Exploring non-traditional antimicrobials: Insights from three cases

Guest speakers: Jennifer Schneider, Rida Mourtada & Gregorio Iraola

Moderator: Sina Gerbach

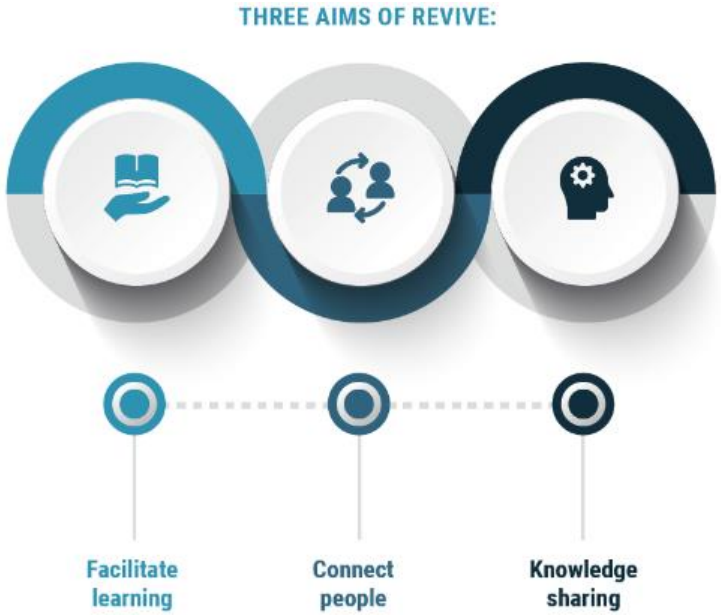
Host: Victor Kouassi

22 August 2024

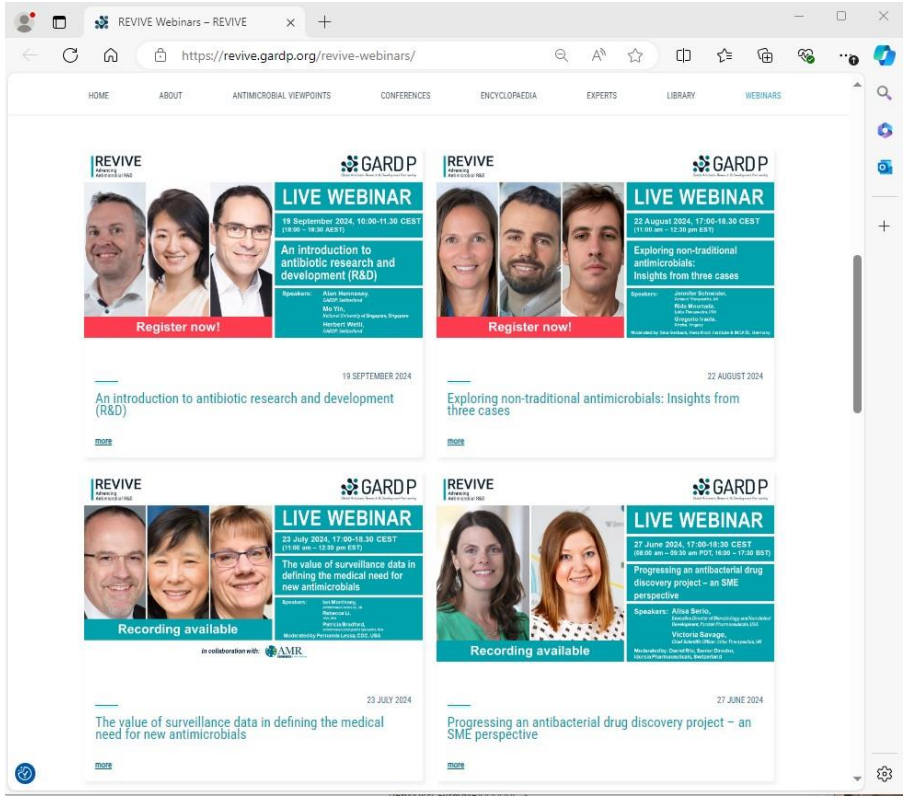
GARDP
Global Antibiotic Research & Development Partnership

REVIVE

Capture essential R&D technical knowledge and share expertise with the global community through the REVIVE website (revive.gardp.org).



Webinar recordings



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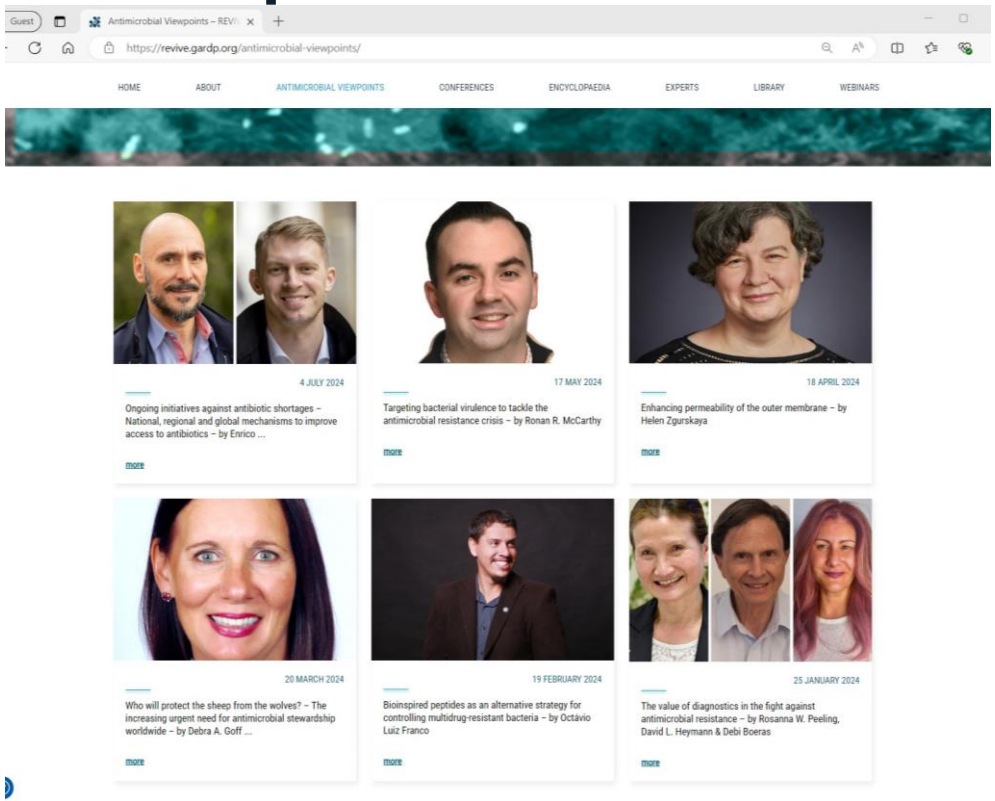
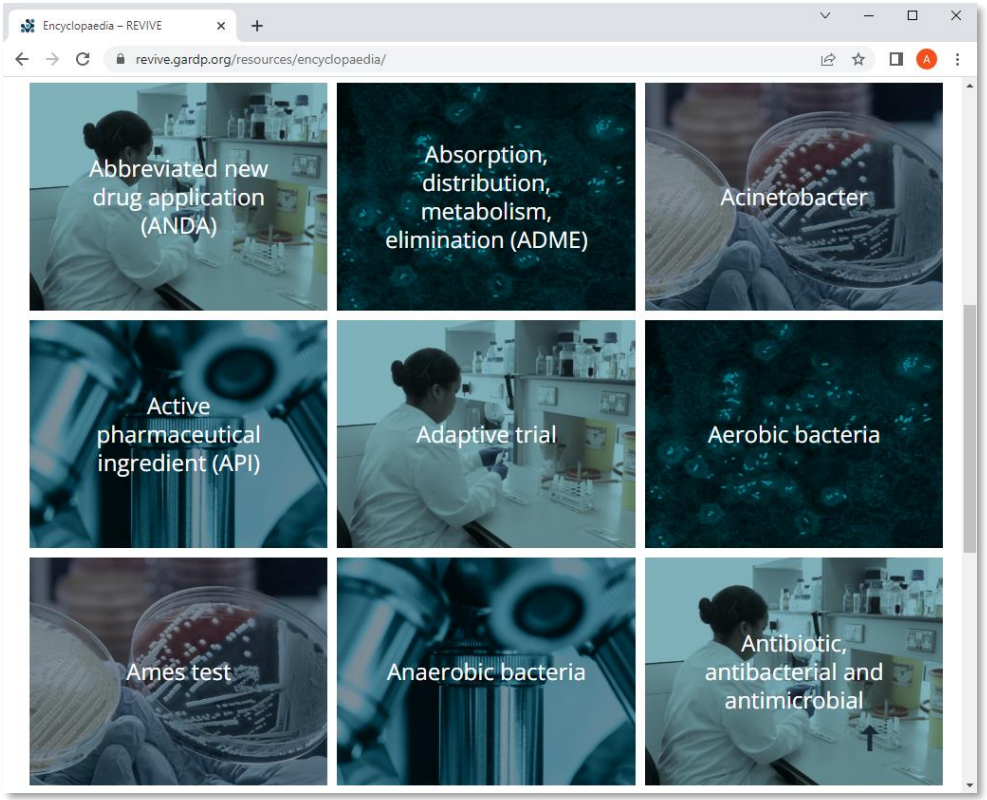
Antimicrobial Viewpoints



revive.gardp.org/antimicrobial-viewpoints

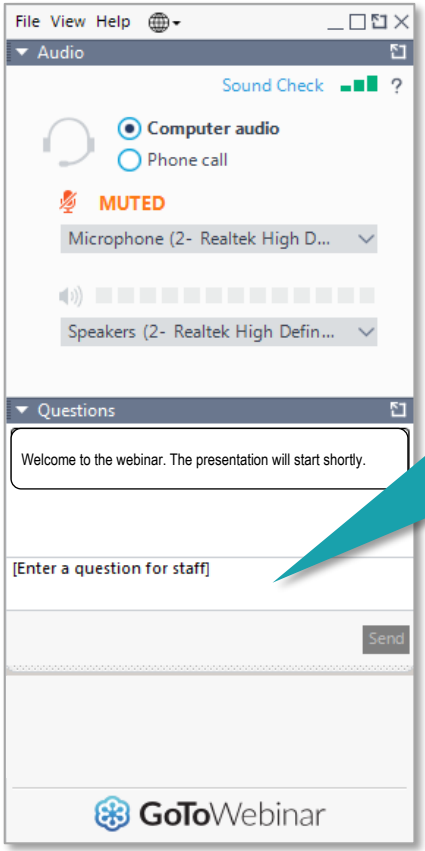
Antimicrobial Encyclopaedia



revive.gardp.org/resources/encyclopaedia

How to submit your questions

If your question is addressed to a specific speaker, please include their name when submitting the question.



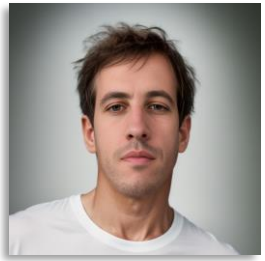
The presentation will be followed by an interactive Q&A session.

Please submit your questions via the ‘questions’ window. We will review all questions and respond to as many as possible after the presentation.

