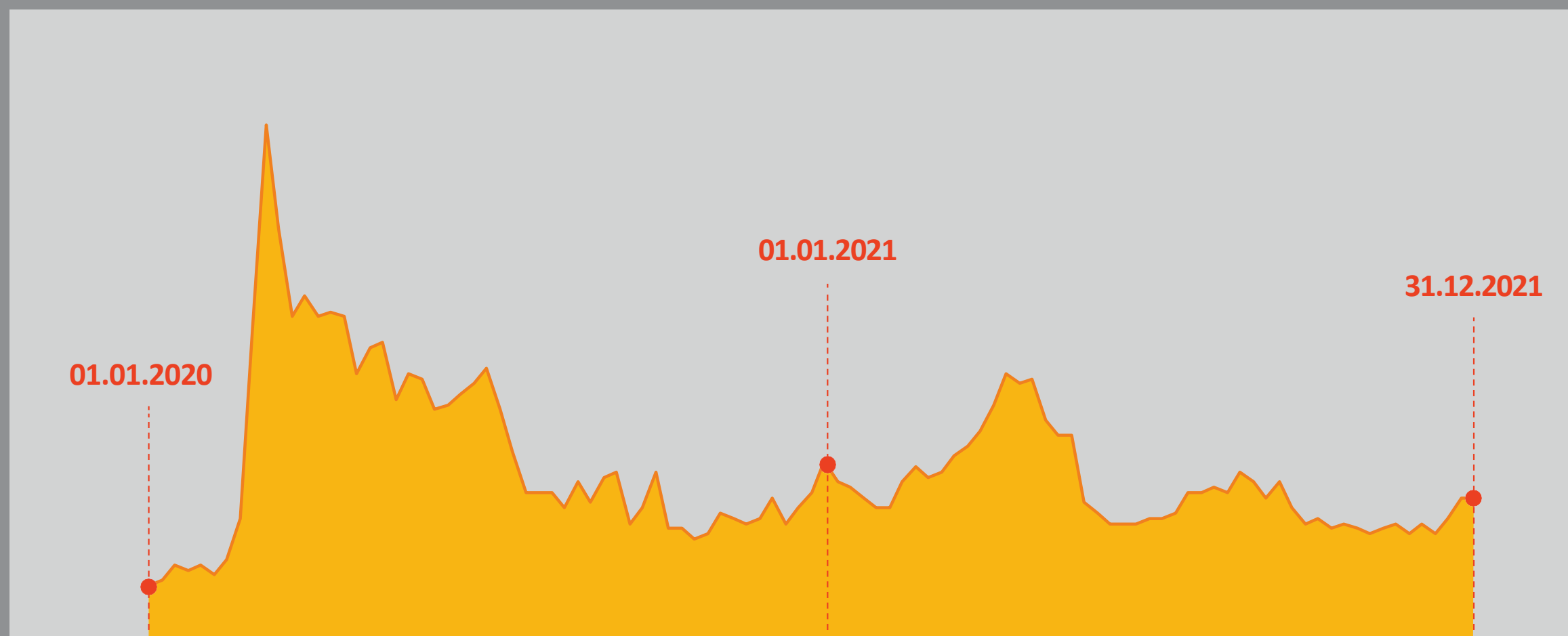


**Newly developed laboratory scale
technology for obtaining novel raw
material according to market trends**

DRSIR

