

Paras Biopharmaceuticals Finland

Key Areas of Work and Expertise

- Paras Biopharmaceuticals recombinant Biologics CDMO activities are centered and focused on development of:
 - Domain Antibodies (nanobodies, scFvs, diabodies, etc.)
 - Interleukins and IL variant proteins
 - Complex recombinant proteins
 - Recombinant Immunotoxins (RIT)
 - Recombinant vaccines/Virus Like Particles (VLP)
 - Plasmid DNAs

Paras Biopharma Strategy

Flawless Biologics™ Concept

- Like a Diamond with its unique and specific internal qualities, every Biologics is unique with its primary amino acid sequence, refolding and 3-D structure. Like a Flawless Diamond, biologics need to be developed and produced with extreme care and are difficult to produce.
- Paras Biopharmaceuticals, set up by a group of scientists and technologists with extensive experience, skills and successful track record in developing biologics, has expertise in producing next generation recombinant biologics that require highest level of knowledge & expertise. Paras Biopharmaceuticals main focus is to develop high quality biologics in the following categories-
 - Domain Antibodies (Nanobodies, Diabodies, scFvs)
 - Interleukins (IL) and IL fusion proteins
 - Recombinant Vaccines/Virus Like Particles (VLPs)
 - Plasmid DNA
 - Complex recombinant Proteins
- Paras Proprietary Technologies enable efficient production of recombinant biologics



Flawless Biologics™

a Paras Biopharma initiative

Paras Biopharmaceuticals Introduces The Concept Of Flawless Biologics™

Stay Tuned For Further Updates...

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Flawless Biologics™

A Paras Biopharma initiative

Enabling Flawless Biologics™

Building Quality Robustness in Development, Scale-up, and Production of Biopharmaceuticals

Enabling Biologics



Scale-up



Biologics CDMO and Biosimilars

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Flawless Biologics™

a Paras Biopharma initiative

Development and Process Optimization

- Fully optimized
- Low deviations
- Accountability in development
- Well-characterized process
- Limited variability
- Extensive profiling
- State-of-art analytical methods
- Scalable process

Paras Biopharma introduces its Flawless Biologics™ concept for **Development and Process Optimization** of recombinant proteins.

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Flawless Biologics™

a Paras Biopharma initiative

Scaled-up Production

- Finnish Quality Excellence
- Low regulatory risks
- Addressing multiple batch production flexibility
- World-class production suite
- Logistical support and planning
- Economical Production
- Speed to market
- Superior Quality

Paras Biopharma introduces its **Flawless Biologics™** concept for **Scaled-up Production** of recombinant proteins.



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Paras Biopharma USP

Enabling and Enhancing Microbial Technologies

Paras Proprietary Technologies

Paras Proprietary Technologies enable efficient production of recombinant biologics

#	Paras Proprietary Technology	Value additions
1	Diabrid® Technology	Optimized protocols and procedures are used along with economical method to facilitate highly efficient refolding of proteins.
2	Noblecleav® Technology	Incorporates gene construct with Paras Proprietary Partner and Spacers, enabling high expression yields for difficult and challenging proteins
3	Biomultifold® Technology	Enables achievement of multigram of proteins per liter of fermentation – yield enhancing technology
4	Cytofold StructQuant® Technology	Expression of recombinant proteins / peptides in the cytoplasm of proprietary E. Coli as fully active proteins

Proven Toolbox

(for recombinant biologics production)



Cytofold
StructQuant®
Protein
Folding
Technology



A first of kind tried and tested technology for production of soluble complex recombinant proteins in the cytoplasm of an *E. coli*.

Write to us at BD@parasbiopharma.com to know more about this technology and explore options to save time and costs by using this technology for your recombinant biologics candidates.

Diabrid®
Technology

NobleClev®
Technology

Biomultifold®
Technology

Cytofold
StructQuant®
Technology

Contact us to know more about Paras Biopharmaceuticals Proprietary Biologics Production Technologies

www.parasbiopharma.com

Are you looking to achieve a robust and consistent production process for your recombinant biologics?



