A LEADING BIOTECH IN THE DEVELOPMENT OF GAME-CHANGING MICROBIOME-BASED BIOTHERAPIES

May 2021



Because a Majority of Diseases Start in the Gut, What if We Could Address Them in a New Way with Microbiome-Based Therapeutic Approaches?

Strong body of scientific evidence has shown that gut microbiome dysbiosis is at the root of numerous diseases





Neurological Star Immune Digestive **Metabolic**





The development of Microbiome-based therapies is the New Paradigm in Medicine

The Gut Microbiome Field Combines Scientific and Clinical Validation



YSOPIA reaps benefits from a differentiating competitive positioning: Single-Strain Keystone Bacteria





Strong Scientific Rationale Linking Christensenella to Disease Development



YSOPIA is the first biotech company to harness the tremendous therapeutic potential of *Christensenella*



Christensenella: a pivotal role in the bacterial ecosystem



Christensenella is a keystone bacteria and its abundance correlates with metabolic health

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Xiang Li, 2020, PeerJ

Christensenella Prevents Obesity in Animal Models





Transplantation of C. minuta in germ-free mice demonstrated lower body fat percentage and lesser weight gain



- Obesity has been associated with a loss of christensenella • bacteria in numerous international scientific publications
- People with higher amounts of Christensenella minuta tend to • be leaner (Cornell University)



Targeting gut microbiome emerged as the most promising opportunity to treat obesity



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WHO, World Obesity Federation

Ysol Program



Harnessing the potential of Christensenella minuta as a novel biotherapy to treat obesity and associated metabolic disorders, called XIa1

- Showed strong efficacy results in preclinical animal models 0
- Phase 1 clinical trial ongoing => safety profile validated in healthy volunteers Ο
- Phase 1 full data expected Q3 21 0





IP secured









Human Safety ongoing



Fully characterized C. minuta library

GMP grade production

Proof of Concept Animal Studies Showed Significant Effect in Lowering Body Weight Gain



Proof of concept study demonstrated that *C. minuta* significantly reduced body weight gain in a high fat rodent model compared with control

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YSOPIA Bioscience, Mazier et al., Cells 2021, 10, 823

C. minuta XIal Mechanism of Action in Obesity



In mice on high fat diet for 4 weeks, XIa1 reduced body weight gain significantly as well as food efficiency, circulating leptin levels and normalized glycemia

Xla1 restores gut microbiome symbiosis ex vivo



Xla1 increases butyrate levels



Xla1 restores microbiome diversity



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XIa1 increases Bacteroidetes/Firmicutes ratio*



* The Bacteroidetes/Firmicutes ratios is decreased in obese patients

CAUSALITY Study

Ongoing Phase I Clinical Trial of Xla1

 Primary endpoint: Assess the safety and tolerability of XIa1*

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- Secondary endpoints: Evaluate the effects of XIa1 on subject's intestinal microbiome ecology and the engraftment dynamics of XIa1 in the gastrointestinal tract
- Dosing Strategy: 1 capsule daily during 3 months



First highly promising safety data support the good safety profile of XIa1

EXPLORATORY

- Anthropometric measures (body weight, weight circumference...)
- Lipid profile, Bile acids
- Postprandial biomarkers (glucose, insulin, GLP1...)
- Satiety
- Quality of life

+ Blood, urine, stool samples *XIa1 is the Drug Product from *C.minuta* strain

Developing Single-Strain Bacteria as Effective Biotherapies for Multiple Disease State



Exploring additional therapeutic areas with high unmet medical needs, such as **oncology**





Prof. Philippe Langella & his team



Prof. Yolanda Sanz & her team



Université **BORDEAUX**





développement Régional



YSOPIA DIOSCIENCE Unleashing microbiome-based therapies

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