Today’s speakers

Exploring non-traditional antimicrobials: Insights from three cases

Jennifer Schneider
Chief Executive Officer
Centauri Therapeutics *(UK)*



Gregorio Iraola
Chief Executive Officer
Kinzbio *(Uruguay)*

Rida Mourtada
Chief Executive Officer
Lytica Therapeutics (USA)

Moderator:
Sina Gerbach
Deputy Head and Development Lead of the Transfer Group Anti-infectives, Leibniz-HKI and Program Manager at INCATE (Germany)

SUPPORTING INNOVATORS TO FIGHT DRUG RESISTANT INFECTIONS

INCATE

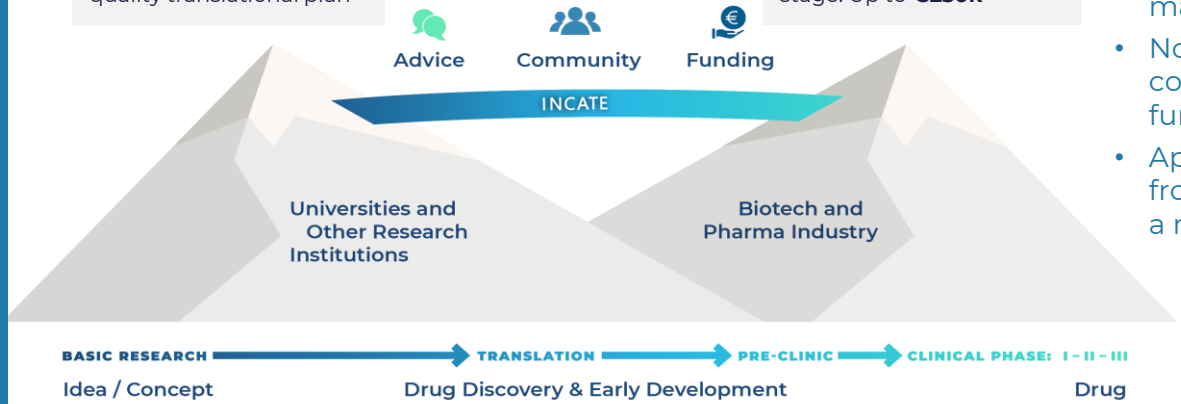
The **INC**ubator for **A**ntibacterial **T**herapies in **E**urope

How we help

Advice to align with market needs and build a quality translational plan

Community to share ideas and support in building a business to fight infections

Funding to answer critical questions and reach next stage. Up to **€250k**



Why INCATE?

- No cost
- Easy application process for cash funding
- No need of confidential material disclosure
- No strings attached & compatible with other funding programs
- Applications are accepted from around the world on a rolling basis

Achievements 2021-2024

290+
Ventures contacted since launch

40
Ventures selected for tailored support & funding

HERA
Recognised as unique instrument by EU health Emergency Preparedness & response agency

Reach out

info@incate.net
www.incate.net
@INCATE
@INCATEurope

Stay informed by signing up to our community:
https://www.incate.net/contact/

Members

Universität Basel · NCCR AntiResist · BIOASTER · DZIF · LEIBNIZ HKI

Partners

Boehringer Ingelheim · Roche · KINETICOS LIFE SCIENCES · SHIONOGI · MSD

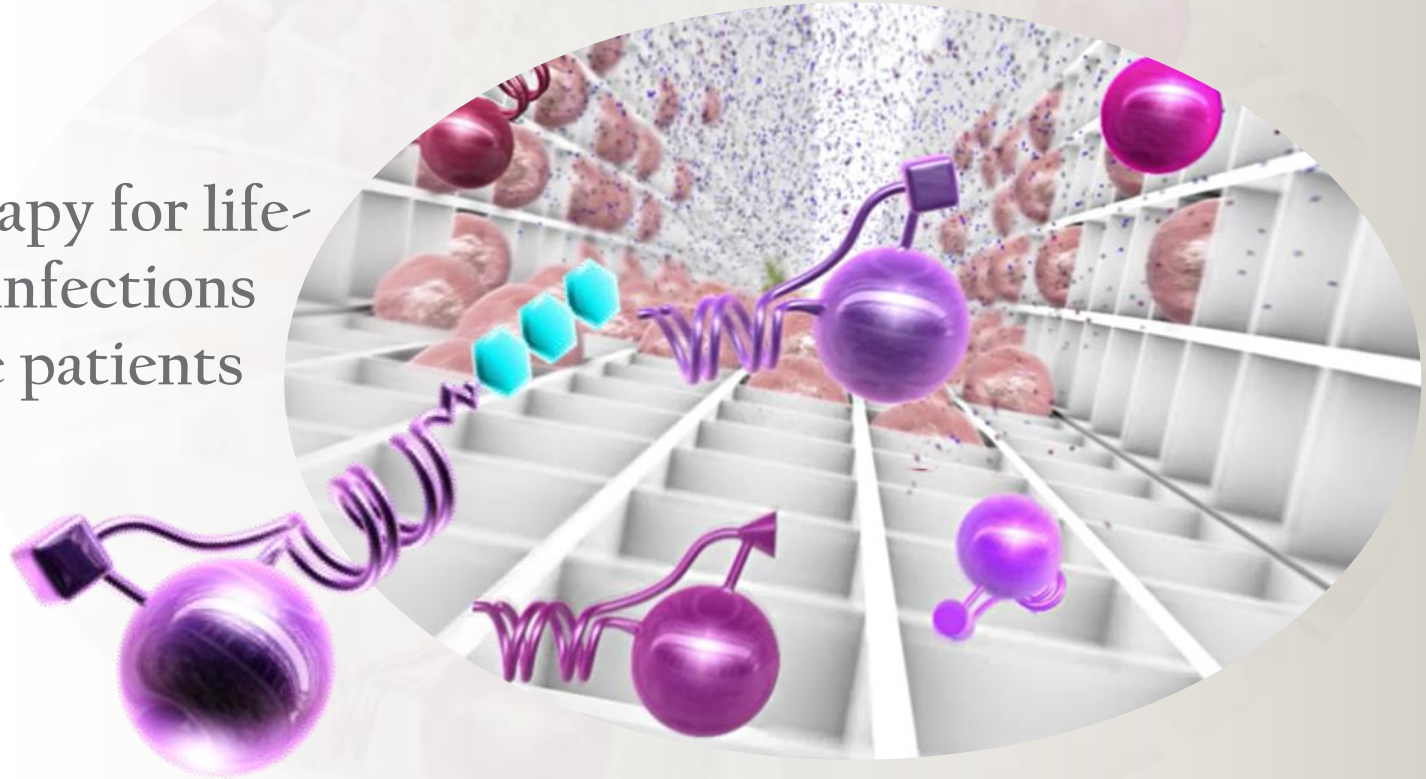
Jennifer Schneider

Jennifer Schneider has been the CEO of Centauri Therapeutics since May 2022. Prior to Centauri, Jennifer was Executive Officer, North America, for the Global Antibiotic Research & Development Partnership (GARDP). She has nearly twenty years of experience working with companies, universities, and non-governmental organizations in the United States and around the world, providing expertise in antibiotic policy, partnering, and fundraising. She participates in US and international discussions surrounding market creation, access, and novel payment models.

Jennifer received her PhD in molecular biology from the University of Notre Dame and her MPH in epidemiology and international health from the University of Michigan.

Centauri THERAPEUTICS

Immunotherapy for life-threatening infections in vulnerable patients



Jennifer Schneider, CEO

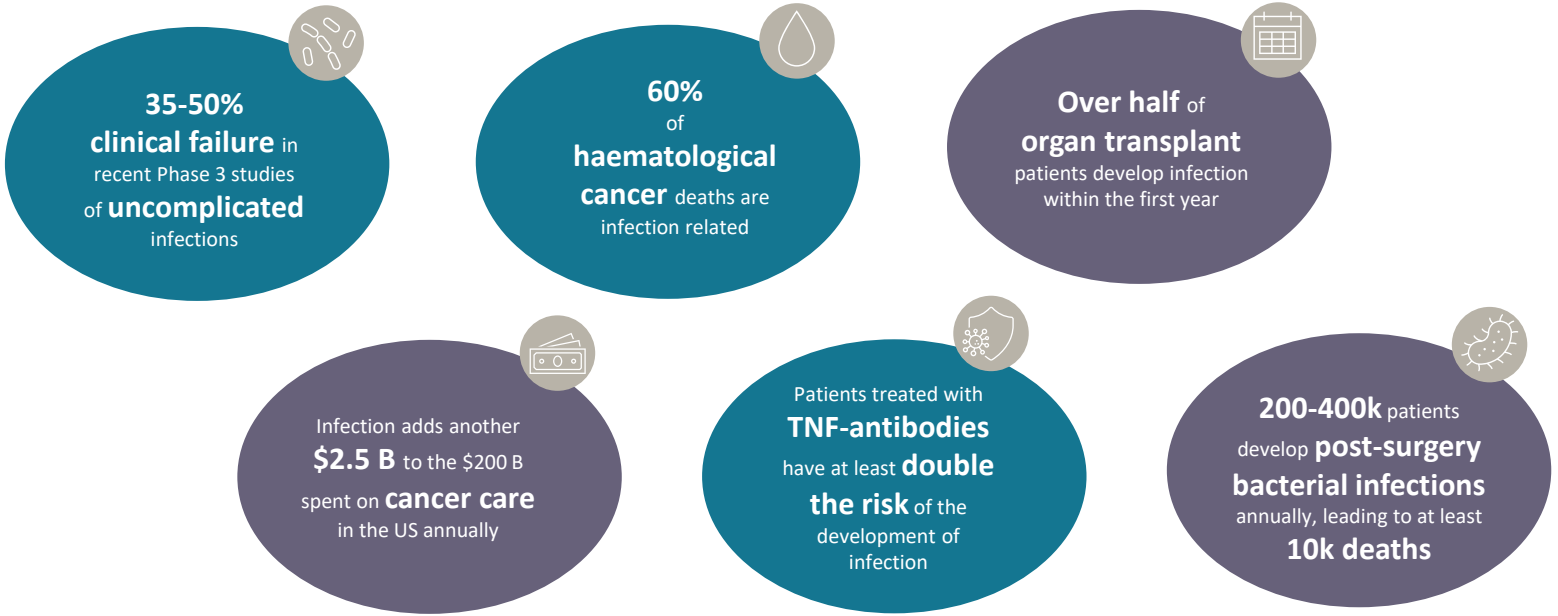
Non-confidential deck

REVIVE webinar

August 22, 2024

www.centauritherapeutics.com

Current antibacterial agents are performing poorly

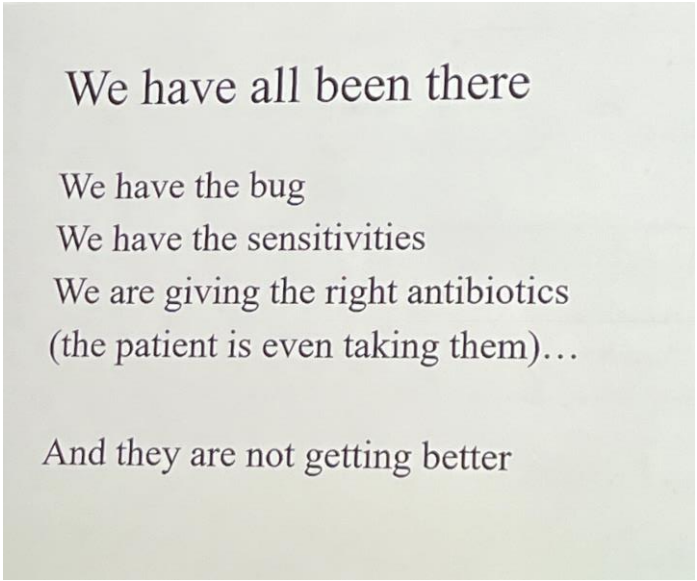


https://www.pfizer.com/news/press-release/press-release-detail/phase-3-studies-pfizers-novel-antibiotic-combination-offer
https://www.gsk.com/en-gb/media/press-releases/gepotidacin-s-positive-phase-iii-data-shows-potential-to-be-the-first-in-a-new-class-of-oral-antibiotics-for-uncomplicated-urinary-tract-infections/
Zembower, T.R. (2014). Epidemiology of Infections in Cancer Patients. In: Stosor, V., Zembower, T. (eds) Infectious Complications in Cancer Patients. Cancer Treatment and Research, vol 161. Springer, Cham https://doi.org/10.1007/978-3-319-04220-6_2
https://www.cdc.gov/drugresistance/solutions-initiative/stories/partnership-estimates-healthcare-cost.html
https://www.euro.who.int/en/health-topics/disease-prevention/pages/news/news/2022/01/whoecdc-report-antimicrobial-resistance-remains-threat-to-health-in-european-region
ps://www.cdc.gov/media/releases/2019/p1113-antibiotic-resistant.html