NEW MARKET TRENDS

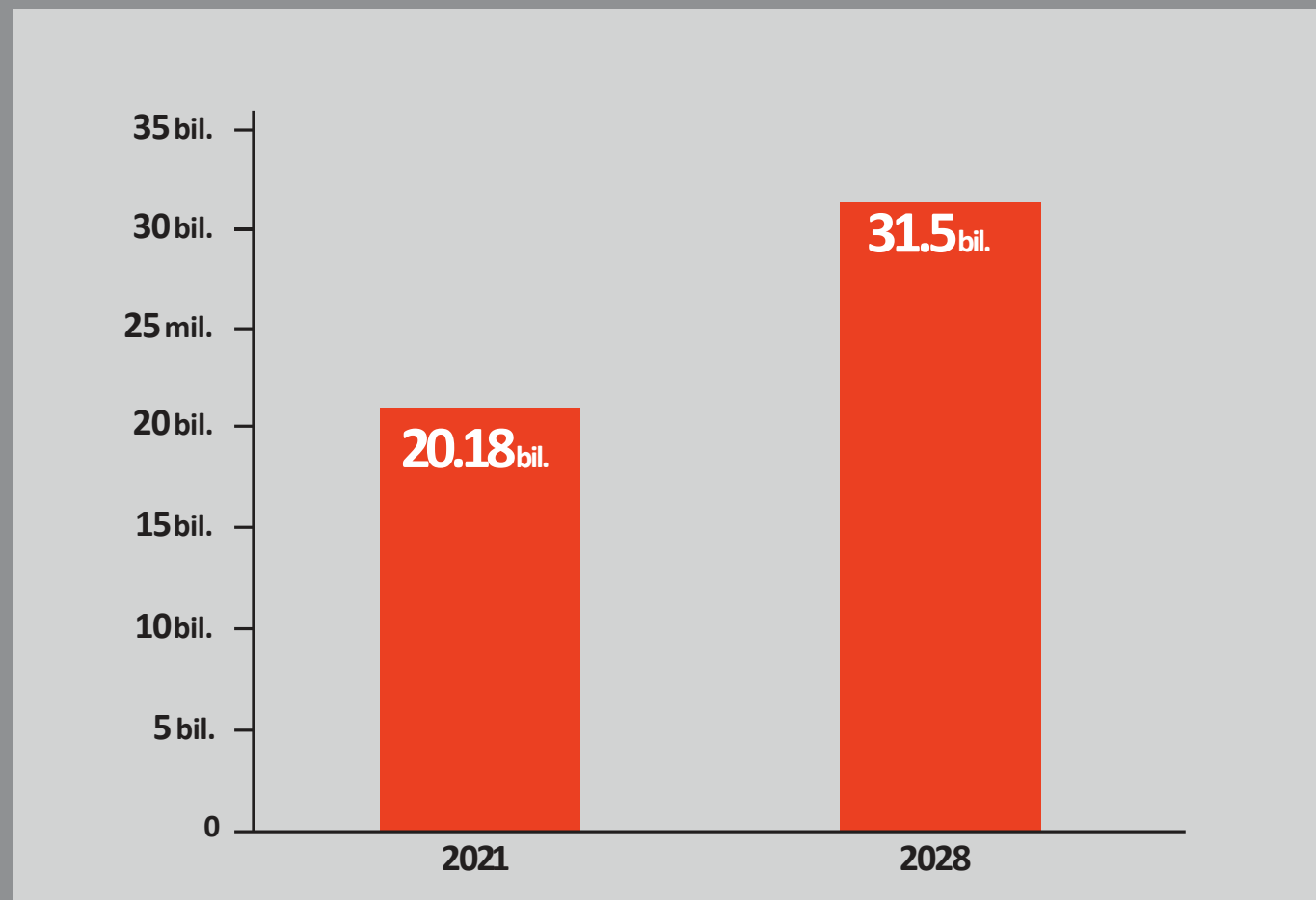
The COVID-19 pandemic accelerated the trend toward food supplements that supports the immune system.



