blank negative control; Universal primers of 16s rDNA (right) showed that both chip wash contained bacterial genomic DNA and had a lower Cq value than the blank negative control. NC is negative control, and CW-M2GSC is chip wash with M2GSC medium.

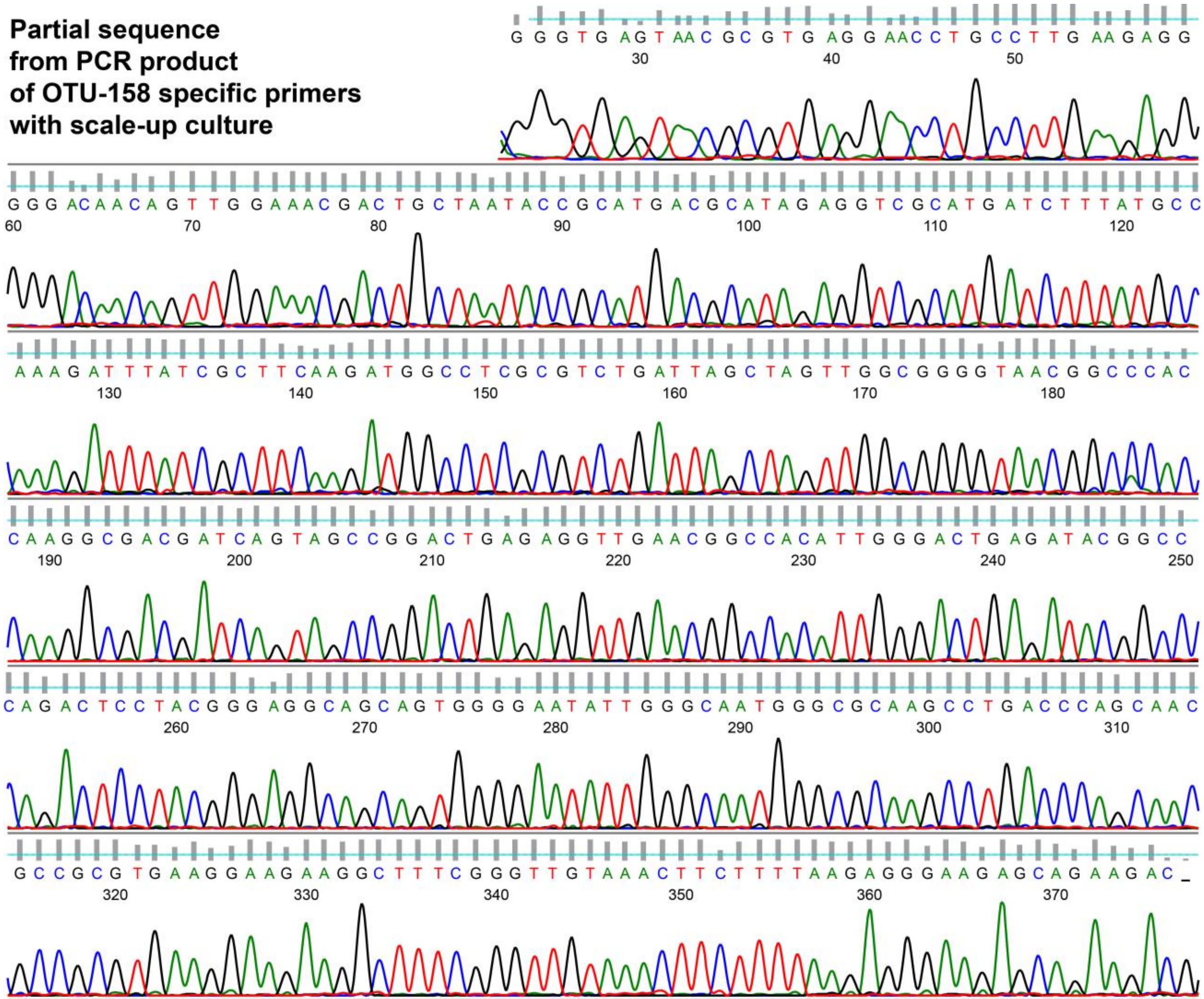


Fig. S8 Chromatogram from Sanger sequencing of positive PCR product of the first scale-up culture with target-specific primers.

