# At Biolinker, we **discover, develop** and **manufacture** your target protein

Portfolio Presentation

Awards we are proud of:
• Top 500 deeptech startup worldwide (Hello Tomorrow) • Top7 Biotech startup in Brazil (100 Open Startups) • Startup of the Future (Sebrae) • Top 40 startup (Wolves Summit) • Prize to founder Mona Oliveira, PhD, for 'Contributions in Innovation and Entrepreneurship' (University of São Paulo)

# Agenda

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Happy clients, happy life...

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It is not only expertise...

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# Who are we?

Company Overview

# Who are we?

Company Overview

### Founded by Scientists of the University of São Paulo

Scientific background in Biochemistry, Biotechnology, Nanosciences and Nanotechnologies, Veterinary Medicine.

### Syntethic Biology Pioneer in Latin America

Biolinker is 1 of only 10 companies worldwide with own kit for cell-free protein synthesis. We have an ISO-certified laboratory with clean room on 250m² on the outskirts of São Paulo.

### Fortune Global 500 Customers

Biolinker collaborates with Fortune Global 500 companies in various industries, leveraging their technology for broad applications.

### Proteins for agriculture, industrial biotechnology, pharmaceuticals, food, and more.

Biolinker discovers, developed and manufactures recombinant proteins across a range of sectors

### Strong in Toxic and Difficult-to-Express Proteins

Biolinker developed its own cell-free protein synthesis extract for toxic and difficult-to-express protein expression

# What we can do for you?

Services Overview

# What we can do for you?

Services Overview

### Protein Services

Discover, develop and manufacture novel proteins for your application

### Enzyme Services

Discover, develop and manufacture novel enzymes for your application

### Diagnostics + ELISA dev

Develop diagnostic reagents and tools. Provide ELISA services

### Strain Optimization

Engineer microbial strains with desired properties

### Bioprocess Engineering

Develop and optimize bioprocesses for the production of recombinant proteins

### Life Science Products

Catalogue products for the Life Science community

# Our Synthetic Biology Platform 'Sol'

*... our proprietary 'secret sauce‘ ☺*

# Synthetic Biology Platform 'Sol'

We developed our protein engineering platform Sol to allow customization to client needs.

### Genetic Repository

database containing genetic information and related performance data

### Cell-free and Cell-based Expression Systems

different expression systems for different requirements of target proteins

### Scalability

transition from small-scale to large-scale protein production possible


### Directed Evolution Techniques

generation of diverse protein libraries and selection of the best-performing variants

### Purification Methods

different and efficient protein purification techniques

### Customizability and modularity

combination of specific tools and techniques based on specific research objectives possible

# Why is our platform Sol special?

The 6 elements of our protein engineering 'secret sauce'

## Genetic Repository

• We have over 100 organisms for production of proteins • Our Genetic Repository database contains genetic information and related performance data • We leverage existing genetic designs and data to execute new projects.

## Cell-free and Cell-based Expression Systems

• We attend different requirements of target proteins in terms of yield, solubility, and post-translational modifications • We have various expression systems for matching requirements.

## Directed Evolution Techniques

• Biolinker collaborates with Fortune Global 500 companies in various industries, leveraging their technology for broad applications.

## Purification Methods

• We work with efficient protein purification techniques, such as affinity chromatography, ion exchange chromatography, or size exclusion chromatography, to isolate your target protein.

