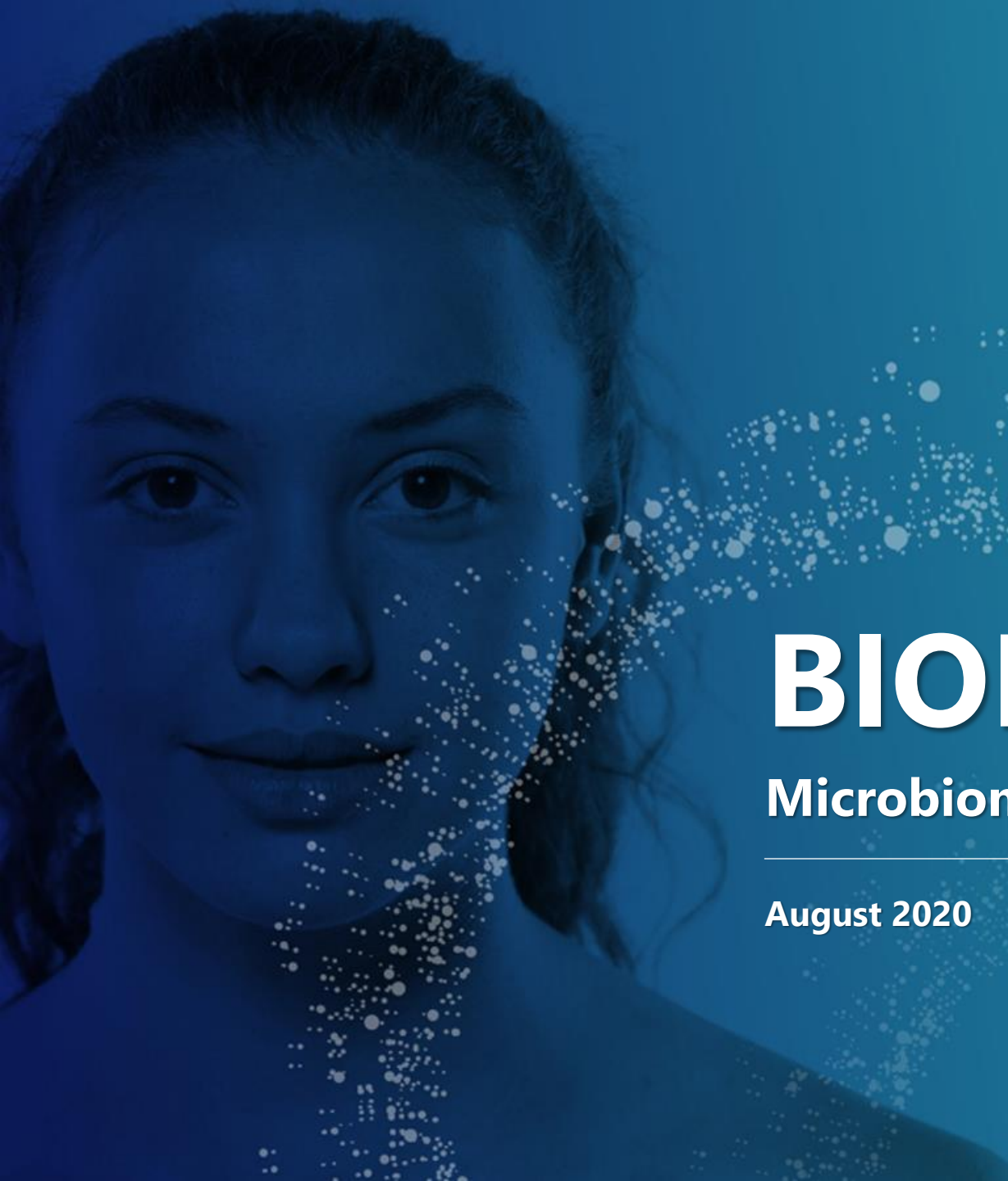




BIOMICA

Microbiome-Empowered Therapeutics

August 2020

Forward Looking Statement

This presentation contains "forward-looking statements" relating to future events, and we may from time to time make other statements, regarding our outlook or expectations for future financial or operating results and/or other matters regarding or affecting Evogene Ltd. or its subsidiaries, including Biomica Ltd. ("Biomica") (collectively, "Evogene" or "we"), that are considered "forward-looking statements" as defined in the U.S. Private Securities Litigation Reform Act of 1995 (the "PSLRA") and other securities laws. Such forward-looking statements may be identified by the use of such words as "believe," "expect," "anticipate," "should," "planned," "estimated," "intend" and "potential" or words of similar meaning. For these statements, Biomica claims the protection of the safe harbor for forward-looking statements contained in the PSLRA and other securities laws.

Such statements are based on current expectations, estimates, projections and assumptions, describe opinions about future events, involve certain risks and uncertainties which are difficult to predict and are not guarantees of future performance. Therefore, actual future results, performance or achievements, and trends in the future of Biomica and Evogene may differ materially from what is expressed or implied by such forward-looking statements due to a variety of factors, many of which are beyond Biomica's and Evogene's control, including, without limitation, those described in greater detail in Evogene's Annual Report on Form 20-F and in other information it files and furnishes with the Israel Securities Authority and the U.S. Securities and Exchange Commission, including those factors under the heading "Risk Factors."

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HIGHLIGHTS

Mission

Developing innovative microbiome-based therapeutics

Emerging biopharmaceutical company

Focus

Treatment of immune-mediated and infectious diseases:

- Immuno-Oncology
- Gastrointestinal (GI) related disorders
- Antimicrobial resistance (AMR)

Pipeline

Enabled by a unique computational predictive biology platform (combining 'Big-Data' & Artificial Intelligence technologies)

Founded Israel, 2017

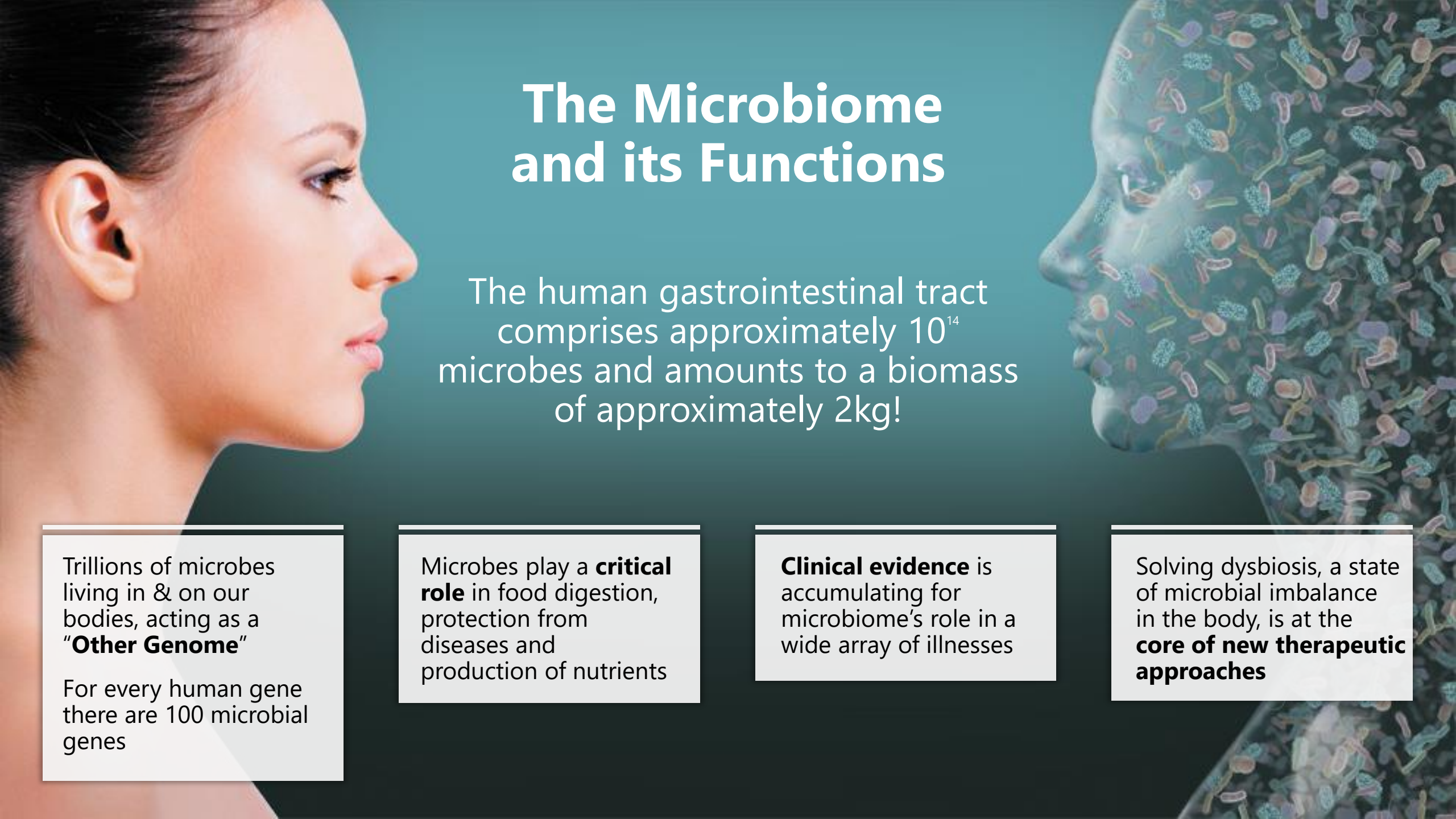


evogene
DECODING BIOLOGY

Subsidiary of Evogene Ltd.
(NASDAQ, TASE: EVGN)

A pioneer in the field of
applied computational
predictive biology

Holds Approx. 90%



The Microbiome and its Functions

The human gastrointestinal tract comprises approximately 10^{14} microbes and amounts to a biomass of approximately 2kg!

Trillions of microbes living in & on our bodies, acting as a "**Other Genome**"

For every human gene there are 100 microbial genes

Microbes play a **critical role** in food digestion, protection from diseases and production of nutrients

Clinical evidence is accumulating for microbiome's role in a wide array of illnesses

Solving dysbiosis, a state of microbial imbalance in the body, is at the **core of new therapeutic approaches**

Market Landscape

↑ Rapid growing industry

2024

70%
CAGR

Multi \$Bn
market opportunity

> \$4Bn
invested in microbiome
companies since 2014

2018

A record
in Microbiome investment levels are
set in 2017 & 2018, and growing

Key Drivers

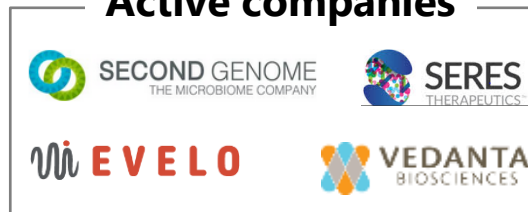
Big Pharma



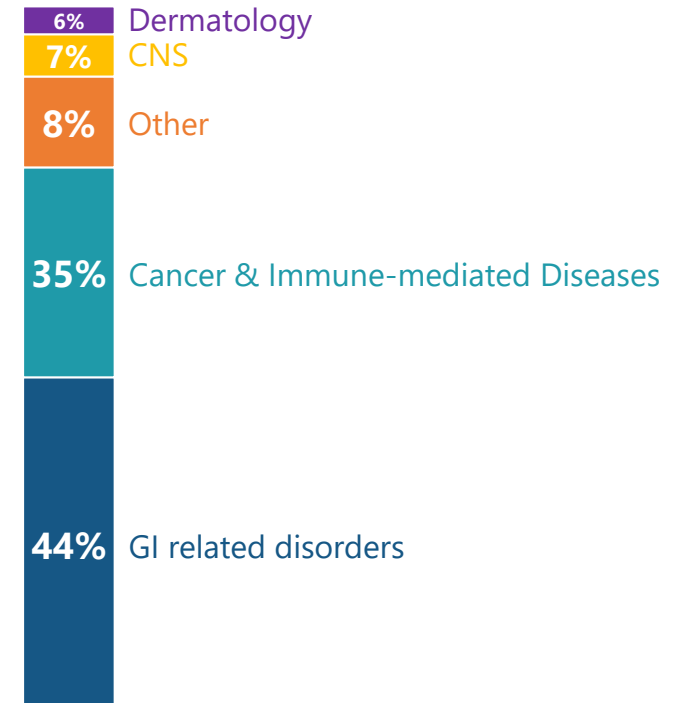
Prominent VCs



Active companies



Current areas of focus



Most candidates are still in the
discovery & preclinical stages;
few are in clinical stage (Ph. II/III)

Sources:
BCC Research (2017) – Human Microbiome-based Drugs and Diagnostics Market SVB – Emerging Healthcare: Microbiome Investment Trends Aug 2017)
<https://www.microbiometimes.com/the-microbiome-biotech-landscape-an-analysis-of-the-pharmaceutical-pipeline/>

Big Biopharma is Investing More Through Partnerships



2014-2020: Immuno-Oncology, Inflammatory Bowel Disease (UC, CD), Obesity and Diabetes, C. diff

Biomica's Mission and Focus

Discovery and development of novel therapies
for microbiome-related human disorders using
computational predictive biology

The Challenge

Microbiome space is Big-Data driven

Multi-OMICS big-data & clinical meta-data needed for addressing specific biological questions

How to cope with enormous amount of information?