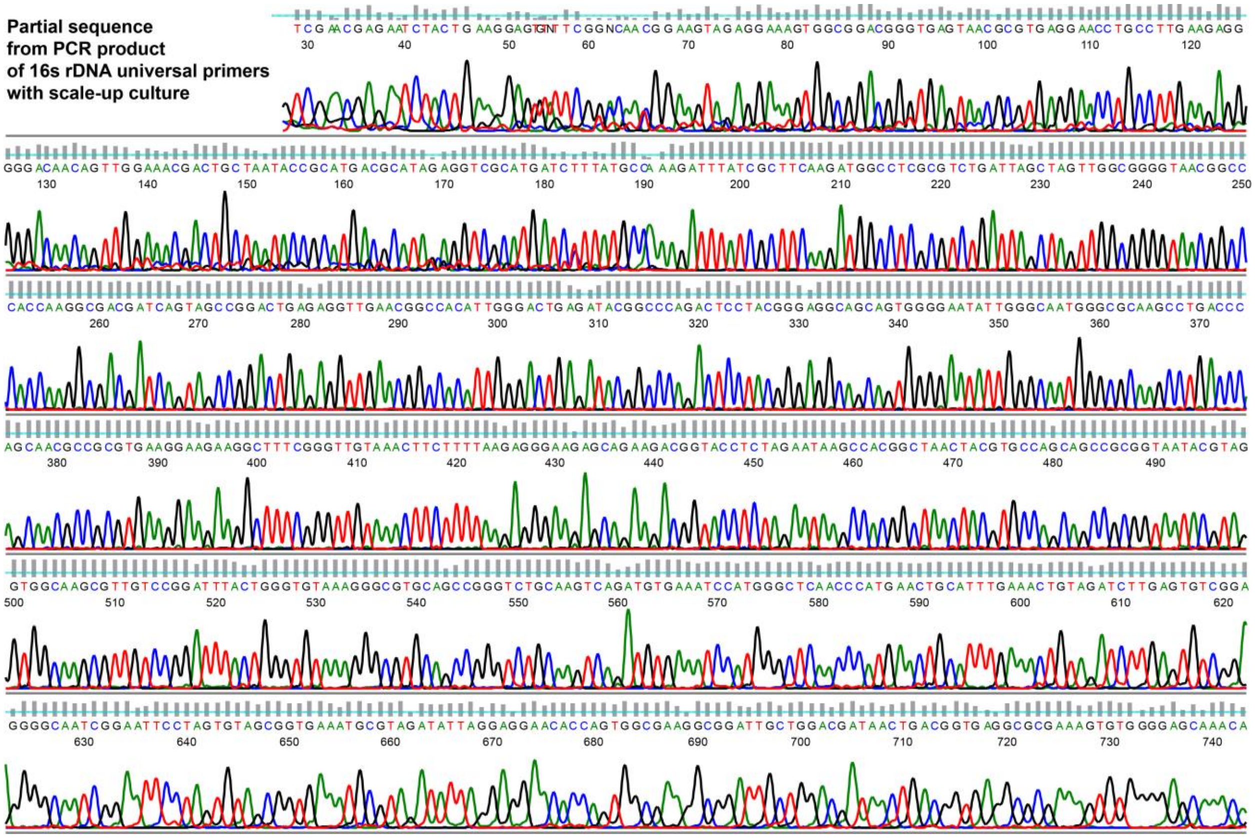


Fig. S9 Validating the scale-up colonies from the splitting SlipChip approach by Sanger sequencing of the positive PCR product of the first scale-up culture using universal primers. No contamination was observed, with minor heterogeneity at the beginning of the chromatogram.

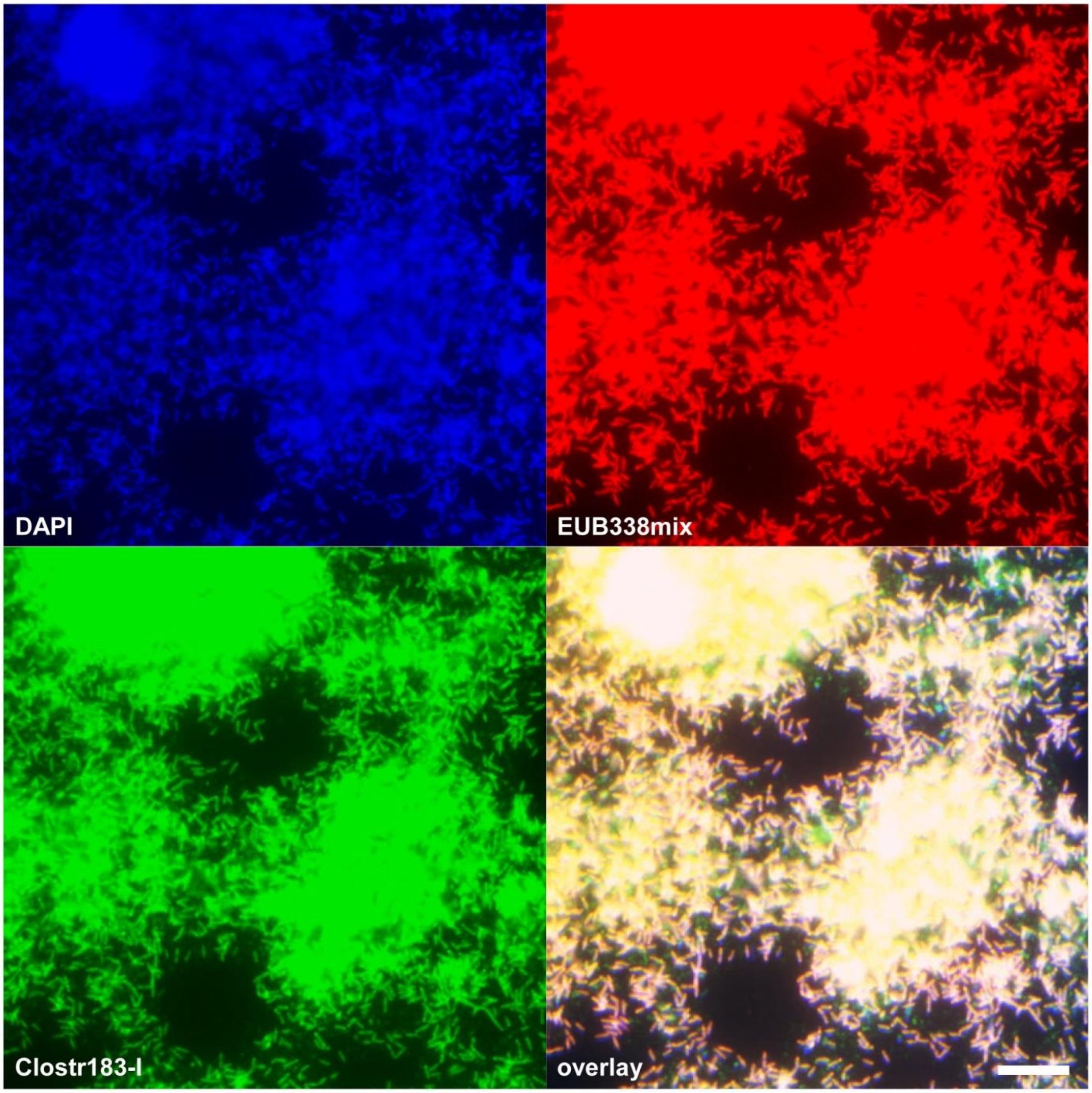


Fig. S10 FISH visualization of bacterial cells within pure culture of isolate microfluidicus 1. All cells detected by the general bacterial probe mix EUB338 I-III are also detected via the newly designed Clostr183-I probe, targeting isolate microfluidicus 1. While some cells (as identified by DAPI) did not bind any of these two probes, no archaea or eukaryotes were detected. Thus, FISH-negative cells are likely sporulating cells with substantially decreased ribosome content as compared to log-phase cells. Scale bar is 10 µm.

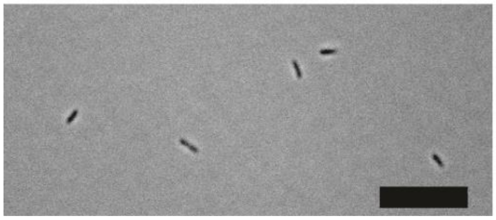


Fig. S11 Optical microscopy of isolate microfluidicus 1. Scale bar is 20 µm.

