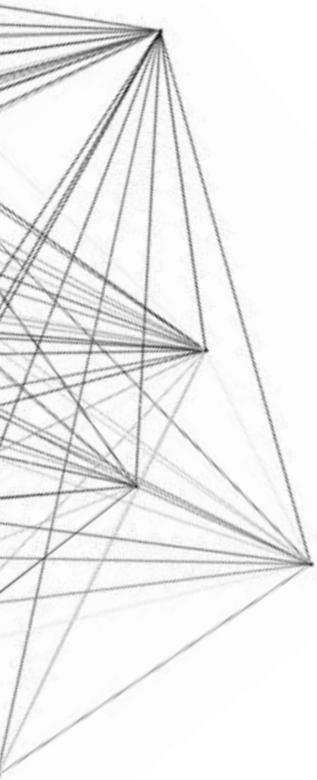




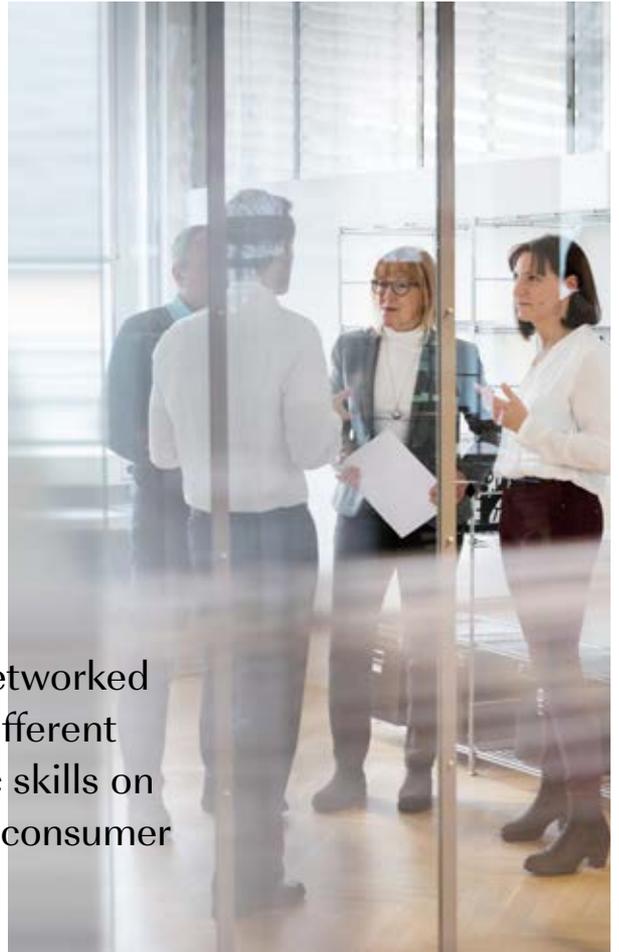
BRAIN networks

Networks dynamize value added



— Technology-driven innovation cycles are becoming shorter and shorter. This is concurrent with rapidly changing consumer wishes. Sustainable production and the goal of keeping raw materials within value chains for as long as possible and creating closed-loop material cycles have become key factors for corporate strategy planning. Research, process development, production and marketing are becoming more closely dovetailed, and development partnerships across regions and disciplines are gaining importance. More than ever, successful corporate action calls for dynamic networks that develop ideas quickly and efficiently and can bring products to market.

— The bioeconomy involves a transition towards new bio-based products that offer both economic and environmental benefits and are accepted by society. Rapidly evolving biotechnologies have become a driver of innovation in a wide variety of industries. Innovations no longer follow linear value chains to the markets. Instead, new networks are arising to generate value added, and BRAIN embodies a key nexus in this context.



“We are witnessing an increasingly networked and cooperative interplay between different technology approaches and scientific skills on the one side and large ingredient and consumer goods industries on the other.”

Dr. Jürgen Eck – CEO, BRAIN AG



> 100

BRAIN has entered into over 100 exclusive research cooperation arrangements with industrial partners.

> 50

BRAIN currently cooperates with more than 50 partners in different academic networks.