⋮
The common practice:
The biological (trial and error) approach

⋮
It has 2 disadvantages:

A needle
in a
haystack...



Guessing
the lottery
numbers

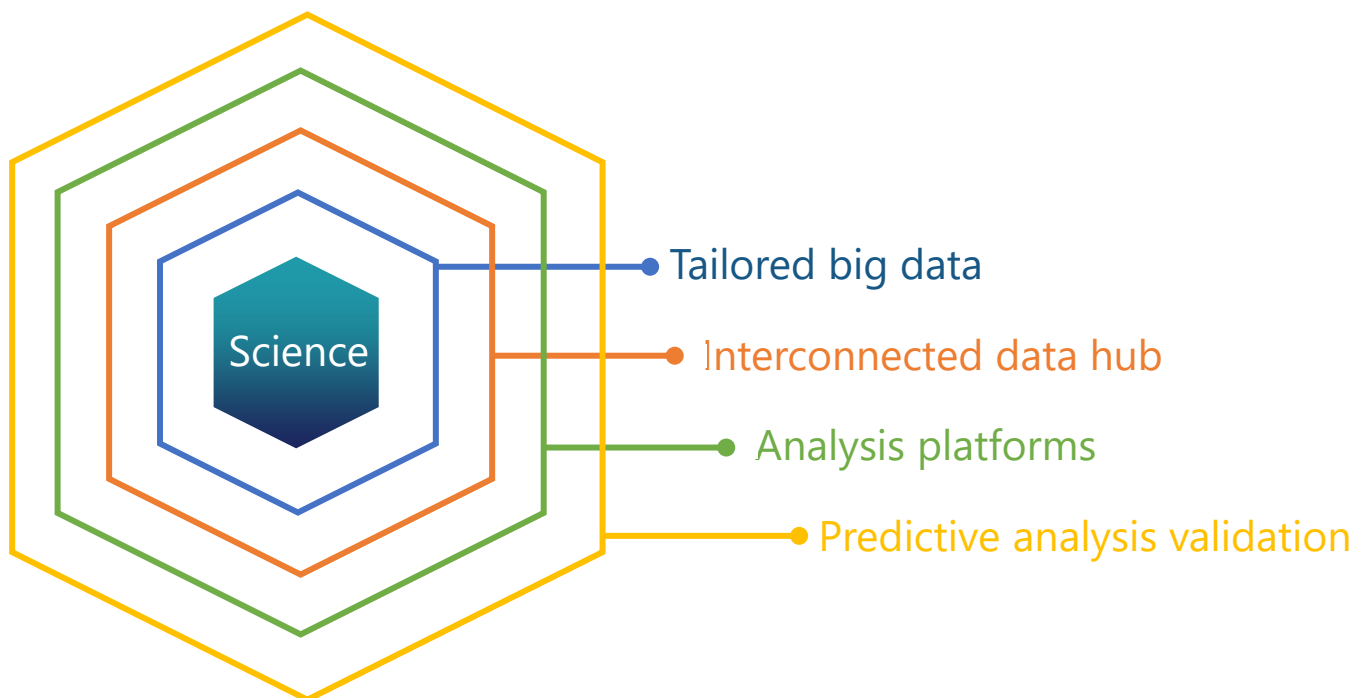
The Competitive Edge

Our computational technologies enable data integration, analysis & prediction

Databases generated via data integration capabilities



Proprietary Computational Predictive Biology (**CPB**) platform, utilized to mine data



Proven Success of the CPB Platform's Predictions

Evogene's CPB platform was developed over the last decade at an investment of tens of millions of dollars and validated through repeated-collaborations with industrial leaders

Innovation

Herbicidal targets

Bio-insecticides

Bio-fungicides

Bio-stimulants

Herbicidal compounds



Collaboration

Strategic collaborations with world-leading companies over the years

MONSANTO



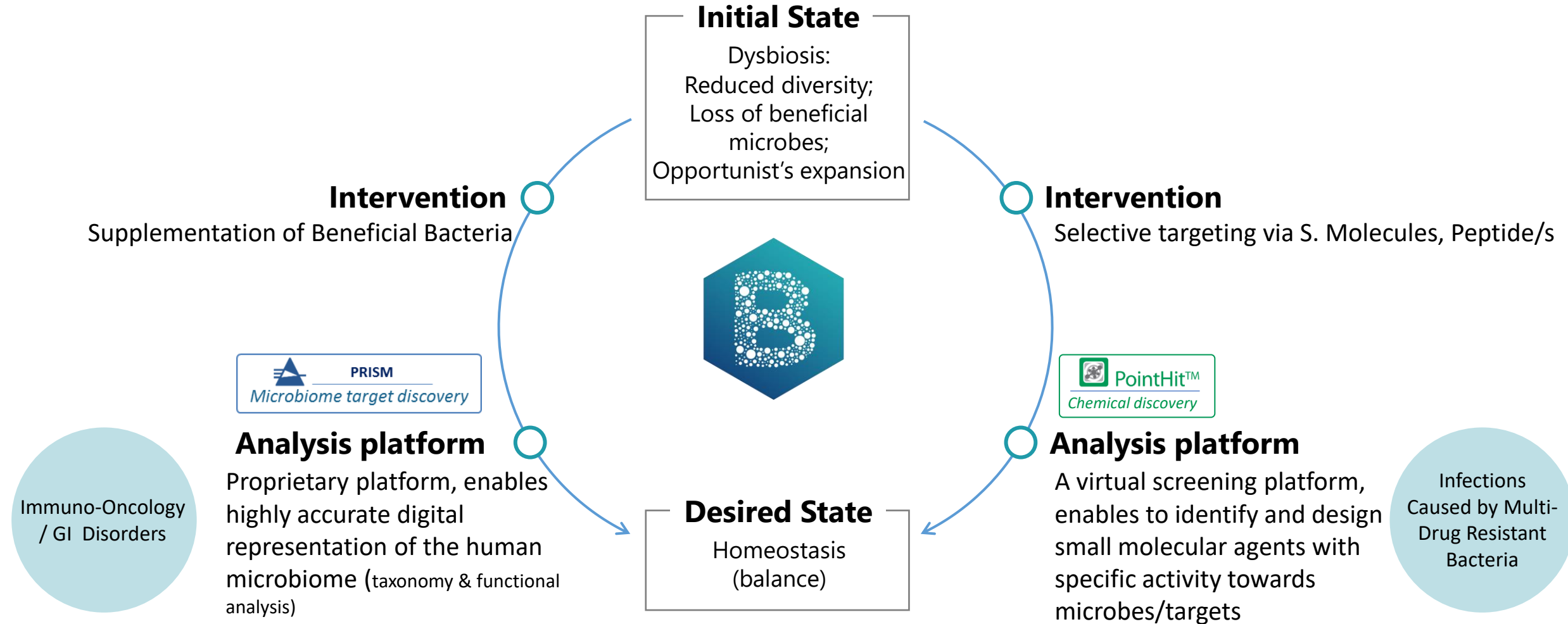
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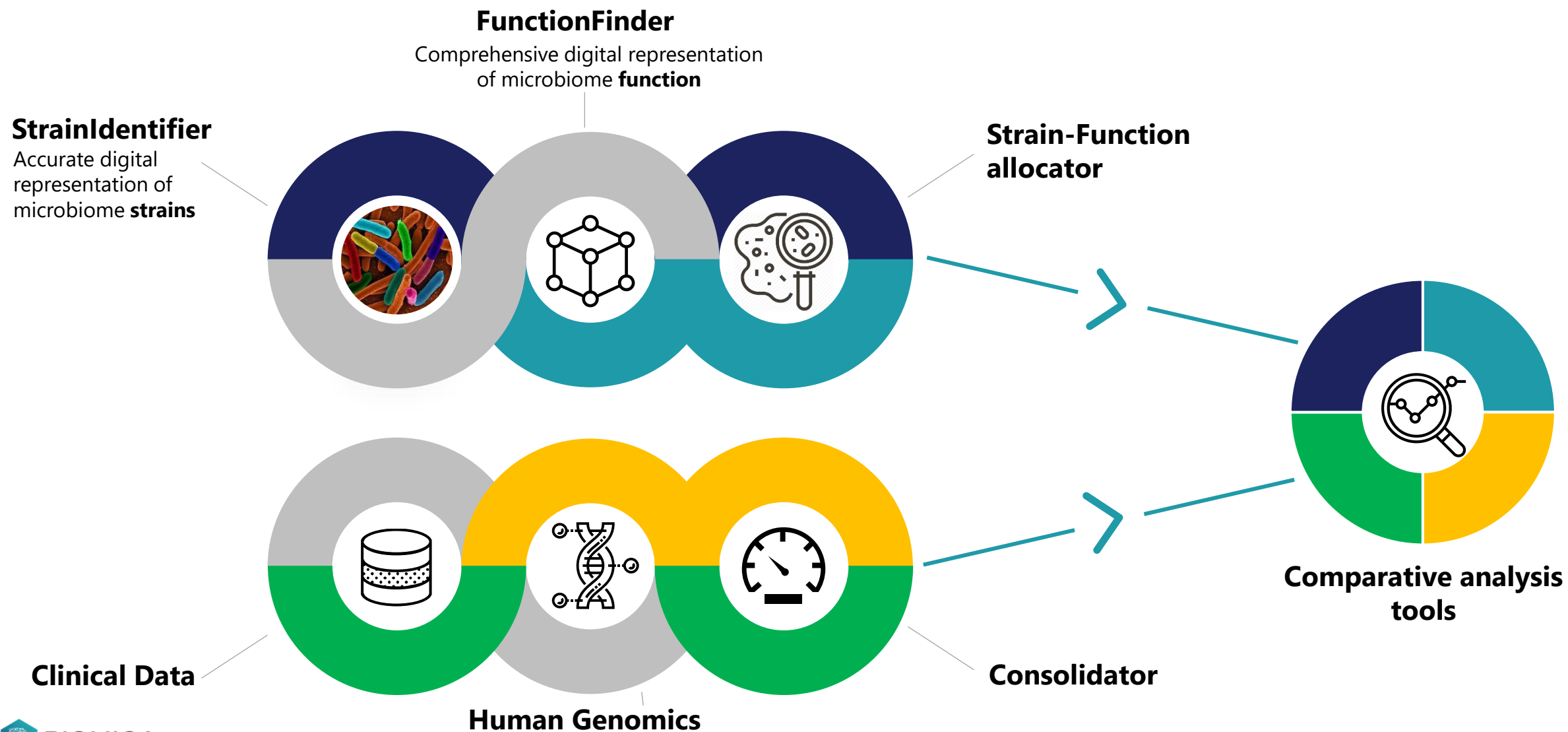
syngenta



