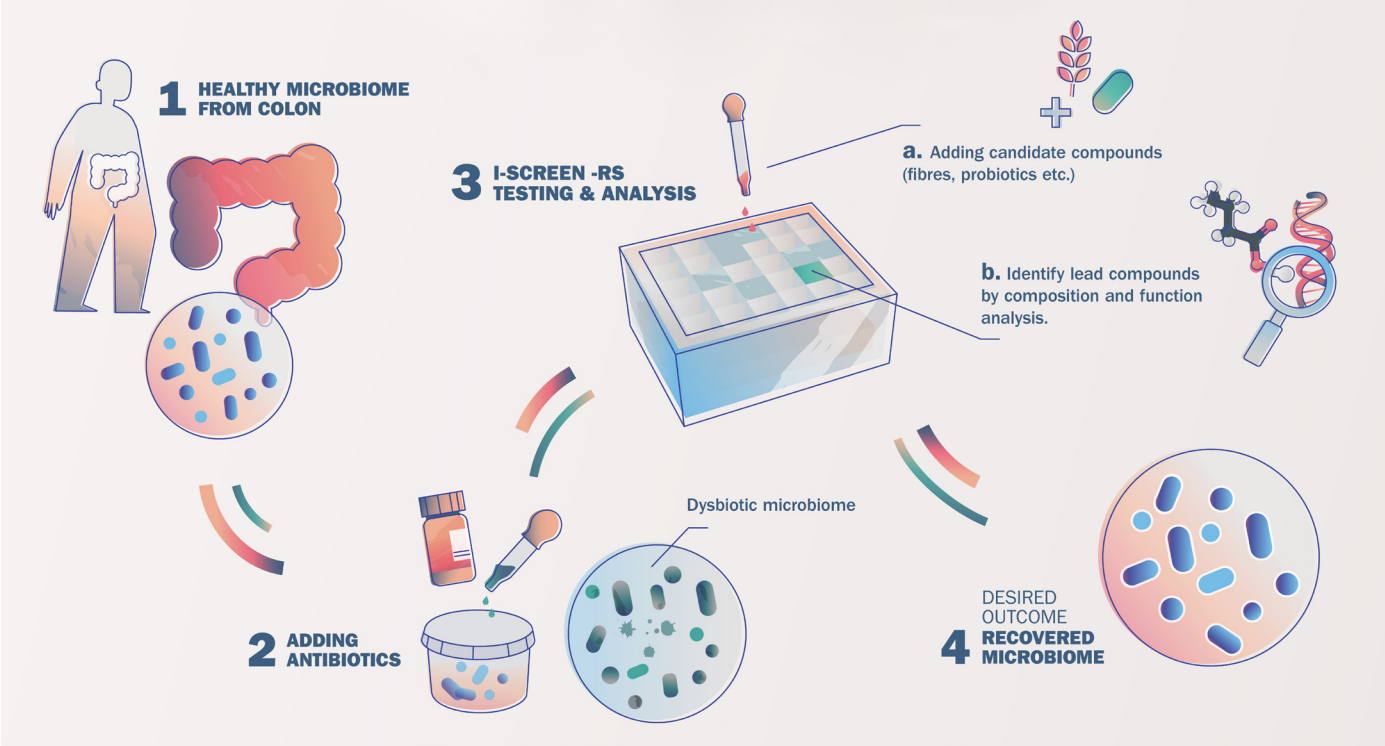
I-screen-RS: Targeted identification of compounds to restore a balanced microbiome



TNO innovation for life

Developing the right probiotic or compound to restore gut heath can be a long, laborious and inefficient process. With i-screen Restoration (i-screen RS), TNO can accelerate pre-clinical study and selection of the right ingredients and streamline the development process.

What is the key to restoring a healthy microbiome? How do different prebiotics, probiotics and compounds impact gut microbiota in patients that suffer from irritable bowel syndrome, Clostridioides difficile infection and other challenging conditions? What is the best way to counteract the gut effects of antibiotic treatments?

