

ALOPEXX, INC.

IMMUNE THERAPEUTICS FOR MICROBIAL DISEASES

Investor Presentation
February 2023

Forward Looking Statements

ALOPEXX, Inc. 

This presentation contains forward-looking statements that involve substantial risks and uncertainties. All statements, other than statements of historical facts, contained in this presentation, including statements regarding Alopexx, Inc.'s (the "Company") strategy, future operations, future financial position, projected costs, prospects, plans, and objectives of management, are forward-looking statements. The words "anticipate," "believe," "continue," "could," "depends," "estimate," "expect," "intend," "may," "ongoing," "plan," "potential," "predict," "project," "target," "should," "will," "would," and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. The Company may not actually achieve the plans, intentions, or expectations disclosed in these forward-looking statements, and you should not place undue reliance on these forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in these forward-looking statements. In addition, the forward-looking statements included in this presentation represent the Company's views as of the date of this presentation. The Company anticipates that subsequent events and developments will cause its views to change. However, while the Company may elect to update these forward-looking statements at some point in the future, it specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing the Company's views as of any date subsequent to the date of this presentation.

This presentation highlights basic information about us and the proposed offering. Because it is a summary, it does not contain all of the information you should consider before investing.

The Company has filed with the U.S. Securities and Exchange Commission (the "SEC") a registration statement (including a prospectus) to which this presentation relates, but such registration has not been declared effective. Before you invest, you should read the prospectus, including the Risk Factors therein, and the documents incorporated by reference or filed as exhibits to the registration statement, the complete information about the Company and this offering. You may access these documents for free by visiting EDGAR on www.sec.gov. Alternatively, copies of the preliminary prospectus may be obtained from ThinkEquity LLC, Prospectus Department, 17 State Street, 41 st floor, New York, NY 10004, telephone (877) 436-3673 or email prospectus@think-equity.com.

This presentation shall not constitute an offer to sell, or the solicitation of an offer to buy, nor will there be any sale of these securities in a jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws jurisdiction. The offering will only be made by means of a prospectus pursuant to a registration statement that is filed with the SEC after this statement becomes effective.

Offering Summary

Issuer	Alopexx, Inc.
Listing/Symbol	Nasdaq / ALPX
Expected Offering Size	\$15,000,000
Expected Price	\$5.00
Shares Offered	3,000,000
Over-Allotment	15%
Use of Proceeds	Advance clinical trials, manufacturing, general corporate purposes
Sole Book Runner	ThinkEquity

Our Pipeline

Two proprietary, clinical, immune therapeutic candidates targeting PNAG:

F598

Fully human monoclonal antibody

AV0328

Chemically synthesized vaccine

- First-in-man and pilot clinical studies completed
- Phase II proof-of-concept trials planned for both the antibody and vaccine
- **Potential to create the first broad-spectrum anti-infective immune therapeutics**

The Need

Reducing the World's Reliance on Antibiotics

The Target PNAG

- Unique target found on a wide and expanding range of microbes
- Immune targeting of PNAG could avoid or reduce the need for antibiotics

Market Opportunity

- Peak sales >\$2B for initial indication for each asset
- Expansion to other indications possible

Intellectual Property

- Covered by multiple patents
- Patent protection through 2040

Management

- Executive Team and Board have deep experience in drug development and with the financial community
- Co-Founder identified PNAG

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THERAPEUTIC APPROACHES TO INFECTIOUS DISEASES

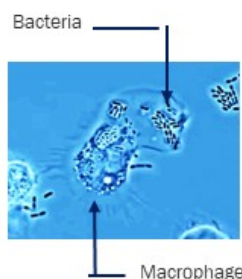
Antibiotics vs Immune Therapy

Antibiotics

- Kill or inhibit growth of bacteria
- ~ 100 approved antibiotics
- Use in humans associated with alteration in gut flora
- Widespread use in humans and animals has led to the development of resistance
 - ~ 22 million pounds of antibiotics are consumed yearly in the US alone
 - Bacteria multiply rapidly (new generation every 20-30 min)
 - Low levels of antibiotics end up in water, food and soil
- Resistance to antibiotics now occurs ~1 year after introduction

Antibiotics are most effective if they are not broadly utilized.

