



# OUR SERVICES

SUPPLYING 100% PLANT-BASED BESPOKE  
PROTEINS TO THE CELLULAR AGRICULTURE  
INDUSTRY



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# LEAF EXPRESSION SYSTEMS

At Leaf we live and breathe plants. Our scientific team are all specialist plant scientists with a depth of expertise in the production of proteins in plants. By using our extensive knowledge of plants' cellular functions, we are combining nature and biotechnology to provide ingredients faster and more sustainably to the cultivated meat, dairy and seafood sectors of the cellular agriculture industry.

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# WHY LEAF?

SupraVec® is our proprietary plant-based transient expression technology that allows us to produce bespoke active ingredients in the leaves of plants. The SupraVec® system has several advantages:



## Free from CRUELTY

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No animals are used in the process.



## More SUSTAINABLE

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Plants are self-contained individual bioreactors.



## Non-GMO

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We use transient expression technology. This means that we are not creating, or using GMO plants to manufacture our own products.



## Free from CONTAMINANTS

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Produced in controlled conditions, our products are free from contaminants such as pesticides, chemicals and animal infectious agents.



## And we're FAST

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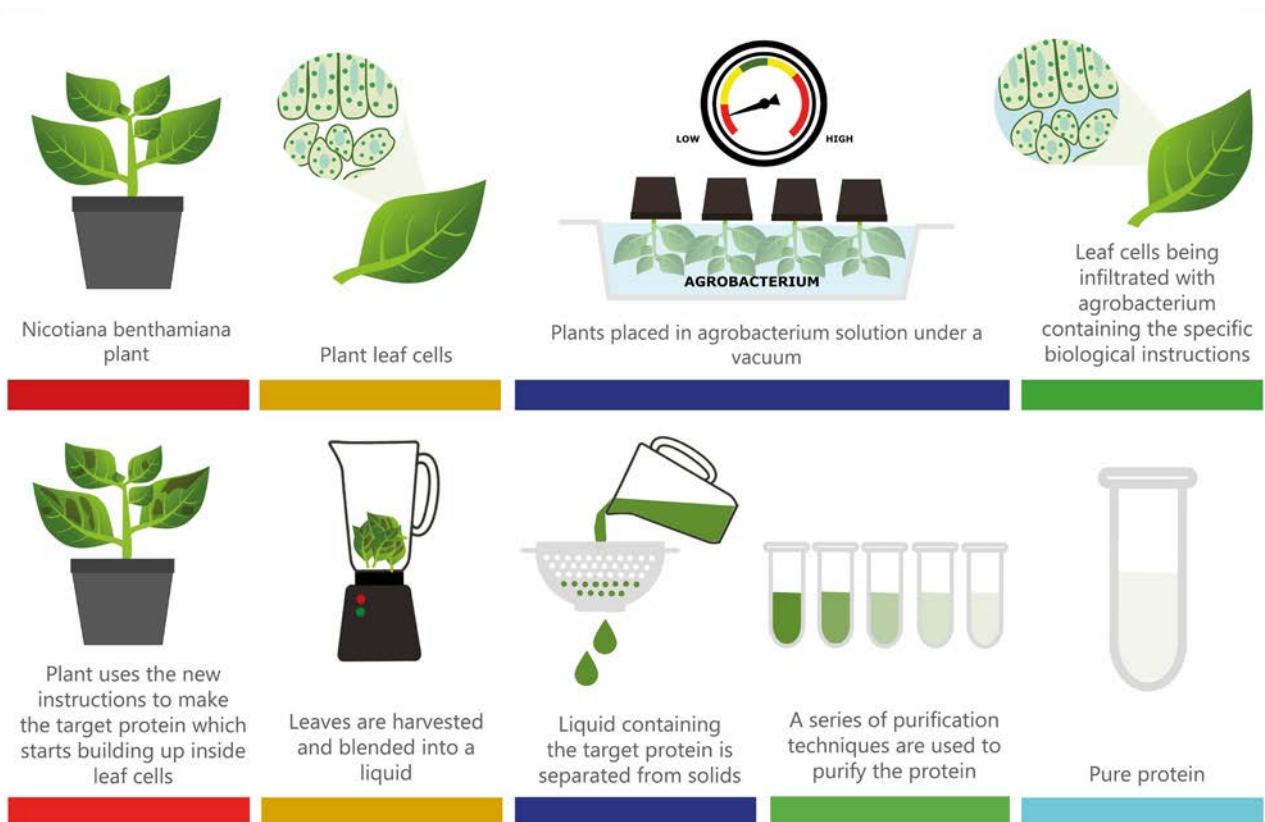
The process is established and developed in a matter of weeks.

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# THE PROCESS

## HARNESSING NATURE'S BIOREACTOR

Our SupraVec® technology allows for the rapid simultaneous production of multiple gene products in a controlled and coordinated manner within the tissues of plants. Using gene synthesis and modular vectors, new products are rapidly produced and easily scaled.



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# OUR SERVICES

Our cohesive portfolio of services lends itself to both small-scale feasibility studies and large-scale manufacturing. Our technology, facilities, expertise and contacts enable us to undertake multiple simultaneous projects.

## TRANSIENT EXPRESSION

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This non-GMO expression process is fast and efficient. Once the plants are infiltrated, purified protein is delivered within two weeks.

## STABLE EXPRESSION IN PLANTS

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We can create stable whole plant lines on behalf of our clients for long-term, large-scale production in other geographical locations.

## STABLE EXPRESSION IN CELL LINES

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We can generate bespoke plant cell lines using bioreactor-based processes with high levels of expression in a stable production platform. It is easily scalable and cost-effective when compared to other eukaryotic bioreactor processes.

## RESEARCH AND DEVELOPMENT

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Our experienced scientific team have a combined 100+ years of developing processes for the manufacture of biologic products for the health, personal care, life sciences and agritech industries.

## DEDICATED PROJECT TEAM

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You will be assigned to a dedicated senior member of our project team. They will be on hand throughout the length of the assignment to help guide and advise to ensure that your specific needs are met.

## OUT LICENCING

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Commercial licences for our SupraVec® technology will allow you to run your own inhouse manufacturing if required. A full tech transfer can also be provided to ensure a seamless transition for production within your own facility.

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# PRODUCTS

## PLANT-BASED GROWTH FACTORS AND CYTOKINES

Growth factors are an essential component of the serum-free cell culture media that is required for efficient expansion and maturation of animal cells under controlled culture conditions.

We have produced a number of growth factors and cytokines that are available on an exclusive or non-exclusive licence basis.

For further information on our plant-based growth factors, or to speak to us about bespoke growth factor productions (alternative species or growth factors engineered for improved stability) email [info@leafexpressionsystems.com](mailto:info@leafexpressionsystems.com).

### INTERLEUKIN 1 $\alpha$

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Cell  
Maintenance

### INTERLEUKIN 1 $\beta$

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Cell  
Proliferation

### INTERFERON A

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Wrinkles/Fine  
lines

### TNF $\alpha$

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Muscle Cell  
Maintenance

### IGF

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Cell  
Differentiation

### PDGF

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Cell  
Differentiation

### FGF2

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Cell  
Proliferation

### GM-CSF

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Increase  
Collagen