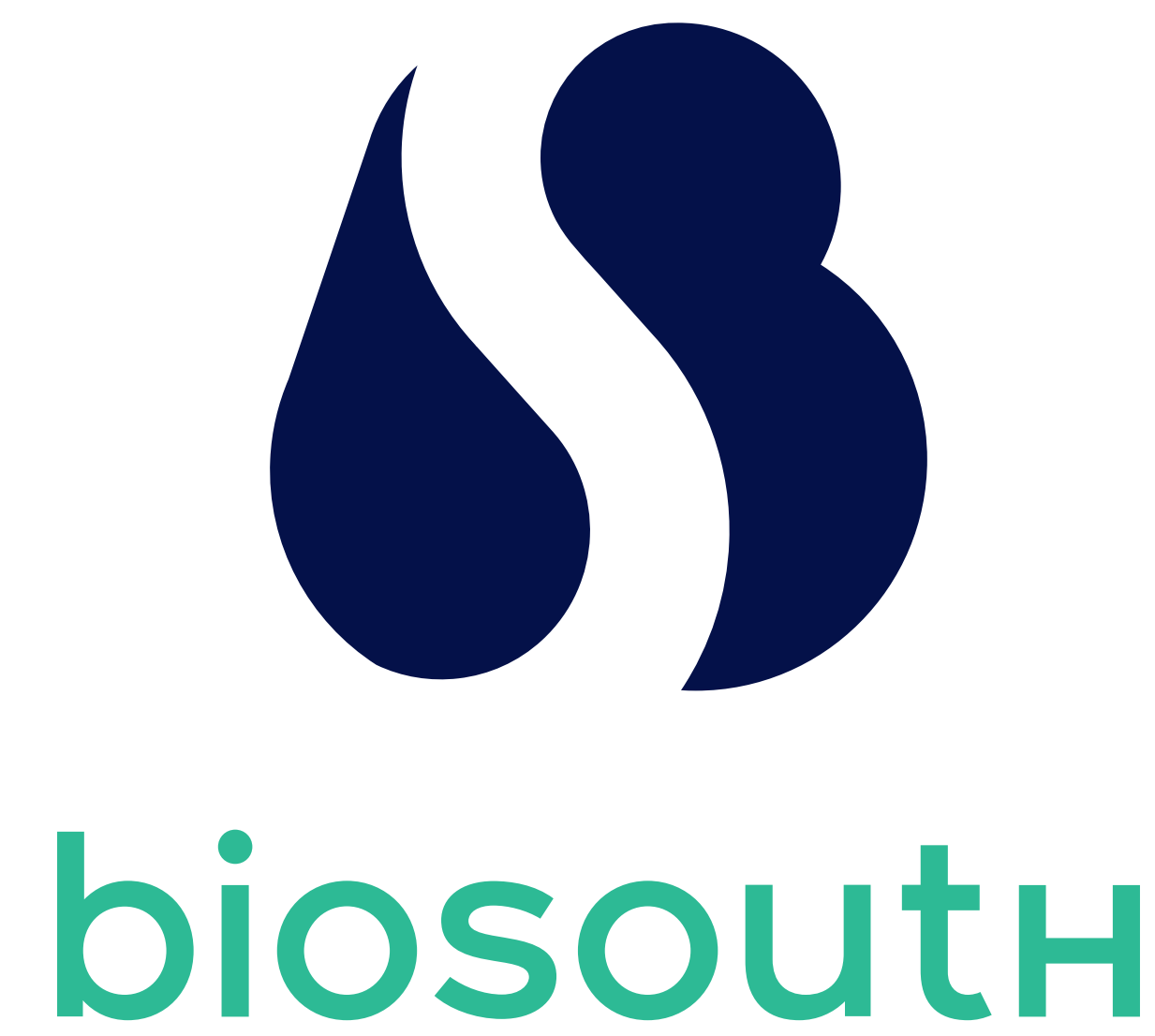


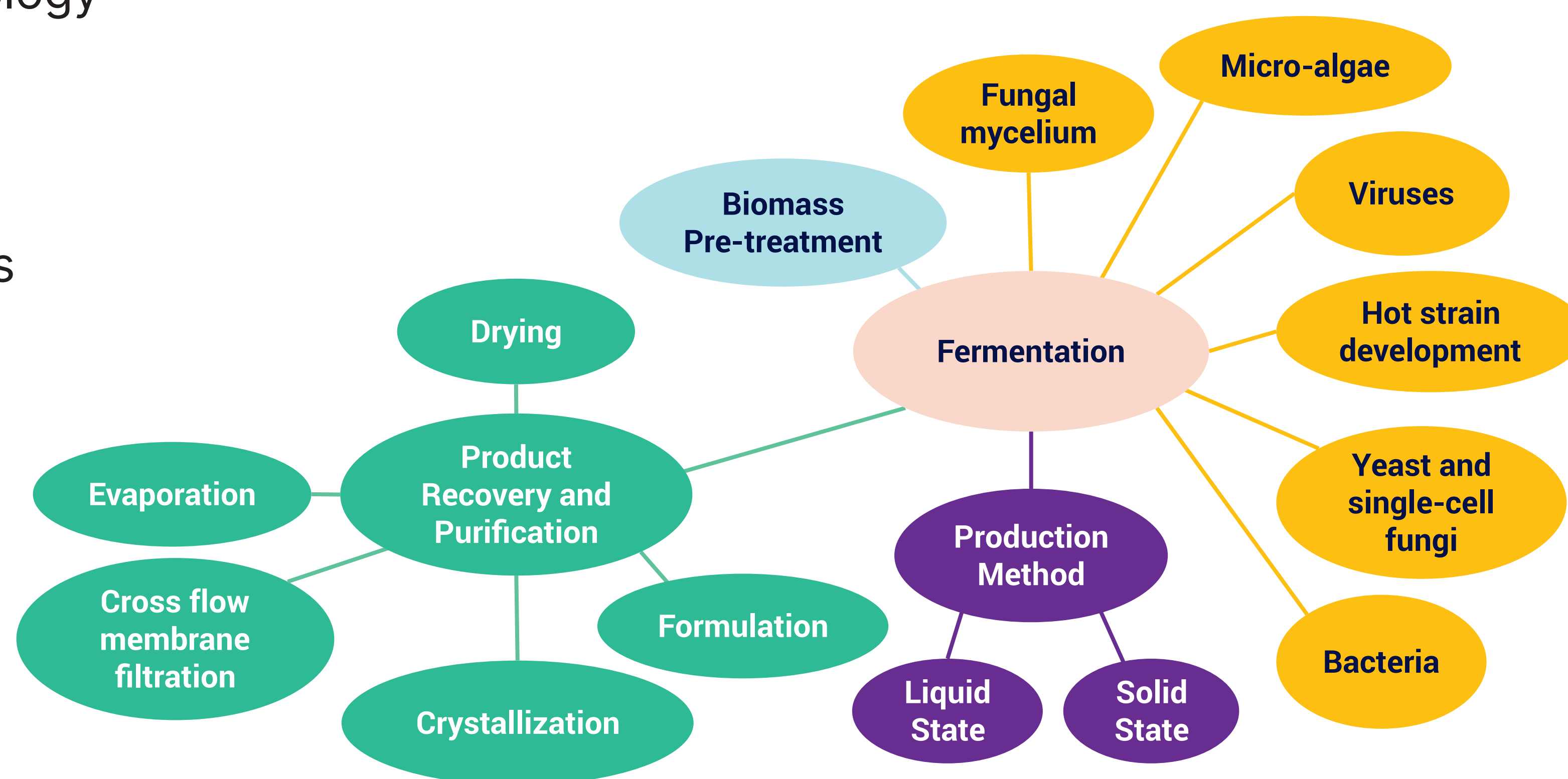
# Microbial fermentation and downstream processing for scale-up and contract manufacturing



- Bringing together people, processes, and technology to deliver breakthrough scale-up solutions
- Taking products from laboratory through to commercial-scale production
- Situated in Canterbury, New Zealand, BioSouth is ideally located to serve the Australasian market

BioSouth comprises a committed and capable group of New Zealand and Australian professionals with extensive experience in microbial fermentation as well as the process engineering and automation associated with its production.