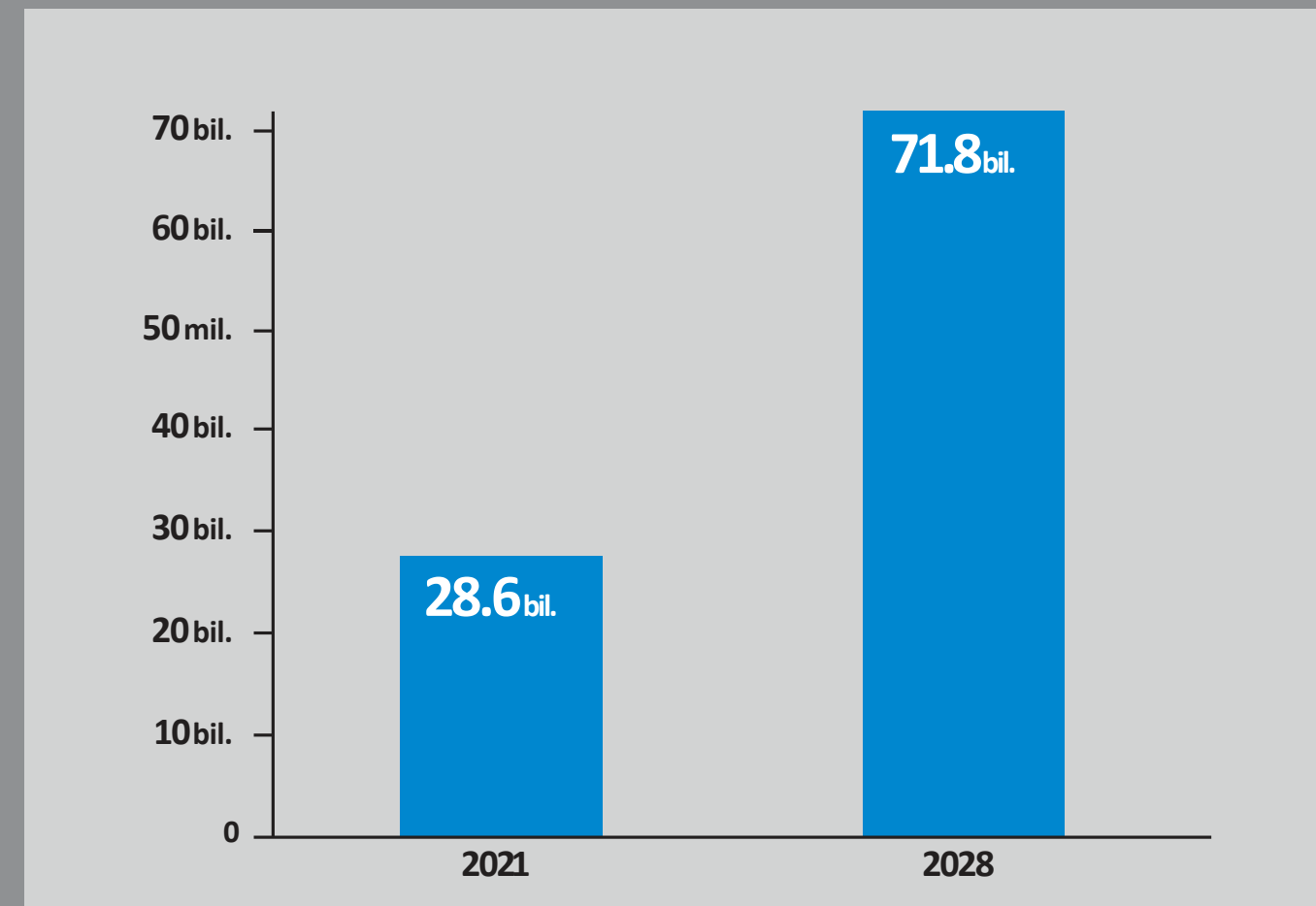
The growth of consumers interest about **immunity***

NEW MARKET TRENDS

The COVID-19 pandemic accelerated the trend toward food supplements that supports the immune system.



The projection of growth in global **immune** health supplements market**



The projection of growth in global **dietary** supplements market**

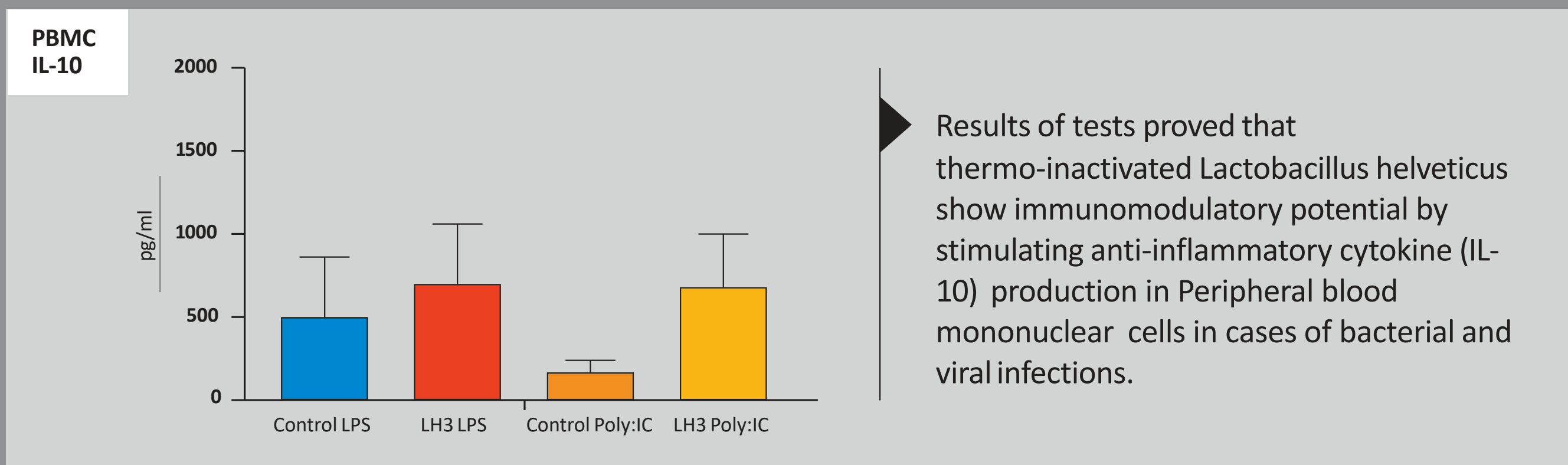
NEWLY DEVELOPED LABORATORY SCALE TECHNOLOGY FOR OBTAINING NOVEL RAW MATERIAL ACCORDING TO MARKET TRENDS

