The client and background

We are working with **a food manufacturing business and brand owner whose products include cured, chilled meat**. Curing is a traditional preservation process used to impart colour, flavour and texture to some meats, in addition to food safety control against pathogens. The curing process combines several elements (e.g. use of a brine, hanging, tumbling/manipulating, forming and cooking) over a number of days/weeks/months, to produce a variety of tastes and textures in the end products, e.g. a traditional cured, sliced ham. This process also **requires the addition of nitrates/nitrites (in the form of the brine)**, which are injected into the raw meat and/or used to immerse it, before further processing.

There is **research suggesting that the use of nitrates/nitrites can cause potential health issues**, through the formation of potentially carcinogenic nitrosamines. It is for this reason that **food processors and retailers are exploring alternative ingredients**, e.g. vegetable powders containing natural sources of nitrates, to reduce the impact on the human body. However, replicating the physical appearance, as well as texture and flavour of premium quality meat has been problematic when using alternative ingredients and the chilled environments required for food processing.

The search

The client is therefore actively searching for a step-change in **potential solutions to replicate the meat curing process (and subsequent physical appearance/flavour) without the use of added nitrates/nitrites.** The compounds to be replaced provide several functions, and so any alternative solutions should have quality parity to current premium ham products in the market place and enable one or more of the following:-

- Retention of fibrous texture of cooked meat
- Characteristic pinkish colour and cured flavour
- Food safety/shelf-life stability / production of toxic compounds

Solutions which can only provide some of the functionalities above would be interesting if a combination with other methods could lead to a replacement / reduction in the use of nitrites in the process.

Potential solutions could include those that could be implemented immediately, or require further research and development work, such as:-

- **New ingredients to directly replace the use of nitrates/nitrites**
- **Alternative processes / equipment to replace use of ingredients – e.g. tenderising and processing of proteins / muscle tissue**
- **Processes or equipment that provide the same physical benefits of nitrates/nitrites without over-processing the meat (i.e. requiring further tumbling and reforming after process)**

The client is also interested to understand the physiological and chemical processes further, and are therefore interested in the following:-

- **Research groups looking at the molecular basis of nitrite curing in the fields of Meat and Food Science (e.g. reactions with muscle structure)**
- **The use of processing techniques for muscle tissues, proteins and live tissue (e.g. in non-meat applications such as fish, vegetable matter)**
- **Role of fermentation microorganisms in curing**
- **Chemical alternatives to nitrite ions**

What the client can offer

The client is a large and established food manufacturing business and has excellent market access to introduce new products and provide a pathway to exploitation of new technologies. The client is interested in potential collaboration with research groups developing technologies, those looking to commercialise relevant technologies and companies able to supply ingredients or processing systems directly. In addition they may be able to support any research or development directly with their resources, or through public funding. Please send any preliminary information on any potential solution or partner to:- Diane Kolonko, via diane@strategicallies.co.uk