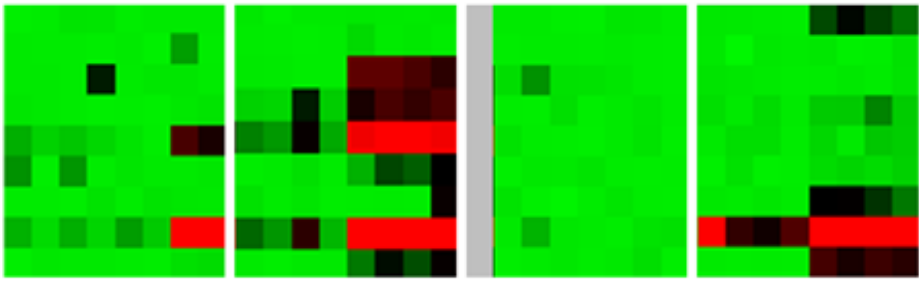
For years, food, medical and pharmaceutical companies have been searching for the answers to challenging questions like these. Today, TNO offers a faster, more streamlined, more effective path from concept to solution.

FASTER SCREENING AND SELECTION

The Health-restoring Intestinal Screen (I-screen-RS) is a novel screening platform that allows developers to test and select ingredients for restoring a healthy microbiome. I-screen-RS enables simultaneous testing of multiple probiotic or fibre compound formulas at the pre-clinical stage of development. This significantly speeds up the selection process and helps mitigate lost development opportunities, saving companies time and money.

I-screen-RS is an in vitro, 96-well screening platform that contains healthy human gut microbiota. After the application of antibiotics that disrupt the microbiota, developers can then apply promising probiotic or fibre compounds that can potentially restore gut health. I-screen-RS can accelerate the selection of the most promising candidates for restoring gut health after antibiotic treatment or for chronic conditions.

1 µg/ml															
AMX				CIP				CLI				DOX			
		GOS				GOS				GOS				GOS	
24 h	32 h	24 h	32 h	24 h	32 h	24 h	32 h	24 h	32 h	24 h	32 h	24 h	32 h	24 h	32 h



Bifidobacterium adolescentis
Bifidobacterium adolescentis/angulatum
Bifidobacterium angulatum
Bifidobacterium animalis
Bifidobacterium longum
Bifidobacterium longum
Bifidobacterium ruminantium
Bifidobacterium species
Bifidobacterium thermophilum

Fig. 1. Bacterial fingerprints of the nontreated and antibiotic-treated adult microbiota with and without GOS addition obtained with the I-chip after 24, 32 or 48 h in vitro fermentation. Antibiotics were used in concentrations of 1 and 10 lgmL1. Signal compared with the background (S/B): Green: below detectable level, Black: medium abundance, Red: high abundance.

SAFE, EFFECTIVE AND SUSTAINABLE SELECTION

I-screen-RS is fast and reliable. It allows for in vitro testing of many candidate compounds in parallel, and eliminates the need for animal testing. Since I-screen-RS is seeded with actual human microbiome, the impact of candidate compounds can be directly studied. And, since I-screen-RS can be utilised in the earliest stages of compound development, it reduces the risk of focussing too long on an inadequate or ineffective compound for restoring gut health. Developers can uncover, very early in the process, which compounds show the most promise.

HIGHER THROUGHPUT WITH PROVEN TECHNOLOGY

The process used in I-screen-RS is derived from the well-known and proven i-Screen technology. With i-Screen, pharmaceutical and biotech companies can test the effects of compounds metabolised by human intestinal microbiota, to identify ideal candidates for further drug development.

I-screen-RS takes the same technology one step further. By testing various prebiotic, probiotic and other compounds in the earliest stages of development, companies can focus their attention on the compounds that show the most promise. This increases throughput, and reduces time-to-market.

Once the top candidates are identified, developers can move swiftly into preclinical and clinical trials, confident that their chosen compounds have the desired effect on an unhealthy gut microbiome. This allows developers to focus on the other steps of the development process.

ACCELERATE YOUR DEVELOPMENT TODAY.

Are you working on compounds that strengthen or restore microbiome? Want to accelerate development, reduce costs, and engage in more targeted study of relevant candidates? Contact TNO today to discover how I-screen-RS can screen, select and develop solutions and reduce time-to-market for your products. Together, we can speed up the journey to better gut health and faster patient recovery.

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TNO is and independent research organization that connects people and knowledge to create innovations that boost the competitive strength of industry and the well-being of society in a sustainable way. This is our mission and it is what drives us, the over 3,400 professionals at TNO, in our work every day. We work in collaboration with partners in nine technology domains.

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