Data Sheet

GENERAL AUTOMATION LAB TECHNOLOGIES

Access the Human Gut Microbiome at Unprecedented Scale

High-throughput microbial isolation, cultivation and screening with Prospector

The Prospector™ system lets you grow thousands of individual microcolonies at the same time to quickly isolate, cultivate and screen the living microbiome.

Build large isolate libraries in a few months.

Prospector's microbial cultivation arrays pack the sampling power of 10s to 100s of culture dishes or 60 96-well plates. That takes your library generation time down from a few years to a few months.

Isolate rare and slow-growing microbes.

Individual microbes in samples self-sort into 6000+ nanoscale growth chambers. You can now cultivate rare and slow-growing microbes without worrying about fast-growing strains getting in the way.

Each Prospector microbial cultivation array replaces 100s of culture dishes or 96-well plates. Because they're about the size of a microscope slide, they also free up a lot of space in the lab. Individual microbes self-sort into 6109 nanoscale growth chambers when sample are loaded onto the array. Microcolonies incubate right on the deck, and Prospector fits into your anaerobic chamber.

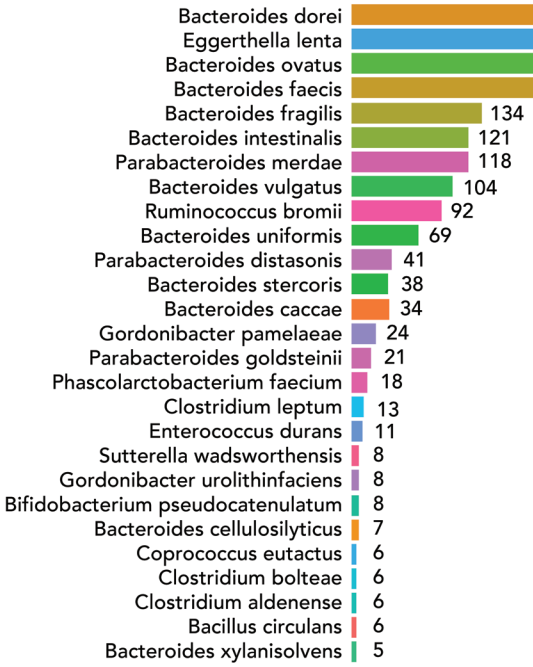
Integrated optics let you image clonal microcolonies quickly using fluorescent detection. Then just select the microbes you want Prospector to transfer from the array to a 96-well plate to use for downstream analysis like 16s rRNA Sanger sequencing or NGS.

Prospector microbial isolation and cultivation array

Prospector system

Microbial isolates from human gut microbiome

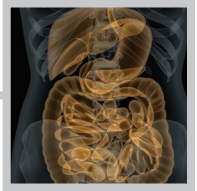
To decipher microbiome-related mechanisms such as how microbes interact with each other and with their host, or validate hypothesis being generated through metagenomics such as association of a microbiome with a particular disease, we need to be able to study the living strains. To do this requires the ability to isolate and cultivate individual organisms at a massive scale. Conventional culturing methods that use petri-dishes and broth culturing simply lack the throughput and workflow needed to generate microbiome-level insights. Prospector is an array-based platform that enables scientists to cultivate target microbes from complex samples such as human stool samples using a massively scalable, easy-to-use workflow.



Taxa less than N=5		
N=1	**N=2**	**N=3**
Akkermansia muciniphila	Alistipes indistinctus	Asaccharobacter celatus
Alistipes onderdonkii	Bifidobacterium longum	Clostridium citroniae
Bifidobacterium animalis	Christensenella minuta	Eggerthella sinensis
Bilophila wadsworthia	Clostridium hylemonae	Hungatella effluvii
Blautia coccoides	Escherichia/Shigella fergusonii	Lactobacillus paracasei
Clostridium scindens	Paraprevotella clara	
Coprococcus comes		
Dorea longicatena		
Gordonibacter faecihominis		
Lactonifactor longoviformis		
Staphylococcus epidermidis		

TABLE 1. Low abdudance HGM isolates occurring at less than N=5 isolated using the Prospector

2536 isolates identified at species level shown in this data set



Media tested:
GAM, BHI, BRU, PYGB, YCFAC

Cultivation of low-abundance isolates		
Isolate	**Prospector**	**Shotgun metagenomics**
Akkermansia muciniphila	1	0.02%
Bifidobacterium longum	2	0.88%
Bifidobacterium pseudocatenulatum	8	0.71%
Clostridium boltae	6	0.02%
Lactobacillus paracasei	3	0.05%
Clostridium scindens	1	<0.01%

TABLE 2. Shot gun metagenomics relative abundance data for a sampling of isolates that were identified as rare species by the Prospector

FIGURE 1. Isolates are from 7 human stool samples. Samples were incubated for 16 -136 hours on Prospector microbial isolation and cultivation arrays at 37°C under anaerobic conditions. 16s rRNA Sanger sequencing used for identification.

For more information please visit www.galt-inc.com