Scientific Approach



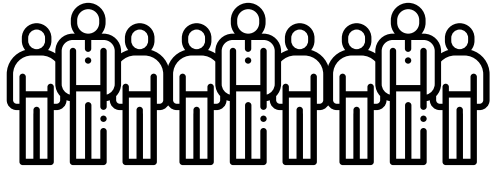
PRISM - Platform Capabilities



Example 1

Superior Digital Representation of Metagenomics Functions

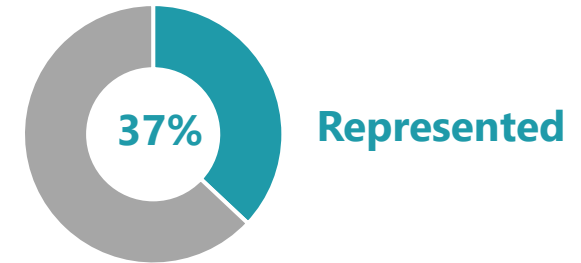
92 IBD* and non-IBD individuals



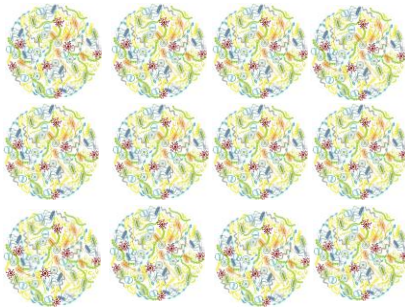
Public functions catalog



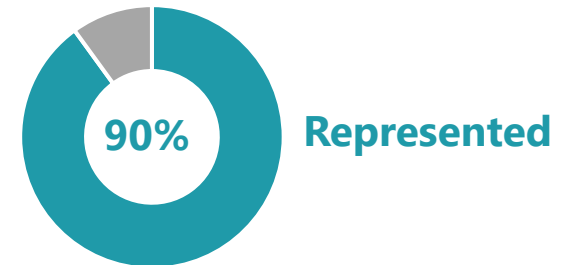
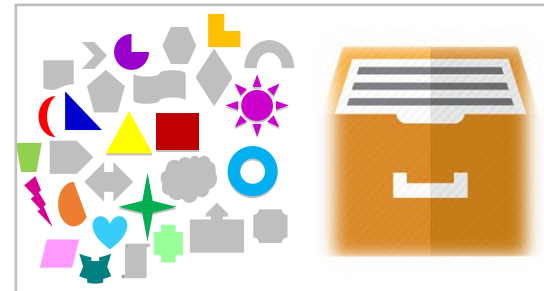
% of sample functions represented



206 stool samples



Proprietary functions catalog

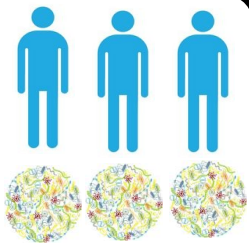


Biomica proprietary computational function catalog enables comprehensive representation of human gut microbiome (3X more than state of the art public tools)

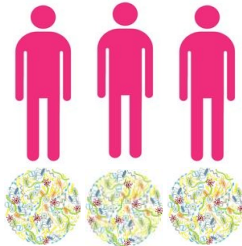
Example 2

Higher Resolution - Using Proprietary Representation to Separate IBD and non-IBD Samples

30 non-IBD individuals



43 IBD individuals



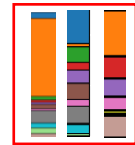
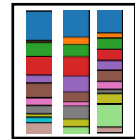
State-of-the-art public tool



PRISM

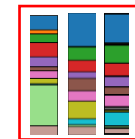
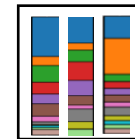
Abundance profile

* Non-IBD

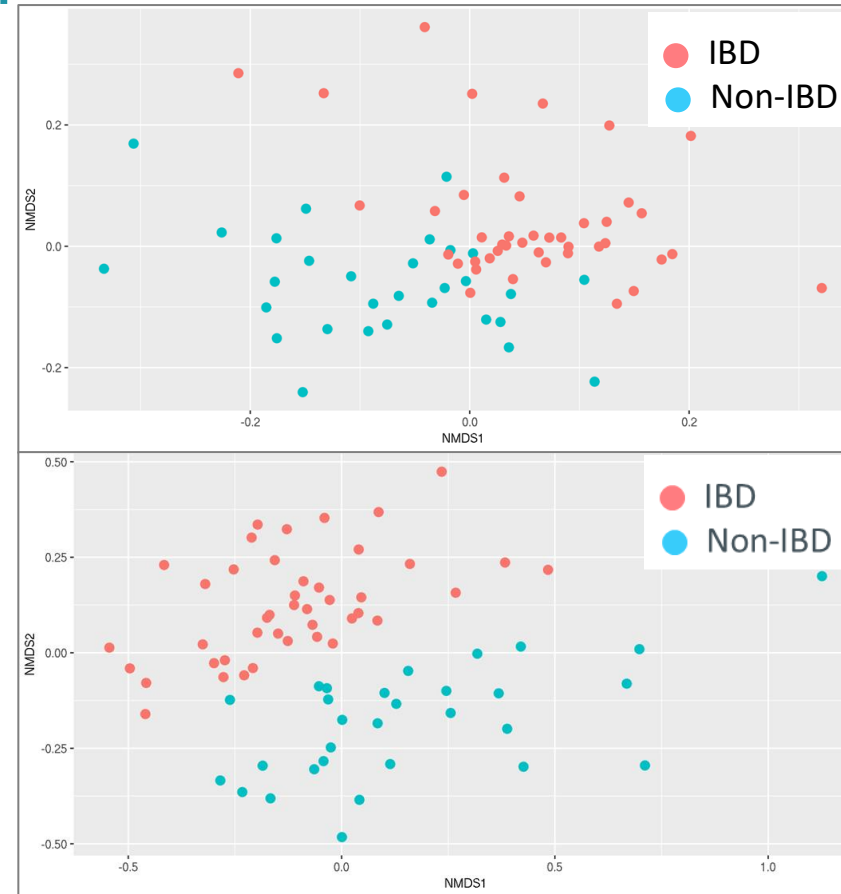


IBD

* Non-IBD



IBD



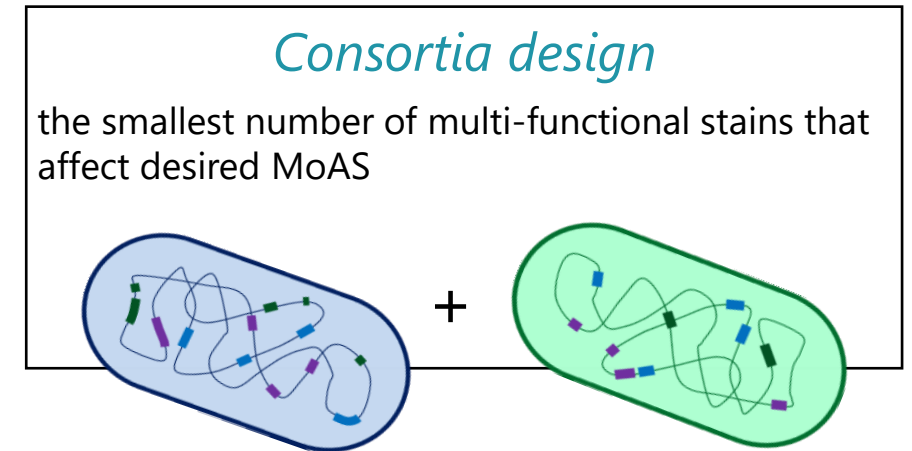
* illustration figure

Improved resolution yields better separation of samples based on clinical aspects

Microbial Functions-Based Drug Design

Rationally Designed Microbial Consortium based on Functions* composition addressing key MoAs**

- Utilizing **PRISM** High-Res. Functional analysis to explore microbial **functional profiles associated with clinical features**
- Identify functions linked **to mechanistic underlying cause of the disorder**
- Computational identification of **strains that contribute the most** to the function of interest
- Choose strains that **affect multiple MoAs through several different functions**
- Considering **host-microbe and microbe-microbe interactions**



* *Function* -

Genetic elements (e.g. genes, operons, pathway, plasmids) and/ or their biosynthetic products (e.g. metabolites, proteins, enzymes)

Biomica's Edge

Our computational platform is capable of **unprecedented high-resolution** microbiome analysis

Pioneers in the field of **functional microbiome analysis**, leading innovative technology

Minimum Microbial Strains

Maximum Relevant Functions

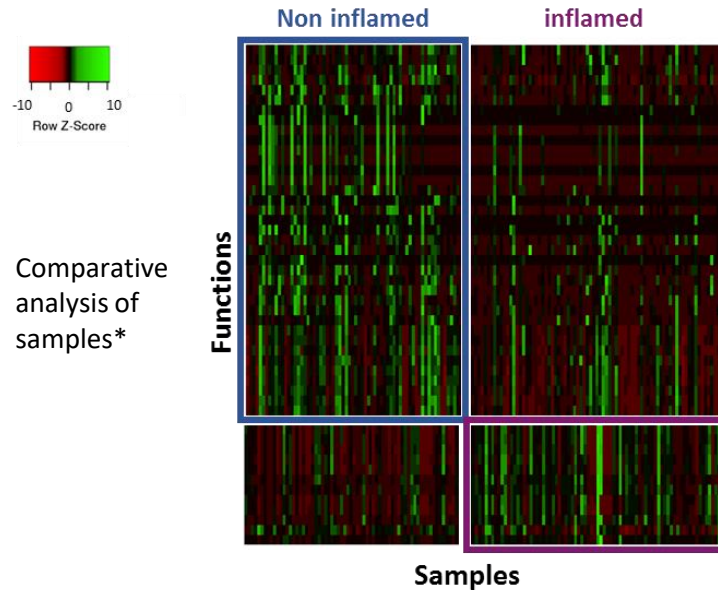
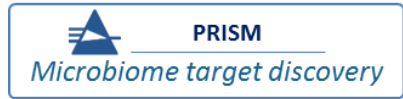
Maximal Therapeutic Impact

Advantages of our approach Vs. others in the field:

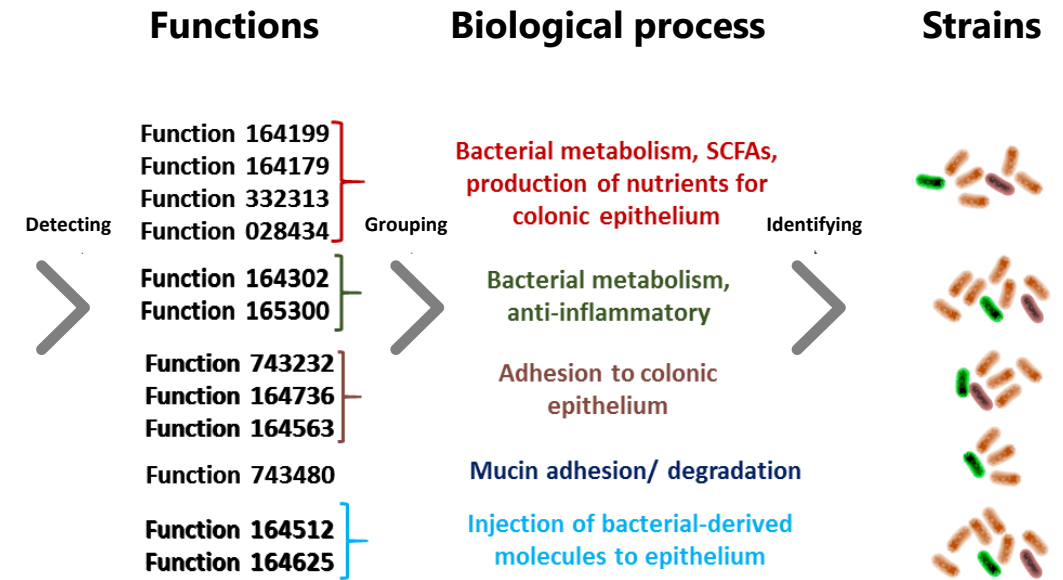
- Fecal Microbiota Transplant (FMT): Collection of 10,000s entities, no QC
- Single-strain method: We bring higher efficiency due to multiple MoAs
- Other multi-strain rationally-designed LBPs: We optimize consortium for better efficacy with less adverse effects (due to fewer & carefully selected entities)