## Scalability

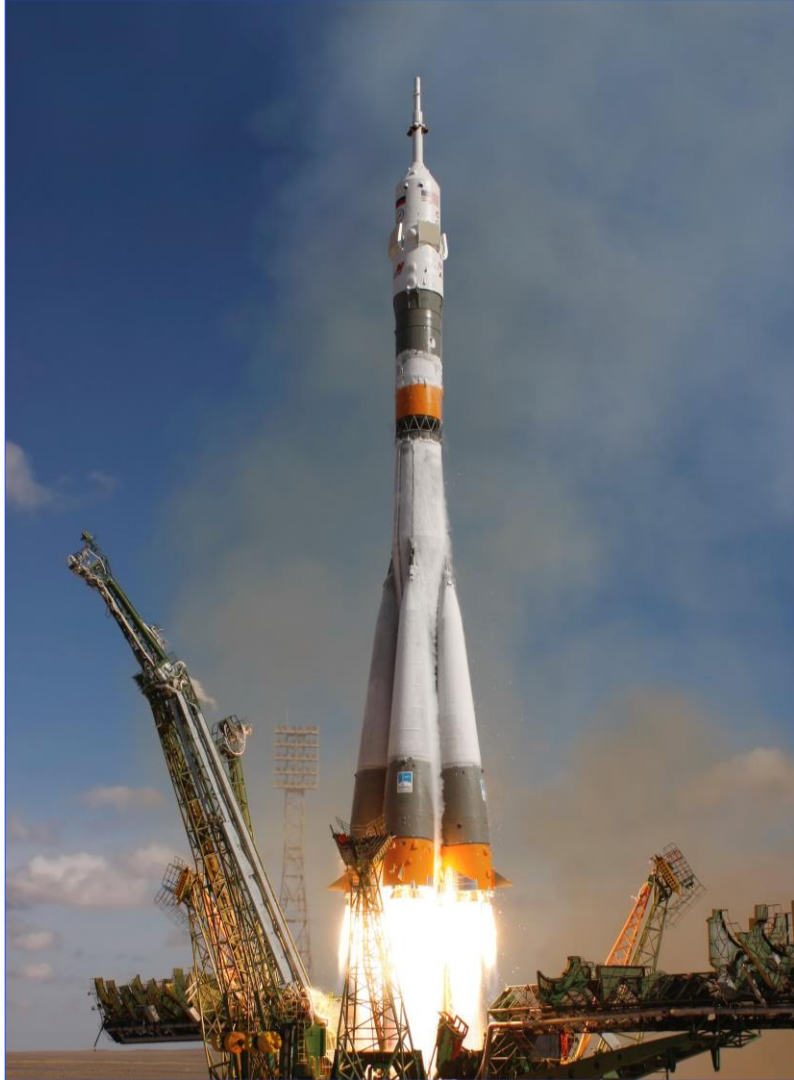
• Our cell-free platform is linearly scalable. We can transition from small-scale to large-scale protein production when needed.

## Customizability and Modularity

• Platform is customizable and modular. Our scientists choose and combine specific tools and techniques based on client‘s specific research objectives.

# Our Case Studies

Happy clients, happy life...



# Case Study 1: Cellva Ingredients

Production of animal ingredients through cell culture

## Background

Cellva is the first company in Brazil focused on the development and production of animal ingredients through cell culture

## Problem Statement

Client required an efficient and scalable production of growth factors to enable their cell culture processes for sustainable animal ingredient development.

## Results and Impact

Biolinker developed a bioprocess for growth factors and thus enabling Cellva to advance in their cultivated animal ingredient development.

## Key Takeaways

Proven experience in bioprocess development of growth factors + expressing growth factors.

> “The R&D and production of growth factors by Biolinker has enabled advances in the development of cultured fat.”

**Bibiana Matte**
Fundadora e diretora científica

# Case Study 2: Celluris

Biopharmaceticals. Israeli-backed Swiss-Brazilian company

## Background

Celluris is developing RefuaPepCAR, a CAR T-cell based therapy for the treatment of different hematological and solid tumors.

## Problem Statement

Discover and develop regulatory peptides for the CAR T-cell therapy in order to provide an additional level of control over the therapy, allowing clinicians to fine-tune the immune response.

## Results and Impact

Successfully expressed the relevant scFVs recombinant antibody. By using phase display, we screened and identifies a set of target peptides desired binding properties.

## Key Takeaways

Proven experience in discovery and development of peptides for the biopharmaceutical industry + expressing scFVs recombinant antibodies.

> “Biolinker offers the best price-to-quality ratio. Their service has greatly accelerated our work.”

**Patrícia Rozenchan**
Co-Founder and R&D Director at Celluris

# Case Study 3: Solvay

Belgian multinational chemical company. *Fortune Global 500* company.

## Background

The Client requires specific specialty enzymes to be employed as biocatalysts. The target specilaty enzymes shall be used in the conversion of raw materials into desired products.

## Problem Statement

The Client requested the research and development of a set of new enzymes with desired characteristics.

## Results and Impact

In order to deliver new specialty enzymes, Biolinker took advantage of bioprospection, screening, selection, characterization, optimization and final enzyme production.

## Key Takeaways

Biolinker successfully researched and developed novel specialty enzymes for a *Fortune Global 500* company.

