

# Infant Bacterial Therapeutics (BT)



**Corporate Presentation** June 2017

**INFANT BACTERIAL THERAPEUTICS** 

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## **Infant Bacterial Therapeutics**

### **Overview**

#### History

- Pharmaceutical microbiome company focused on areas of unmet medical need
- Founded 2013 by Staffan Strömberg and Eamonn Connolly as subsidiary of BioGaia
- Lead drug candidate IBP-9414, to prophylactically prevent necrotizing enterocolitis ("NEC"), a fatal, rare disease that afflicts premature infants and carries an economic burden of USD 300,000 per complicated NEC
- Pursuing a second rare disease program IBP-1016 for the treatment of an unmet medical need in gastroschisis, a severe disease in infants

#### Current

- Main drug candidate IBP-9414 in Phase II finalized recruitment of all 120 patients January 2017
- Orphan Drug Designation from FDA and EMA
- Rare Pediatric Disease Designation granted, Priority Review Voucher
- Current financial resources, SEK85m cash
- Current worldwide, royalty free patent

#### Future

- Phase II results for IBP-9414 expected Q3-Q4 2017
- Future financial requirement SEK 300-600m to conduct Phase III study for IBP-9414
- Label Patient Population 56,000 children in US and 108,000 in EU with Third - party assessed opportunity USD200m – USD350m in US market for IBP-9414
- Expected ease of market introduction and distribution of IBP-9414 in USA
- Market Approval for IBP-9414 target 2020 / 2021

## **Key IBT people and collaborators**

#### **Extensive experience and collaboration with tier 1** institutions

Key IBT decision makers				
	Peter Rothschild, MBA	۰.	Group Presi	
E.	Chairman	1	Managing D Became Cha	
6	Staffan Strömberg, Ph.D.	÷	Vice Preside positions at Swedish Or	
	CEO and co-founder		the Swedish	
01	Eamonn Connolly, Ph.D.	2	Senior VP R 2013 and ex	
C.F.	Head of R&D and co- founder		pharmaceut Pharmacia &	
2	Sanjiv Sharma, M.B.A.	٠.	A blend of s size and sta	
	Chief Commercial Officer		with nationa companies l	
R	Anders Kronström, M.Sc.	1	Extensive e industry wit	
	Chief Technical Officer		pharmaceu leadership	
A	Agneta Heierson, Ph.D.	۰.	Over 25 yea	
	Vice President, Clinical Development	2	Formerly Glo AstraZeneca	
E	Daniel Mackey	1	20 years exp international	
	Chief Financial Officer		and account Nordea Inve	

- Group President and founder of BioGaia
- Managing Director of BioGaia for 19 years
- Became Chairman of IBT in 2016
- Vice President of Nicox France, management positions at AstraZeneca, Head of R&D of Swedish Orphan, Head of Medical Devices at the Swedish Medical Products Agency
- Senior VP Research of BioGaia from 2002 to 2013 and extensive experience in the pharmaceutical industry (Kabi Vitrum, Pharmacia & Upjohn)
- A blend of successful experience in large, midsize and start-up companies in the US and Asia, with national and global responsibility for companies like Sanofi and Valeant
- Extensive experience in the pharmaceutical industry with specialisation on pharmaceutical development, project leadership and business development
- Over 25 years experience in the pharma industry
- Formerly Global VP, R&D Supply Chain at AstraZeneca
- 20 years experience from diverse U.S. and international management positions in finance and accounting with Investors Bank & Trust Co., Nordea Investment Management AB

#### **IBT's extensive collaboration network**



#### Key Opinion Leader Meetings

- Feb-13: Atlanta. US
- Apr-13: New York, US
- May-14: Vancouver, Canada
- Sep-14: Boston, US

- May-15: San Diego, US
- Sept-15: Budapest, Hungary
- May-16: Baltimore, US
- Nov-16: Stockholm, Sweden
- Mar-17: San Diego, CA

## **Financial**

- IBT B listed on Nasdaq First North Premier
- Cash March 2017 ca SEK85m
- Strong investor base and over 5,000
   Shareholders
- Application to Nasdaq Main Market planned 2017
- Market Cap ca SEK500m (€50m)
- YTD Stock performance ca100%



