



## Clean Solutions for a Dirty Problem

### About Us

BIORoxx GmbH was founded in December 2019 and develops environmentally friendly rodenticides that allow wide, simple and harmless use. The first product to be developed is a rat poison. Later, the development of poisons against mice and other rodents is planned.

The team of BIORoxx GmbH is broadly positioned and has the required expertise in almost every field. The further know-how not available in the team is complemented by specialized consultants and partners.

### Rats

Rats are everywhere in the world. They sit in houses, in gardens, in sewers, in grain silos or even in stables. Worldwide, they wreak havoc on infrastructure while destroying and polluting 10-25% of crops, seeds and animal feed with their droppings. Even more problematic are the very dangerous diseases and epidemics transmitted by them or their parasites. Such diseases include the plague, Hantavirus, Lyme disease, SARS, and Typhoid fever.

Furthermore, rats also transmit animal diseases (zoonoses) such as Foot-and-mouth disease and swine fever, which have led to the increased use of antibiotics in factory farming. At present, there are an estimated 3-4 rats per person in the world, which means that there are about 30- 40 billion rats globally- in Germany alone there are 500,000,000 of these rodents. This is a huge problem that is getting worse every year.

### The Rat Poison Problem

Globally, attempts are being made to prevent the proliferation and spreading of rats with poisons (so-called rodenticides) in order to reduce their populations.

Rats are largely resistant to the 1st generation rodenticides (anticoagulants) currently available for rat control. Furthermore, many rat strains have already become partially resistant to 2nd generation rat poisons. These extremely toxic substances also accumulate in soil and waters and are not degradable in sewage treatment plants. According to the studies of the Federal Environment Agency Germany such rat poisons have been detected in fish from all waters and thus have already reached the human food chain.

All this extremely limits their possible uses. They may only be used by professionals, in closed rooms but not outdoors. In addition, the 2nd generation rat poisons are subject to the strictest restrictions: Application in sewers is not allowed. In some countries (California, Australia, New Zealand, etc.) these poisons are already completely banned. Another problem is the high cross-toxicity for other animals and also humans: When scavengers, e.g. birds of prey, foxes but also domestic animals, eat the killed rats, they can get poisoned themselves and die.

### The Necessity

A concept study of the Federal Environment Agency Germany confirms our approach. According to them, an environmentally friendly rat poison is an urgent, as of yet „unmet need“! Thus, such a rat poison would have very interesting economic prospects in addition to a very positive ecological and social contribution. A true game changer!

## Our Solution

The rodenticide under development by BIORoxx GmbH combines all desired properties:

- High efficacy
- Good environmental compatibility
- Resistance development is excluded
- Consumption of poisoned rats is harmless to other animals (no cross-toxicity)
- Consumption of poisoned bait is almost harmless for other animal species
- Poisoned rats die quickly and painlessly

## Profitability and Finances

The global market size for rodenticides in 2021 was approximately US\$5.15 billion (Germany US\$545 million). According to Research + Market, growth rates of at least 5% per year can be expected. This implies that the global market will reach a size of US \$ 7.24 billion by 2028.

All rat poisons currently available in Germany have only temporary approvals which will not be extended as soon as an environmentally friendly product becomes available on the market.

This indicates - at least temporarily - a unique market position in Germany and Europe. Due to the outstanding properties of the BIORoxx product, the worldwide increasing environmental awareness and the much broader and non-restricted applicabilities strongly increasing sales figures can be expected. Another favorable feature is that, for its low cross-toxicity, it can also be sold to non-specialists (with significantly higher margins in the B2C-market).

For the further development of the product up to market entry further investments of 3.7 million € are needed, which will be collected in 3 financing rounds. With a stepwise market entry of a first product, which can be expected by the end of 2025, the break-even can be reached shortly thereafter. The approval of the final, fully sustainable product is expected in 2027 with market entry expected shortly thereafter.

## Sales Strategy and Patents

The first goal of BIORoxx GmbH is to develop the novel and sustainable rodenticides to the approval by the European Chemical Agency (ECHA) both of the active ingredients and the products. Subsequently, market entry is planned. Here, a stagewise approach (according to regions) will be followed. The first markets approached will be the EU, Australia and New Zealand. The first product with significantly improved properties will be developed to market maturity, this will enable the development of the final, fully sustainable product from BIORoxx' own resources.

Patents have been applied worldwide - patents have already been granted in Australia, Canada, Israel, Mexico, Brazil and Korea. Confirmation of the active principle has been achieved through the successful „proof of concept study“ in January 2020.

## Achievements



BIORoxx GmbH was able to succeed at the business plan competition of KUER (Climate, Environment, Energy, Resources) on behalf of the Ministry of Environment NRW 2021 and won the second prize.

In 2022, it represented the state of NRW at the booth of the NRW Environmental Industry Competence Network at the Hannover Messe and won the „Winner of the Day“-Award in the Pitch competition.

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