Overview of the Discovery Process

Case Study: BMC321- Novel anti-inflammatory bacterial drug candidate

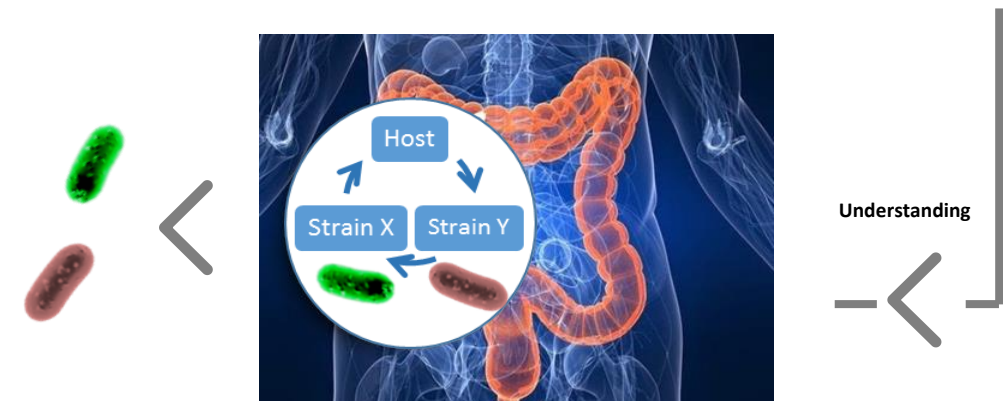


Comparative analysis of samples*



BMC321:

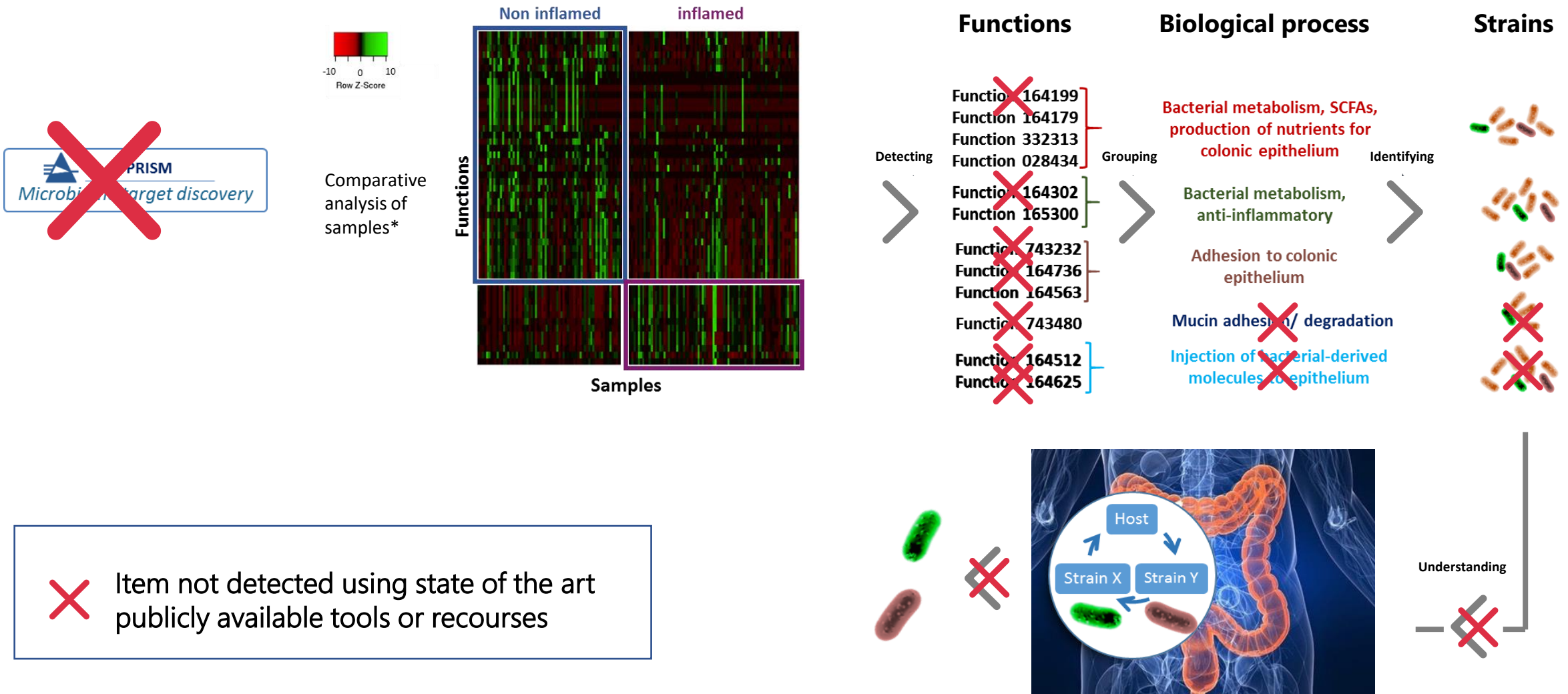
Two specific strains were identified to carry out the relevant **anti-inflammatory** functions.
The combination of the two are the basis for our drug candidate for the treatment of Crohn's Disease



*Analysis of more than 400 samples from Crohn's Disease patients

Overview of the Discovery Process

Case Study: BMC321- Novel anti-inflammatory bacterial drug candidate



*Analysis of more than 400 samples from Crohn's Disease patients

Biomica's Discovery Pipeline

	Program	Indication / Target	Discovery	Preclinical	Phase 1	Phase 2	Approach
Immuno-oncology (with ICI*)	BMC121	Combination Therapy for NSCLC**					
	BMC127	Combination Therapy for NSCLC					
GI related disorders	BMC321	IBD					
	BMC322	IBD					
	BMC426	IBS					
Antimicrobial resistance (AMR***)	BMC202	C. difficile toxin-B					

In the AMR Program, Biomica has a collaboration with Nobel Prize Laureate Prof. Ada Yonath at Weizmann Institute of Science to develop a selective treatment against MRSA

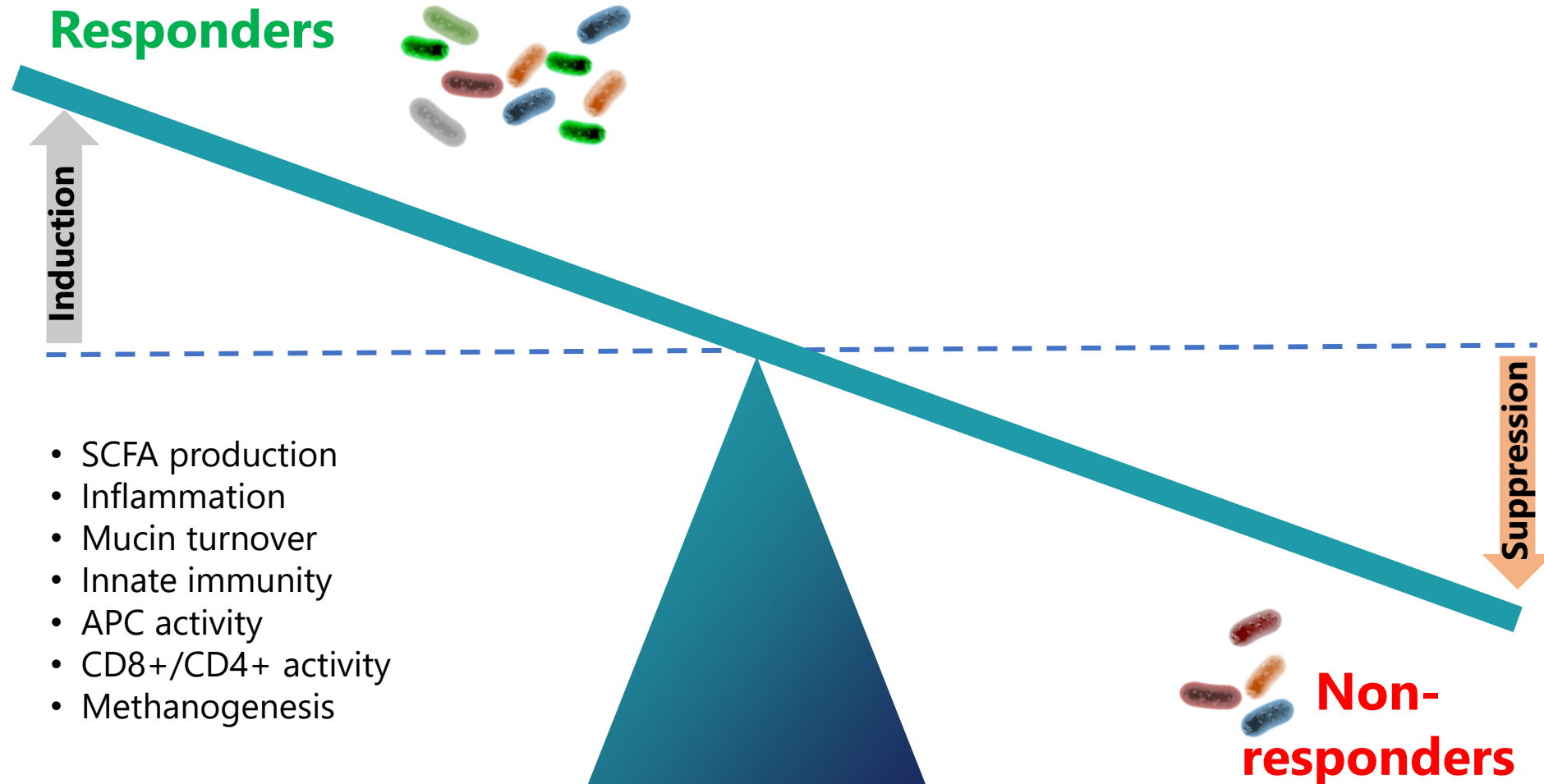


Live Biotherapeutics



Small-molecule

Response to Immunotherapy is Modulated Through Specific Bacterial Functions



Fecal Microbiota Transplantation (FMT) and re-Induction of anti-PD-1 Therapy in Refractory Patients - POC

AAAS [Become a Member](#)

Science

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Clinical studies are testing whether cancer immunotherapy drugs work better when patients receive a fecal transplant. JEFF MCINTOSH/THE CANADIAN PRESS/AP PHOTO

Fecal transplants could help patients on cancer immunotherapy drugs

By Jocelyn Kaiser | Apr. 5, 2019, 1:45 PM

“...Now, another potential therapy is being tested in clinical studies: fecal transplants. Early results from two groups described at the annual meeting of the American Association for Cancer Research (AACR) here this week suggest some patients who initially did not benefit from immunotherapy drugs saw their tumors stop growing or even shrink after receiving a stool sample from patients for whom the drugs worked...”