Traditional approaches to infection are no longer sufficient for many patients

New mechanisms are needed to address untreated infections

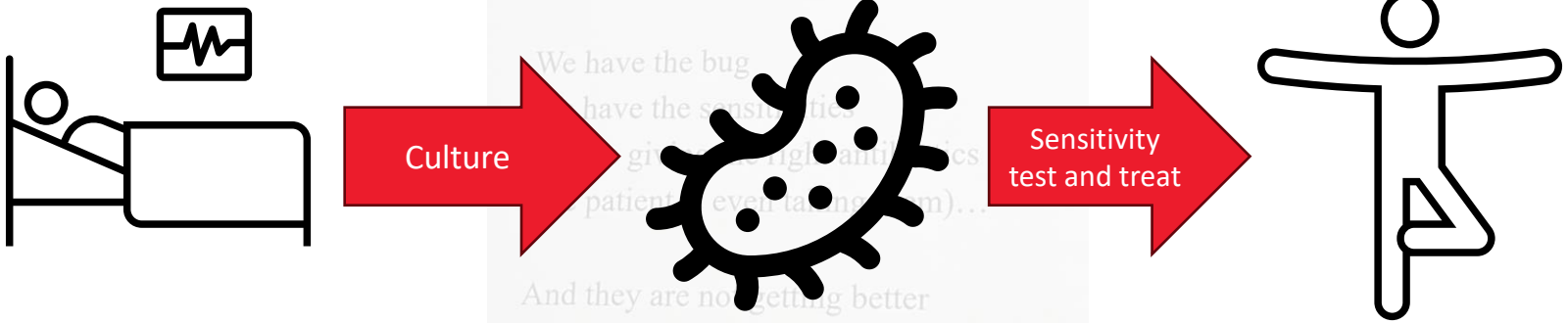
ESCMID Global



Taken from Dr. Steve Holland
Laboratory of Clinical Immunology and Microbiology
National Institute of Allergy and Infectious Diseases
National Institutes of Health
ECCMID 2024

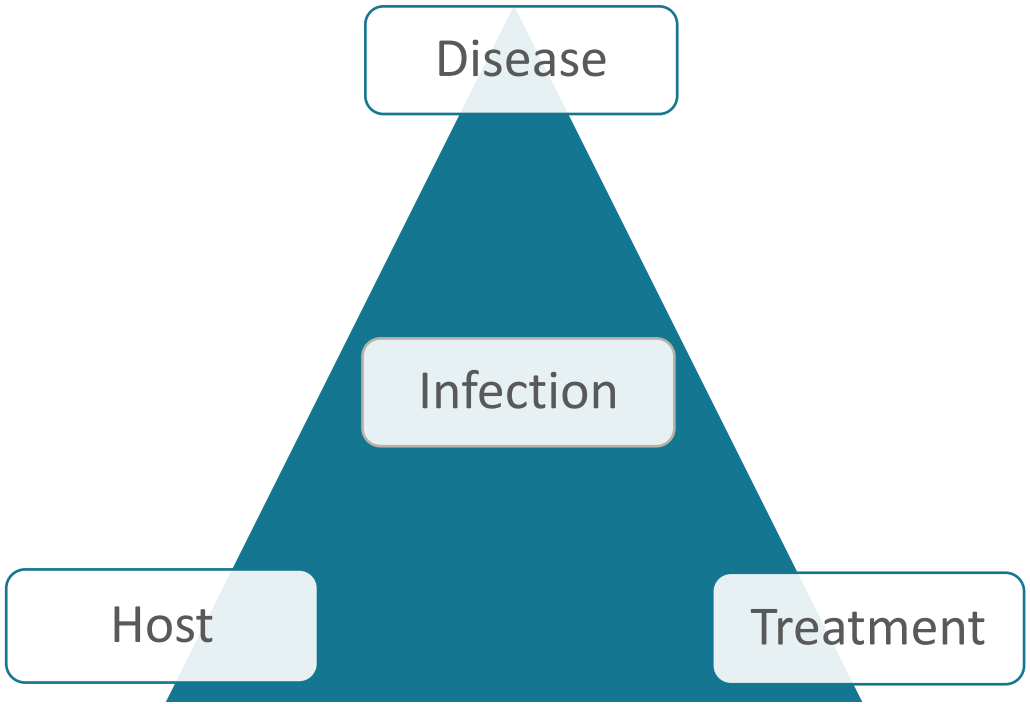
This approach is no longer sufficient for many patients

The traditional approach does not take into account the host



A more complex model of infection is being recognized

Emerging understanding of the patient will support development of non-traditional agents



Top papers in antimicrobial pharmacology, 2023

Model-based assessment of neutrophil-mediated phagocytosis and digestion of bacteria across *in vitro* and *in vivo* studies

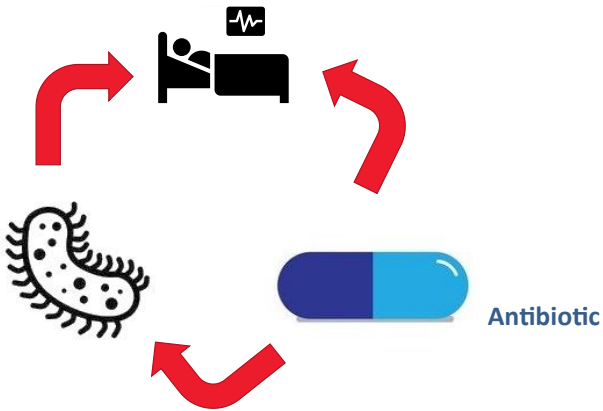
- ***"Typically, antimicrobial drugs are administered to assist a compromised (or functioning) immune system in combating an infection. However, the host response component is usually disregarded during pharmacokinetic/pharmacodynamic (PKPD) assessment of antibiotics, and its effect relative to that of the administered antibiotic(s) is undetermined, although it may be profound."***

- Thorsted A, Pham AD, Friberg LE, Nielsen EI. CPT Pharmacometrics Syst Pharmacol. 2023;12:1972-1987. doi:10.1002/psp4.13046

Immune modulation seeks to tip the balance back in favor of the host

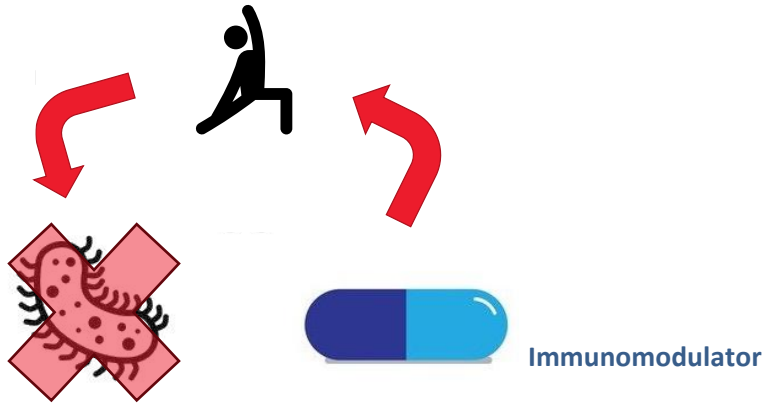
Anti-infectives work best when coupled to a robust immune response

Patients with weakened immunity are often unable to control or clear infections, leading to chronic infections, resistance, increased hospitalization, and death



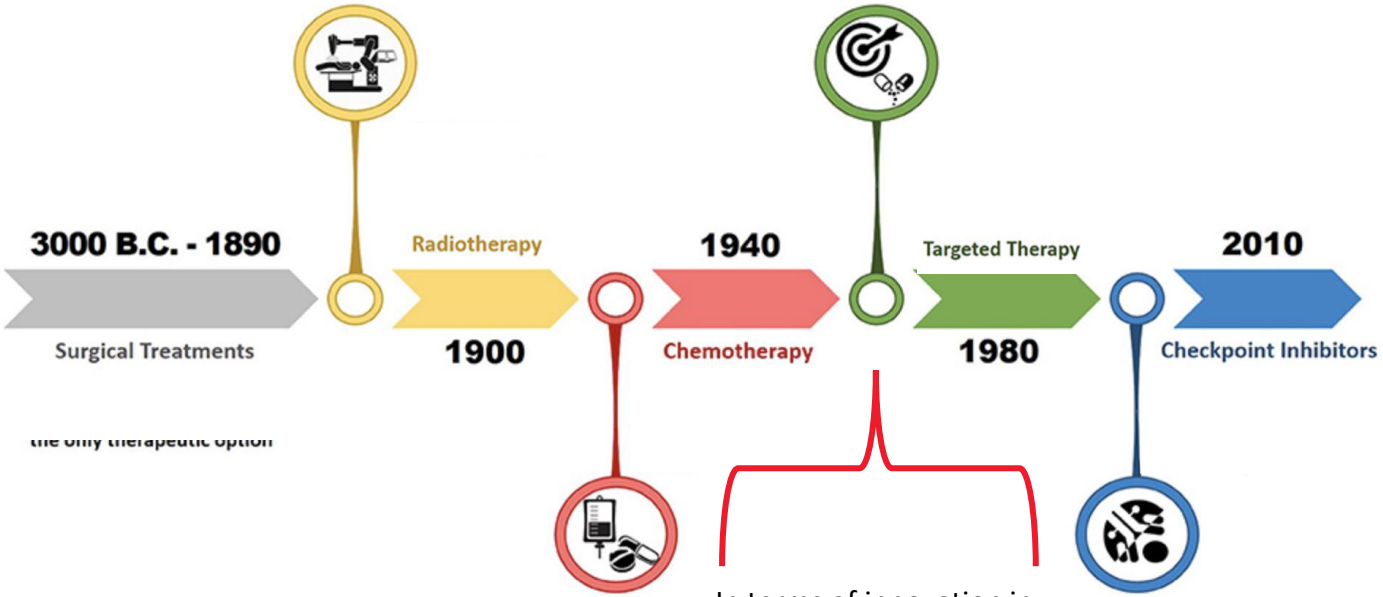
Traditional antibiotic development focuses on achieving target drug concentration in healthy individuals without accounting for the immune system of the patient

Leveraging the immune system, even in immune compromised hosts, enables more rapid and complete clearance of infection



Centauri's technology engages a potent pre-existing antibody response which efficiently drives antibacterial clearance

Immunotherapy has the potential to transform anti-infectives in the same way as the discovery of the cancer immunity cycle has for oncology



In terms of innovation in antibiotics, we are here.