Material for technology: *Lactobacillus helveticus*

Product developed in result of technology: Thermo-inactivated bacteria classified as paraprobiotics

Author of technology: Riga Stradiņš University

Results of tests: Proved immunomodulatory potential



POTENTIAL USAGE OF NEW PARAPROBIOTIC:

Thermo-inactivated
Lactobacillus
helveticus



Food industry
Functional food
Food
supplements



Pharmaceutical industry
Medicines
Veterinary medicines



Cosmetic industry
Dermatocosmetic

LACTOBACILLUS HELVETICUS – ONE OF THE MOST PROMISING PROBIOTIC LAB SPECIES

Lactobacillus Helveticus is acceptable for use in food and food supplements in EU.

Lactobacillus Helveticus has been granted Qualified presumption of safety status status by the European food safety authority (EFSA) and has generally recognized as safe (GRAS) status in US.

Lactobacillus helveticus health-promoting benefits*

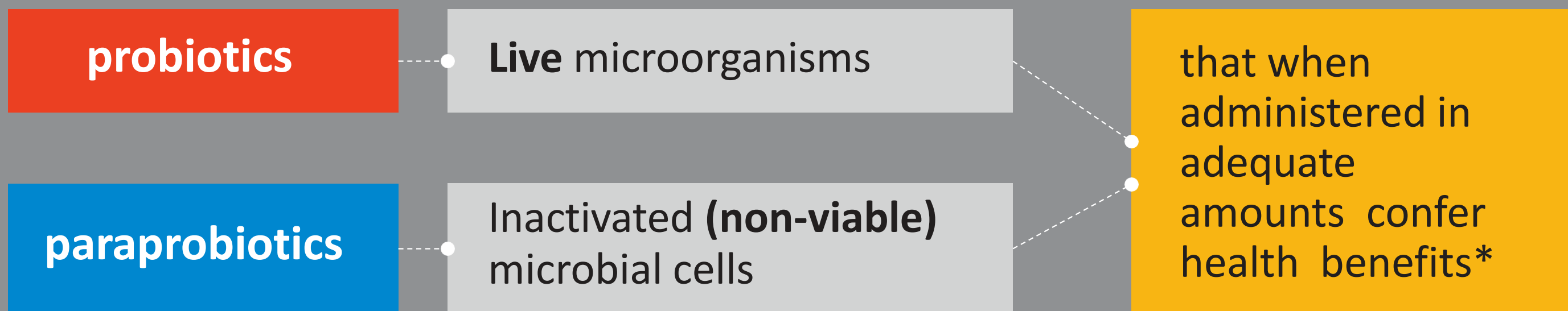
Modulates the host immune response

Improves the bioavailability of nutrients

Positively affects the composition of the intestinal microbiota

Prevents gastrointestinal infections

PROBIOTICS VS PARAPROBIOTICS



Recent results suggest that **probiotics may exert health benefits even when they are dead**. This phenomenon has been labeled “the probiotic paradox”** and is likely explained by bioactive compounds that are released when bacterial cells dissolve in the digestive system***.

*Basavaprabhu H. Nataraj, Syed Azmal Ali, Pradip V. Behare and Hariom Yadav Postbiotics-parabiotics: the new horizons in microbial biotherapy and functional foods. *Microbial Cell Factories* (2020) 19:168 <https://doi.org/10.1186/s12934-020-01426-w>

**Clifford A Adams The probiotic paradox: live and dead cells are biological response modifiers. *Nutrition Research Reviews* 2010 Jun;23(1):37-46. doi: 10.1017/S0954422410000090

***Shahina Akter, Jong-Hyun Park, and Hoo Kil Jung Potential Health-Promoting Benefits of Paraprobiotics, Inactivated Probiotic Cells, *J. Microbiol. Biotechnol.* 2020. 30(4): 477–481 <https://doi.org/10.4014/jmb.1911.11019>

BENEFITS OF PARAPROBIOTICS:

- ✓ Have the same effects to health as probiotics*
- ✓ Easy to produce*
- ✓ Longer shelf life*
- ✓ Simple transportation and storage**
- ✓ Could be administered in combination with antibiotics or antifungal agent**
- ✓ Could be used in cases of lactose intolerance*

Thank you for your time!