Recombinant Biologics CDMO
E. coli / *S. cerevisiae* / *Pichia*

Talk to **Paras Biopharma experts** to know more about our tool box and proprietary technologies for economical production of your biologics.

Diabrid®
Technology

NobleClev®
Technology

Biomultifold®
Technology

Cytofold
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Technology

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Paras Biopharma USP

Endotoxins Solutions

Paras Biopharmaceuticals Offers Knowledge-Driven Solution for Endotoxin Control

- Endotoxins form a major contaminants in commercially available proteins or biologically active substances. Endotoxins can initiate a strong immune response such as endotoxin shock, organ failure, tissue injury, disseminated intravascular coagulation, and even death.
- Due to the harmful effects of endotoxin, the FDA has limited the concentration of endotoxin
- Endotoxin removal is one of the most difficult tasks in downstream processes during protein purification. With years of experience in the field of recombinant protein development and Production, Paras Biopharmaceuticals deeply understands that removal of endotoxins from your biologicals is extremely important.
- We will be your reliable partner in effectively reducing the endotoxin levels and meeting strict regulatory requirements.
- We use a combination of unique technology knowledge and scientific understanding for effective removal of Endotoxins.



Your preferred CDMO for low
Endotoxin recombinant Proteins

Endotoxins Problem



Endotoxins-Solution

Speak with our
technical experts today
to know about our
custom approach on
endotoxin removal



Diabrid®
Technology

NobleClev®
Technology

Biomultifold®
Technology

Cytofold
StructQuant®
Technology



Your preferred CDMO for low Endotoxin recombinant Proteins

Endotoxins-Solution



Speak with our technical experts today to know about our **custom approach on endotoxin removal**

Enabling Process Development and Scaleup

Ensuring large scale batch production and supply



Diabrid® Technology

NobleClev® Technology

Biomultifold® Technology

Cytofold StructQuant® Technology

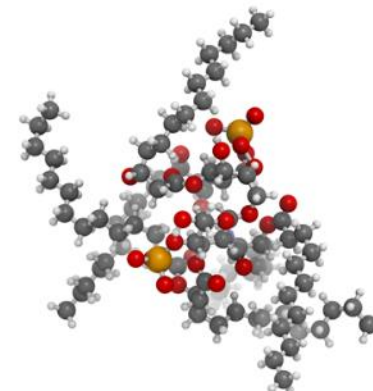
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Your preferred CDMO for low Endotoxin recombinant Proteins

Endotoxins-Solution

For Bulk Recombinant Biologics



Lipid A Bacterial Endotoxin

Endotoxins, part of cell walls of gram-negative bacteria, are a major contamination issue in production of recombinant biologics.

If left unchecked, they tend to cause major reactions and adverse effects.

Paras Biopharmaceuticals

is your recombinant biologics partner for helping you enable low endotoxin levels in bulk recombinant biologics material.

Enabling Process Development and Scaleup

Ensuring large scale batch production and supply



Speak with our technical experts today to know about our **custom approach on endotoxin removal**

Diabrid® Technology

NobleClev® Technology

Biomultifold® Technology

Cytofold StructQuant® Technology

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Paras Biopharma USP

Flexible Timelines and Rapid Turnaround Times

Achieving Critical Milestones in Aggressive Timelines

- Paras Biopharmaceuticals team has developed expertise to work on aggressive timelines to achieve critical milestones for client projects. If you are looking for technical solutions in limited timeframe, we can be best suited for such Biologics Projects.
- Small, medium, and large companies look for aggressive timelines to scale up their processes and carry out IND-enabling Tox studies.
- It is crucial for the companies to achieve the milestones set before the next fundraising round.
- Considering the cash position for 1 to 3 years (especially small and mid sized companies), it becomes even more crucial to get the milestones achieved.
- Paras Biopharmaceuticals has flexible timeline schedules for accommodating projects with pressing deadlines.
- We can aim for a scalable production process in just 3 months from the time we have the gene sequence.