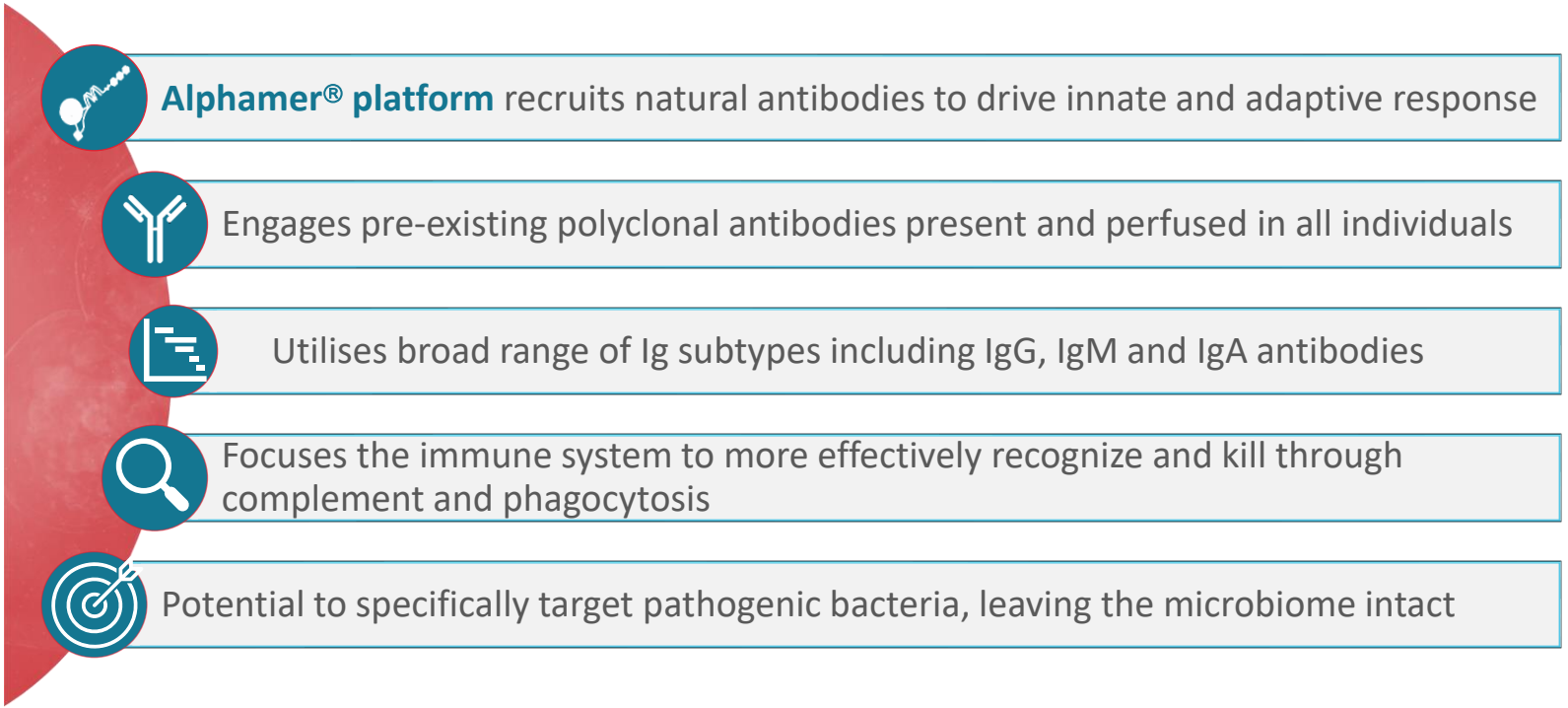
The last antibiotic class to be successfully introduced as treatment was discovered in **1987**

Immuno-oncology: $48b market in 2022

Figure from: Falzone L, Salomone S and Libra M (2018) Evolution of Cancer Pharmacological Treatments at the Turn of the Third Millennium. *Front. Pharmacol.* 9:1300. doi: 10.3389/fphar.2018.01300

Compelling rationale for targeted immunotherapies for treatment of bacterial infections

Background to the Centauri platform



Centauri has strong financial support to bring our vision to patients

Robust cash position supports broader evaluation of the opportunities with our platform and development of additional differentiated assets

£24 M

£24 million GBP (c. $32 million USD) Series A investment round

$9 M

Up to $9 million USD (c. £7.8 million GBP) grant from Combating Antibiotic Resistant Bacteria Biopharmaceutical Accelerator (CARB-X)

£1 M

Previous funding received via Innovate UK grant programme

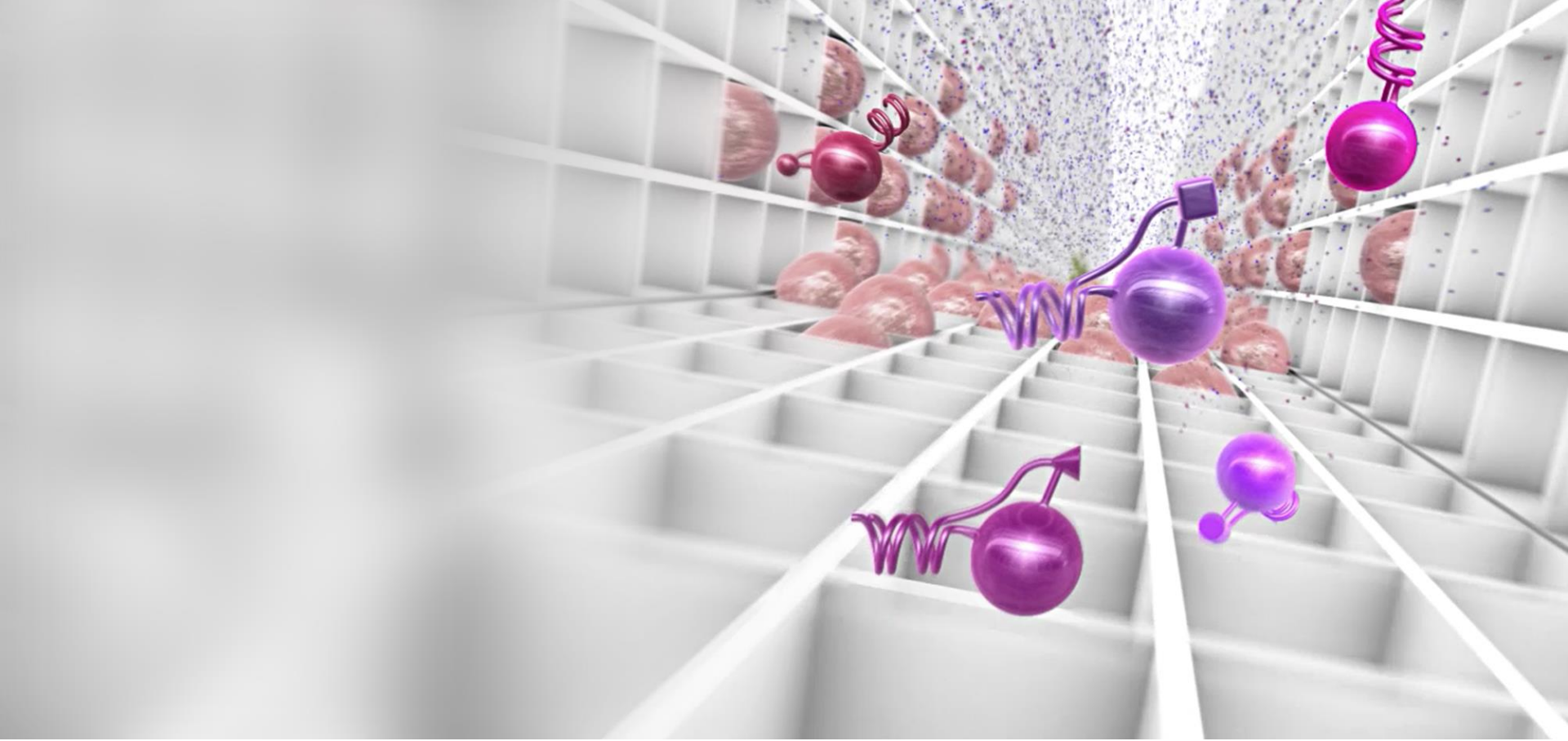
ANIMATRIX FOUNDERS LLP
infinite possibilities

Boehringer Ingelheim

evotec

repair impact fund
novo holdings

CARB-X
Combating Antibiotic-Resistant Bacteria



The Alphamer Platform

Origins of the platform

1960s – first xenograft (animal to human) heart valve transplant

What happened

An immune response in patients led to very rapid killing of transplanted animal tissue

Killing of the xenograft driven by ***antibodies already present in abundance***

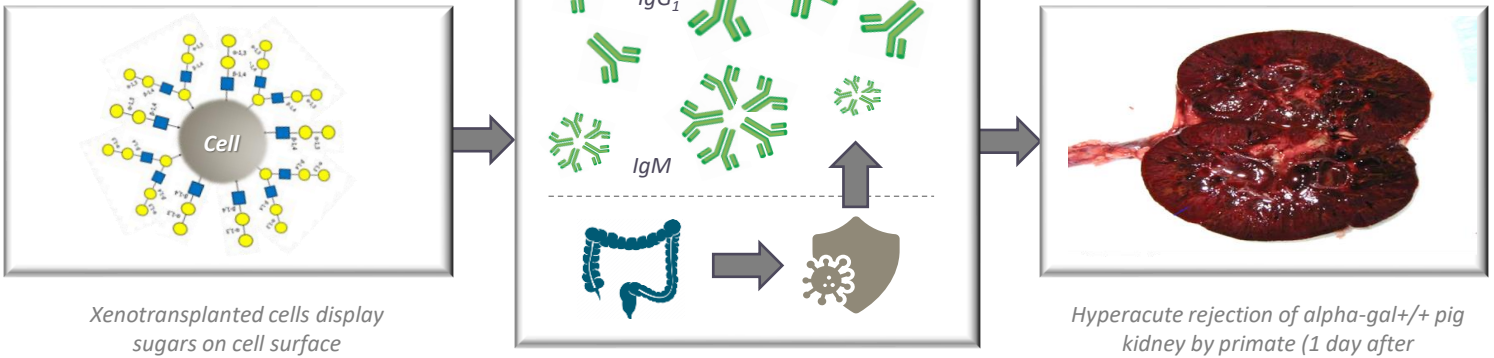
Given the powerful response from these antibodies, there is opportunity to harness them for therapeutic benefit

The key to this antibody response is the presentation of natural sugars to the immune system and is the basis for the design of our Alphamers

Foreign cells or organisms expressing non-self sugars…

… are recognized by pre-existing anti-sugar polyclonal antibodies

… which drive powerful immune response



Xenotransplanted cells display sugars on cell surface

Antibodies raised continuously to non-self sugars presented in gut

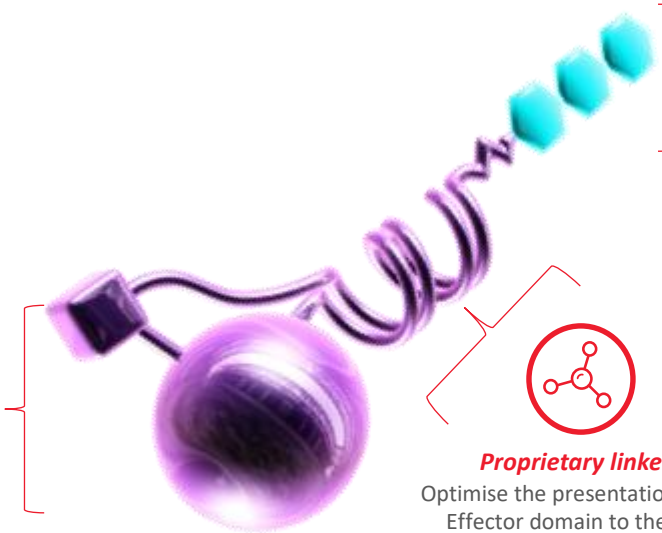
Hyperacute rejection of alpha-gal+/+ pig kidney by primate (1 day after transplantation)
Oct '21 United Therapeutics
www.fiercebiotech.com/medtech/nyu-surgeons-successfully-transplant-kidney-from-genetically-modified-pig-into-human

Extensive preclinical data supports therapeutic potential of redirecting anti-glycan antibodies [see refs]

Clinical precedence exists for both the use of alpha-Gal and Rhamnose for recruiting natural immunity

1. Kristian, *et al.* (2015). *J. Mol. Med.* 93: 619-31; **2.** Abdel-Motal, *et al.* (2007). *J. Virol.* 81: 9131-41; **3.** Yilmaz, *et al.* (2014). *Cell* 159: 1277-89; **4.** Galili, *et al.* (2007). *J. Immunol.* 178: 4676-87;
5. Schrand, B *et al.* (2018). *Nat. Comms*, 9: 3348; **6.** Tanemura, *et al.* (2015). *World Journal of Gastroenterology* 21(40): 11396-410.