White Blood Cells
Ingesting and Killing
Bacteria

**Immune Therapies**

- Utilizes, augments, and directs the body's immune response
- 2 approaches - Antibodies & Vaccines
- Have been shown to be highly effective & safe
- Low risk of resistance
 - Unlike antibiotics the vaccine, antibody and immune cells do not leave the body
- Limitation
 - Current Immune therapies are highly specific

Immune therapies are most effective if they are widely utilized.

Broad-spectrum immune therapeutics that could prevent or reduce the need for antibiotics are needed.

Reducing Reliance on Antibiotics

AMR is a killer!

AMR happens when bacteria, fungi and parasites become resistant to antibiotics

GLOBAL IMPACT

~ **5M** deaths/year

AMR increases the risk, morbidity, and mortality from infections

- | | |
|---|---|
|  Surgical procedures |  Cancer Chemotherapy |
|  Trauma |  Immunocompromised Individuals |
|  Admission to Intensive Care Units |  Sexually transmitted diseases |

Creates significant financial costs**\$55B**

CDC estimated cost per year

\$20B

for healthcare

\$35B

for loss of productivity

CDC
DOI: 10.1056/NEJMp1311479

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THE BROAD-SPECTRUM POTENTIAL OF TARGETING PNAG

A Therapeutic Paradigm Shift

Vaccines and antibodies that prevent infections are very specific to the microbe being targeted.

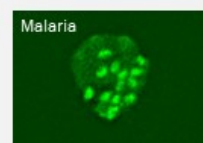
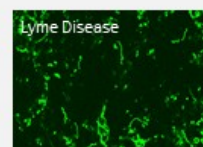
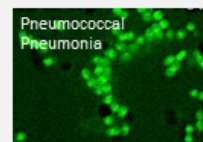
Need different vaccines and antibodies for each microbe.

IS THERE A BROAD-SPECTRUM APPROACH?**PNAG - (Poly N-Acetyl Glucosamine)**

- **Critical component** of the surface of bacteria & fungi causing serious infections
- Needed for microbial survival and **ability to cause disease**
- Used by microbes to adhere to tissues and **surgically implanted prostheses**
- **Majority of bacterial and fungal microbes produce PNAG**
- Currently identified on **over 75 separate bacterial and fungal microbes** including many antibiotic resistant ones



PNAG is an ideal target for immune therapeutics
one target for many infections

Microbes expressing PNAG on their surface
(green color)


Compound	Initial Therapeutic Focus	Discovery	Pre-Clinical	Phase I	Phase II	Phase III	Non-Overlapping Utility of Antibody and Vaccine	mAb F598	Vaccine AV0328
mAb F598	Prevention of Hospital Acquired Infections						Immediate protection	✓	
Vaccine AV0328	Expanded Coverage when added to Existing Vaccines						Long-Term protection		✓
							Effective in active infections	✓	
							Effective in immune compromised patients	✓	
							Prevention/Treatment of AMR	✓	✓

Monoclonal Antibody F598

- All genetic components derived from humans
- First-in-man and pilot clinical studies completed

Specific initial indication

- Prevention of hospital-acquired infections in intensive care unit patients

Vaccine AV0328

- Chemically synthesized
- COGs < \$1.00/dose
- Far lower than commercially available vaccines
- First-in-man clinical study completed

Specific initial indication

- Complementary vaccine for current *S. pneumo* infections

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Prevention of Pneumococcal Infections

Vaccine AV0328

Current Status

Conventional vaccines while effective are highly specific

- Serotype-specific vaccines target antigens unique to a subset of the microbial species**
- 100+ known *S. pneumoniae* serotypes**
Pneumovax 23 protects against 23 serotypes
- To broaden coverage, newer vaccines include additional serotype-specific components**
Pneumovax 7 → Pneumovax 13 → Pneumovax 20
- Despite limited coverage Pneumovax sales > \$5.5B**

Challenges/Opportunities

Pneumovax introduction has resulted in an increase in infections caused by uncovered serotypes

- Found to vary by age and geography
- Serotype-specific vaccines becoming less effective at targeting *S. pneumo* globally
- Cannot hope to contain all or most of the 100+ serotype-specific antigens in a single vaccine

Serotypes Causing Majority of *S. pneumoniae* Infections in Adults Before and After Pneumovax7 and Pneumovax13 Introduction



Nature Sci Rep 10, 18977 (2020).
<https://doi.org/10.1038/s41598-020-75691-5>

There is a need for a single component vaccine that can cover all serotypes.

