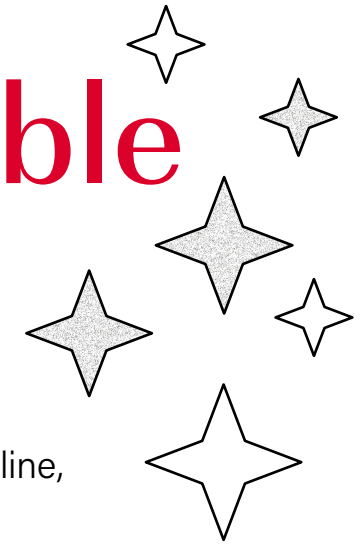
New Product Development

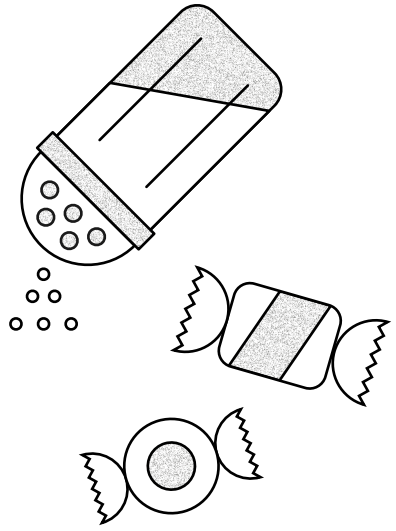
Real innovations for highly profitable markets

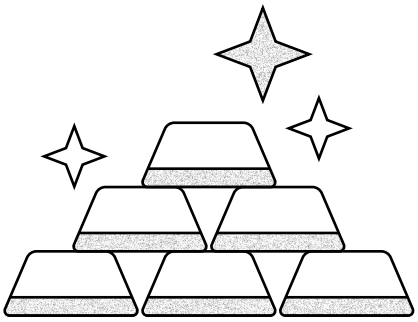


BRAIN is continuously expanding its development pipeline, adding new validated product ideas and harnessing business potential in promising areas. Innovations are generated based on novel cell models for simulating sensorial reactions, as well as from unique methods for decoding how microorganisms work. Examples of applications for new product ideas range from natural sweeteners to the sustainable extraction of metal.

Improving taste and quality

The DOLCE partnership program is working on developing a unique range of natural sweeteners that retain the characteristic taste of the foods to which they are added. These natural sweeteners and sweetness enhancers are identified by screening BRAIN's proprietary and unique libraries of natural substances utilizing the patented Human Taste Cell technology, a novel cell culture technology that reliably evaluates human taste perception. This technology is also applied in SALT-E, a program that aims to reduce salt in foodstuffs. Edible plants and microorganisms can even contain active ingredients that protect foods against contamination by bacteria, viruses or mold fungi. BRAIN is developing the corresponding bioactive substances within the FRESCO program.

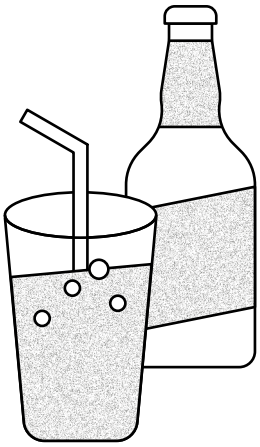




Recovering precious metals from ore and waste

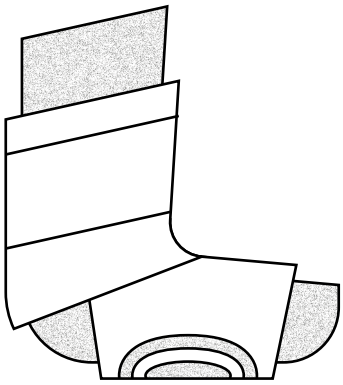
In Germany alone, up to three tonnes of gold from waste incineration literally end up on the street because traditional recycling technologies are unable to extract the metals from waste incineration ash in a targeted manner. In its green and urban mining programs, BRAIN has developed highly efficient technologies based on special microorganisms In order to extract metal fractions. These technologies can also be deployed in mining, and have the potential to revolutionize the extraction of precious metals from ores.

