

CO<sub>2</sub> to food: solve the global challenges of greenhouse gas carbon dioxide and food shortage by converting CO<sub>2</sub> to single cell proteins in gas fermentations

#### Abstract

Two challenges faced by the mankind are the overuse of fossil fuels and the subsequent overproduction of carbon dioxide as a greenhouse gas, and the shortage of proteins due to rising world population and growing need for protein rich diet. CPI aims to solve those challenges by research and developing technologies that converts CO<sub>2</sub> to protein through gas fermentation. A class of microorganisms called chemolithotrophs which grow efficiently using CO<sub>2</sub> as the sole carbon source and produce single cell proteins that is a good source of nutrition. CPI has developed the capability and owns the industrial know-how on gas fermentation at both the early stage R&D and later stage process development and piloting. It boasts a newly renovated gas fermentation lab consisting of lab scale fermenters specialising in gas fermentations using C1 gases, with which we helped customers to develop, prototype and demonstrate gas fermentation product/processes, moving fast from proof-of-concept to full production and commercialisation with speed and safety. This enables commercial services in the areas of high throughput host cell screening/selection, process characterisation and development, process modelling, techno-economic analysis, and piloting and process demonstration. A success story told is CPI has helped a customer built, commissioned and been operating a pilot scale purpose-built gas fermentation loop reactor to grow a Methylotriph using another C1 gas methane for the production of single cell proteins.