PRECOMPETITIVE CHALLENGES

CASE EXAMPLES & ADVICE FOR FUTURE PROJECT APPLICANTS

PLANT2FOOD

A Novo Nordisk Foundation Sponsored Initiative

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1. ABOUT THE CASE EXAMPLES

The Plant2Food platform supports collaborative precompetitive research projects between academia and industry stakeholders within the plant-based value chain (only not-for profit organizations can apply or funding). All outcomes and results from the research projects must be shared openly and without the protection by intellectual property rights, e.g. patens.

Based on discussions between the main applicants and university business developers that took place during the first Plant2Food call round, the Plant2Food business developers have prepared five case examples that highlight precompetitive aspects to be considered when defining precompetitive research ideas.

Generally, precompetitive research projects focus on:

- Generic problems that are relevant to many companies or an entire industry at the same time.
- The results of the open projects are not new products/services – but rather a generic knowledge foundation that can easily be used by companies for downstream innovation.
- Data and results can be shared with the public without compromising the companies' ability to adapt the open results for specific, commercial (and protectable) applications.

The business developers are from the four partner universities in Plant2Food: Aarhus University, The University of Copenhagen, Technical University of Denmark and Wageningen University & Research. The Plant2Food platform is funded by the Novo Nordisk Foundation and ends 2027.

2. CASE A – USING PLANT MATERIAL UNDER MTA

Purpose

The project aims: to develop new plant varieties using speed breeding, to optimize the varieties for Nordic growth conditions, to test selected varieties in real-life vertical farming scenarios and, thereafter, to identify the sensory quality and content of health-beneficial components.

Precompetitive challenge

The project plans to use plant material from third parties for pre-breeding. This raised a concern with the TTO as to whether the plant material would be made freely available for everyone to use.

Solution

It was checked that the provided materials originated from genetic resource centers and university collections and therefore would be available to a commercial third party. A solution is for third parties to gain access to the material for research use only by signing a Material Transfer Agreement (MTA). This means that the material can be used for research purposes, i.e. the material is allowed to be used as a model plant/control group but not for commercial purposes.

3. CASE B – CAN RESULTS AND DATA FROM PREVIOUS PROJECT BE OPENLY SHARED?

Purpose
The project expands on an existing project collaboration by adding new partners and integrating an existing dataset in the investigation of new functional characteristics.

Precompetitive challenge
Investigation is needed by the local TTO of whether the conditions given in the previous collaboration Agreement would apply and hinder commercial third parties to access and use the dataset.

Solution
The previous collaboration agreement was investigated and found to contain a similar "open access" requirement as the one used in the Plant2Food platform. Thus, the requirements for precompetitive and open results were met.

4. CASE C – ACCESS TO BACTERIAL STRAINS FOR COMMERCIAL PURPOSES

Purpose
To design improved bacterial strains for fermentation of plant material for production of plant-based food.

Precompetitive challenge
The improved strains were based on company proprietary strains that other companies could not gain access to during or after the P2F project. The result would be that such strains would provide the companies participating in the P2F with a competitive advantage.

Solution
The solution was to use non-commercial strains from depositories or strains owned by the universities. All results are published so that any player in the industry may try to recreate desired genetic traits in their own strains. Everyone can access the strains developed in the project for research use only under a Material Transfer Agreement (MTA).

5. CASE D – COMMERCIAL STRAIN SELECTION

Purpose

To develop a sustainable processing approach for production of clean label and functional protein-rich pulse ingredients to be used in the production of emulsions in plant-based dairy products.

Precompetitive challenge

In the application, one milestone was described as ´commercial strain selection'. This raised the question whether one of the partners would have a precompetitive advantage if one of their starter cultures was used.

Solution

A discussion with the project coordinator made it clear that commercial strains would only be used as a reference, not as starter cultures. The focus of the research is on bacteria isolated from natural sources and, when found promising as starting cultures, such bacterial strains would become freely available. To avoid any misunderstanding, the word 'commercial' was deleted in the corresponding milestone description.

6. CASE E – PLANT BREEDING EXAMPLE

Purpose
To discover key genes in a protein crop that will eradicate or reduce the number of undesired compounds in the seeds.

Precompetitive challenge
In the initial proposal, the consortium had one commercial partner who would provide elite lines to shorten the time to completion of the P2F project and for registration of a new plant variety with the desired trait.

Solution
The solution was to focus the project on new genes to lower the undesired compounds and remain a mutant library and maintain the extracted mutant lines as "project-only" material, with all partners agreeing not to pursue commercialization of this material". The genetic knowledge on genes of interest will not be protected and will be published, providing everyone access to and free use of the results, enabling them to recreate desired mutants in their own breeding material. In addition, a competing breeding company joined the P2F project.

7. ADVICE FOR FURTURE PROJECT APPLICATNS

Advice for future project applicants for Plant2Food:

- Ensure that the results of your project will be applicable to the relevant industry broadly and is solving a common challenge for all players in said industry.
- Clearly identify in your application the timing of when the industrial partner will make commercial use of the results and ensure that this happens after the Plant2Food project is finalized.

Advice on use of biological materials and model plants

a. Projects within the Plant2Food platform can achieve an earlier impact by using elite lines to shorten the time to market versus using model plants.

b. Depending on the chosen crop to be investigated, the industry leverages different means of IP protection – commonly plant breeder's rights (PBR) for cereals and to a higher extent patents for vegetables, including novel protein crops. The patenting route is not allowed if the invention is based on results obtained in a Plant2Food project.

c. Should a variety developed during Plant2Food be registered using PBR, a competitor would still be able to use it for crossbreeding and to obtain the desired trait in its own genetic background.

d. Regardless of PBR, attention should still be given to how the trait/mutant is developed or selected, as this could make it challenging for competitors to recreate. When generating biological material make sure that third parties have access to the material or are able to recreate the material.

e. If an industry partner provides commercial biological materials, then the industry partner must provide access to the industry as well as Universities through an MTA for research purposes only.

f. In some cases, the identification of specific genetic variants within a plant variety can be the primary results. In this case, it is the publication of the results rather than the plant material that must be public available. However, this must be discussed and decided together with the local TTO.

8. CONTACT

The Plant2Food secretariat and the local business developers at the partner universities will help potential applicants define the precompetitive aspects of the project idea.

Main applicants must discuss the precompetitive nature of their research project with the local business developer. You can find the contact information for your local university Tech Transfer Office below:

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