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Clinical Experience

- First-in-man trial completed in healthy adult volunteers
- Phase II ready
- Active IND for future studies

Clinical Safety

- AV0328 well-tolerated
- Minimal local reactions
- No increased side effects with 2nd dose

Efficacy

- At the highest doses:
Killing of all PNAG-positive microbial species and strains tested

Includes all *S. pneumo* strains tested

Microbe	Strain	Outcome
<i>N. gonorrhoeae</i>	UNC25	POS
	A442089	POS
	15253	POS
	H041	POS
	CTR- SPAIN	POS
<i>N. meningitidis</i> Serogroup A	Z2087	POS
<i>N. meningitidis</i> Serogroup B	B16B6	POS
	M2996	POS
	NMB	POS
	H44/76	POS
	M981	POS
	M992	POS
<i>N. meningitidis</i> Serogroup C	89-1	POS
<i>N. meningitidis</i> Serogroup W	W171	POS
<i>N. meningitidis</i> Serogroup X	BF	POS
<i>N. meningitidis</i> Serogroup Y	Y2220	POS
<i>A. baumannii</i>	S1	POS
<i>C. albicans</i>	SC5314	POS
<i>S. pneumoniae</i>	TIGR 4 (4)	POS
	Spn 6B (8B)	POS
	248 (14)	POS
	EF3030 (19F)	POS
	11065 (9V)	POS
	Spn 212 (22F)	POS
	Spn 255 (31B)	POS
	Spn 080 (8)	POS
<i>S. aureus</i>	MN8 (CP8)	POS
MRSA	USA300 (No CP)	POS
	USA100 (CP5)	POS
	Sanger 256 (CP8)	POS
<i>E. coli</i>	NDM1	POS
	MCR1	POS
<i>K. pneumoniae</i>	KPN NDM 1	POS
	KPN-KPC	POS
<i>S. typhi</i>	TY2	POS

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Potential Role in the Prevention of *Streptococcus pneumoniae* Infections

VACCINE AV0328

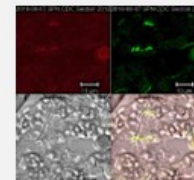
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RATIONALE

- **PNAG expressed on 100% of *S. pneumoniae* serotypes tested**
Expression noted in clinical samples
- **Vaccine AV0328**
Single component vaccine that may cover all serotypes

BROAD-SPECTRUM COVERAGE OF AV0328 LENDS ITSELF TO A UNIQUE INITIAL APPROACH

- Will serve as a complementary vaccine to existing or future serotype-specific vaccines
Could expand coverage to remaining serotypes
- No other *S. pneumoniae* vaccine in development offers this degree of coverage



Expression of PNAG by *S. pneumoniae* in infected human lung

Red = antibody to *S. pneumoniae* cells;
Green = MAb to PNAG

Based on feedback from FDA and Expert Panel there is now a developmental road map for use of AV0328 in the prevention of *S. pneumoniae* infections

Proposed Indication

"AV0328 is indicated for adults 18 years of age and older for the prevention of pneumococcal pneumonia and invasive disease caused by *Streptococcus pneumoniae* serotypes not covered by serotype-specific vaccines"

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FEEDBACK FROM FDA AND EXPERT PANEL

FDA and Expert Panel supported utilization of AV0328 as a complementary vaccine

3 Indications Evaluated

- *S. pneumoniae*
- Sexually Transmitted Diseases (STDs)
- *N. meningitidis*

Assumptions

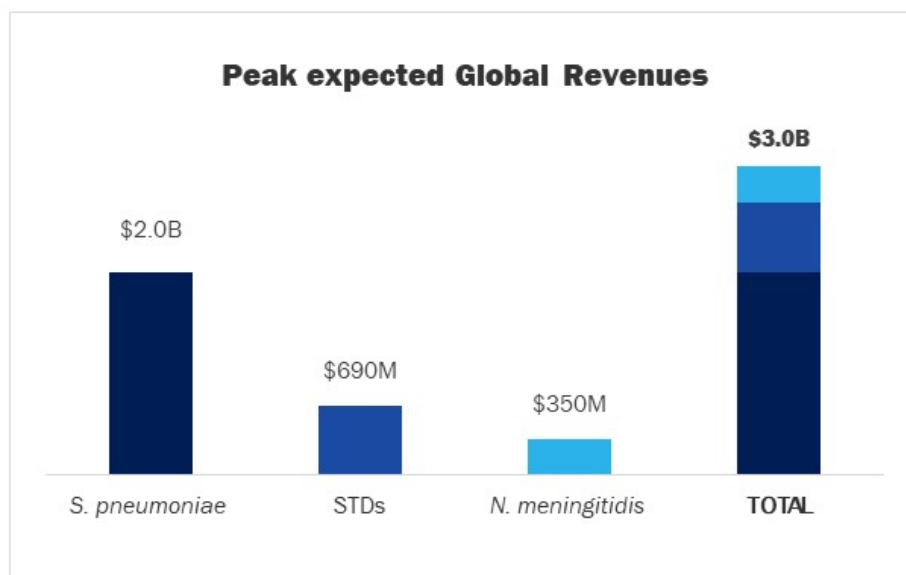
AV0328 would complement existing vaccines