Gene Sequence to Scalable Process + Protein **In Three Months***



Time Saved =
Revenue Plus

- ✓ IL-fusion proteins
- ✓ Long Peptides
- ✓ Nanobodies
- ✓ Diabodies
- ✓ Peptibodies
- ✓ Domain antibodies
- ✓ scFvs

Paras Biopharma's
Feasibility Study Program is a time-efficient project to express your difficult proteins in 3 months*

Diabrid®
Technology

NobleClev®
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Biomultifold®
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Cytofold
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Technology

[Click here to know more about Paras Biopharmaceuticals Proprietary Biologics Production Technologies](#)

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Paras Biopharmaceuticals Finland Oy, Kiviharjunlenkki 10, OULU, FI-90220 Finland * Conditions apply

For scaled-up Microbial Production (750L scale) in **2 months**



Your Trusted Partner for Single-Domain Antibodies Development and Production

Offering Efficient Production of Recombinant Proteins in Microbial Systems

Diabodies; Peptibodies; IL-Fusion Proteins; scFvs; and many more...

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PARAS PROPRIETARY MICROBIAL TECHNOLOGIES

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Paras Biopharma USP

Unmatched Prices

Unique Solutions for Cash and Long-term Partnership

- Cost control (especially for smaller biotech companies) is very essential in the initial stages because of the restricted resources.
- A smart cost-control program will be beneficially in the long-term survival of the biotech company.
- Paras Biopharma offers attractive business models (risk reward based; manufacturing partnership) for companies to control cost at the initial stages.
- As a result, the companies will be able to support more programs in their pipeline thereby increasing the chances of success.

Paras Biopharma Expertise

A wide range of recombinant biologics

Paras Biopharmaceutical Unique Expertise

- Paras Biopharma expertise lies in bringing unique combination on quality focused product development, work on aggressive timelines & in limited cash. Productivity and Product Quality are our main attributes.
- Paras Biopharma focus is on development and production of next generation recombinant biologics that are produced in microbial systems (*E. coli*, *Pichia*, *Saccharomyces*).
- These next-generation biologics include:
 - **Domain Antibodies (nanobodies, scFvs, diabodies, etc.)**
 - **Interleukins and IL variant proteins**
 - **Complex recombinant proteins**
 - **Recombinant Immunotoxins (RIT)**
 - **Recombinant vaccines/Virus Like Particles (VLP)**
 - **Plasmid DNAs**
- Unlike simple recombinant proteins, these recombinant biologics require specialized technologies (Paras Biopharma possesses) and robust experience in working with these products.

Paras Biopharma Expertise

**Interleukins (IL) and IL Variant Proteins & Domain
Antibodies**

Developing an Interleukin or IL variant protein candidates for unmet medical needs?



Interleukins Expert Recombinant
Biologics CDMO

Talk today with Paras Biopharma to know how you could benefit through our experience of successfully developing such complex proteins in microbial systems.

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Technology

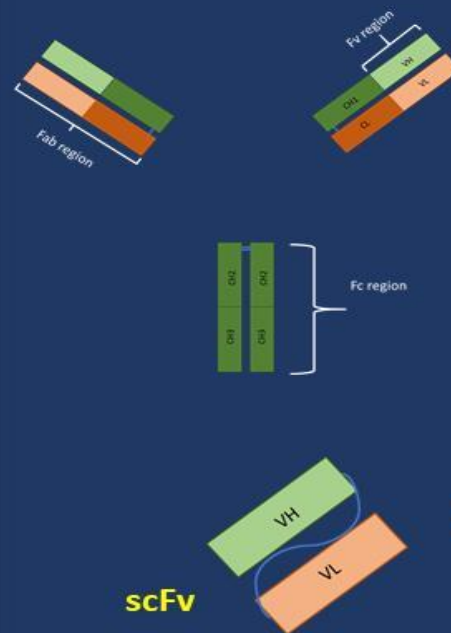
Cytofold
StructQuant®
Technology

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Paras Biopharmaceuticals - Domain Antibodies Production Technologies



scFv (single-chain fragment variable)