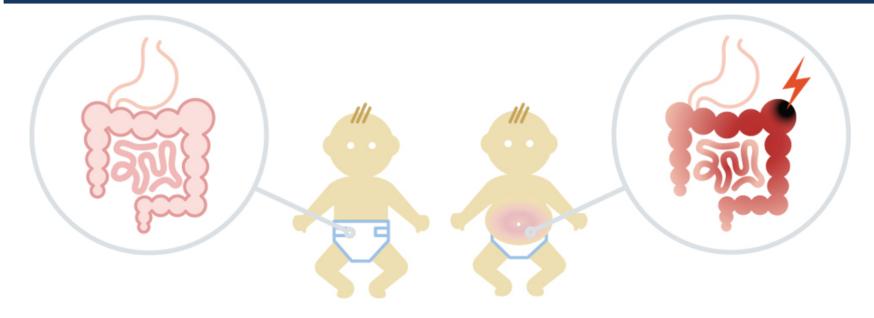
Major Shareholders as of March 31, 2017

- Annwall & Rothschild Investments AB
- The Fourth Swedish National Pension Fund (AP4)
- AMF Aktiefond Småbolag
- Nordea Småbolagsfond, Norden
- CF Ruffer Investment Funds
- Mingdale Company Ltd
- Swedbank Robur Ny Teknik
- Handelsbanken Svenska Småbolagsfond
- M2 Capital Management



### 1. IBP-9414 for the prevention of necrotizing enterocolitis

## **Necrotizing Enterocolitis**



NEC is severe inflammation of the bowel in preterm infant bowel which can lead to death of the baby

Major surgery required in 20-40% of NEC cases at cost of 300 kUSD or more

Survivors have long-term consequences: short-bowel syndrome, abnormal growth, cognitive, visual and hearing impairments

There is no preventive treatment for NEC

## **Necrotizing Enterocolitis (NEC)**

### A devastating gastrointestinal emergency





#### NEC kills 1500 US och 3700 EU infants every year

## Who gets NEC?

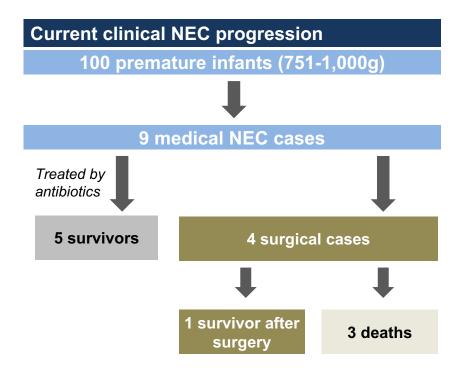
### **Premature infants**

	Infants birth	NEC incidence	NEC mortality	Mortality (% of
	weight	rate (%)	rate (%)	weight cohort)
	501-750g	12.0%	42.0%	5.0%
High incidence	751-1,000g	9.2%	29.4%	2.7%
and mortality	1,001-1250g	5.7%	21.3%	1.2%
	1,251-1,500g	3.3%	15.9%	0.5%
	1,501-2,500g	0.4%	8.2-17%	0.03-0.06%
	>2,500g	0.1%	0-20%	0-0.02%

The smaller the premature infant is at birth, the more likely he/she will get NEC and die

## **Target population**

### A preventive therapy for all preterm infants at risk of NEC



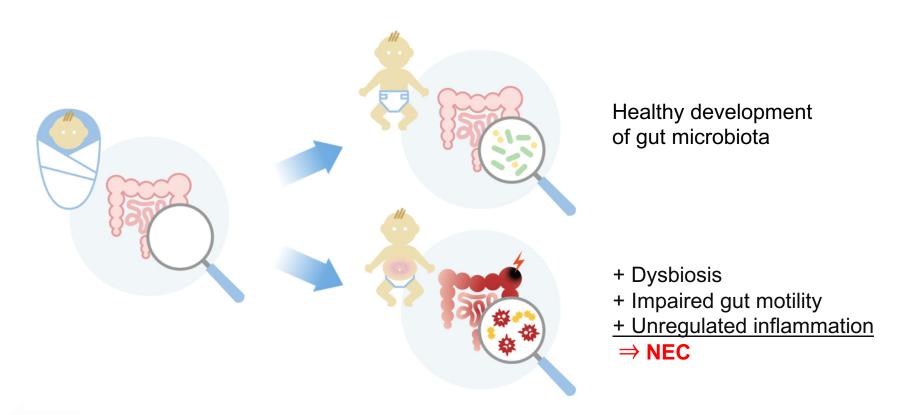
#### **Target label population**

Based on the expected IBP-9414 drug label, the targeted annual label population is:

■ **US:** 56,000 premature infants (≤1500 gram)

■ **EU5:** 108,000 premature infants (≤ 34 weeks)

### What causes NEC?



## **Clear clinical signal from L. reuteri**

### All studies show clinically significant reduction of NEC

Study	Number of patients	Reduction in NEC incidence
Rojas et al. (2012)	750 patients	<ul><li>40% in the total study population</li><li>37% in infants ≤1,500g</li></ul>
Oncel et al. (2014)	400 patients	<ul><li>20% in the total study population</li><li>38% in infants ≤1,000g</li></ul>
Hunter et al. (2012) & Dimaguila et al. (2013)	354 patients	89% in the total study population
Jerkovic Raguz et al. (2016)	100 patients	50% in the total study population
Shadkam et al. (2015)	60 patients	82% in the total study population
Hernandez-Enriquez et al. (2016)	44 patients	92% in the total study population