Detailed Contribution Description

LM and RFI designed the experiment as described in Figure 1. LM designed, performed experiments, and analyzed the data in Figures 2, 4, and 5. LM and JK designed, performed experiments, and analyzed the data in Figure 3. RH designed and performed FISH experiments and phylogenetic analyses for Figure 6, wrote the corresponding Results and Discussion and Supporting Information sections, and helped to edit the paper. NH was involved in clinical specimen acquisition and preparation in Figure 5*A*. IH performed all procedures for clinical specimen acquisition in Figure 5*A*. EC designed the study and clinical operations in Figure 5*A*. MK helped with device infrastructure and performed the experiment in SI Figure 11.

Table S1

#metadata of OTU_158_V1V3 and OTU_896_V1V3, retrieved from http://www.hmpdacc.org/most_wanted/ on Apr 27, 2012

otuID	otu_158_V1V3	otu_896_V1V3
priorityGroup	HIGH PRIORITY/MOST WANTED	HIGH PRIORITY/MOST WANTED
variableRegion	V1V3	V1V3
count454	14888	788
consensusLength	475	463
consensusSequence	ACGCTGGCGGCGTGCTTAACACATGCAAGTCGAACGAGAATCTACTGAAAGAGTTTTCGGACAATGGAAGTAGAGGAAAGTGGCGGACGGGTGAGTAACGCGTGAGGAACCTGCCTTGAAGAGGGGGACAACAGTTGGAAACGACTGCTAATACCGCATGACGCATAGGGGTCGCATGATTTTTATGCCAAAGATTTATCGCTGAAAGATGGCCTCGCGTCTGATTAGCTAGTTGGTGGGGTAACGGCCCACCAAGGCGACGATCAGTAGCCGGACTGAGAGGTTGAACGGCCACATTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGGGCAATGGGCGCAAGCCTGACCCAGCAACGCCGCGTGAAGGAAGAAGGCTTTCGGGTTGTAAACTTCTTTTAAGAGGGAAGAGCAGAAGACGGTACCTCTAGAATAAGCCACGGCTAACTACGTG	TGCTTAACACATGCAAGTCGAACGAGAATCTGCTGAAGGAGGATTCGTCCAACGGAAGTAGAGGAAAGTGGCGGACGGGTGAGTAACGCGTGAGGAACCTGCCTTGAAGAGGGGGACAACAGTTGGAAACGACTGCTAATACCGCATGACGCATAGGGGTCGCATGATCTTTATGCCAAAGATTTATCGCTTCAAGATGGCCTCGCGTCTGATTAGCTGGTTGGCGGGGTAACGGCCCACCAAGGCGACGATCAGTAGCCGGACTGAGAGGTTGAACGGCCACATTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGGGCAATGGGCGCAAGCCTGACCCAGCAACGCCGCGTGAAGGAAGAAGGCTTTCGGGTTGTAAACTTCTTTTAAGAGGGAAGAGCAGAAGACGGTACCTCTAGAATAAGCCACGGCTAACTACGTG
rdpSummary	Root(100);Bacteria(100);Firmicutes(100);Clostridia(100);Clostridiales(100);Ruminococcaceae(100);Oscillibacter(99)	Root(100);Bacteria(100);Firmicutes(100);Clostridia(100);Clostridiales(100);Ruminococcaceae(100);Oscillibacter(94)
UCHIMERefScore	0.038	0.0612
UCHIMEDenovoScore	0	0.1856
maxUCHIMEScore	0.038	0.1856
UCHIMEVerdict	neither	neither
toGoldGlobalPercentIdentity	90.59	88.44
toGoldGlobalBestHit	249174	32020
toGoldHumanGlobalPercentIdentity	87.29	88.44
toGoldHumanGlobalBestHit	804634	32020
toHMPStrainsGlobalPercentIdentity	87.29	88.44
toHmpStrainsGlobalBestHit	804634	32020
toSilvaGlobalPercentIdentity	98.95	99.78
toSilvaGlobalBestHit	Unl08zxz	Unl022fr
toGreengenesNamedGlobalPercentIdentity	92.45	91.61
toGreengenesNamedGlobalBestHit	607206	607206
toGreengenesUnnamedGlobalPercentIdentity	91.08	91.16
toGreengenesUnnamedGlobalBestHit	244027	812374
maxFraction	0.6979866	0.3489933
maxFractionBodyHabitat	Stool	Stool
454_seqCounts_Stool	13561	709
454_seqCounts_Buccal mucosa	8	3
454_seqCounts_Hard palate	37	1
454_seqCounts_Keratinized gingiva	3	0
454_seqCounts_Palatine Tonsils	6	0
454_seqCounts_Saliva	11	0
454_seqCounts_Subgingival plaque	0	0
454_seqCounts_Supragingival plaque	0	0
454_seqCounts_Throat	19	1
454_seqCounts_Tongue dorsum	0	2
454_seqCounts_Anterior nares	161	6
454_seqCounts_L_Antecubital fossa	364	15
454_seqCounts_L_Retroauricular crease	112	8
454_seqCounts_R_Antecubital fossa	341	37
454_seqCounts_R_Retroauricular crease	204	6
454_seqCounts_Mid vagina	7	0
454_seqCounts_Posterior fornix	10	0
454_seqCounts_Vaginal introitus	44	0
454_seqCounts_positive	0	0
454_seqCounts_water	0	0
454_subjectCounts_Stool	104	52
454_subjectCounts_Buccal mucosa	5	2
454_subjectCounts_Hard palate	9	1