PRICE **\$60/dose** - Base Case

UPSIDE **\$90/dose**

DOWNSIDE **\$45/dose** for Canada and EU

Peak expected Global Revenues



* assumes AV0328 is approved for both *S. pneumoniae* and *N. meningitidis*

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Hospital Acquired Infections (HAIs)



~ 1.7 million HAIs

Centers for Disease Control estimate

- ▲ Cause or contribute to 99,000 deaths/year in the US
- ▲ Substantial morbidity, mortality, and expense
- ▲ Many caused by AMR pathogens

FOCUS ON INTENSIVE CARE UNITS (ICU)

20% Prevalence of HAIs is very high
Leading cause of death in non-cardiac ICUs

40% of all ICU expenditures

Estimating HAIs and Deaths in US Hospitals, Kievers, 2002
The Direct Medical Costs of HAIs in US Hospitals and the Benefits of Prevention., CDC Mar 2009
<https://www.cdc.gov/policy/polaris/healthtopics/hai/index.html>

Healthcare Associated Infections: The Unknown Killer

Healthcare Associated Infections (HAIs) affect millions of people and add billions of dollars to healthcare costs in the U.S. annually. HAIs are an unintended consequence of care delivered by healthcare organizations. Scientific evidence suggests that most HAIs are preventable.



HAIs felt to be potentially preventable

Medicare imposing financial penalties to encourage hospitals to reduce incidence of HAIs.

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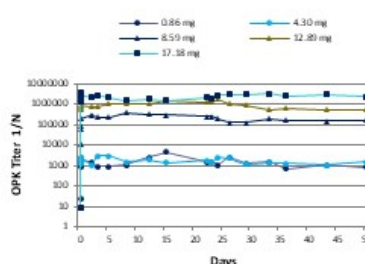
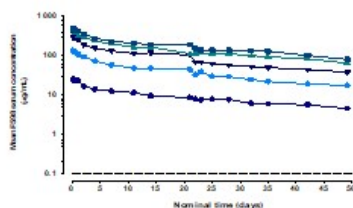
Clinical Experience

- Phase I & Phase II pilot trials completed
- Active IND for future studies

Clinical Safety

- Well tolerated
- No significant toxicities observed
- Long half-life
 - ~20-30 days
 - Antibody detected up to day 50

-  Potential for a single infusion to provide 2-3 months of protection



Killing of Microbes by F598

- Staphylococcus aureus*
- S. epidermidis*
- Neisseria gonorrhoeae*
- N. meningitidis*
- Hemophilus influenzae* type b
- Streptococcus pneumoniae*
- S. pyogenes*
- Bordetella pertussis*
- Francisella tularensis* LVS
- Burkholderia cepacia* complex
- Candida albicans*
- Aspergillus flavus*
- A. fumigatus*
- Fusarium solani*
- Enterococcus faecalis*
- Escherichia coli*
- Klebsiella pneumoniae*
- Enterobacter cloacae*
- Acinetobacter baumannii*
- Mycobacterium avium*
- Listeria monocytogenes*

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Gram-positive Bacteria, Gram-negative Bacteria and Fungi Associated with HAIs