Alphamers engage the surface of the pathogen through targeting moieties bound to an effector domain to drive rapid immune clearance



Effector domain

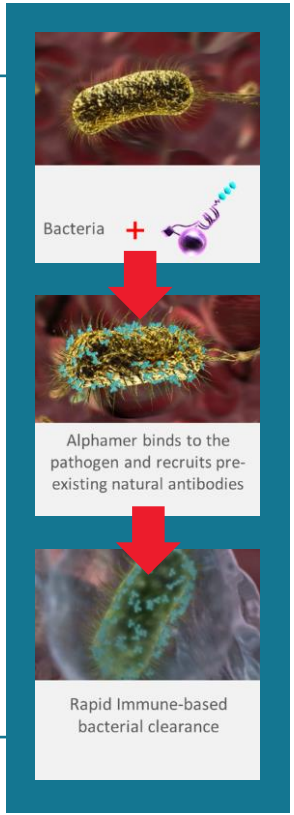
Present either alpha-gal or rhamnose sugar to recruit natural host immunity

Targeting domain

Selectively binds target of interest

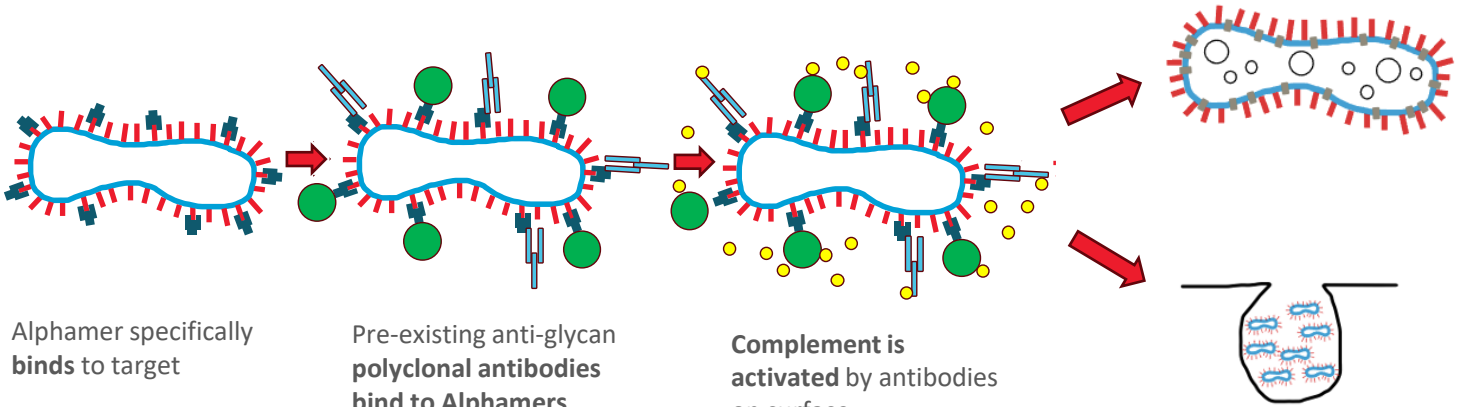
Proprietary linkers

Optimise the presentation of the Effector domain to the host immune system and maximise efficacy of the drug



Alphamer mechanisms of action

Two independent pathways leading to cell death



Alphamer specifically **binds** to target

Pre-existing anti-glycan **polyclonal antibodies bind to Alphamers** decorating surface

Complement is activated by antibodies on surface

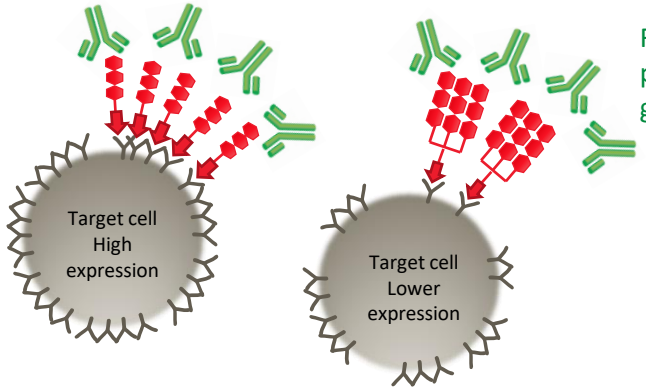
Recruitment and activation of complement leads to **assembly of MAC complex** and cell death

AND

Opsonophagocytic killing of antibody + complement coated cells by macrophages and granulocytes

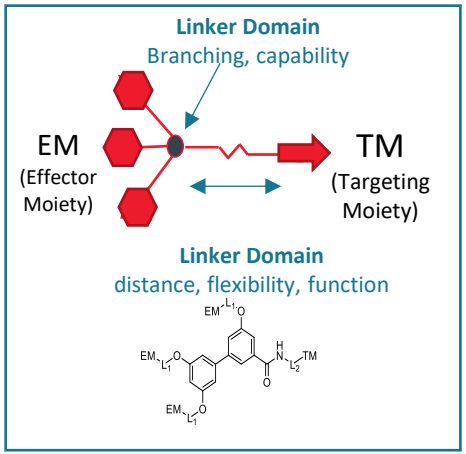
- Bacterial surface protein
- Alphamer targeting bacterial surface protein
- Anti-alpha gal / anti-rhamn IgM antibody
- Anti-alpha gal / anti-rhamn IgG antibody
- Complement
- Complement membrane attack complex (MAC)

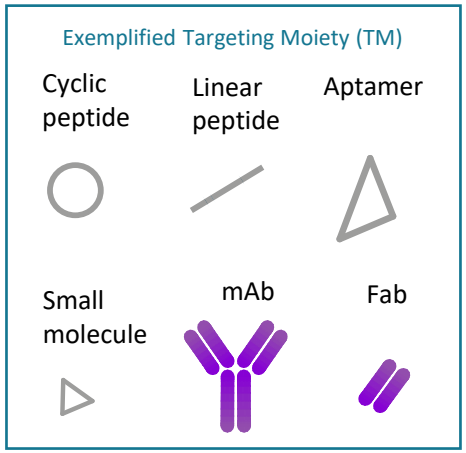
Linkers fine tune optimal valency and compatibility for multiple types of targeting moiety, while ensuring appropriate presentation of the sugar to the immune system



Recruitment of polyclonal anti-glycan antibodies

Engagement of polyclonal antibody response by Alphamers expected to lead to broader immune response and faster bacterial clearance than IgG1 mAbs or other recombinant antibody products





We have synthesised and characterised examples of these types of targeting moieties in ID and cancer

Centauri's platform is a disruptive, immunotherapy-based approach to the treatment of serious infections

Unique mechanism of action

Polyclonal IgG, IgM, and IgA antibodies engaging multiple immune effector mechanisms

Tunable spectrum - broad or narrow spectrum agents

Flexible platform, exemplified and protected with different targeting technologies (peptides, antibodies, aptamers, small molecules)

Differentiated health outcomes

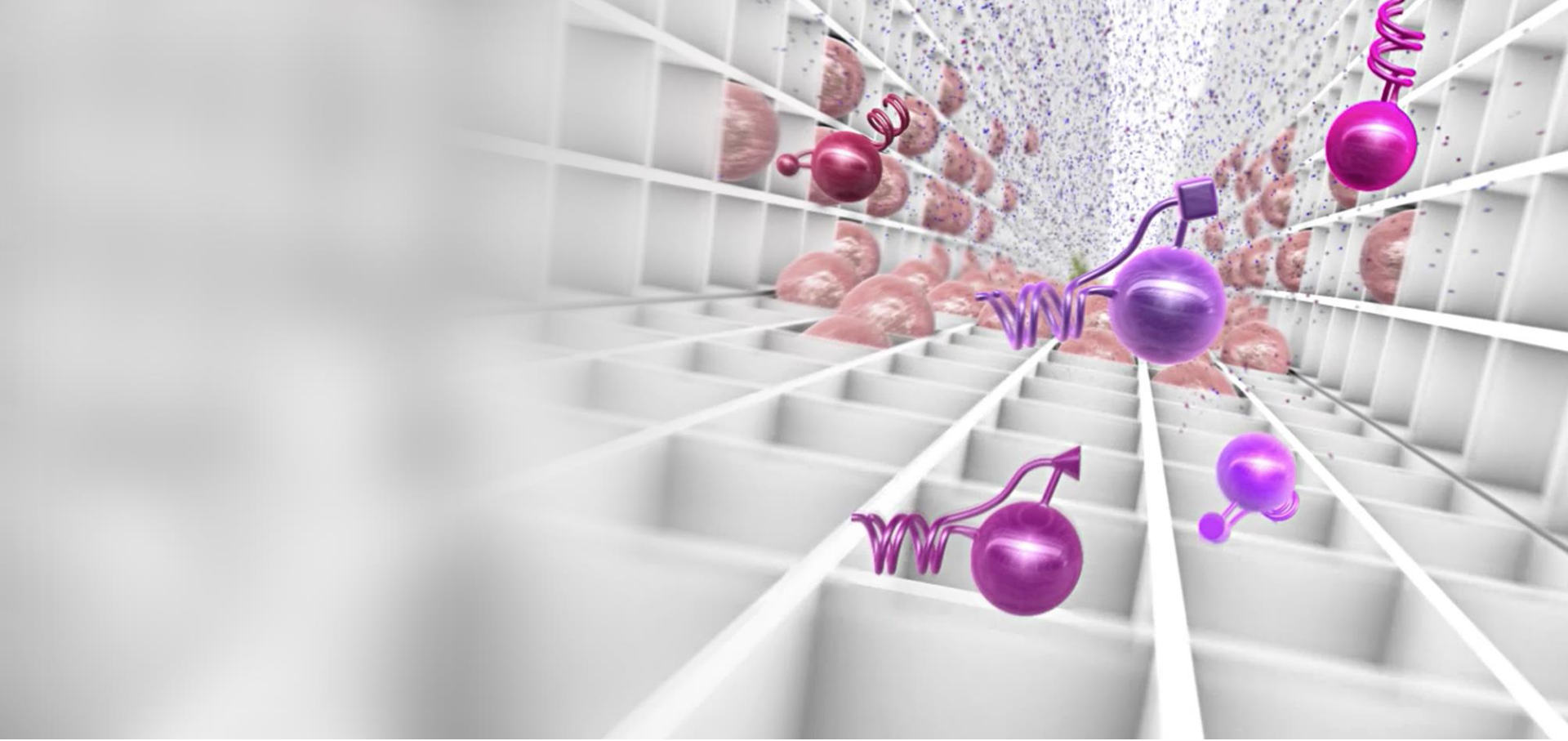
Preclinical in vivo *data supports use in immune compromised patients*