### IBP-9414 – development plan

### A development program consisting of two clinical trials

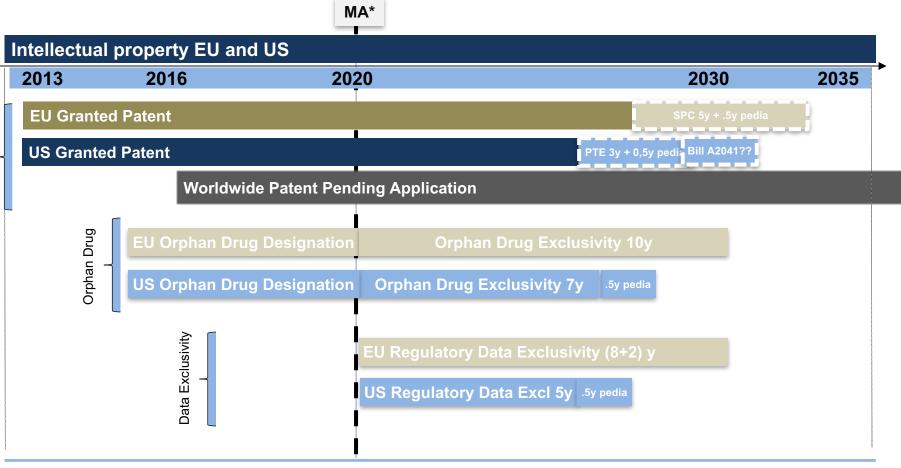
#### Drug development plan

2016	2017		2018	2019	
Safety and to	erability trial				
<ul> <li>A randomized, dou parallel-group, dos placebo-controlled study to investigate tolerability of IBP-9 administered in 120</li> </ul>	e escalation multicenter the safety and 414	EOPII <sup>1</sup>			
First patient dosed	in June 2016		Pivotal t	rial	
<ul> <li>Expected duration October 2017</li> </ul>	June 2016 –		<ul> <li>A randomized, double blind, placebo controlled study to e</li> </ul>		
<ul> <li>Received a green I 2nd and final Data Monitoring Board (</li> </ul>	Safety		of IBP-9414 in premature inf in the prevention of NEC Expected duration: 2018-20	ants, ≤1,500 grams,	N
<ul> <li>Recruited 100% of January 2017</li> </ul>	patients as of				
<ul> <li>ClinicalTrial.gov ide NCT02472769</li> </ul>	entifier:				

#### Notes

### **IBP-9414 – Intellectual Property**

### **Three layers of protection**



Timelines are indicative, this slides contains forward looking statements and may be subject to change

\* Market Approval

Patent Protection

### **IBP-9414 Target Product Profile**

### For the prevention of necrotizing enterocolitis

Product description	<ul> <li>Pharmaceutical therapy approved as Orphan Drug in EU and US to prevent NEC</li> <li>The first FDA and EMA-approved drug product to prevent NEC</li> </ul>	
Patient population	<ul> <li>Premature infants ≤1,500g (US) ca 56,000</li> <li>Premature infants ≤ 34 weeks gestational age (EU) ca 108,000</li> </ul>	
Route of Administration	Oral / enteral	
Product efficacy	Demonstrates 33% reduction in the incidence of NEC compared to standard of call alone	
Safety profile	<ul> <li>Well tolerated with no known side effects</li> <li>No increase in risk of sepsis or multi-resistance to antibiotics</li> <li>No known contraindications</li> </ul>	

### Market potential for IBP-9414 assessment

IBT has mandated consultants to assess the market opportunity...



CLEARVIEW Healthcare Partners

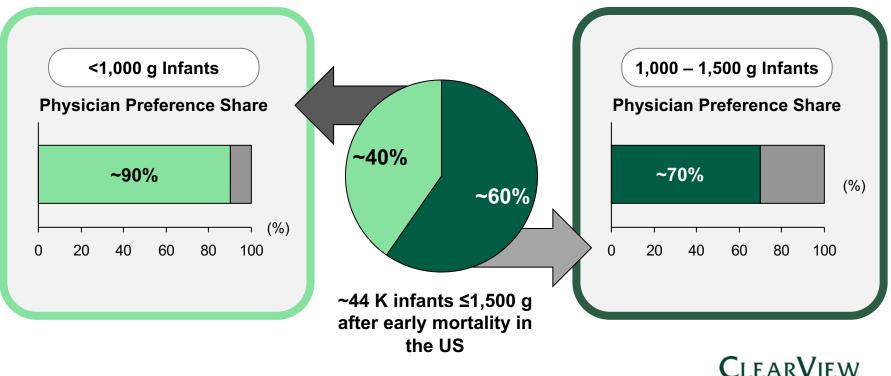
...who have interviewed the relevant key stakeholders across US and Europe... Including 60 Neonatology Key Opinion Leaders interviews