CDC List

Organism	PNAG Expression
<i>Acinetobacter</i>	Positive
<i>Burkholderia cepacia</i>	Positive
<i>Candida auris</i>	Positive
<i>Clostridioides difficile</i>	Positive
<i>Clostridium sordellii</i>	NT
<i>Enterobacterales</i> (carbapenem-resistance)	Positive
ESBL-producing <i>Enterobacterales</i> (extended-spectrum β -lactamase-producing)	Positive
<i>Escherichia coli</i>	Positive
<i>Klebsiella pneumoniae</i>	Positive
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	Positive
Non-tuberculous <i>Mycobacteria</i> (NTM)	Positive
<i>Pseudomonas aeruginosa</i>	Negative
<i>Staphylococcus aureus</i>	Positive
<i>Mycobacteria tuberculosis</i> (TB)	Positive
Vancomycin-intermediate <i>Staphylococcus aureus</i>	Positive
Vancomycin-resistant <i>Staphylococcus aureus</i>	Positive
Vancomycin-resistant <i>Enterococci</i> (VRE)	Positive

- Majority of hospital-acquired pathogens produce PNAG
- mAb F598 used to prevent or mitigate development of HAIs in ICU patients
- Would be consistent with Medicare directive to prevent HAIs**

Alopexx is uniquely positioned to perform a large phase II study in this setting.

Collaboration with Paris APHP, public hospital consortium
David Skurnik, MD, PhD, key opinion leader

- Worked on development of antibody and vaccine
- Heads a coalition of investigators and institutions interested in performing the study

Demonstrating that mAb F598 can reduce the morbidity/mortality associated with HAIs in ICU patients would constitute a major health advance.

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ANALYSIS LIMITED TO US,
CANADA AND EU5

3 Indications Evaluated

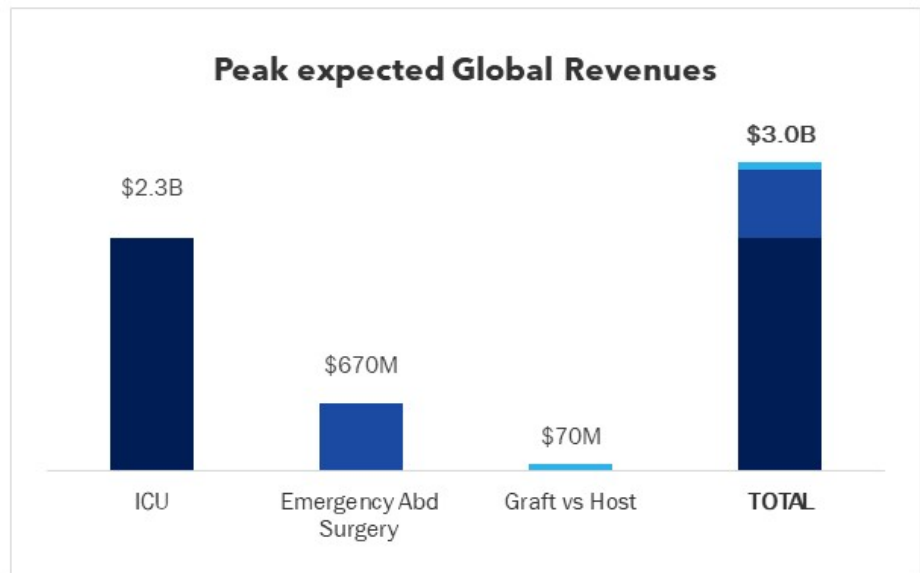
- ICU patients (only a subset of patients – those colonized with MRSA, used for analysis)
- Emergency Abdominal Surgery
- Graft vs Host Disease