“...One unresolved question is exactly which microbes help ramp up the desired immune activity...”

1 | Cancer Immunotherapy - Combination Therapy

Initial Focus on Lung Cancer (NSCLC)

- Non-small cell lung cancer (NSCLC) is the leading cause of cancer-related mortality worldwide
- Current solutions reach only an average of **17%-20%** overall response rate



Biomica aims to improve clinical response of ICI through immunomodulating combination therapy

BMC121 & BMC127

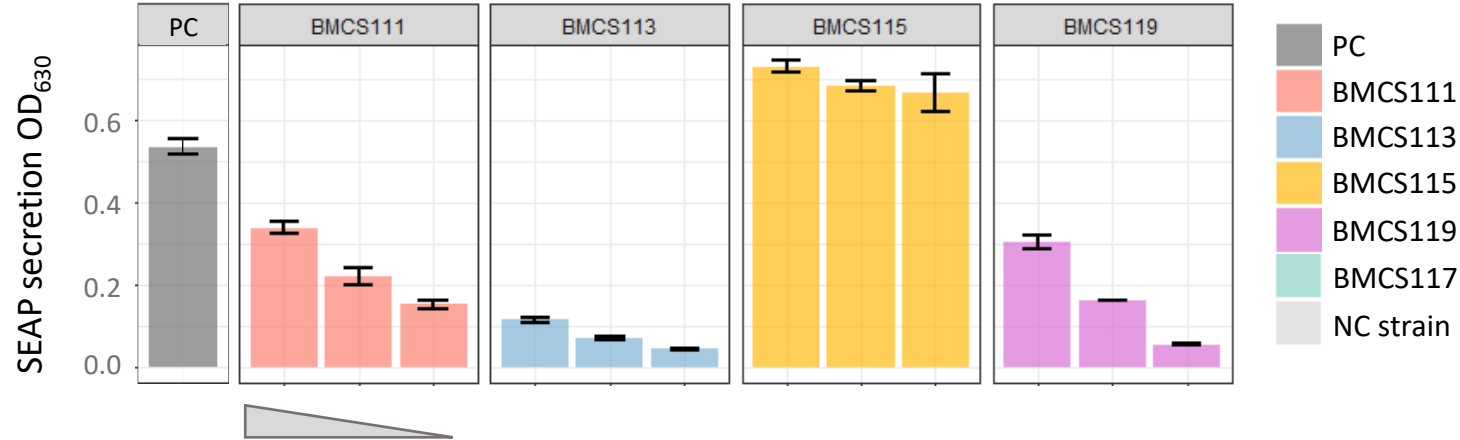
Rationally designed consortia aimed to facilitate anti-tumor activity in combination with ICI

- Orally administered capsule, comprised of 4 bacterial strains each, detected through Biomica's proprietary computational functional genomic analysis platform
- Strains were selected based on specific functional capabilities and their immuno-stimulatory potential
- The combination of 4 different microbial strains in a consortium is aimed to achieve effective immune activation through several underlying and complementary mechanisms

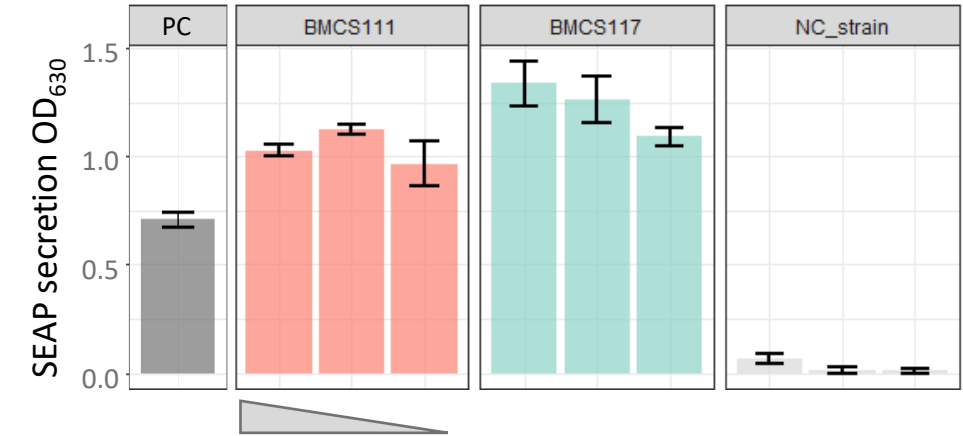
Consortium	Microorganism	Microbial component / function					Host response					Interactions with other microorganisms		
		Cell envelope component	SCFA production	Lactate production	Flagella	Mucin degradation	Dendritic cell activation and Th1 response	CD4/8 activation	NF-κB activation	TLR activation	TNFα	Gut health	Consortium members	General gut residents
BMC121	BMCS111													
	BMCS114													
	BMCS115													
	BMCS117													

Components of BMC121 & BMC 127 induce immune response through multiple MoAs* *in vitro*

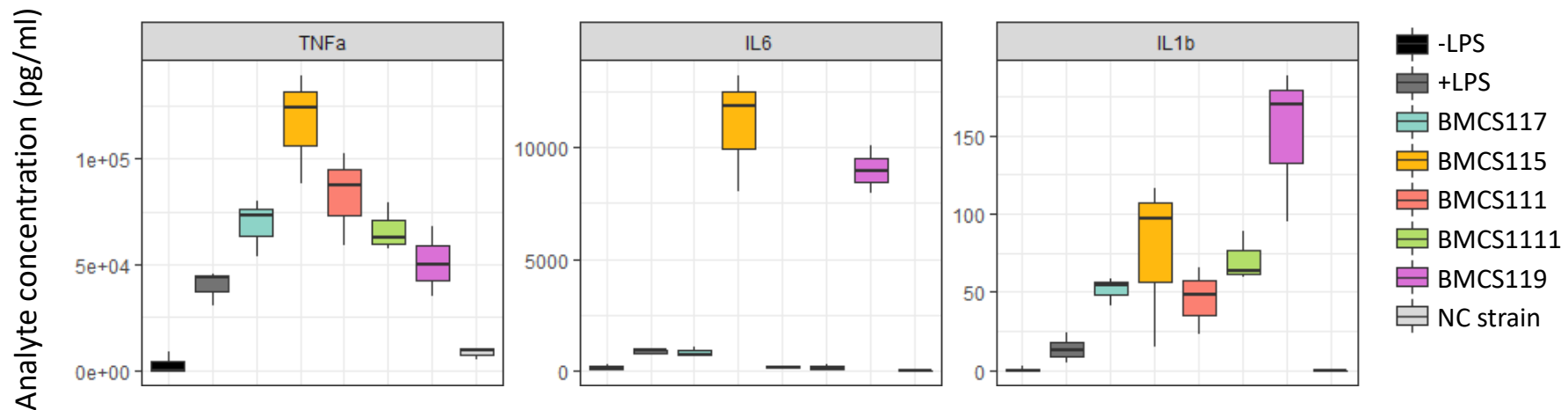
TLR4 activation by bacterial strains



TLR2 activation by bacterial strains

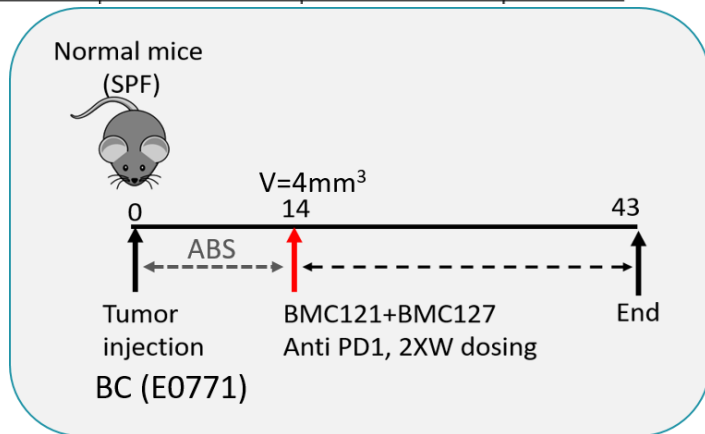
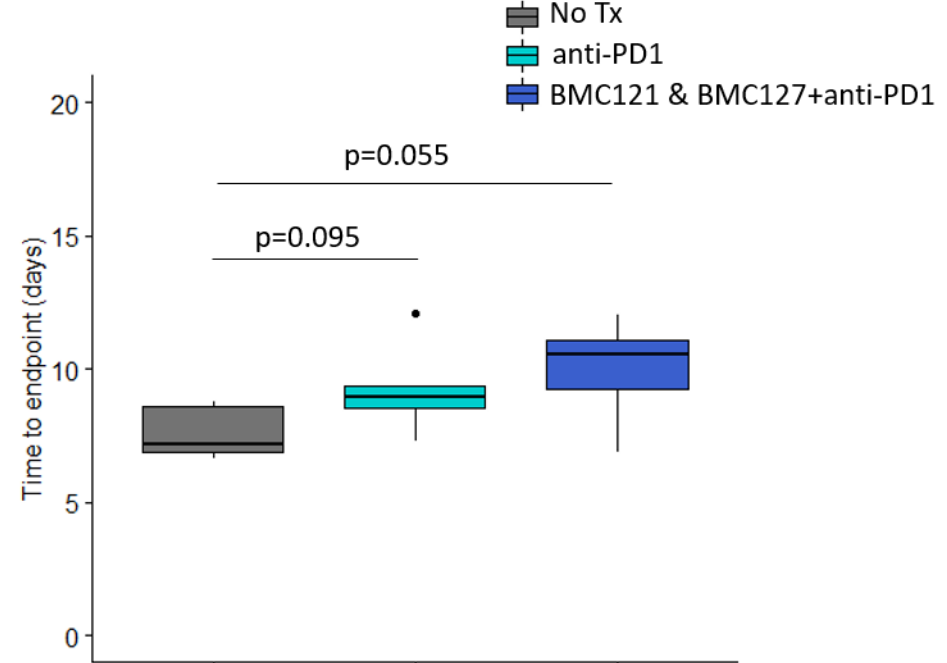
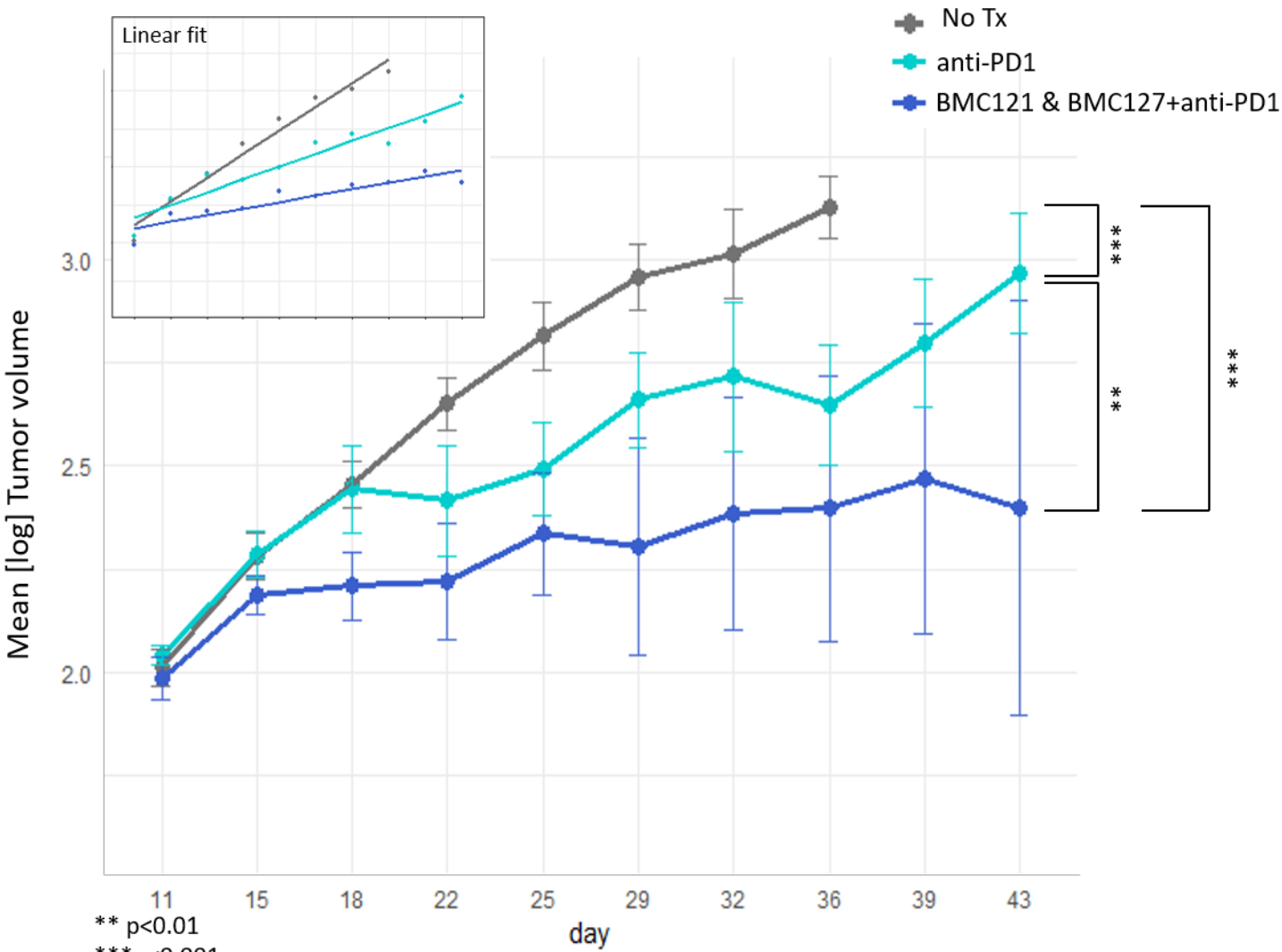