Selected examples from BRAIN's innovation pipeline:



Nature-based beverage ingredients

Global demand for novel natural beverage ingredients is on the rise. BRAIN is contributing its unique BioArchive and special screening technologies to a partnership with Suntory Beverage & Food Europe for the purpose of developing new, nature-based beverage ingredients. Suntory is contributing its expertise in the areas of product development, formulation, marketing and sales.

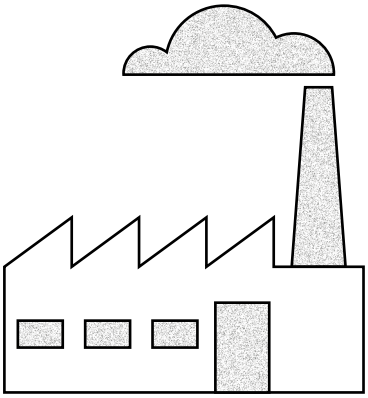


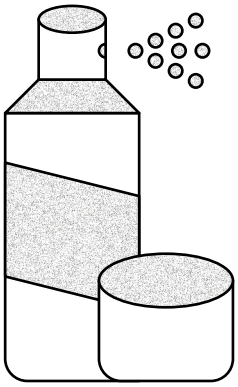
Biological management of chronic wounds

Scientists at BRAIN have utilized the larvae of the common green bottle fly in order to decode the mechanisms involved in wound cleaning, thereby developing the Aurase® enzyme for new wound treatment products. BRAIN produces the biological active ingredient in an ultrapure form. SolasCure Ltd., a company founded with BRAIN's involvement, is currently preparing clinical trials and subsequent marketing of the substance.

From waste to winners

Every year, the chemical industry requires around 15 million tonnes of carbon for the manufacturing of plastics, lubricants and cosmetics. The carbon is almost exclusively derived from fossil raw materials. An alternative being advanced by BRAIN is carbon from industrial waste streams such as industrial waste gases. BRAIN has identified and developed special bacteria that use carbon dioxide for their metabolism and produce various industrially relevant chemical components in the process. This generates sustainable components for the chemical industry, which can be utilized to produce bioplastics, for instance.

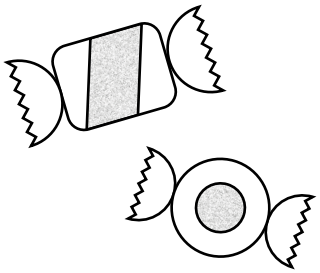




Concepts for natural sweat reduction

Natural active ingredients that protect against excessive perspiration and body odor are in great demand, and BRAIN has a novel concept to reduce human perspiration. This genuine scientific breakthrough received the highest award in the "Applied Research" category at the 30th IFSCC Congress. Based on this discovery, the company is now using its proprietary patented cell systems for physiological and sensory sweat gland simulation in order to develop biological deodorants and aluminum-free antiperspirants.

Facts & figures



61 bn

The global **sugar market** comprises the production of approximately 185 million tonnes and value added of more than USD 61 billion.[2]

12

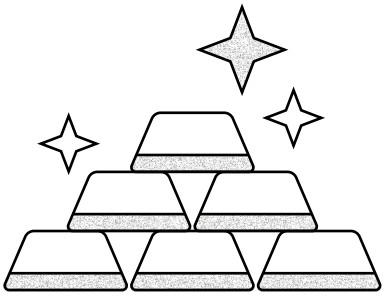
BRAIN's **development pipeline** currently comprises twelve projects. The company is planning to be an ingredients supplier in seven of the twelve programs.[1]

220,000

Bioactive natural ingredients of plant origin have been identified and structurally categorized to date. These offer enormous potential for industrial applications in a variety of market segments.

1 tonne

Every year, we produce over 40 million tonnes of electronic waste. **One tonne of computer boards** alone may contain **up to 250 grams of gold** and one kilogram of silver.



www.brain-biotech.com/innovation-examples

1 see pages 50-52
2 Sources: USDA 2017, Finanzen.net 01/2018