Assumptions

F598 would be added to existing standard of care

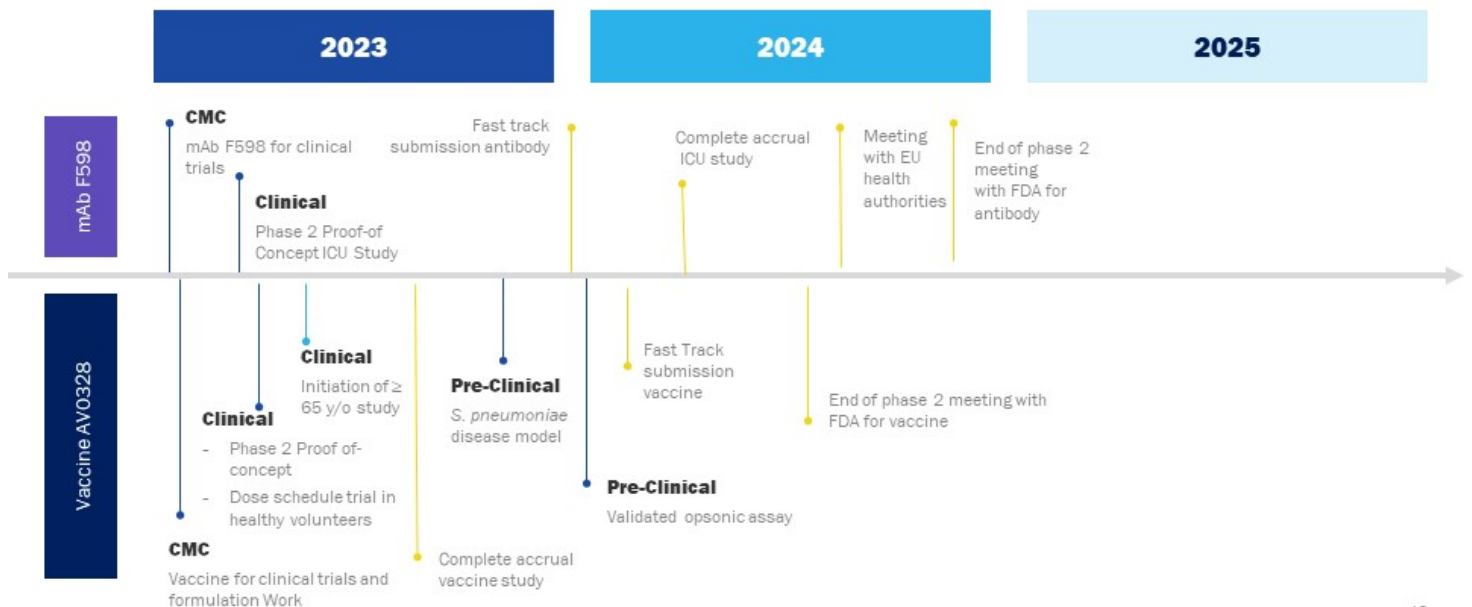
PRICE **\$5,000** US & Canada
\$4,000 EU5

SHARE **30% US**
25% Canada & EU5



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Timeline & Milestones



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Covered by multiple US and International Patents

12824510	Poly-N-Acetyl Glucosamine - Binding Peptides and Methods of use Thereof	Expires 2029
40405927	Anti-Microbial Vaccine Compositions	Expires 2040
38953665	Methods For Providing Continuous Therapy Against PNAG Comprising Microbes	Expires 2040
38905796	Low Contaminant Antimicrobial Vaccines	Expires 2040

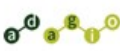
Synthesis of PNAG oligosaccharide also covered by a trade secret agreement

Monoclonal antibody produced using a proprietary master cell bank



ALOPEXX PLATFORM

Competitive Landscape

Pipeline Status and Market Capitalization*				
	Clinical		Approved	
Vaccine	 \$2.07B	 \$3.58B	 \$918.60M	 \$66.91B
mAb	 \$33.66M	 \$504.95M	 \$3.03B	

* Market Caps as of January 31, 2023

Pro Forma Pre-IPO Capitalization Table

Common Shares Outstanding ¹	4,851,210
Options ²	1,300,000
Warrants	0
Fully Diluted Shares Outstanding	6,151,210

1. Includes 211,120 shares upon conversion of notes at a 25% discount to the offering price, which is assumed to be \$5

2. To be issued post-offering, exercise price will equal the price of this offering

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Management

Daniel R. Vlock, MD
President, CEO, Director

- Co-Founder
- > 25 years of pharmaceutical experience



Thomas T. Thomas, CFA
Chief Financial Officer

- Corporate Treasurer, Genentech



Gerald B. Pier, PhD
Chief Scientific Officer

- Co-Founder
- Professor of Medicine, Microbiology and Immunology, Harvard Medical School



William W. Chin, MD
Senior Strategic Advisor, Director

- Senior VP Discovery Research and Clinical Investigation, Eli Lilly
- EVP Science and Regulatory Advocacy, CMO, Pharmaceutical Research and Manufacturers of America (PhRMA)



Christine de los Reyes, PharmD, MBA
Chief Business Officer, Chief Commercialization Officer

- Executive Director of Licensing & Development, Pfizer
- > 30 years pharmaceutical experience