RAW 264.7 macrophages cytokines secretion

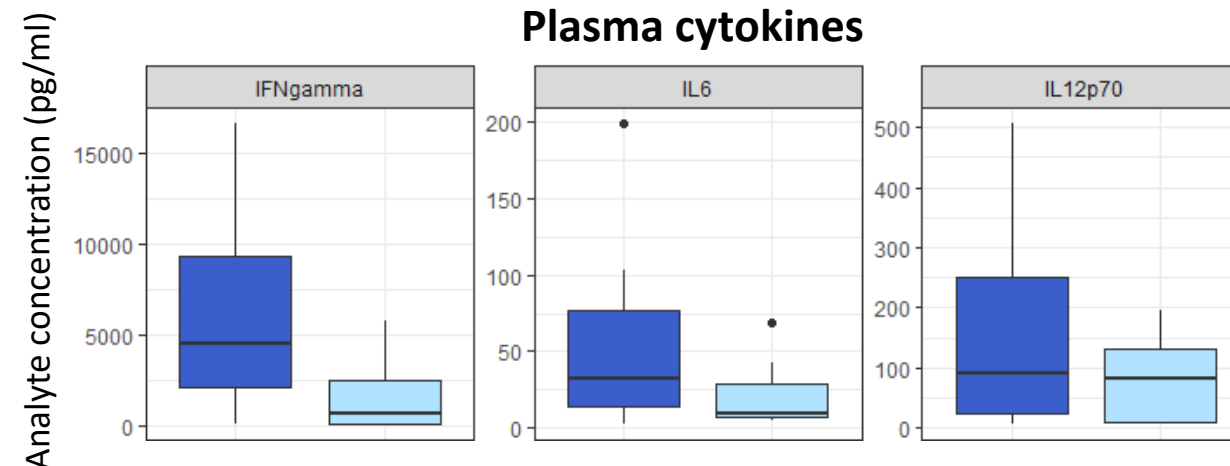
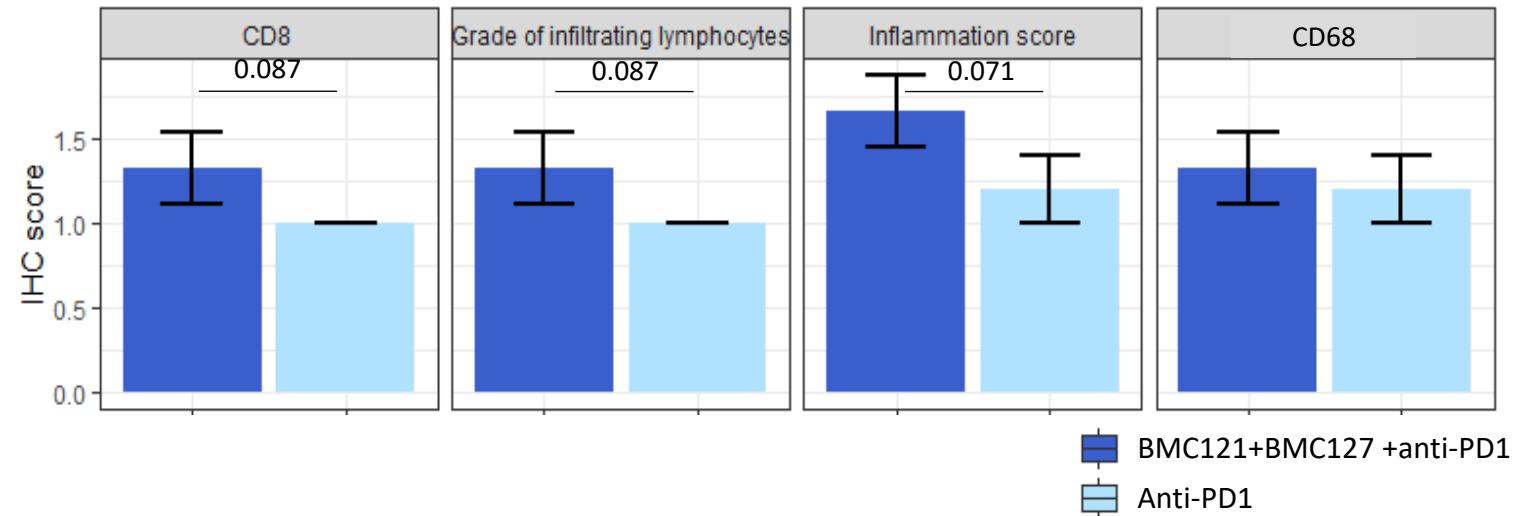
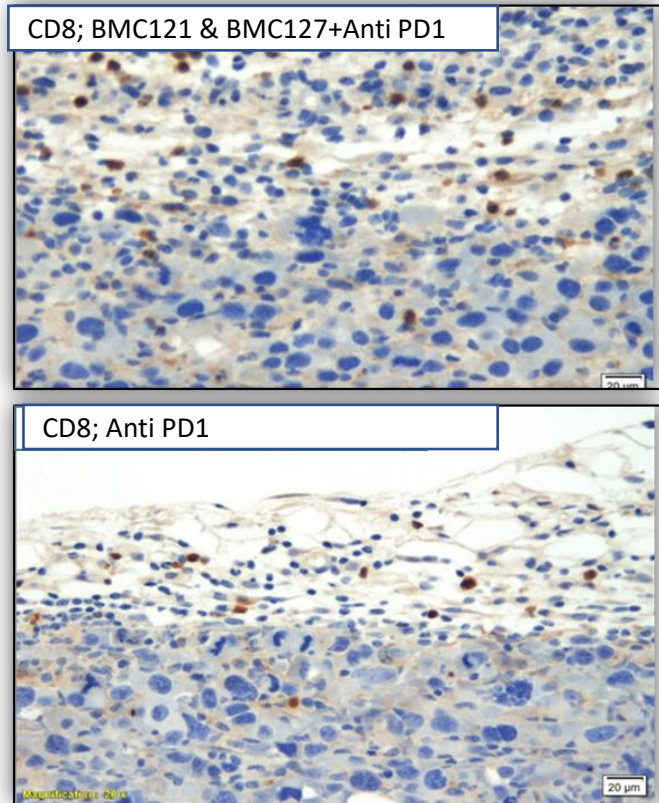


BMC121 & BMC127 potentiate the effect of anti-PD1 therapy *in vivo*

Mean Tumor Volume and Time To Endpoint significantly improved



BMC121 & BMC127 increase anti-tumor immune response & pro-inflammatory cytokines production



Summary of In-Vivo Results:

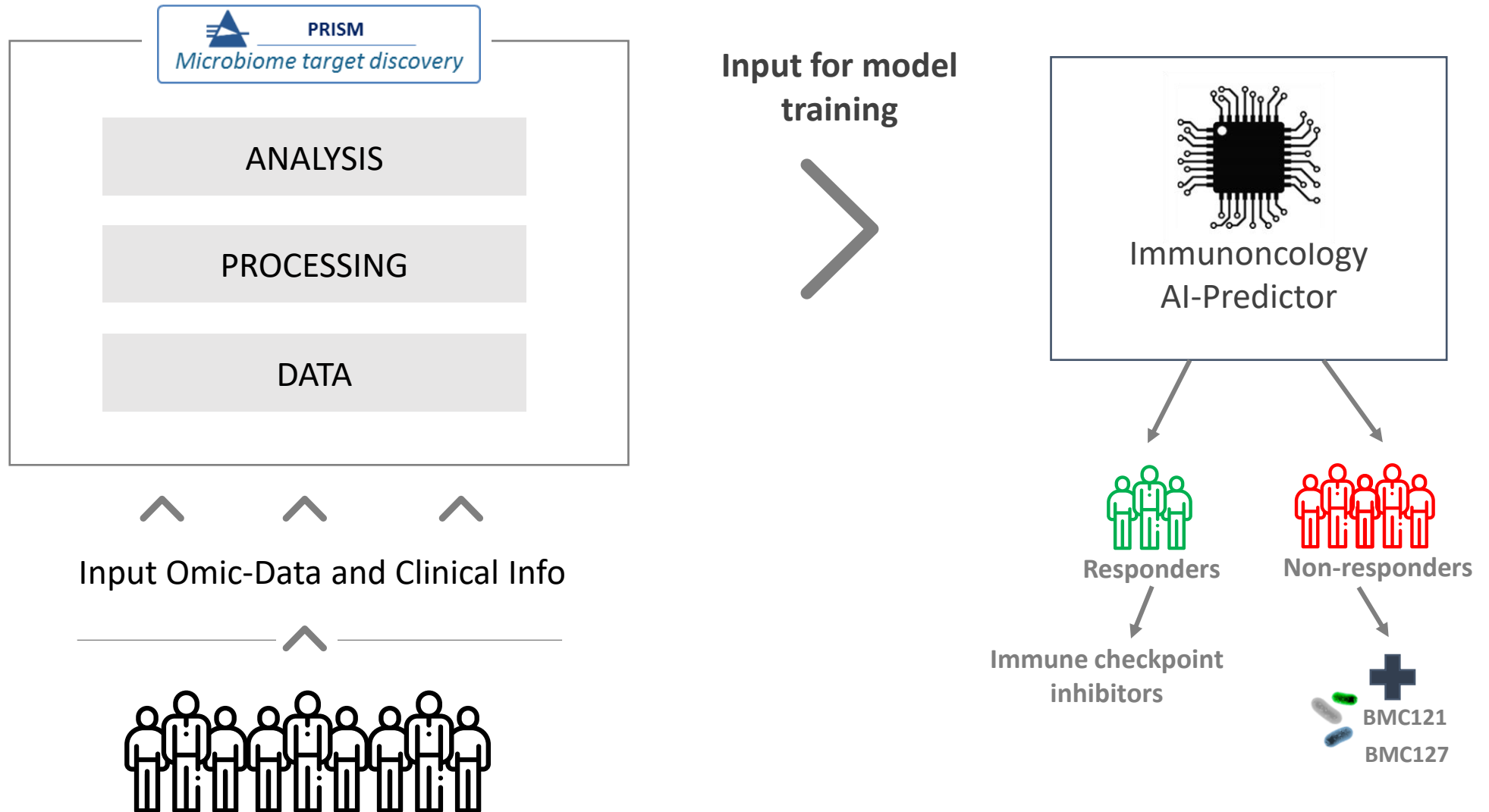
BMC121 & BMC127 potentiate the effect of anti-PD1 therapy