Ubiquitous and pharmacologically relevant antibody concentration

Tissues already well perfused and rich in anti-Gal and anti-Rhamnose antibodies

Potential for bi-functional molecules

Choice of targeting moiety allows for design of molecules with multiple mechanisms of action

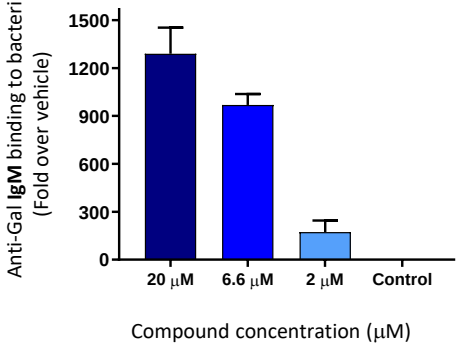


Proof of Concept

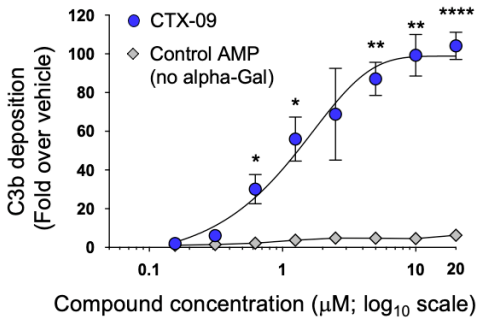
We have demonstrated that Alphamers are functional immunotherapeutics *in vitro*

Significant bacterial killing driven through immune activity

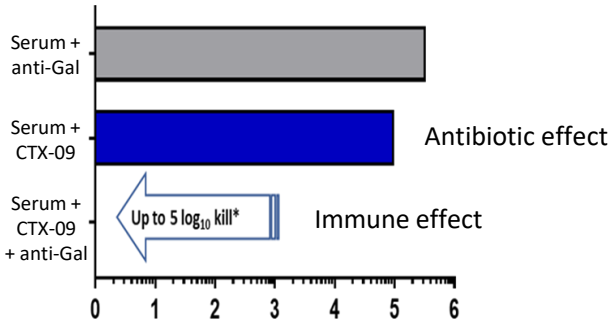
Anti-Gal binding to
***Escherichia coli* K1**
(ATCC 700973)



Anti-Gal mediated
complement deposition
onto ***E. coli* K1**



Anti-Gal Mediated Serum Killing
of ***E. coli* K1**



Binding of Alphamer to bacterial surface recruits natural antibodies

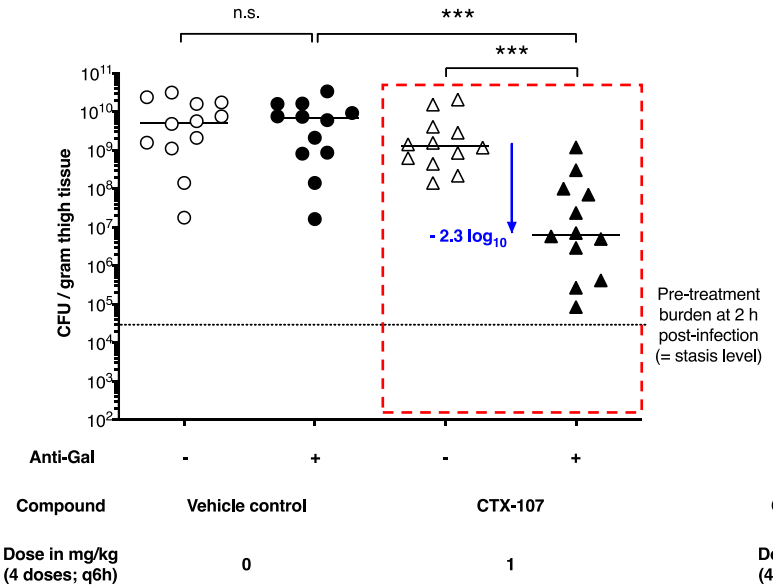
Recruitment of natural antibodies drives complement deposition…

…and serum killing at sub-MIC concentrations

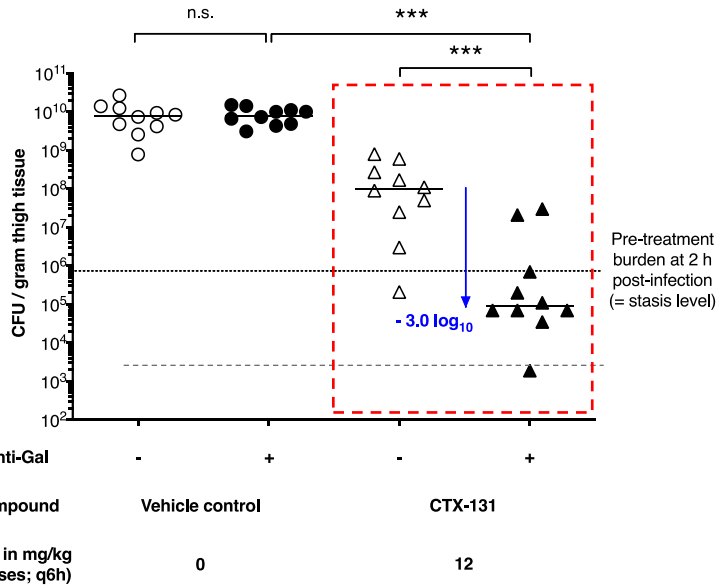
Dual MoA demonstrated *in vivo*

Alphamers mediate *Escherichia coli* inhibition, even in neutropenic murine thigh infection models. Neutropenic animal models are likely a significant under representation of the robustness of the Alphamer mechanism.

CTX-107 activity against *E. coli* NCTC 13441 (ESBL+)

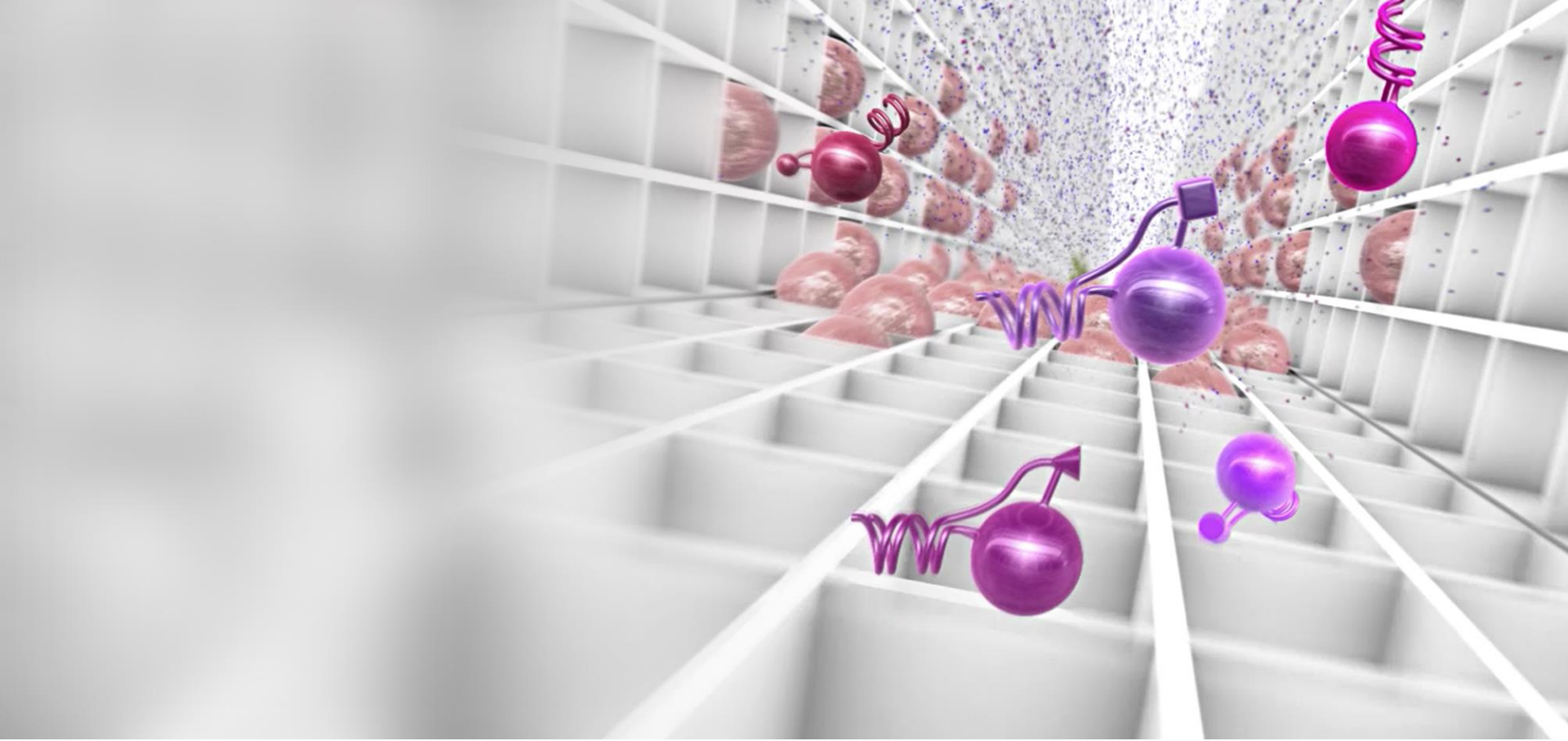


CTX-131 activity against *E. coli* K1



n.s., not significant; ***, $p<0.0001$, unpaired, two-tailed Mann-Whitney test

Significant drop in bacterial load in the presence of the anti-Gal antibody (red boxes)

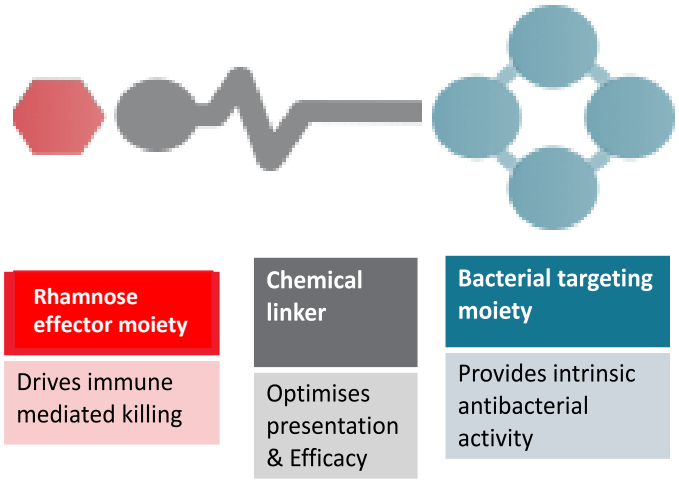


Our lead program, ABX-01

ABX-01 a broad spectrum Gram-negative program

Validation of the technology and approach

- Will treat serious infections caused by Gram-negative pathogens
- Selected to work against clinically prevalent and multi-drug resistant strains
- Broad spectrum, via AMP targeting moiety
- Effective as monotherapy
- No requirement for diagnostic test