454_subjectCounts_Keratinized gingiva	3	0
454_subjectCounts_Palatine Tonsils	4	0
454_subjectCounts_Saliva	6	0
454_subjectCounts_Subgingival plaque	0	0
454_subjectCounts_Supragingival plaque	0	0
454_subjectCounts_Throat	3	1
454_subjectCounts_Tongue dorsum	0	1
454_subjectCounts_Anterior nares	18	3
454_subjectCounts_L_Antecubital fossa	22	6
454_subjectCounts_L_Retroauricular crease	13	3
454_subjectCounts_R_Antecubital fossa	21	5
454_subjectCounts_R_Retroauricular crease	11	1
454_subjectCounts_Mid vagina	2	0
454_subjectCounts_Posterior fornix	2	0
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454_subjectfractions_Hard palate	0.06666667	0.007407407
454_subjectfractions_Keratinized gingiva	0.021276595	0
454_subjectfractions_Palatine Tonsils	0.028368793	0
454_subjectfractions_Saliva	0.045801528	0
454_subjectfractions_Subgingival plaque	0	0
454_subjectfractions_Supragingival plaque	0	0
454_subjectfractions_Throat	0.022222223	0.007407407
454_subjectfractions_Tongue dorsum	0	0.006896552
454_subjectfractions_Anterior nares	0.1294964	0.021582734
454_subjectfractions_L_Antecubital fossa	0.16058394	0.04379562
454_subjectfractions_L_Retroauricular crease	0.084415585	0.019480519
454_subjectfractions_R_Antecubital fossa	0.15	0.035714287
454_subjectfractions_R_Retroauricular crease	0.07096774	0.006451613
454_subjectfractions_Mid vagina	0.02739726	0
454_subjectfractions_Posterior fornix	0.028169014	0
454_subjectfractions_Vaginal introitus	0.13235295	0
454_subjectfractions_positive	0	0
454_subjectfractions_water	0	0
454_RelativeAbundanceStool	0.007333881	3.07E-04
454_RelativeAbundanceBuccal mucosa	0.00000398	9.16E-07
454_RelativeAbundanceHard palate	0.0000995	9.62E-07
454_RelativeAbundanceKeratinized gingiva	0.00000379	0
454_RelativeAbundancePalatine Tonsils	0.00000542	0
454_RelativeAbundanceSaliva	0.0000109	0
454_RelativeAbundanceSubgingival plaque	0	0
454_RelativeAbundanceSupragingival plaque	0	0
454_RelativeAbundanceThroat	0.0000492	7.04E-07
454_RelativeAbundanceTongue dorsum	0	8.48E-07
454_RelativeAbundanceAnterior nares	0.00013	5.07E-06
454_RelativeAbundanceL_Antecubital fossa	0.000338	8.00E-06
454_RelativeAbundanceL_Retroauricular crease	0.000153	4.02E-06
454_RelativeAbundanceR_Antecubital fossa	0.000878	3.11E-05
454_RelativeAbundanceR_Retroauricular crease	0.0001	9.22E-07
454_RelativeAbundanceMid vagina	0.00000316	0
454_RelativeAbundancePosterior fornix	0.00000454	0
454_RelativeAbundanceVaginal introitus	0.0000574	0
454_RelativeAbundancepositive	0	0
454_RelativeAbundancewater	0	0

Table S2

searching for 16S rRNA gene of Caecococcus microfluidicus isolated in this paper in nr database by BLAST
Database: nr
Fields:subject ids, % identity, alignment length, mismatches, gap opens, q. start, q. end, s. start, s. end, evalue, bit score
#apply filter: percent identity greater or equal to 97%, and alignment length greater or equal to 250

