

## SCREENING OF BIOLOGICAL NITROGEN-FIXING BACTERIA

### Description:

#### Patent Status:

PCT Application filed

#### License Status:

Collaboration and licenses available

#### Contact:

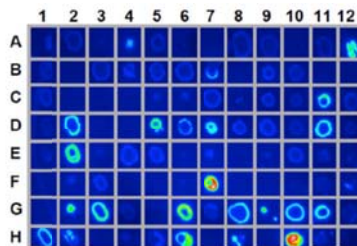
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This technology represents a significant improvement in the ability to discover and determine the activity of nitrogen-fixing bacteria both *in vitro* and *in planta*.

Many plants, such as legumes, associate with microbes, such as *Rhizobia* bacteria, which convert atmospheric nitrogen into nitrogen fertilizer. It has been challenging to find the best strain to interact with a specific crop variety, to validate commercial inoculants for their activity, and/or to improve inoculants such that they are robust across a range of environmental conditions.

Existing methods to screen candidate bacteria for nitrogen fixing activity include the acetylene reduction assay, radioisotope ratio analysis, DNA analysis or yield analysis, but these can be inaccurate, require considerable labour or cost and/or are difficult to adapt to high-throughput screens.

This invention enables screening of nitrogen-fixing activity rapidly *in vitro*, potentially allowing for high throughput microbial selection, breeding and/or authentication. Second, this technology detects nitrogen fixation activity in intact plants, potentially enabling selection for host-bacteria compatibility.



**Figure** – quantitative analysis of nitrogen fixation in bacteria

### Advantages:

- Quantitative; high throughput; inexpensive
- Enables agar-based quantification of BNF activity
- Enables development of BNF strains suited for specific crop varieties and growing conditions