Dual mechanism of action: immunotherapeutic effects via complement fixation and phagocytosis in addition to intrinsic antibacterial activities in the same molecule

TPP broad-spectrum Gram-negative

	Minimum Acceptable Result	Ideal Result
Mechanism of Action	A **peptide conjugated** to one or more alpha-Gal or **L-rhamnose** epitopes (Alphamer) that **binds to Gram-negative bacteria**, **including MDR strains**. Possesses intrinsic **antibacterial activity** and promotes **multiple immune mechanisms** to eradicate bacteria through recruitment of natural anti-glycan antibodies.	
Patient Population	Adults with confirmed or suspected serious Gram-negative infections including those caused by MDR Enterobacterales *(Escherichia coli, Klebsiella* spp.*, Enterobacter* spp.)	Adults and children (>1yr) with confirmed or suspected serious Gram-negative infections including those caused by MDR (including ColR strains) Enterobacterales, *Pseudomonas aeruginosa* and/or *Acinetobacter baumannii*
Dosage form	Lyophilised powder	iv-ready solution
Route of Administration	iv	iv
Dosing	q6h	BID
Indications	VAP/HAP or IAI with limited treatment options	VAP/HAP and IAI with limited treatment options
Risks/Safety	• AEs must be manageable and reversible • Nephrotoxicity comparable to or better than current cyclic peptides due to an improved therapeutic window (>3) • Manageable DDIs	• (additional) Able to be dosed in critically ill patients including those with renal or hepatic insufficiency as well as cardiac disease

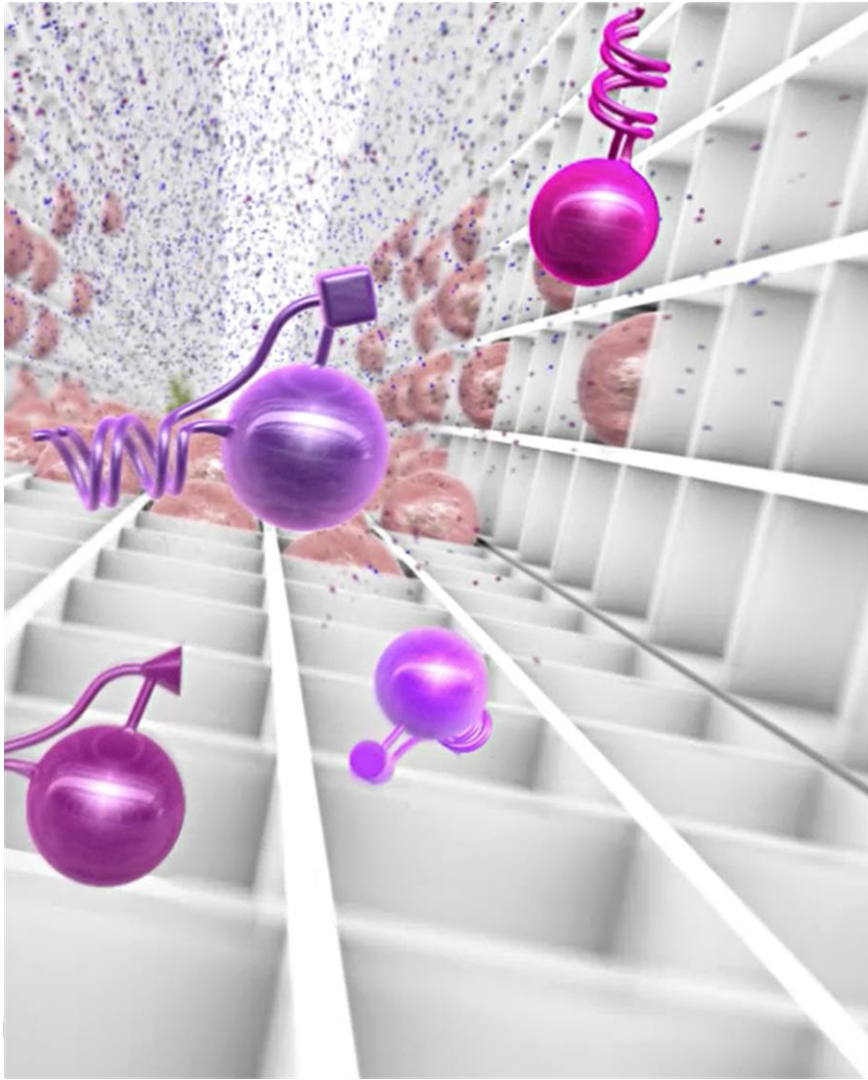
Summary of science and novel approach

- Excellent scientific and leadership team, robust IP position, and solid funding base
- Highly disruptive immunotherapeutic technology with application across multiple therapy areas including infectious diseases, oncology and vaccines
- Demonstrated broad-spectrum anti-microbial activity against Gram-negative bacteria *in vitro* and *in vivo*
- Potent dual mechanism of direct antibacterial and anti-glycan driven immune response demonstrated *in vivo*
- Novel solution to treating a range of life-threatening diseases with systemically-delivered immunotherapeutic
  - The underlying immune mechanism is well known, universal and highly potent
  - The platform can generate multiple innovative products across a number of therapy areas

Immunotherapy for life-threatening infections in vulnerable patients

Centauri
THERAPEUTICS

We seek to tackle life-threatening infectious diseases in the most vulnerable patients.



Rida Mourtada

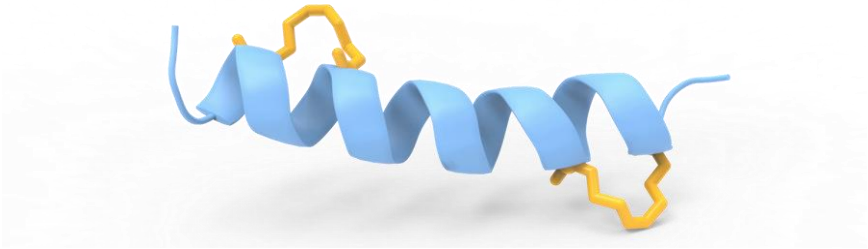
Rida Mourtada is a co-founder and Chief Executive Officer at Lytica Therapeutics, a biotechnology company focused on developing novel therapeutics to treat infectious diseases and cancer. His passion for drug discovery led him to co-invent Lytica's core technologies, stapled antimicrobial Peptides (StAMPs) and stapled peptide antibody conjugates.

Rida completed his bachelor’s and master’s degrees at the University of Toronto, Canada and he received his PhD from the Harvard-MIT Program in Health Sciences and Technology at the Massachusetts Institute of Technology, USA.

Lytica

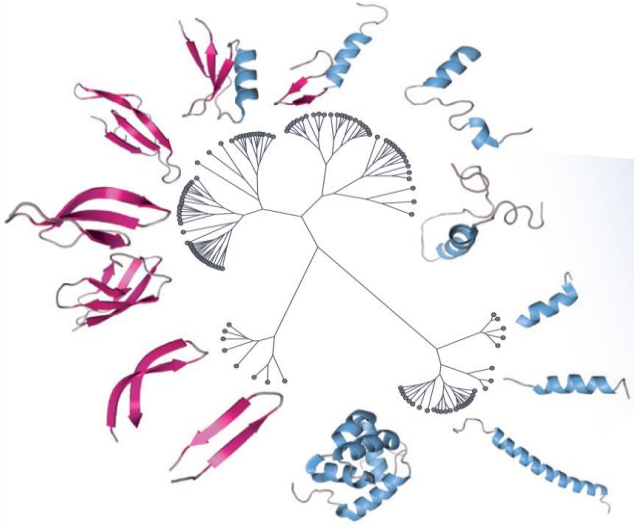
Break Barriers

Stapled Antimicrobial Peptides

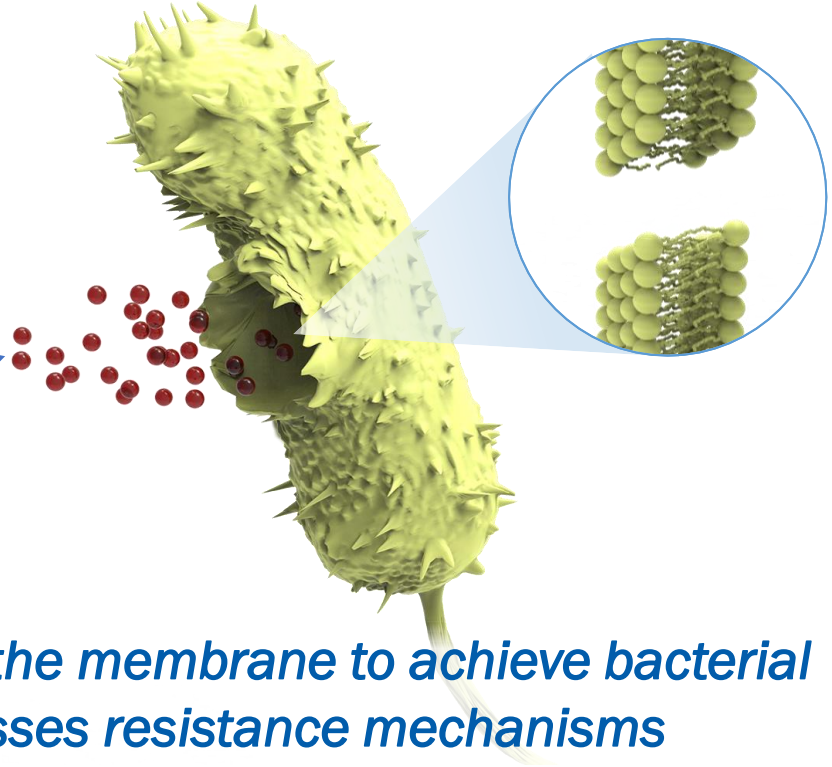


AMPs: A Natural Source of Antibiotics That Has Yet To be Harnessed

- >700 sequences are alpha-helical
- Broad spectrum activity
- Low potential for resistance



Fjell et al. *Nat Rev Drug Discov.* **2011**



Targeting the membrane to achieve bacterial lysis bypasses resistance mechanisms

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AMPs: A Natural Source of Antibiotics Yet To be Harnessed