When you work with BioSouth you don't just get access to plant and equipment in New Zealand and Australia, you get access to a wealth of collective knowledge and experience. If you are serious about getting your bacterial, yeast or fungal system beyond the lab to successful scale-up and beyond, you need to talk to BioSouth.



## BioSouth's Position in the Value Chain

### Upstream process optimisation – fermentation

BioSouth can get you from laboratory through the technical and scientific challenges of producing at scale. Our advanced facilities and extensive experience of process optimization offer a comprehensive solution to reduce the cost of microbial fermentation at commercial volumes.

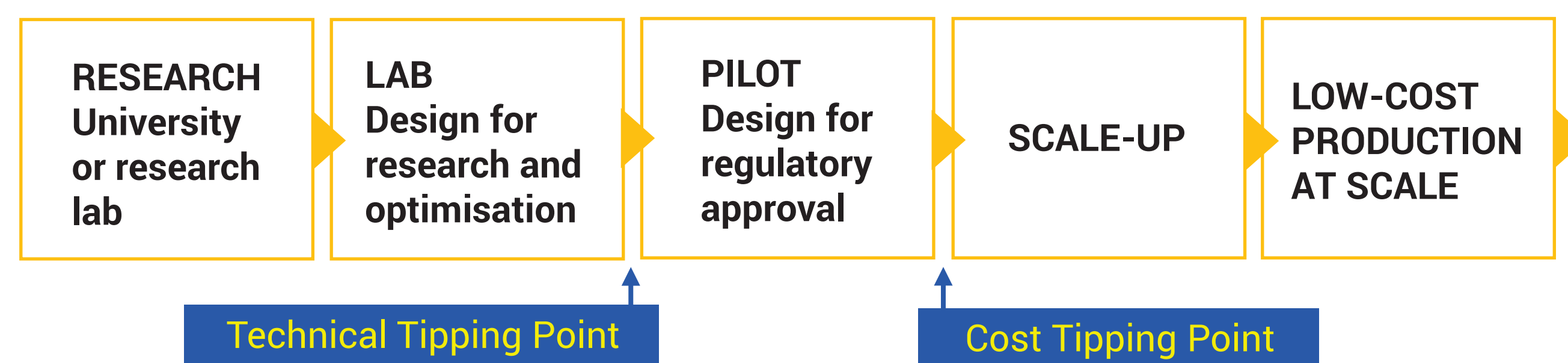
The optimisation of culture conditions is an essential part of upstream process fermentation. BioSouth employs systems biology, process design and fermentation media development coupled with automated systems and nascent AI to optimize the fermentation process. BioSouth can ensure production costs are minimised and thereby support commercial viability.

### Downstream process optimisation - product recovery and purification

Fermentation at scale presents a unique set of challenges but it's only the start. The challenge to get a microbial product or process from lab to scale-up and out to commercial scale production involves extensive work post-fermentation: product separation, filtration, dewatering, stabilisation, formulation and beyond.

BioSouth has a range of technologies and processes at its disposal to take your product from fermentation brew to a stable final product. BioSouth can even hold product for you at required temperatures and dispatch to your customer as required.

#### PRELIMINARY ACTIVITIES



#### SECONDARY ACTIVITIES



## Part of a global knowledge network

Beyond BioSouth's own technical and scientific capability exists an extensive network across universities and research institutions in both New Zealand and Australia. The BioSouth team may not always have the answers as every microbe presents its own unique set of challenges. But through the BioSouth extensive network in both countries and around the world, coupled with its own Science Advisory Board, knowledge and solutions to complex problems are never far away.

The BioSouth Science Advisory Board (SAB) provides independent advice to the BioSouth management team. It provides a strategic scientific overview and serves to aid BioSouth as it pursues its vision for a centre of excellence in bioprocessing and contract manufacturing in New Zealand and Australia.