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gi|61620028|gb|AY850435.1|	99.52	1243	6	0	67	1309	9	1251	0	2263
gi|169287428|gb|EU471953.1|	99.05	1261	9	3	111	1368	1	1261	0	2259
gi|169282916|gb|EU467441.1|	97.22	1331	36	1	1	1331	35	1364	0	2252
gi|169287473|gb|EU471998.1|	97.13	1288	32	3	84	1368	88	1373	0	2169
gi|169285037|gb|EU469562.1|	98.94	1130	12	0	222	1351	136	1265	0	2021
gi|110436563|gb|DQ796163.1|	97.39	1148	29	1	222	1368	235	1382	0	1953
gi|214017950|gb|FJ363563.1|	100	1049	0	0	307	1355	1	1049	0	1938
gi|84626925|gb|DQ339838.1|	100	1038	0	0	325	1362	1	1038	0	1917
gi|22324751|gb|AF530344.1|	99.81	1038	0	1	325	1362	1	1036	0	1905
gi|62753295|gb|AY920178.1|	99.42	1039	4	2	325	1362	1	1038	0	1884
gi|298391468|gb|HM478330.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298391173|gb|HM478035.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298390963|gb|HM477825.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298390562|gb|HM477424.1|	100	1001	0	0	344	1344	1	1001	0	1849
gi|298390543|gb|HM477405.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298389976|gb|HM476838.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298389938|gb|HM476800.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298389589|gb|HM476451.1|	100	1001	0	0	344	1344	1	1001	0	1849
gi|298389422|gb|HM476284.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298389379|gb|HM476241.1|	100	1001	0	0	344	1344	1	1001	0	1849
gi|298389231|gb|HM476093.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|298388837|gb|HM475699.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|258688844|emb|FP083306.1|	100	1001	0	0	344	1344	1	1001	0	1849
gi|258688642|emb|FP083302.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|258688592|emb|FP083252.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|258687382|emb|FP082637.1|	100	1001	0	0	344	1344	1	1001	0	1849
gi|258687350|emb|FP082605.1|	100	1001	0	0	344	1344	1	1001	0	1849
gi|258687324|emb|FP082579.1|	100	1001	0	0	344	1344	1	1001	0	1849
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gi|258684705|emb|FP075308.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|258684256|emb|FP075075.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|258684063|emb|FP081284.1|	100	1001	0	0	345	1345	1	1001	0	1849
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gi|258681398|emb|FP084863.1|	100	1001	0	0	345	1345	1	1001	0	1849
gi|258681389|emb|FP084854.1|	100	1001	0	0	345	1345	1	1001	0	1849
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gi|298389217|gb|HM476079.1|	99.9	1001	1	0	345	1345	1	1001	0	1844
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gi|258680857|emb|FP084518.1|	99.9	1001	1	0	344	1344	1	1001	0	1844
gi|258679890|emb|FP078489.1|	99.9	1001	1	0	345	1345	1	1001	0	1844
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gi|258679682|emb|FP078282.1|	99.9	1001	1	0	345	1345	1	1001	0	1844
gi|258685337|emb|FP081786.1|	99.8	1001	2	0	344	1344	1	1001	0	1838
gi|258680032|emb|FP078631.1|	99.8	1001	2	0	344	1344	1	1001	0	1838
gi|258679945|emb|FP078544.1|	99.8	1001	2	0	345	1345	1	1001	0	1838
gi|258682949|emb|FP080298.1|	99.7	1001	3	0	344	1344	1	1001	0	1832
gi|258681405|emb|FP084870.1|	99.7	1001	3	0	345	1345	1	1001	0	1832
gi|258681365|emb|FP084830.1|	99.7	1001	3	0	345	1345	1	1001	0	1832
gi|258680303|emb|FP078703.1|	99.7	1001	3	0	344	1344	1	1001	0	1832
gi|258688156|emb|FP083014.1|	99.5	1001	5	0	344	1344	1	1001	0	1821
gi|258687287|emb|FP082542.1|	99.1	1001	9	0	345	1345	1	1001	0	1799
gi|258689133|emb|FP077748.1|	98.8	1001	12	0	344	1344	1	1001	0	1783
gi|258679670|emb|FP078270.1|	98.8	1003	8	2	345	1345	1	1001	0	1783
gi|62753249|gb|AY920132.1|	97.69	1039	21	2	325	1362	1	1037	0	1783
gi|258689128|emb|FP077743.1|	98.6	1001	14	0	344	1344	1	1001	0	1772
gi|258690090|emb|FP078109.1|	98.5	1001	15	0	345	1345	1	1001	0	1766
gi|258679990|emb|FP078589.1|	98.5	1001	15	0	344	1344	1	1001	0	1766
gi|258679817|emb|FP078417.1|	98.3	1001	17	0	344	1344	1	1001	0	1755
gi|62753277|gb|AY920160.1|	97.02	1039	27	3	325	1362	1	1036	0	1744
gi|310840978|gb|GU105506.1|	99.07	968	9	0	27	994	1	968	0	1738
gi|258680809|emb|FP084474.1|	97.9	1002	20	1	344	1344	1	1002	0	1733
gi|298392763|gb|HM479625.1|	97.8	1001	22	0	345	1345	1	1001	0	1727
gi|258684129|emb|FP074949.1|	97.8	1001	22	0	345	1345	1	1001	0	1727
gi|258688530|emb|FP083190.1|	97.7	1001	23	0	344	1344	1	1001	0	1722
gi|258688471|emb|FP083131.1|	97.7	1001	23	0	344	1344	1	1001	0	1722
gi|258687267|emb|FP082522.1|	97.7	1001	23	0	345	1345	1	1001	0	1722
gi|258680259|emb|FP078659.1|	97.7	1002	21	2	345	1345	1	1001	0	1722
gi|258679892|emb|FP078491.1|	97.7	1001	23	0	345	1345	1	1001	0	1722
gi|258679706|emb|FP078306.1|	97.6	1002	22	2	344	1344	1	1001	0	1716
gi|258687656|emb|FP082713.1|	97.5	1001	25	0	344	1344	1	1001	0	1711
gi|310841110|gb|GU105638.1|	98.75	961	12	0	27	987	1	961	0	1709
gi|298392813|gb|HM479675.1|	97.4	1001	24	2	344	1344	1	999	0	1703
gi|258684733|emb|FP075336.1|	97.4	1001	24	2	344	1344	1	999	0	1703
gi|258680334|emb|FP078734.1|	97.3	1001	27	0	344	1344	1	1001	0	1700
gi|258680314|emb|FP078714.1|	97.3	1001	27	0	345	1345	1	1001	0	1700
gi|310840826|gb|GU105354.1|	98.95	949	10	0	27	975	1	949	0	1698
gi|258680175|emb|FP084224.1|	97.3	1001	25	2	344	1344	1	999	0	1698
gi|310840972|gb|GU105500.1|	99.36	935	6	0	27	961	1	935	0	1694
gi|310841115|gb|GU105643.1|	98.94	944	10	0	32	975	2	945	0	1688
gi|73427009|gb|DQ144095.1|	99.57	925	4	0	511	1435	1	925	0	1687
gi|258681714|emb|FP079519.1|	97	1001	30	0	345	1345	1	1001	0	1683
gi|258689064|emb|FP077679.1|	97.01	1004	23	7	345	1345	1	1000	0	1681
gi|310840973|gb|GU105501.1|	99.04	936	9	0	27	962	1	936	0	1679
gi|310840928|gb|GU105456.1|	98.83	942	11	0	27	968	1	942	0	1679
gi|310840975|gb|GU105503.1|	98.93	936	10	0	27	962	1	936	0	1674
gi|310840927|gb|GU105455.1|	99.03	932	9	0	27	958	1	932	0	1672
gi|310840976|gb|GU105504.1|	98.82	936	11	0	27	962	1	936	0	1668
gi|310841112|gb|GU105640.1|	99.03	928	9	0	27	954	1	928	0	1664
gi|310841093|gb|GU105621.1|	97.72	967	20	2	27	992	1	966	0	1663
gi|310841111|gb|GU105639.1|	99.24	918	7	0	24	941	1	918	0	1657
gi|310841173|gb|GU105701.1|	99.34	912	4	2	28	938	1	911	0	1650
gi|310841037|gb|GU105565.1|	99.12	913	8	0	29	941	1	913	0	1642
gi|383385719|gb|JQ799156.1|	97.89	948	18	2	507	1453	1	947	0	1639
gi|310840926|gb|GU105454.1|	99.12	910	8	0	27	936	1	910	0	1637
gi|310841163|gb|GU105691.1|	98.91	915	10	0	27	941	1	915	0	1635
gi|310840866|gb|GU105394.1|	99.01	912	9	0	27	938	1	912	0	1635
gi|310836892|gb|GU101420.1|	99.55	897	4	0	29	925	1	897	0	1635
gi|310840980|gb|GU105508.1|	99.33	901	6	0	27	927	1	901	0	1631
gi|310842043|gb|GU106571.1|	98.8	915	11	0	24	938	1	915	0	1629
gi|310841348|gb|GU105876.1|	99.12	905	8	0	24	928	1	905	0	1628
gi|310840979|gb|GU105507.1|	99.44	894	5	0	27	920	1	894	0	1624
gi|310842898|gb|GU107426.1|	98.9	908	10	0	31	938	1	908	0	1622
gi|310840856|gb|GU105384.1|	99.77	881	2	0	28	908	1	881	0	1616
gi|310840807|gb|GU105335.1|	99.77	880	2	0	26	905	1	880	0	1615
gi|239620487|gb|FJ651880.1|	99.44	889	5	0	1	889	27	915	0	1615
gi|310841256|gb|GU105784.1|	98.89	898	10	0	28	925	1	898	0	1604
gi|239620493|gb|FJ651886.1|	99.21	889	7	0	1	889	27	915	0	1604
gi|310842899|gb|GU107427.1|	98.36	912	15	0	27	938	1	912	0	1602
gi|310842632|gb|GU107160.1|	98.78	900	11	0	27	926	1	900	0	1602