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Gail Cassell, PhD, D. Sc. (hon) Independent Director Designee	Richard Cohen¹ Independent Director Designee	Peter Honig, MD, MPH Independent Director Designee	Ann MacDougall, JD ^{2,3} Independent Director Designee	Peter J. Werth Director
– Former Vice President, Infectious Diseases Drug Discovery and Development, Eli Lilly and Company	– Former Board Member, Chair of the Audit Committee, Rodman and Renshaw	– Former Head Worldwide Safety and Regulatory Affairs, Pfizer	– Former General Counsel, PwC-US – Board Member- Opiant Pharmaceuticals – Former Interim Board Chair, Progenics Pharmaceuticals	– Founder and CEO of ChemWerth Inc
   	 	   	    	CHEMWERTH (1) Chair Audit Committee. (2) Chair Compensation Committee. (3) Chair Governance Committee

Investment Summary

- ✓ Developed immune therapeutics capable of addressing a significant and growing medical need
Reducing the world's reliance on antibiotics
- ✓ The target, PNAG is present on a wide and expanding range of microbes
Including AMR pathogens
- ✓ Two immune therapeutic clinical candidates, **Phase II ready**
 - mAb F598
 - Vaccine AV0328
- ✓ Potential **market opportunity** in excess of **\$4 billion**
- ✓ **Strong IP portfolio** through 2040
- ✓ **Seasoned** commercial large pharma **management team**





Thank You!

Contact us:

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Cambridge, MA 02138

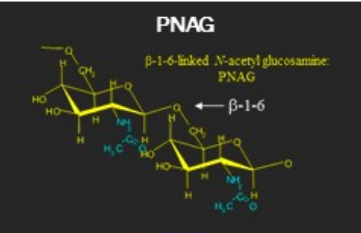


info@alopexx.com

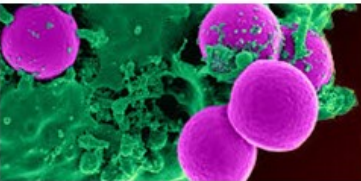
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BACK-UP SLIDES

PNAG



β -1-6-linked N-acetylglucosamine: PNAG



- Survival strategy
- Protection from external environment
- Loss of PNAG leads to diminished resistance to environmental stress and greater clearance by the host

Closely Related to



Chitin



β -1-4-linked N-acetylglucosamine: Chitin-Invertebrates



- Component of invertebrate exoskeleton
- Protection from external environment



Targeting PNAG offers the potential of creating the **first broad-spectrum anti-infective immune therapeutics**