Innovations emerge from strategic alliances

— Scientific and technical challenges can best be tackled by interdisciplinary teams, as is shown by the **NatLifE 2020** and **ZeroCarbFP** alliances which BRAIN coordinates.



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Eight strategic alliances supported by BMBF have meanwhile been established as part of the German Industrial Biotechnology Innovation Initiative.

NatLifE2020



The **Natural Life Excellence Network 2020** that is supported by the German Federal Ministry of Education and Research (BMBF) has been working since 2013 to develop sustainable production processes and new test systems for innovative bioactive ingredients, proteins and small molecules for the food and cosmetics industries. Both NatLifE 2020 and ZeroCarbFP are subdivided into a research, a development and a pilot phase of three years each.

2.4 bn

The Industrial Biotechnology Innovation Initiative started working in 2011 as the first BMBF promotion measure within the BioEconomy 2030 National Research Strategy, with an overall volume of € 2.4 billion.



The **ZeroCarbonFootPrint** alliance supported by BMBF aims to transform residual and waste streams into new valuable materials that can be put to industrial use. These are bio-based additives for manufacturing high-tech oils or functional biomass for sustainable ore processing and metal recycling processes. The aim is to establish intelligent material cycles that keep the utilized resources within value chains after their primary use.

“Secondary and waste streams such as flue gas or waste incineration ash contain masses of carbon. The ZeroCarbFP alliance aims to harness new technologies for transforming these resources into new industrial building blocks.”

Dr. Guido Meurer — Unit Head Producer Strain Development



Networks are part of BRAIN's DNA

— The networking and open innovation concept that is widely practised within academic research is literally part of the DNA of BRAIN, which began life as a university student start-up.



6

Since 2008, BRAIN employees have undergone continuing professional development in a total of six different courses of study or this is still ongoing.

A key component of the work performed by BRAIN scientists is to exchange the latest insights into highly specialized subject areas with scientists at international research institutes. In some cases, the industrial applications of these findings will only transpire in the distant future. Based on initiatives like these that are also fostered within BRAIN's alumni network, specific cooperation arrangements emerge, such as BRAIN's ongoing research cooperation with Mannheim University in the **M²Aind** project for new high-resolution real-time screening technologies for three-dimensional skin spheroids.

BRAIN is regularly represented at international trade shows and conferences to maintain industrial networks, explore the market and customer needs, and to present its own product and cooperation offerings. BRAIN's excellent reputation in the fields of bioeconomy and industrial biotechnology also leads to valuable invitations to discussion forums such as the **German Biotech Days (DBT)** and the **Global Bioeconomy Summit** in Berlin in April 2018.



2

young women commenced training in BRAIN's first biology laboratory technician course in 2018. Since 2016, the company has offered an independent course of training for office management assistants.

BRAIN is involved in a large number of projects that aim to promote young professionals. For instance, BRAIN is a partner of the one-week **"Biotechnology inventor lab"**, which is initiated by the Zentrum für Chemie e.V. and supported by Goethe Universität Frankfurt, the German Chemical Industry Association (VCI) and the Government of the Federal State of Hesse. Students in MINT research projects are supported in **regional talent networks**. School classes and groups of students often visit BRAIN to learn about the company's research through technical presentations and guided visits to the labs, and to receive career guidance in the field of biotechnology. Added to this are presentations at graduate school events and workshops for doctoral students for the purpose of academic training.

15

Since 2005, 15 young people have received commercial training in various training associations and more than 15 others have undergone company assignments at BRAIN under a partnership with Merck KGaA since 1999.



Facts & figures

11

partners from industrial enterprises, medium-sized companies and academic research are currently working together in the ZeroCarbFP alliance coordinated by BRAIN.

22

alliance partners are currently cooperating in the NatLife 2020 alliance coordinated by BRAIN.

> 150

Since 1996, BRAIN has mentored more than 150 student dissertations and internships.

20

Students of various natural science disciplines have been involved and promoted for more than 20 years.

50 %

of the workforce have been with BRAIN in Zwingenberg for more than eight years.

> 60

different types of qualification are held by BRAIN employees.

→ www.brain-biotech.de/en