Preliminary pre-clinical results demonstrated an improved anti-tumor activity:

- Increased overall response-rate compared with anti-PD1 alone (20% increase)
- Increased Tumor Growth Inhibition (%TGI) compared with anti-PD1 alone (46% vs 22%)
- Increased antitumor immune response observed in:
 - Higher infiltrating lymphocytes
 - Higher infiltrating CD-8 T cells
 - Higher intra-tumor inflammation
 - Increased pro-inflammatory cytokines in circulation

Predictor of Patients' Response to ICI

Utilizing AI and PRISM-generated high-res microbiome profiles



2 | GI Related Disorders

IBS & IBD

Irritable Bowel Syndrome (IBS)*

A common intestinal functional disorder, group of symptoms:

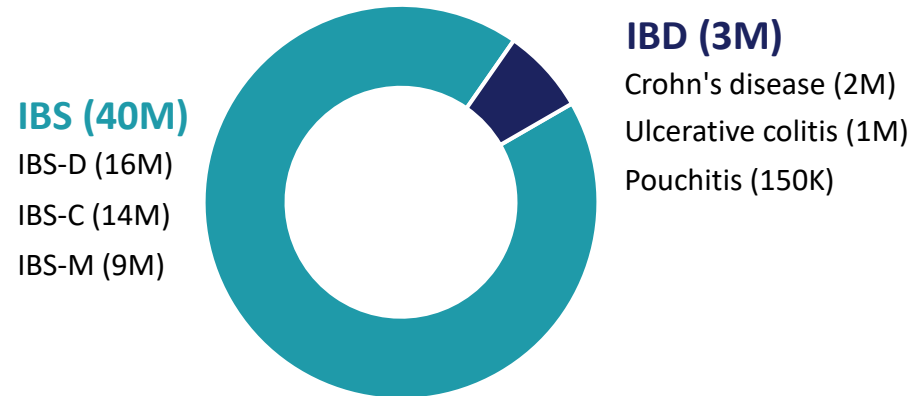
- Abdominal Pain
- Constipation or Diarrhea
- Bloating, Gas & Diarrhea

**In collaboration with The University of North Carolina (UNC) at Chapel Hill*

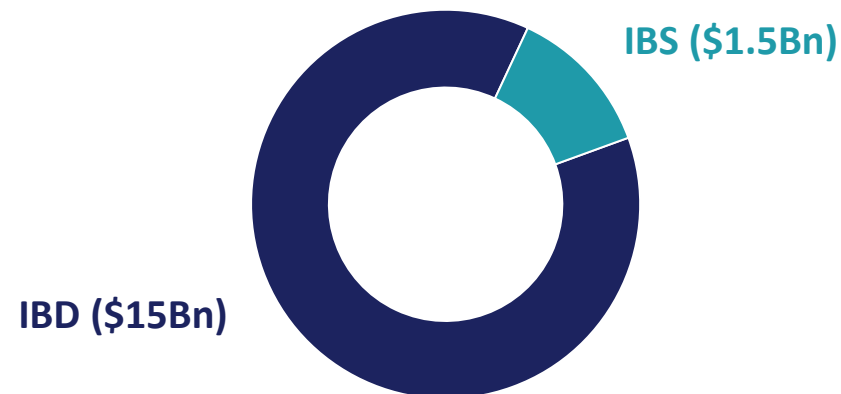
Inflammatory Bowel Disease (IBD)

A group of inflammatory conditions of the colon and small intestine (Crohn's disease, Ulcerative colitis & Pouchitis)

Approximate number of patients: 43M



Approximate market size (USD)

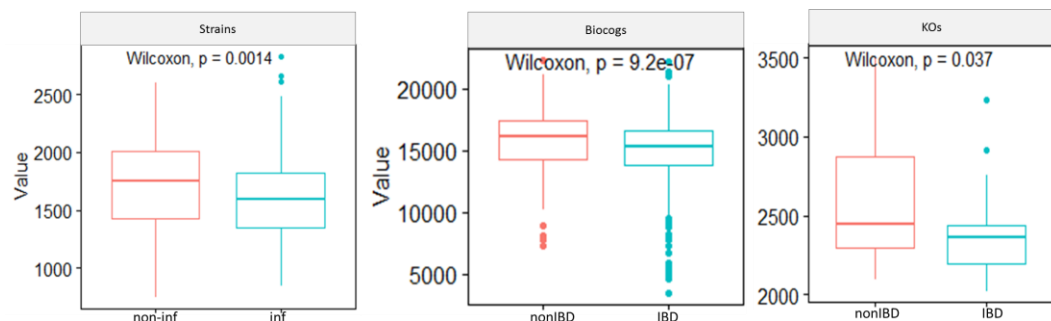


Both clearly related to the microbiome

Biomica pushes the barriers posed by existing therapies by addressing the underlying cause of the disorder, rather than the symptoms

Established Role for Microbiome in IBD Etiology

A state of inflammation is associated with reduced richness of microbial taxa and functions



Roles for Intestinal Bacteria, Viruses, and Fungi in Pathogenesis of Inflammatory Bowel Diseases and Therapeutic Approaches

R. Balfour Sartor^{1,*} and Gary D. Wu^{2,*}

¹Departments of Medicine, Microbiology & Immunology, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599

²Division of Gastroenterology, Perelman School of Medicine, the University of Pennsylvania, Philadelphia, PA 19104

Gastroenterology. 2017 February

Therapeutic Manipulation of the Microbiome in IBD: Current Results and Future Approaches

Jonathan J. Hansen, M.D., Ph.D.¹ and R. Balfour Sartor, M.D.²

Jonathan J. Hansen: jjhansen@med.unc.edu; R. Balfour Sartor: rbs@med.unc.edu

Curr Treat Options Gastroenterol. 2015 March

BMC321 & BMC322

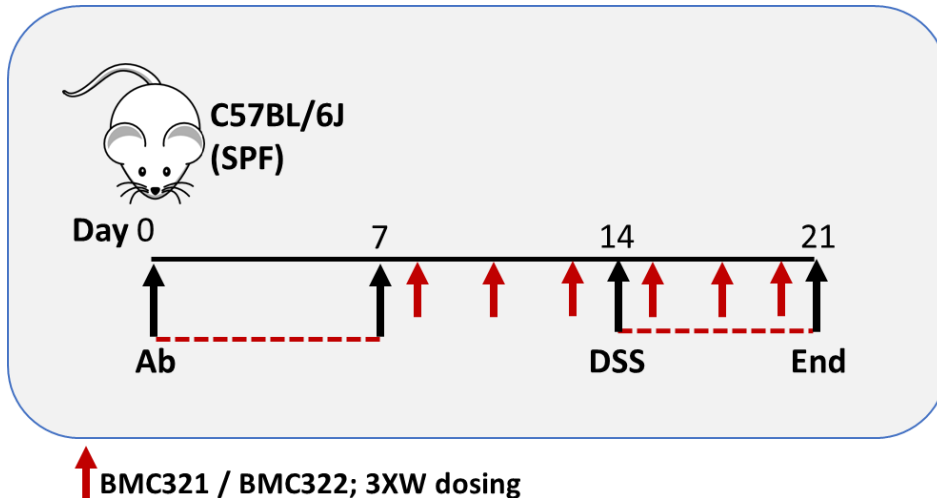
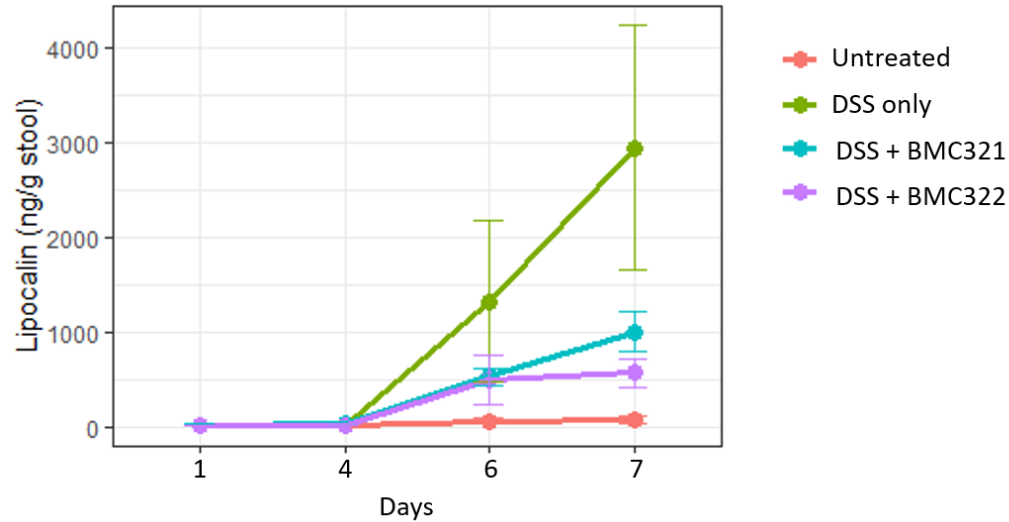
Rationally designed consortia aimed to reduce inflammation for the treatment of IBD

- Orally administered capsule, comprised of 4 bacterial strains each, detected through Biomica's proprietary computational functional genomic analysis platform
- Strains were selected based on their anti-inflammatory functions targeting both immunocytes and intestinal mucosal cells
- The combination of 4 different microbial strains in a consortium is aimed to effectively attenuate inflammation through several complementary mechanisms
- Support growth and metabolism of other consortium members and the growth of additional favorable gut resident bacteria

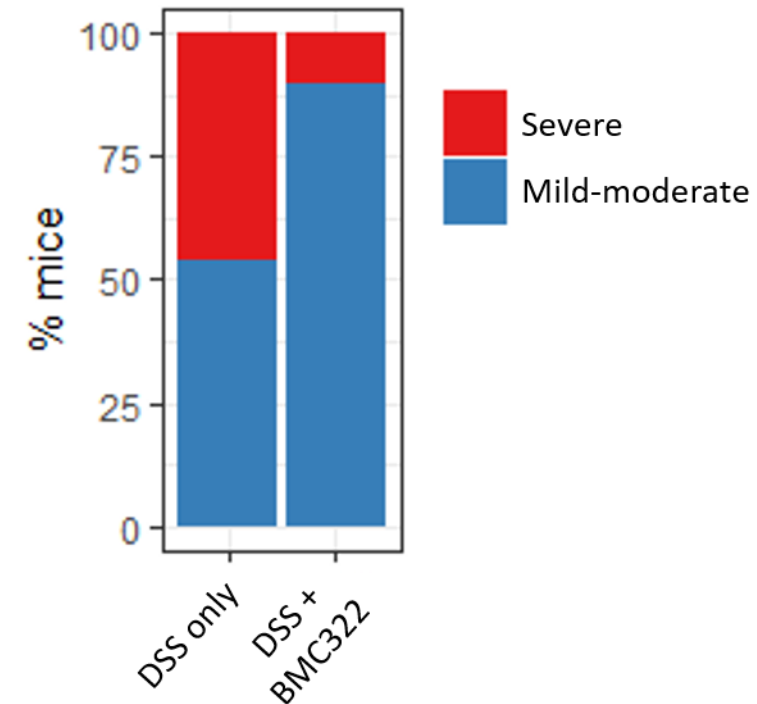
Consortium	Microorganism	Microbial component / function						Host response							Interactions with other microorganism		
		SCFA	Function 61458	Function 314622	Function 314623	Function 32072	Function 2456	Tregs↑	mechanism1	mechanism2	mechanism3	mechanism4	mechanism5	mechanism6	mechanism7	with other members in consortium	with other gut residents
BMC321	BMCS311																
	BMCS315																
	BMCS313																
	BMCS318																