An scFv is a fusion protein and is made up of a variable heavy (VH) and a variable light (VL) chain domain linked by a linker peptide.

scFvs are mostly produced in microbial systems such as *E. coli*.

They offer many **benefits** over full length antibodies such as improved PK properties and improved reachability.

As a result, they have **wide applications** in therapeutics, diagnostics, and other research purposes.

Connect with Paras Biopharma to know more about our **Domain Antibody Production Technologies** and how we help our clients in their biologics development efforts

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Paras Biopharma Expertise

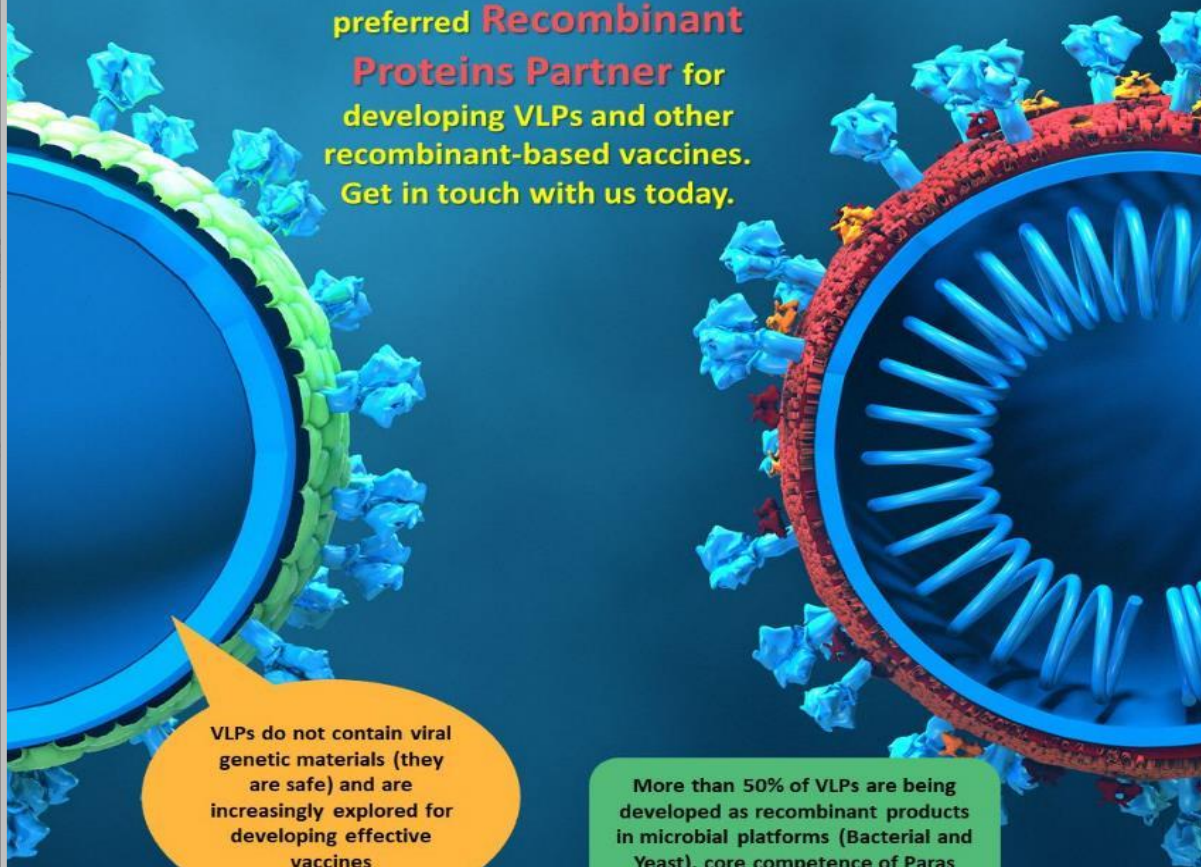
**Recombinant Vaccines/Virus-Like Particles (VLP) &
Recombinant Immunotoxins (RIT)**