 15 Pharmacy and Therapeutics neonatologists and pharmacists (P&T members)

Payers

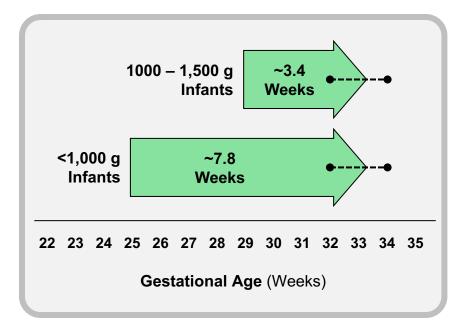
### Neonatologists show high willingness to prescribe IBP-9414

Clearview US market research indicates an overall 78% physician preference share reflecting a high unmet medical need



Healthcare Partners

## Treatment up to 34 weeks



Physicians expected to halt IBP-9414
 treatment once infants had reached 32 to 34 weeks postmenstrual age



### **Expected Formulary Inclusion by Institution Type**

Institution Type	Major Medical Centers	Medium Hospitals	Small Community Hospitals
Share of Premature Infants	~60%	~30%	~10%
Estimated Formulary Adoption	~85%	~60%	~0%

Overall Formulary Approximately 70% of addressable patients are anticipated to receive care at an Inclusion institution that includes IBP-9414 on formulary



### Significant market potential for IBP-9414

IBT has mandated consultants to assess the market opportunity...





...who have strongly engaged and favorably reacted to IBP-9414's targeted profile...

- KOLs recognized NEC as a high unmet need with high mortality rates and lack of any medical preventive treatment
- NEC Economic Burden is estimated to be 20% of the total cost of initial care and USD 5 Billion spent annually on NEC in the US
- Highly positive reaction towards clinically proven safety and efficacy due to safety concerns
- Based on target profile, interviewees would expect IBP-9414 to be included on formulary

...resulting in significant market opportunity

Estimated annual revenue potential of USD200m – USD350m in US



### 2. IBP-1016 for the treatment of Gastroschisis

## Gastroschisis

#### What is Gastroschisis?

- Birth defect of the abdominal wall, where the baby's intestines stick outside of the baby's body, through a hole beside the belly button
- Affects late preterm infants with an average gestational age of 36 weeks and average birth weight of 2.4kg

#### What causes gastroschisis?



Dysbiosis and growth of pathogenic bacteria in the gut



Sub-optimal gut motility is the main clinical problem



#### Gastroschisis prevalence

Approximately 2,000 babies per year are born in the US with this birth defect

#### What happens when you have gastroschisis?

 After surgery repair, the core complication is due to severe impairment of the gut motility

Gastroschisis is associated with a high economic burden of ca \$95,000 per child

## **Clear signal on improved gut motility**

### 5 studies with L. reuteri

	Study	Number of patients	Results
Improved gut motility in term and preterm infants	Indrio et al. (2008)	30 patients	85% increase in gastric emptying rate (p<0.001)
	Indrio et al. (2011)	34 infants	39% increase in gastric emptying rate (p=0.01)
Improved feeding tolerance in preterm infants	Rojas et al. (2012)	750 patients	<ul> <li>34% reduction in episodes of feeding intolerance with interruption of feeding (p=0.08)</li> </ul>
	Oncel, Sari et al. (2014)	400 patients	<ul> <li>29% reduction in episodes of feeding intolerance with interruption of feeding (p=0.015)</li> <li>10% reduction in time to full enteral feeding (p=0.006)</li> </ul>
	Oncel, Arayici et al. (2014)	300 patients	36% reduction in episodes of feeding intolerance with interruption of feeding (p=0.004)

## **Infant Bacterial Therapeutics**

### Summary

- Pharmaceutical microbiome company focused on areas of unmet medical need
- Experienced team supported by a well established network of Key Opinion Leaders
- Clear clinical signal and safety profile of *Lactobacillus Reuteri*
- Strong Intellectual Property protection of *Lactobacillus Reuteri*
- Main project, IBP-9414 for the prevention of NEC, is in Phase 2 in the US and has received:
  - Orphan Drug Designation from the FDA and EU
  - Rare Pediatric Disease designation from the FDA, Priority review voucher may be awarded by the FDA
- Annual revenue potential for IBP-9414 estimated to be USD 200-350m by third-party in the US alone

### Thank you!

**INFANT BACTERIAL THERAPEUTICS** 

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