Use of a Novel Gut-Derived *Ruminococcoides intestinale* Ri-HJH Strain for Immunomodulation and Allergy Control

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Experience: Dr. Yen-Hsuan Ni is a Distinguished Professor of Pediatrics at the College of Medicine, National Taiwan University. His clinical expertise lies in pediatric gastroenterology, hepatology, and nutrition. His research and clinical interests include: (1) pediatric liver diseases—such as viral hepatitis, nonalcoholic fatty liver disease, hereditary liver disorders, and liver transplantation; (2) gut microbiota; and (3) pediatric inflammatory bowel disease. Dr. Ni has published more than 300 peer-reviewed articles in these fields and has been actively involved in numerous international academic activities. In addition to his scientific contributions, he has played a significant role in advancing medical education reform in Taiwan. In recognition of his outstanding achievements in medical education and research, he served as Dean of the College of Medicine, National Taiwan University, from 2019 to 2025, and continues to provide leadership to Taiwan's most prestigious medical college.

Market Needs: Allergic diseases are highly prevalent chronic conditions, and current pharmacological treatments primarily focus on symptom control, with long-term use still associated with side effects and unmet clinical needs. Recent advances in gut microbiota and immune regulation research indicate that novel probiotics with immunomodulatory functions represent an important development direction in preventive medicine and the functional food market. The specific *R. intestinale* Ri-HJH strain disclosed herein demonstrates potential for modulating allergy-related immune responses and aligns with the market demand for safe, long-term management strategies for allergic diseases.

Our Technology: This technology discloses a specific gut bacterial strain, *Ruminococcoides intestinale* Ri-HJH, and its derivatives, which exhibit potential for modulating allergy-related immune responses. Experimental results demonstrate that this strain can influence the interaction between gut metabolism and immune signaling, thereby reducing allergy-associated immune activation and ameliorating allergic inflammatory responses. Compared with conventional probiotics or other strains within the same species, Ri-HJH exhibits strain-specific biological activity, indicating a differentiated advantage in immunomodulatory efficacy. The technology has been supported by relevant experimental validation, providing a clear technical foundation and application direction, and is suitable for patent protection with further potential for development into anti-allergic products.

Strength: (1) It represents a strain-specific next-generation probiotic (NGP), distinct from conventional commercially available probiotics; (2) it is capable of simultaneously modulating gut metabolism and immune regulation, exhibiting a multi-layered regulatory profile; (3) unlike pharmacological treatments, it offers a microbiome-based intervention strategy suitable for long-term use and constitutional modulation; (4) it can be extended to applications across multiple allergy-related diseases; and (5) it demonstrates high potential for commercialization and technology transfer.

Competing Products: This technology is not covered by any existing patents, demonstrating high originality and strong potential for future patent protection.

Intellectual Properties: The research team has decades of experience in the relevant fields, with proven expertise in microbiology, immunology, molecular biology, and translational research, providing a solid foundation for innovation, patent development, and commercialization.

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