#### Emily Parker

Professor Emily Parker joined the Ferrier Research Institute in 2017 to lead the Chemical Biology Research Group. Emily is a Principal Investigator and on the management committee of the Maurice Wilkins Centre for Molecular Biodiscovery which harnesses and links New Zealand's outstanding expertise in biomedical research to develop cutting-edge drugs and vaccines.

#### Roma Gwynn

Dr Roma Gwynn has an MSc in Technology for Crop Protection and a PhD in Insect Pathology from Reading University. Roma has taken a lead role in the EU and internationally in the development and registration of new biopesticide technologies including semi-chemical, botanical, and microbial substances. Her expertise is in facilitating the process of getting biopesticide products onto the market with a particular focus on process efficiency.

#### Ian Boddy

Ian Boddy is the principal in his own technology consultancy IKBCConsulting. He has a PhD in organic chemistry from the University of Auckland, was a Research Fellow at Cambridge University and then a Senior Research Leader with Shering AG, a large German agrochemicals company. Ian was GM Commercial at AgResearch and is a member of the NZ Institute of Directors.

#### Andy Shepherd

A Senior Principal Research Scientist with CSIRO since 1986 based in France as well as Australia working on invasive species management. Andy has an active portfolio of research projects in weed, pest, and invasive species management covering Australia, South Africa and France. He was elected to the Australian Academy of Technology & Engineering in 2019 and an Associate Corresponding Member of the French Academy of Agriculture in 2020.

## Transparency and IP protection

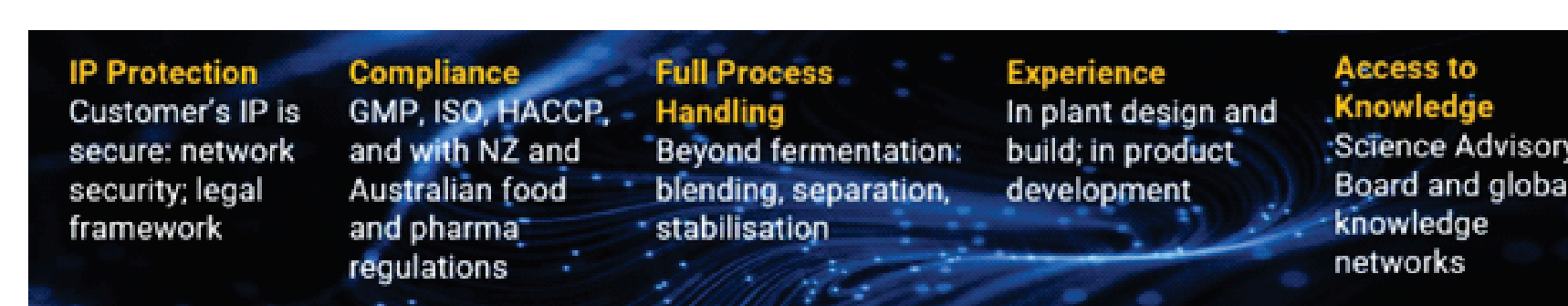
BioSouth is independently owned and operated by New Zealanders and Australians committed to seeing their countries succeed in the bioproducts space in rapidly developing global market. Protocols and systems are in place to ensure full confidentiality and IP protection for all our customers. You can be assured that your IP is safe with us. Any IP accrued along the way belongs to our customers and not to BioSouth.

### Compliance

Whether its biopesticides for crop protection, microbes for environmental remediation, or even alternative proteins, each product and application face its own unique set of challenges when it comes to regulatory compliance. BioSouth can help navigate the complexities. BioSouth's labs will be PC2 certified, and the company is well versed in the regulatory requirements of both the New Zealand and Australian markets.

### Critical success factors

BioSouth covers the critical success factors necessary to ensure it can take your product from laboratory to market in the Australasian region. From IP protection to navigating the challenges of compliance, access to knowledge networks when needed, and practical experience in plant design, build, instrumentation and automation, BioSouth stands ready to help.



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