BMC321 & BMC322 indicate to reduce inflammation in a DSS-treated mouse model*

Gut Inflammation level, During DSS treatment

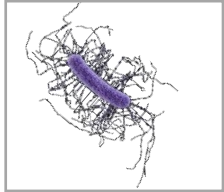


Inflammation status
Day 7 of DSS treatment



Severe inflammation (% of total number of mice):
Control - 43% VS. BMC322- 10%

3 | C. difficile Infection (CDI) - Landscape



Gram-positive, anaerobic, spore-forming, toxin-producing bacillus



Most common hospital-acquired infections (Over 600,000 a year)



Increasing cause of morbidity and mortality (older hospitalized patients)



Incidence & associated mortality progressively increasing in W. countries



15%–25% of all cases of antibiotic-associated diarrhea result from CDI

- **Pathogenicity of C. difficile is mainly mediated by two exotoxins**
- Infection manifestations:
 - Diarrhea
 - Abdominal cramping and pain
 - Fever
 - Nausea
- **The economic cost of CDI est. as \$5.4Bn mostly due to hospitalization**

BMC202

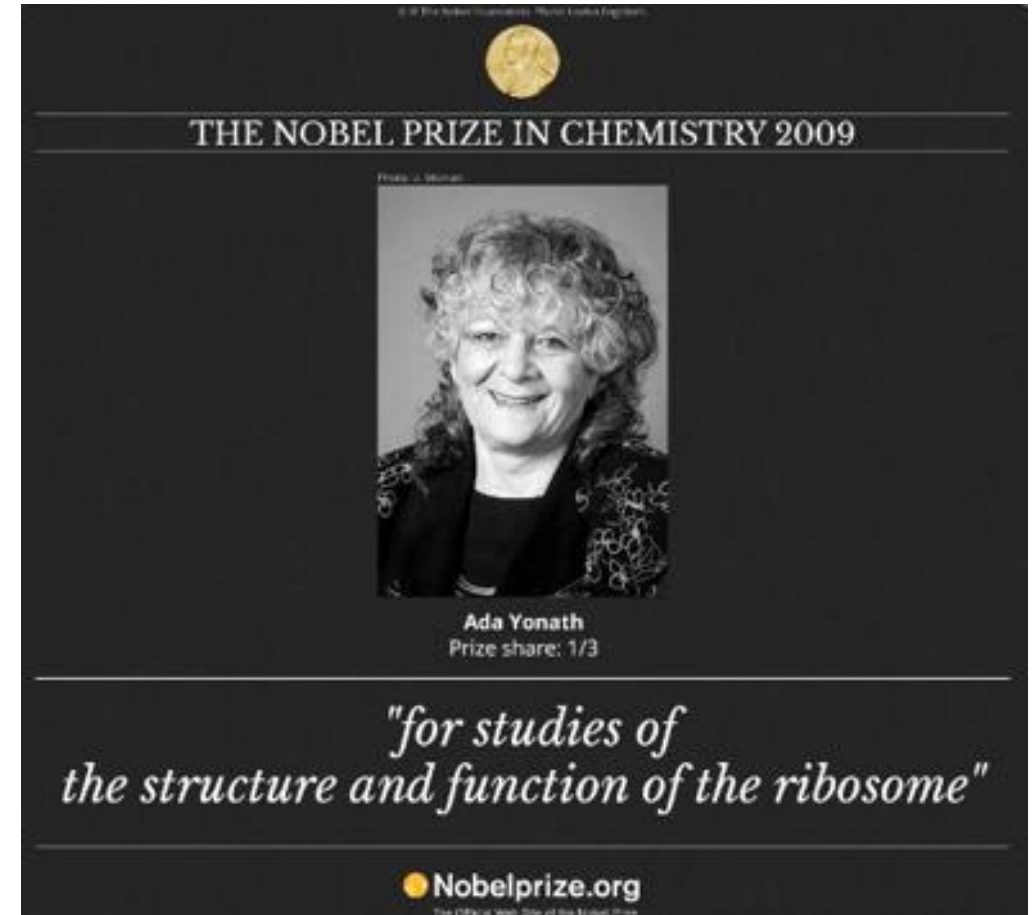
- Our approach is to utilize **BMC202** a non-antibiotic inhibitor of C. difficile toxin, which is responsible for the symptoms associated with CDI, **while preserving healthy gut microbiome**
- BMC202 is a selective anti-bacterial agent designed to inhibit the glucosyl-transferase domain of the C. difficile toxin (TcdB)
- The drug candidate has been identified using Biomica's in silico chemical screening platform, which enables high throughput screening of a database of **~250M** molecules.

Biomica to collaborate with the Weizmann Institute of Science

The company has in-licensed IP and knowhow generated by the Nobel Prize Laureate Prof. Ada Yonath, who will advise Biomica on the program

Biomica to develop a **selective** treatment against antibiotic resistant strains of Staphylococcus aureus (MRSA) infection, in a microbiome focused approach utilizing proprietary computational tools

- MRSA is a multi-drug resistant bacterium, responsible for several difficult-to-treat infections, leading to tens of thousands of annual cases of mortality in the US
- MRSA market in 2016 was approximately \$2.9Bn, projected to reach over \$3.9Bn by 2025*.



Management



Dr. Elran Haber, CEO



Prof. Yehuda Ringel, CSO



Dr. Shiri Meshner, VP of R&D

- Previously served as the CEO of Therapix Biosciences (Nasdaq, TASE: TRPX), leading the company to a successful IPO on Nasdaq, and advancing the company's programs to clinical stage
- Spent more than 10 years as Chairman and board member of several privately held, and publicly traded, companies
- Served in senior executive roles in various life science companies and a private investment firm
- Holds a PhD in Pharmaceutical Science and an MBA in Finance & Financial Engineering, both from The Hebrew University of Jerusalem, Israel

- Chief Division of Gastroenterology and Hepatology at Meir Medical Center, Israel
- Professor of Medicine at Chapel Hill, North Carolina and is affiliated with University of North Carolina Hospitals
- Has more than 30 years of diverse experiences, especially in Gastroenterology and translational research, and an expert on IBS and functional motility disorders
- Recipient of several prestigious awards
- MD from Technion Institute of Technology, Israel

- Previously served as the head & principal investigator of the Dead Sea microbiology lab in the Dead Sea-Arava Science Center
- Spent over 5 years working in the pharma industry both in the US and in Israel (OSI pharmaceuticals and Teva pharmaceuticals)
- Holds a PhD in systems microbiology from the Department of Physics of Complex Systems at The Weizmann Institute

Board of Directors



Mr. Ofer Haviv, Chairman

- Serves as Evogene's (Nasdaq: EVGN), President and CEO as of late 2004. Prior to that he held the positions of Evogene's COO and CFO and was involved in the spin-off from Compugen
- Served as a Director of Finance and Treasurer at Compugen (NASDAQ: CGEN), includes two private placements and an IPO on NASDAQ



Mr. Doron Ben Ami, Director

- A seasoned executive with more than 20 years of management experience in the multinational biotech industry
- Served as Head of the Eastern Europe and Israel region at Merck (MSD), Managing Director of MSD Israel and previously as the General Manager of Lundbeck in Israel.



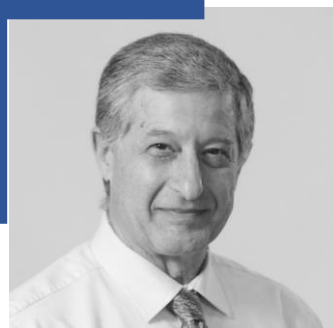
Dr. Kinneret Savitsky, Director

- A seasoned Biopharma executive.
- Serves as the CEO of FutuRx Ltd., the Israeli Biotechnology accelerator established by OrbiMed, Johnson & Johnson Innovation, JJDC and Takeda Pharmaceutical
- Currently serves as a Chairperson and Board member at number of privately held healthcare/pharma companies.
- Served as the CEO of BioLineRx Ltd. (Nasdaq: BLRX),

***Prof. Yehuda Ringel**, Director

Scientific Advisory Board & Advisors

Prof. Yehuda Ringel



Chief Division of Gastroenterology and Hepatology at Meir Medical Center, Israel. Professor of Medicine at Chapel Hill, North Carolina and is affiliated with University of North Carolina Hospitals.

Prof. Willem M De Vos



Professor and Chair of Microbiology at Wageningen University, the Netherlands and Professor of Human Microbiomics at the University of Helsinki, Finland.

Prof. R. Balfour Sartor



Serves as the Midget Distinguished Professor of Medicine, Microbiology and Immunology and Director of the Multidisciplinary IBD Center at the University of North Carolina, Chapel Hill.

Prof. James Versalovic



Pathologist-In-Chief at Texas Children's Hospital and Director of Texas Children's Microbiome Center, Professor and Vice Chair of Pathology & Immunology at Baylor College of Medicine.

Prof. David Rubin



Section chief of gastroenterology, hepatology, and nutrition at University of Chicago Medicine. Chair-elect of the National Scientific Advisory Committee of the Crohn's and Colitis Foundation.

Dr. Ravid Straussman

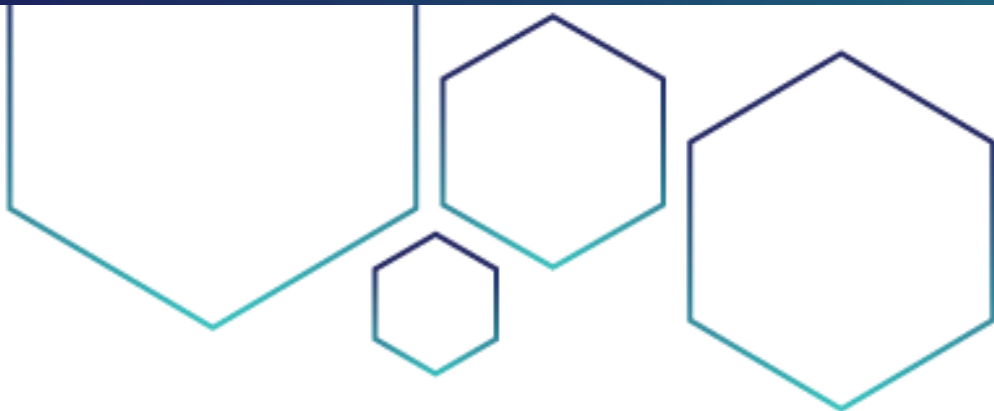


Principle investigator of the Tumor microenvironment, tumor microbiome and resistance to anti-cancer therapy lab at the Weizmann Institute of Science, Israel.



SUMMARY

- Human Microbiome based therapeutics is a rapidly growing space, represents a multi \$Bn market opportunity
- Biomica develops innovative microbiome-based therapeutics utilizing a dedicated computational predictive biology tools
- Biomica's computational tools have been specifically developed to allow the processing of large amounts of data to obtain high-resolution mapping of microbial profiles to deliver optimized drug candidates
- Focus on high-value clinical programs for the development of therapies for antibiotic resistant bacteria, Immuno-Oncology and microbiome-related gastrointestinal (GI) disorders.
- Experienced Management Team, Board of Directors and world class Scientific Advisory Board



BIOMICA

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