gi|310838465|gb|GU102993.1|	98.89	897	10	0	24	920	1	897	0	1602
gi|310842230|gb|GU106758.1|	98.88	896	10	0	24	919	1	896	0	1600
gi|310843290|gb|GU107818.1|	99.77	868	2	0	24	891	1	868	0	1592
gi|310842840|gb|GU107368.1|	98.45	905	13	1	28	931	1	905	0	1592
gi|310841113|gb|GU105641.1|	98.55	898	13	0	29	926	1	898	0	1587
gi|291331103|gb|GU957635.1|	98.88	889	10	0	1	889	27	915	0	1587
gi|310842044|gb|GU106572.1|	98.66	894	12	0	24	917	1	894	0	1585
gi|310841152|gb|GU105680.1|	98.77	892	10	1	27	918	1	891	0	1585
gi|310840857|gb|GU105385.1|	98.55	897	13	0	28	924	1	897	0	1585
gi|291328328|gb|GU954860.1|	99.43	873	5	0	1	873	29	901	0	1585
gi|310841879|gb|GU106407.1|	99.54	868	4	0	33	900	2	869	0	1581
gi|295651187|gb|HM013421.1|	98.76	889	11	0	1	889	28	916	0	1581
gi|239620005|gb|FJ651398.1|	98.76	889	11	0	1	889	16	904	0	1581
gi|291328488|gb|GU955020.1|	98.76	889	10	1	2	889	3	891	0	1580
gi|310841909|gb|GU106437.1|	99.54	866	4	0	27	892	1	866	0	1578
gi|239619923|gb|FJ651316.1|	99.42	869	5	0	21	889	1	869	0	1578
gi|169279765|gb|EU464290.1|	98.02	908	18	0	461	1368	18	925	0	1578
gi|291331104|gb|GU957636.1|	98.65	889	12	0	1	889	27	915	0	1576
gi|239620484|gb|FJ651877.1|	98.65	889	12	0	1	889	27	915	0	1576
gi|239620008|gb|FJ651401.1|	98.65	889	12	0	1	889	17	905	0	1576
gi|310839154|gb|GU103682.1|	98.98	879	9	0	27	905	1	879	0	1574
gi|310841445|gb|GU105973.1|	99.77	857	2	0	21	877	1	857	0	1572
gi|291328286|gb|GU954818.1|	98.54	889	13	0	1	889	28	916	0	1570
gi|239620488|gb|FJ651881.1|	98.54	889	13	0	1	889	27	915	0	1570
gi|239619382|gb|FJ650775.1|	98.54	889	13	0	1	889	27	915	0	1570
gi|310840977|gb|GU105505.1|	99.42	864	5	0	27	890	1	864	0	1568
gi|291328529|gb|GU955061.1|	98.43	889	14	0	1	889	28	916	0	1565
gi|310842046|gb|GU106574.1|	98.53	885	13	0	24	908	1	885	0	1563
gi|310841342|gb|GU105870.1|	99.77	852	2	0	24	875	1	852	0	1563
gi|310838205|gb|GU102733.1|	98.32	892	13	2	25	916	1	890	0	1563
gi|310837149|gb|GU101677.1|	99.42	860	5	0	33	892	3	862	0	1561
gi|310835970|gb|GU100498.1|	99.3	863	6	0	29	891	1	863	0	1561
gi|291331110|gb|GU957642.1|	98.31	889	15	0	1	889	27	915	0	1559
gi|239619213|gb|FJ650606.1|	98.31	888	15	0	1	888	27	914	0	1557
gi|310842067|gb|GU106595.1|	99.53	854	4	0	24	877	1	854	0	1555
gi|310841114|gb|GU105642.1|	99.3	860	6	0	29	888	1	860	0	1555
gi|239619393|gb|FJ650786.1|	98.63	877	12	0	1	877	27	903	0	1554
gi|529080432|gb|KF229853.1|	98.96	866	9	0	24	889	1	866	0	1550
gi|310840808|gb|GU105336.1|	98.74	872	11	0	27	898	1	872	0	1550
gi|239619345|gb|FJ650738.1|	98.63	874	12	0	1	874	27	900	0	1548
gi|310841380|gb|GU105908.1|	99.53	849	4	0	29	877	1	849	0	1546
gi|291331651|gb|GU958183.1|	97.98	890	16	2	1	889	28	916	0	1543
gi|310838473|gb|GU103001.1|	99.64	843	3	0	24	866	1	843	0	1541
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gi|291331102|gb|GU957634.1|	99.41	848	5	0	42	889	1	848	0	1539
gi|239620288|gb|FJ651681.1|	98.73	866	11	0	1	866	11	876	0	1539
gi|310838146|gb|GU102674.1|	98.73	866	10	1	25	890	1	865	0	1537
gi|529083001|gb|KF232422.1|	98.62	867	12	0	1	867	23	889	0	1535
gi|529080529|gb|KF229950.1|	98.84	861	10	0	2	862	1	861	0	1535
gi|291329410|gb|GU955942.1|	98.73	864	11	0	1	864	14	877	0	1535
gi|529080654|gb|KF230075.1|	99.06	854	8	0	1	854	21	874	0	1533
gi|310841035|gb|GU105563.1|	98.5	868	13	0	28	895	1	868	0	1531
gi|169287659|gb|EU472184.1|	97.44	898	23	0	471	1368	1	898	0	1531
gi|310838633|gb|GU103161.1|	99.64	837	3	0	33	869	3	839	0	1530
gi|310842151|gb|GU106679.1|	99.4	840	5	0	27	866	1	840	0	1524
gi|310842099|gb|GU106627.1|	99.4	840	5	0	27	866	1	840	0	1524
gi|310841955|gb|GU106483.1|	99.4	840	5	0	24	863	1	840	0	1524
gi|310841878|gb|GU106406.1|	99.4	840	5	0	24	863	1	840	0	1524
gi|310838817|gb|GU103345.1|	99.64	834	3	0	29	862	1	834	0	1524
gi|310838576|gb|GU103104.1|	99.52	837	3	1	27	863	1	836	0	1522
gi|310841036|gb|GU105564.1|	98.38	865	14	0	28	892	1	865	0	1520
gi|164454293|dbj|AB265290.1|	97.53	889	21	1	478	1366	1	888	0	1519
gi|310841954|gb|GU106482.1|	99.05	845	8	0	33	877	1	845	0	1517
gi|310841907|gb|GU106435.1|	99.4	835	5	0	29	863	1	835	0	1515
gi|310838717|gb|GU103245.1|	99.52	833	3	1	33	865	3	834	0	1515
gi|310833518|gb|GU098046.1|	99.52	832	4	0	33	864	1	832	0	1515
gi|310841908|gb|GU106436.1|	99.28	837	6	0	27	863	1	837	0	1513
gi|118136060|gb|EF071471.1|	98.82	849	10	0	1	849	20	868	0	1513