Your preferred CDMO for VLP development and Production

Virus-Like Particle(VLP)

Paras Biopharmaceuticals is your preferred **Recombinant Proteins Partner** for developing VLPs and other recombinant-based vaccines. Get in touch with us today.



VLPs do not contain viral genetic materials (they are safe) and are increasingly explored for developing effective vaccines

More than 50% of VLPs are being developed as recombinant products in microbial platforms (Bacterial and Yeast), core competence of Paras Biopharmaceuticals

- Diabrid® Technology
- NobleClev® Technology
- Biomultifold® Technology
- Cytofold StructQuant® Technology

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Your preferred CDMO for antibody fragment-based RIT development

Recombinant ImmunoToxin (RIT)

Are you developing RITs and other novel tumor-selective targeting ligands for unmet oncology and other therapeutic needs?

RIT is a recombinant protein linked to a toxin. The protein binds to a cell and is engulfed inside, and the toxins kill the target cells. The protein is usually an antibody fragment (scFv) that can be produced in microbial systems (*E. coli*, *Pichia*, *Saccharomyces*).



- Diabrid® Technology
- NobleClev® Technology
- Biomultifold® Technology
- Cytofold StructQuant® Technology

Paras Biopharmaceuticals is your right partner for developing scFv and other antibody fragment-based RITs. Get in touch with us today.

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Recombinant ImmunoToxin (RIT)

Your preferred CDMO for antibody fragment-based RIT development

Immunotoxin Market Size is forecasted to grow at a CAGR of 7.8% from 2021 to 2026*

Finland-based recombinant biologics CDMO, Paras Biopharmaceuticals, is ready to contribute to this growing market. Contact us for **Efficient** and **Economical** development of your RIT.

Contact Mark.Jackson@parasbiopharma.com today.

Enabling Process Development and Scaleup

Ensuring large scale batch production and supply



* Source: Industry ARC Market Report



Your preferred CDMO for antibody fragment-based RIT development

RITs and other novel tumor-selective targeting ligands in your pipeline?

Leverage on Paras Biopharma's experience to expedite development of your scFv and other antibody fragment-based RITs.

- ✓ Small scale development
- ✓ Process scale up
- ✓ Large scale optimized batches



RIT is a recombinant protein linked to a toxin. The protein binds to a cell and is engulfed inside, and the toxins kill the target cells. The protein is usually an antibody fragment (scFv) that can be produced in microbial systems (*E. coli*, *Pichia*, *Saccharomyces*).

Paras Biopharma Expertise

Plasmid DNA

Contract Manufacturing of Plasmid DNA High Quality Grade and Scalable Process (gm to kg)



- ✓ High yielding Paras Biomultifold® Fermentation Technology
- ✓ Process and specifications tailored to suite your needs
- ✓ Plasmid DNA of various sizes
- ✓ Plasmid concentration from 1-20 mg/ml

pDNA applications:-

- Drug Substance for Cell and Gene Therapy
- DNA Vaccines
- Template for mRNA production

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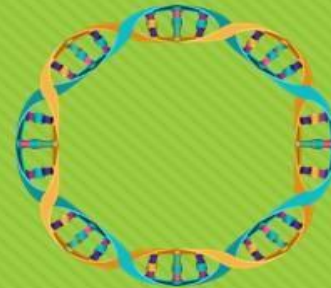