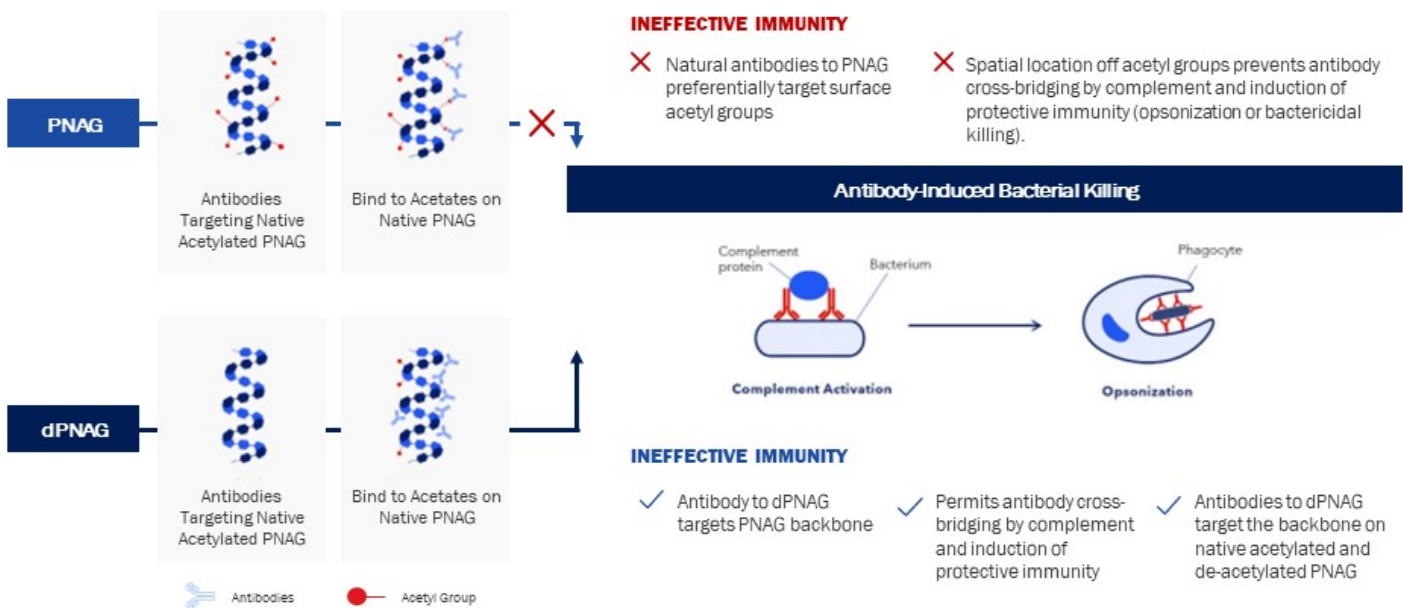


Alopexx has **developed proprietary immune therapeutics** that can effectively target PNAG

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Targeting dPNAG

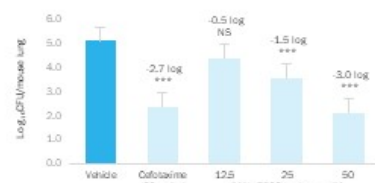
Impact of de-acetylation and mechanism of action



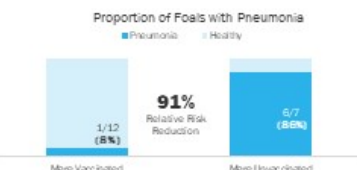
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Pathogen	Animal	Infection Model
<i>S. aureus</i>	Mouse	- Lethal peritonitis - Bacteremia - Skin infection - Corneal Keratitis - Lethal systemic infection
<i>E. coli</i>		- Lethal peritonitis - Oral infection with Shiga-toxin producing strains
<i>Burkholderia complex</i>		Lethal peritonitis
<i>A. baumannii</i>		- Bacteremia - Pneumonia
<i>N. meningitidis</i> serogroup B		Neonatal infection
<i>N. gonorrhoeae</i>		Conjunctivitis
<i>S. pyogenes</i>		Lethal infections
<i>L. monocytogenes</i>		Lethal infections
<i>S. pneumoniae</i>		- Pneumonia - Corneal infections
<i>K. pneumoniae</i>		Pneumonia
<i>C. albicans</i>		Keratitis
<i>P. berghei</i>		Malaria
<i>R. equi</i>	Horse	Pneumonia
<i>S. aureus</i>	Sheep	- Mastitis - Lethal infection
<i>A. pleuropneumoniae</i>	Pig	Pneumonia

14+ pathogens studied in > 20 infection models



mAb F598 is as effective as the antibiotic Cefotaxime in preventing *Streptococcus pneumoniae* lung infections in mice. Independent study performed by Sanofi Aventis.



Vaccine AV0328 protected horse foals against *Rhodococcus equi* infection: An intracellular infection similar to TB. Study conducted at Texas A&M Veterinary School, Noah Cohen and colleagues

Potential Indications and Initial Focus

Setting	Relevant Areas	Indications
Infectious Diseases	Prevention in high-risk populations	- ICU patients - Emergency abdominal surgery - Neonatal infections - Burn patients - Trauma patients - Immunocompromised patients
	Expansion of existing vaccines	- Pneumococcal pneumonia - Meningitis
	Antibiotic resistant organisms	WHO identified threat organisms
	Sexually Transmitted Diseases	- Gonorrhea - Chlamydia
	Chronic and Difficult to treat infections	- Chronic Lyme disease - Recurrent urinary tract infections - Eye infections - Prosthetic joint infections
Non-infectious diseases	Conditions where deposition of PNAG-containing microbial fragments in internal organs can cause disease	- Alzheimer's Disease - Diabetes - Cancer - Traumatic brain injury - Graft vs Host Disease

Compound	Setting	Indication	Discovery	Pre-Clinical	Phase I	Phase II	Phase III
mAb F598	Hospital Acquired Infections	ICU Infections	Initial Indication				
mAb F598		Emergency Abdominal Surgery/Trauma					
Vaccine AV0328	Expansion of Existing Vaccines	<i>S. pneumoniae</i> infections	Initial Indication				
Vaccine AV0328		<i>N. meningitidis</i> infections					