gi|310841536|gb|GU106064.1|	99.16	838	7	0	29	866	1	838	0	1509
gi|310841078|gb|GU105606.1|	99.17	839	6	1	27	864	1	839	0	1509
gi|310838778|gb|GU103306.1|	99.16	838	7	0	28	865	1	838	0	1509
gi|310841959|gb|GU106487.1|	99.28	835	5	1	29	863	1	834	0	1507
gi|310841378|gb|GU105906.1|	99.05	840	8	0	24	863	1	840	0	1507
gi|310842517|gb|GU107045.1|	98.15	863	16	0	27	889	1	863	0	1506
gi|310833629|gb|GU098157.1|	98.82	845	10	0	22	866	1	845	0	1506
gi|310840786|gb|GU105314.1|	98.93	840	9	0	27	866	1	840	0	1502
gi|310839537|gb|GU104065.1|	98.81	843	10	0	24	866	1	843	0	1502
gi|310841875|gb|GU106403.1|	98.47	851	13	0	27	877	1	851	0	1500
gi|310840855|gb|GU105383.1|	98.7	845	11	0	27	871	1	845	0	1500
gi|310837024|gb|GU101552.1|	98.36	856	11	3	27	879	1	856	0	1500
gi|310838419|gb|GU102947.1|	99.88	814	1	0	50	863	4	817	0	1498
gi|110440903|gb|DQ800503.1|	99.04	835	8	0	1	835	33	867	0	1498
gi|310842583|gb|GU107111.1|	98.36	852	14	0	25	876	1	852	0	1496
gi|310840877|gb|GU105405.1|	98.81	840	10	0	27	866	1	840	0	1496
gi|310837892|gb|GU102420.1|	98.81	840	10	0	24	863	1	840	0	1496
gi|310833517|gb|GU098045.1|	99.16	831	7	0	33	863	1	831	0	1496
gi|310842068|gb|GU106596.1|	98.24	854	15	0	24	877	1	854	0	1495
gi|399141153|gb|JQ265125.1|	98.69	842	10	1	38	878	1	842	0	1493
gi|310842262|gb|GU106790.1|	99.39	823	5	0	21	843	1	823	0	1493
gi|310833423|gb|GU097951.1|	99.16	829	7	0	36	864	4	832	0	1493
gi|310842231|gb|GU106759.1|	98.58	843	12	0	24	866	1	843	0	1491
gi|310842154|gb|GU106682.1|	98.69	840	11	0	24	863	1	840	0	1491
gi|310842135|gb|GU106663.1|	98.69	840	11	0	27	866	1	840	0	1491
gi|310842045|gb|GU106573.1|	98.69	840	11	0	24	863	1	840	0	1491
gi|310841956|gb|GU106484.1|	98.69	840	11	0	24	863	1	840	0	1491
gi|310842138|gb|GU106666.1|	98.57	840	12	0	27	866	1	840	0	1485
gi|310838495|gb|GU103023.1|	99.03	828	8	0	24	851	1	828	0	1485
gi|239620227|gb|FJ651620.1|	98.34	844	14	0	35	878	2	845	0	1482
gi|399141562|gb|JQ265534.1|	98.68	835	9	2	1	833	65	899	0	1480
gi|310842150|gb|GU106678.1|	98.57	837	12	0	27	863	1	837	0	1480
gi|310842101|gb|GU106629.1|	98.45	840	13	0	24	863	1	840	0	1480
gi|310842097|gb|GU106625.1|	98.45	840	13	0	27	866	1	840	0	1480
gi|310841108|gb|GU105636.1|	97.79	861	14	5	39	895	2	861	0	1480
gi|310837285|gb|GU101813.1|	98.91	828	9	0	24	851	1	828	0	1480

References:

1. Schmidt TM (http://microbiomes.umms.med.umich.edu/wp-content/uploads/2012/08/media_and_buffer_used_for_culturing_human_gut_microbiome.pdf)
2. Shen F, Du WB, Davydova EK, Karymov MA, Pandey J, Ismagilov RF (2010) Nanoliter multiplex PCR arrays on a SlipChip. *Anal. Chem.* 82(11):4606-4612.
3. Liang Ma SSD, Mikhail A. Karymov, Qichao Pan, Stefano Begolo, and Rustem F. Ismagilov (2014) Individually addressable arrays of replica microbial cultures enabled by splitting SlipChips. *Integr Biol*, In Press. DOI: 10.1039/C4IB00109E.
4. Lane DJ (1991) 16S/23S rRNA sequencing. in Nucleic Acid Techniques in Bacterial Systematics. Eds Stackebrandt E, Goodfellow M (Wiley, New York), pp 115–175.
5. Muyzer G, de Waal EC, Uitterlinden AG (1993) Profiling of complex microbial populations by denaturing gradient gel electrophoresis analysis of polymerase chain reaction-amplified genes coding for 16s rrna. *Appl. Environ. Microbiol.* 59(3):695-700.
6. Stevenson BS, Eichorst SA, Wertz JT, Schmidt TM, Breznak JA (2004) New strategies for cultivation and detection of previously uncultured microbes. *Appl. Environ. Microbiol.* 70(8):4748-4755.
7. Miyazaki K, Martin JC, Marinsek-Logar R, Flint HJ (1997) Degradation and utilization of xylans by the rumen anaerobe Prevotella bryantii (formerly P. ruminicola subsp. brevis) B(1)4. *Anaerobe* 3(6):373-381.
8. Caporaso JG, Lauber CL, Walters WA, Berg-Lyons D, Lozupone CA, Turnbaugh PJ, Fierer N, Knight R (2010) Global patterns of 16s rrna diversity at a depth of millions of sequences per sample. *Proceedings of the National Academy of Sciences*.
9. Caporaso JG, Lauber CL, Walters WA, Berg-Lyons D, Huntley J, Fierer N, Owens SM, Betley J, Fraser L, Bauer M, Gormley N, Gilbert JA, Smith G, Knight R (2012) Ultra-high-throughput microbial community analysis on the illumina HiSeq and MiSeq platforms. *Isme Journal* 6(8):1621-1624.
10. Walters WA, Caporaso JG, Lauber CL, Berg-Lyons D, Fierer N, Knight R (2011) Primerprospector: *De novo* design and taxonomic analysis of barcoded polymerase chain reaction primers. *Bioinformatics* 27(8):1159-1161.
11. DeSantis TZ, Hugenholtz P, Larsen N, Rojas M, Brodie EL, Keller K, Huber T, Dalevi D, Hu P, Andersen GL (2006) Greengenes, a chimera-checked 16s rRNA gene database and workbench compatible with arb. *Appl. Environ. Microbiol.* 72(7):5069-5072.
12. Schloss PD, Westcott SL, Ryabin T, Hall JR, Hartmann M, Hollister EB, Lesniewski RA, Oakley BB, Parks DH, Robinson CJ, Sahl JW, Stres B, Thallinger GG, Van Horn DJ, Weber CF (2009) Introducing mothur: Open-source, platform-independent, community-supported software for describing and comparing microbial communities. *Applied and Environmental Microbiology* 75(23):7537-7541.
13. Kuczynski J, Stombaugh J, Walters WA, Gonzalez A, Caporaso JG, Knight R (2012) Using qiime to analyze 16s rRNA gene sequences from microbial communities. *Current protocols in microbiology* Chapter 1:Unit 1E.5.-Unit 1E.5.
14. Masella A, Bartram A, Truszkowski J, Brown D, Neufeld J (2012) PANDAseq: Paired-end assembler for illumina sequences. *BMC Bioinformatics* 13(1):31.
15. Edgar RC (2010) Search and clustering orders of magnitude faster than BLAST. *Bioinformatics* 26(19):2460-2461.
16. Edgar RC, Haas BJ, Clemente JC, Quince C, Knight R (2011) UCHIME improves sensitivity and speed of chimera detection. *Bioinformatics* 27(16):2194-2200.
17. Turner S, Pryer KM, Miao VPW, Palmer JD (1999) Investigating deep phylogenetic relationships among cyanobacteria and plastids by small submit rRNA sequence analysis. *Journal of Eukaryotic Microbiology* 46(4):327-338.
18. Edgar RC (2004) Muscle: Multiple sequence alignment with high accuracy and high throughput. *Nucleic Acids Research* 32(5):1792-1797.
19. Ludwig W, Strunk O, Westram R, Richter L, Meier H, Yadhukumar, Buchner A, Lai T, Steppi S, Jobb G, Förster W, Brettske I, Gerber S, Ginhart AW, Gross O, Grumann S, Hermann S, Jost R, König A, Liss T, Lüßmann R, May M, Nonhoff B, Reichel B, Strehlow R, Stamatakis A, Stuckmann N, Vilbig A, Lenke M, Ludwig T, Bode A, Schleifer KH (2004) Arb: A software environment for sequence data. *Nucleic Acids Research* 32(4):1363-1371.
20. Ronquist F, Huelsenbeck JP (2003) MrBayes 3: Bayesian phylogenetic inference under mixed models. *Bioinformatics* 19(12):1572-1574.
21. Stoecker K, Daims H, Wagner M (2005) Fluorescence *in situ* hybridization for the detection of prokaryotes. *Molecular microbial ecology*, eds Osborn AMSmith CJ (Bios Advanced Methods), pp 213-239.

22. Amann RI, Binder BJ, Olson RJ, Chisholm SW, Devereux R, Stahl DA (1990) Combination of 16S rRNA-targeted oligonucleotide probes with flow cytometry for analyzing mixed microbial populations. *Appl Environ Microbiol* 56(6):1919-1925.
23. Daims H, Bruhl A, Amann R, Schleifer KH, Wagner M (1999) The domain-specific probe EUB338 is insufficient for the detection of all *Bacteria*: Development and evaluation of a more comprehensive probe set. *Syst Appl Microbiol* 22(3):434-444.
24. Wallner G, Amann R, Beisker W (1993) Optimizing fluorescent *in situ* hybridization with rRNA-targeted oligonucleotide probes for flow cytometric identification of microorganisms. *Cytometry* 14(2):136-143.
25. Stahl DA, Amann R (1991) Development and application of nucleic acid probes. *Nucleic acid techniques in bacterial systematics*, eds Stackebrandt EG, Goodfellow M (John Wiley & Sons Ltd., Chichester, New York), pp 205-248.
26. Zerbino DR, Birney E (2008) Velvet: Algorithms for *de novo* short read assembly using de Bruijn graphs. *Genome Research* 18(5):821-829.
27. Luo R, Liu B, Xie Y, Li Z, Huang W, Yuan J, He G, Chen Y, Pan Q, Liu Y, Tang J, Wu G, Zhang H, Shi Y, Liu Y, Yu C, Wang B, Lu Y, Han C, Cheung DW, Yiu S-M, Peng S, Xiaoqian Z, Liu G, Liao X, Li Y, Yang H, Wang J, Lam T-W, Wang J (2012) Soapdenovo2: An empirically improved memory-efficient short-read *de novo* assembler. *GigaScience* 1(1):18-18.