# Case Study 4: Anheuser-Busch InBev

World's largest brewing company. *Fortune Global 500* company.

## Background

The Client want to improve the beverage formulation in order to adapt to new customer trends.

## Problem Statement

The Client requires the research and development of a novel specialty protein to be employed in their bewerages in order to enhance a specific sensory characteristic.

## Results and Impact

Project still ongoing (May 2023). Outook positive. Biolinker took advantage of bioprospection, screening, selection, characterization, optimization and final protein production. Further research ongoing in order to meet target characteristics.

## Key Takeaways

Biolinker took advantage of bioprospection, screening, selection, characterization, optimization and final protein production.

> “The collaboration between Ambev and Biolinker has played a fundamental role in bridging the gap between the fields of biotechnology and innovation. This partnership has paved the way for future endeavors, with the aim of delivering even more remarkable experiences to our consumers.”

**Carlos Augusto Barros**
ABinBev (Ambev Brasil)

# Case Study 5: Client subject to NDA

Agricultural biotechnology. R&D of genetically modified (GM) seeds

## Background

The undisclosed company is active in the agricultural biotechnology area. They research, develop and sell genetically modified seeds. They are the market leader in their segment.

## Problem Statement

The Client requested the whole development and scale-up of their target recombinant protein (R&D, optimization of expression and purification, production and scale-up to 5g). The target protein is a difficult-to-express Cry protein, required for regulatory purposes.

## Results and Impact

We employed a set of protein engineering strategies (e.g. Codon optimization, Promoter engineering, Tuning growth conditions) to successfully express the difficult-to-express Cry protein in desired quantity (5 grams) for regulatory purposes.

## Key Takeaways

Proven exprerience in protein engineering strategies (development and scale-up of target protein). Robust and well-documented manufacturing process with ISO-9001 process controls.

# Case Study 6: Faculty of Medicine (USP)

Academia (University of São Paulo, Brazil).

## Background

The Faculty of Medicine of the University of São Paulo was carrying out a research project to study the neglected disease Toxocariasis.

## Problem Statement

The toxic protein of interest, Toxocara, exhibits an unidentified domain and contains a substantial quantity of cysteine residues. Furthermore, its expression in Escherichia coli elicits a toxic response. The protein is difficult to express.

## Results and Impact

We strategically engineered the structure of the Toxocara protein in order to enhance protein expression. We used our own cell-free protein systhesis extract to express a minor quantity of this difficult to express protein (≈ 1 µg)

## Key Takeaways

Experience in strategic protein engineering of toxic and difficult-to-express proteins. Use of own cell-free extract for expression purposes.

# Case Study 7: Oswaldo Cruz Foundation

Non-profit research institute for biological sciences (Brazil)

## Background

The Oswaldo Cruz Foundation designed chimeric proteins (fusion protein).

## Problem Statement

The Client requested an expression of chimeric proteins in a cell-free expression system due to the platform‘s benefits (enhanced solubility and folding compared to expression in cellular systems).

## Results and Impact

Biolinker successfully expressed the target chimeric proteins. Nonetheless, the chimeric proteins exhibited instability after protein expression, possibly due to imbalance in protein stoichiometry.

## Key Takeaways

Own *E.coli*-based cell-free protein extract successfully used to express chimeric proteins.

> “Everyone was extremely attentive and provided immediate feedback in case of any doubts..”

**Lea Chapaval Andri**
Researcher

# Case Study 8: Federal University of Goiás (Brazil)

Academia.

## Background

The Faculty of Pharmacy of the Federal University of Goiás (Brazil) is developing a biopharmaceutical to suppress the cytokine storm.

## Problem Statement

Biolinker is tasked with developing a lipid-protein conjugate (lipidated protein) that exhibits inhibitory properties against inflammation. The primary challenge lies in achieving effective interaction between the lipid and protein molecules.

## Results and Impact

Project is still ongoing (2022-2024). Current results are very promissing.

## Key Takeaways

Biolinker has experience in manufacturing of a lipidated protein using recombinant protein expression and attaching the lipid moiety to the protein in a separate phase.

“

I am a full professor of Pharmaceutical Nanotechnology at the Federal University of Goiás. I contacted Biolinker for the acquisition of proteins and peptides for the development of biomimetic nanostructured systems and had an excellent service. From there, we developed a close relationship and are planning collaborative work for the near future. I recommend the company because of its competence, promptness and concern in providing the best possible service.