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Customized Plasmid DNA Production by PARAS PROPRIETARY MICROBIAL TECHNOLOGIES



- **Research and Preclinical-grade Plasmid DNA in short turnaround time and highly competitive price**
- **Material for IND enabling studies**

- ✓ High quality plasmid DNA (small & large scale production)
- ✓ Applications in Viral Vectors, DNA vaccines, CAR-T cell therapy and other needs
- ✓ Process and specifications tailored to suite your needs

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Paras Biopharma Expertise

Complex Recombinant Proteins

Paras Biopharma

Continuing Leadership in Microbial Recombinant Protein Production



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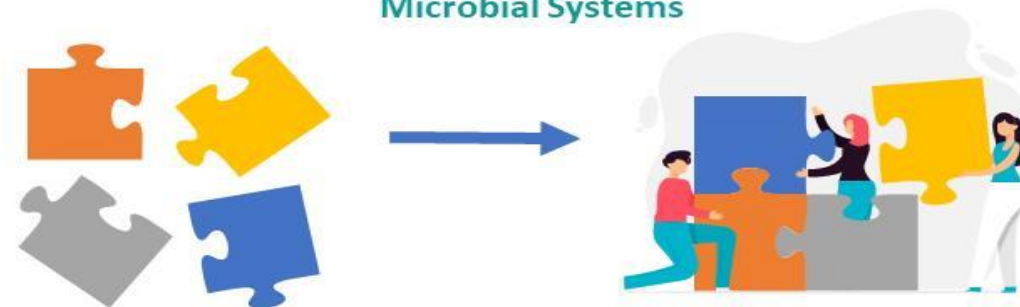
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Unsure How To Solve The Complex Path Of A Gene Sequence To A GLP Tox Study Batch?

Offering Efficient Production of Recombinant Proteins in Microbial Systems



- ✓ IL-fusion proteins
- ✓ Long Peptides
- ✓ Diabodies
- ✓ Peptibodies
- ✓ Domain antibodies
- ✓ scFvs

Paras Biopharma team will utilize **Paras Proprietary Microbial Technologies** to help you lead your way from **Scratch to Batch**

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Paras Biopharma

Recognition in the Industry

A big thanks to Nordic Selection Committee of NLS Invest 2021

for choosing Paras Biopharmaceuticals Finland Oy as one of the **“Rising Stars”** in the biopharma sector to join Nordic Life Science Invest.

Paras Biopharma continues to strive to develop innovative biologics for unmet medical needs as well as provide best biologics CDMO services.



Paras Biopharmaceuticals Finland Oy is recognised as one of the 30 Most Admired Companies to Watch 2021 by CIO Bulletin, USA

Paras Biopharmaceuticals has expertise to produce your Recombinant therapeutic Protein expression (in *E. coli*, *S. cerevisiae* and *P. pastoris*). The company's core competence is for your next generation biologics (domain antibodies, bispecific, Fab and scFv) using our proprietary microbial technologies.

30 Admired Companies to watch
CIO Bulletin 2021



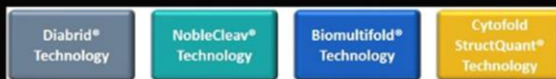
Paras Biopharmaceuticals Finland Oy

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30 Admired Companies to watch
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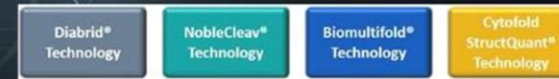
Your preferred Biologics CDMO / Recombinant Production Partner



Paras Biopharmaceuticals Finland Oy is named as one of the

Top Pharma Outsourcing Companies in Europe 2021

Your preferred Biologics CDMO / Recombinant Production Partner





ADDRESS

Paras Biopharmaceuticals Finland Oy,
Kiviharjunlenkki 10, Oulu, 90220, Finland
Phone: +358 442 709 462

EMAIL

bd@parasbiopharma.com
info@parasbiopharma.com



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