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**Prof. Dr. Eliana Lima**
Federal University of Goiás

# Case Study 9: Genes4You (Italy)

Italian nutraceuticals startup

## Background

The Italian company Genes4You is developing a novel nutraceutical.

## Problem Statement

Biolinker was tasked with expressing and purifying the target nutraceutical protein of interest.

## Results and Impact

Biolinker successfully expressed and purifyied the target nutraceutical protein. The project phases included gene cloning, expression optimization, protein expression and purification and quality control.

## Key Takeaways

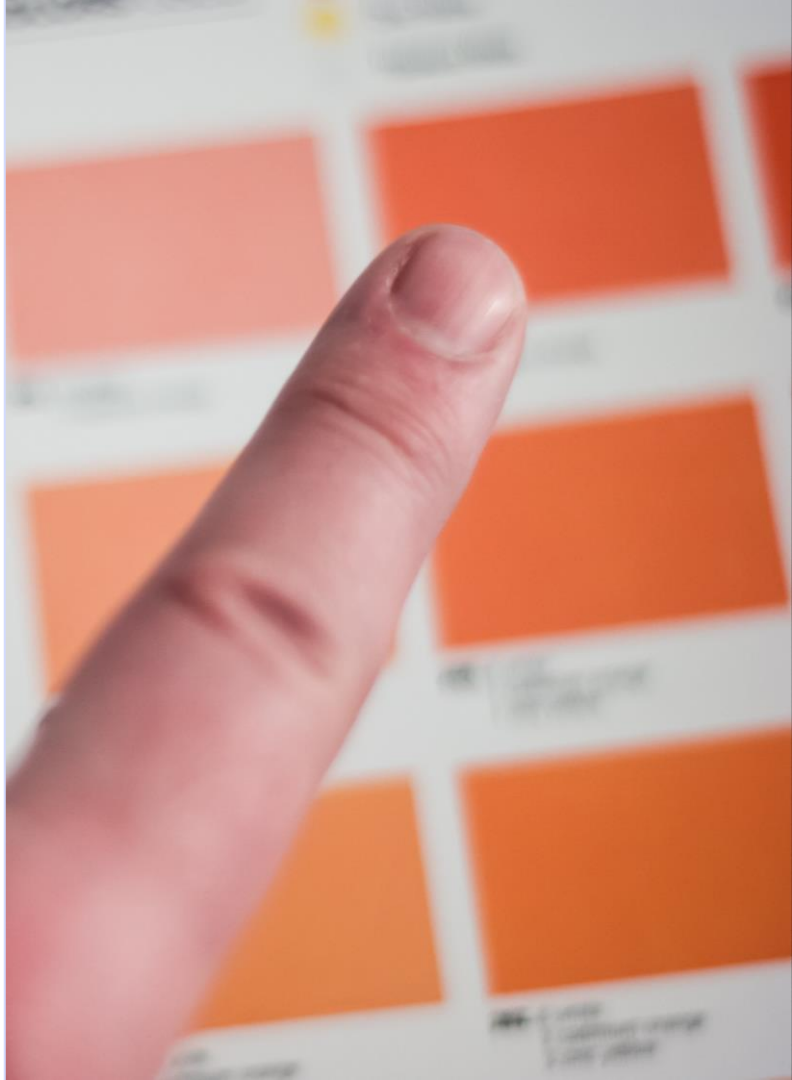
Biolinker has experience in expressing nutraceutical proteins.

> “Your contribution has been highly important to our work. Biolinker demonstrated exceptional efficiency and delivering optimal results.”

**Jessica Simoni**
CEO of Genes4You

# Why choose us?

It is not only expertise...



# Why choose us?

It is not only expertise...

### We are on the cutting edge of synthetic biology

We see ourselves as innovative and as a partner who brings fresh ideas to the table

### Agility

We adapt quickly to new information and change the course of action.

### Specialization

With cell-free protein synthesis, we focus on a specific niche and thus may have deeper expertise in difficult proteins

### Cost Efficiency

We have low overhead costs and are based in Brazil. We generally provide services at a lower cost.

### Commitment of the founders Mona, Sandi and Phelipe

The 3 founders are deeply invested in our work and we bring a level of passion and commitment.

# Next steps?

→ Contact us at yourfriends@biolinker.tech ☺