Big Potential

>700 sequences

Broad spectrum activity

Low potential for resistance

Class-Wide Liabilities

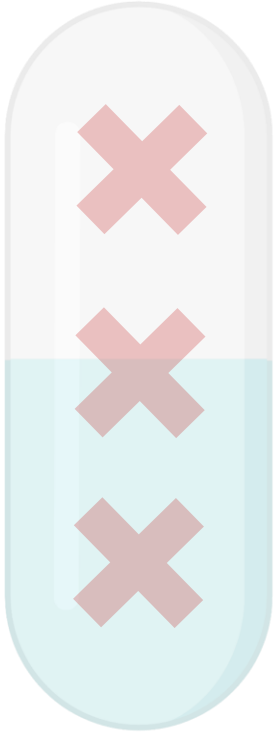
Low Potency

Low Selectivity

Low Stability

Low *In Vivo* Efficacy

Few Candidates No Success



Pexiganan
Topical – *Diabetic Foot Ulcer*

Omiganan
Topical – *Catheter-Associated UTIs*

Brilacidin
IV – *Gram-positive ABSSSI*

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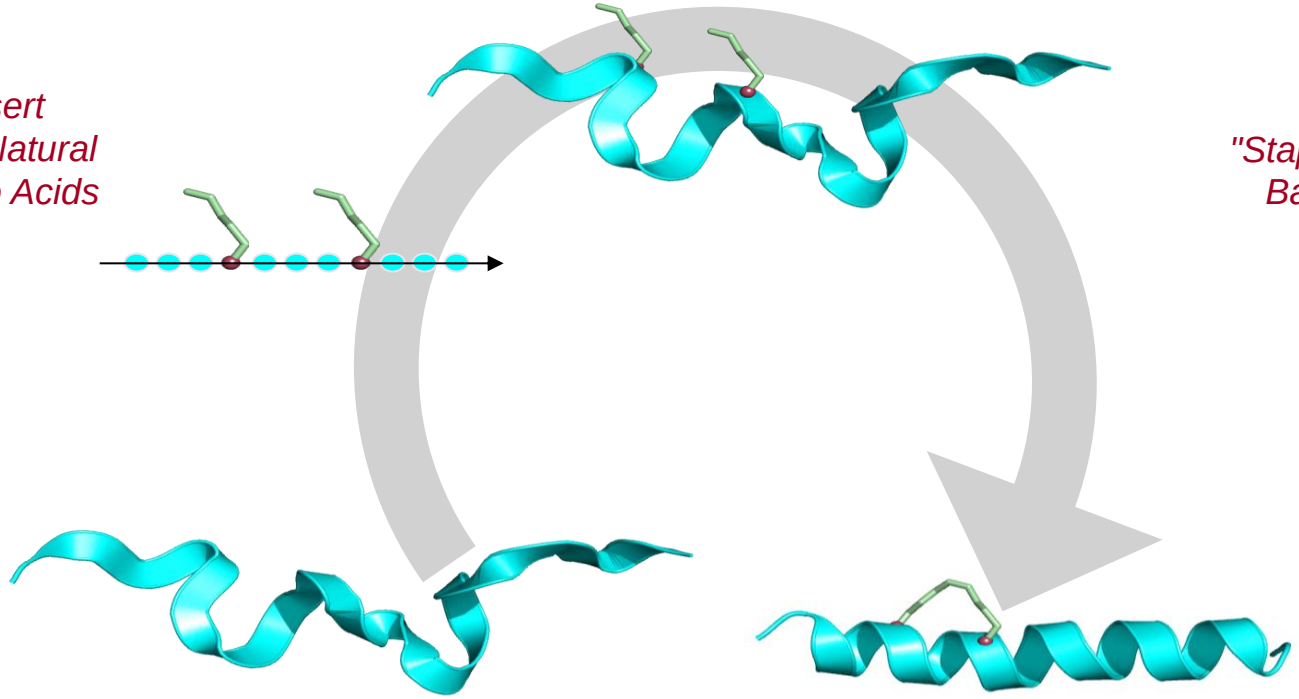
Peptide Stapling: A Technology to Restore and Stabilize Bioactive Shape

Insert Non-Natural Amino Acids

Chemically "Staple" the Peptide Back into Shape



Unstructured Peptide

Low Potency
Prone to Proteolysis

Stapled Peptide

High Potency
Stable

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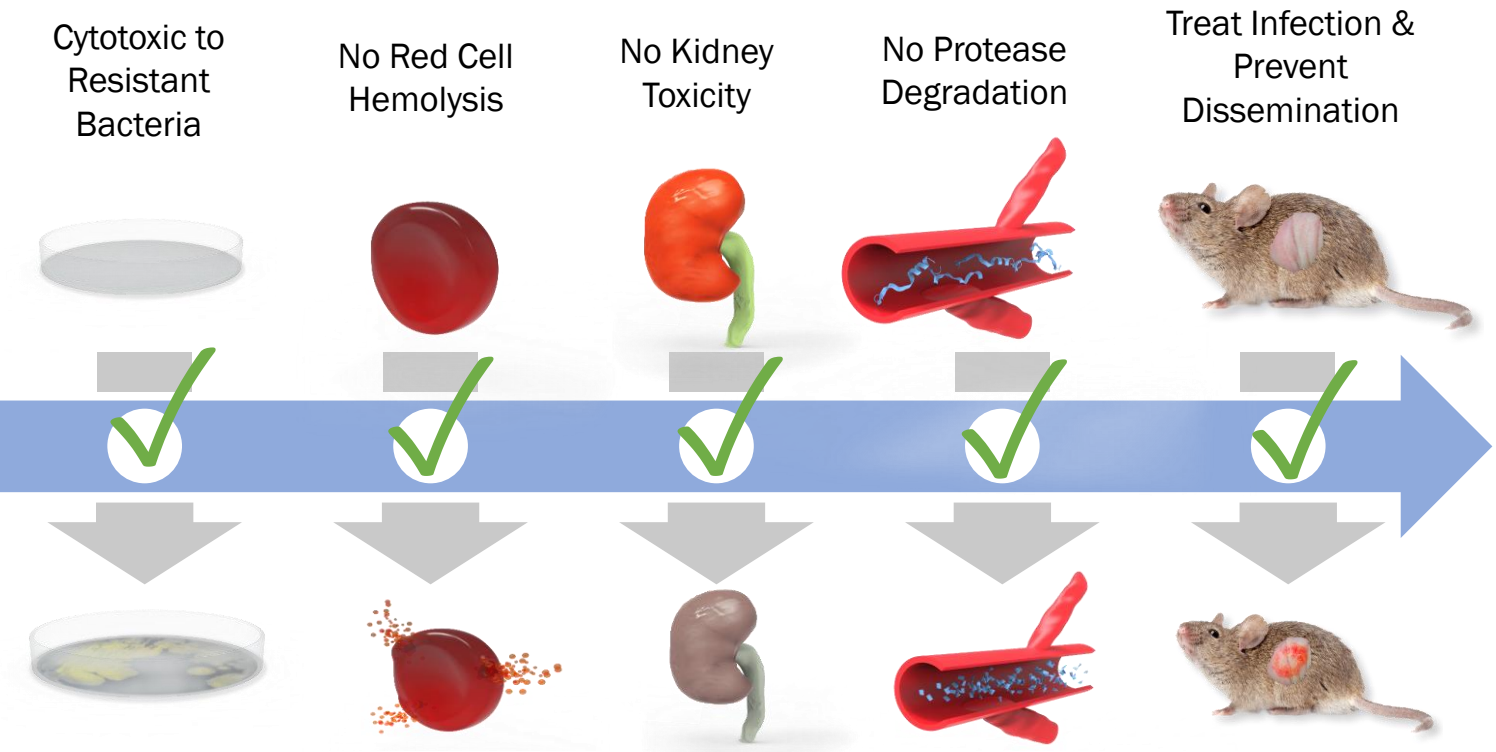
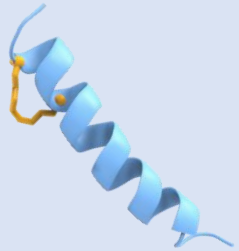
Stapled Antimicrobial Peptides (StAMPs): A Promising New Class of Antibiotics



- **Bacterial selective**
- **Toxic to resistant bacteria**
- ***In vivo* use**



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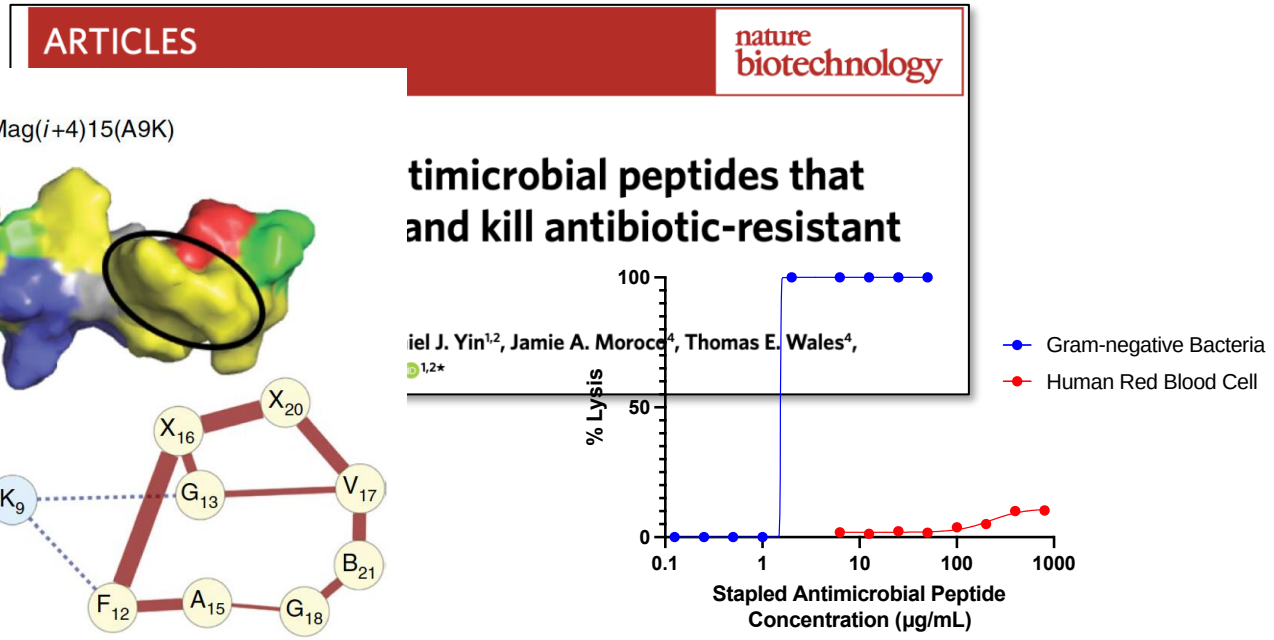
Design Principles of StAMPs Result in Highly Membrane Selective Lytic Antimicrobials



Mourtada et al. *Nat. Biotech.* **2019**

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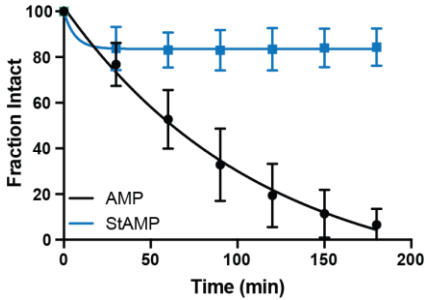
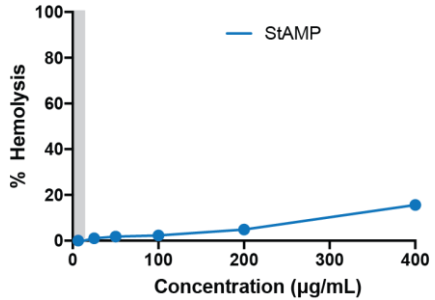
StAMPs: A New Class of Antimicrobials with Unique Properties

Stable



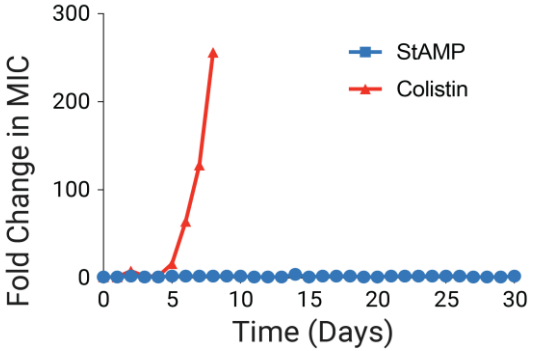
Safe



Gram-negative Selective

Bacteria	Antimicrobial Activity (MIC in µg/ml)
E. coli	2
B. cereus	8
P. aeruginosa	4
S. aureus	64

Do Not Induce Resistance



Effective Against MDR Clinical Isolates

Microorganism	Strain	Amp	Ceftaz	CTX	Cipro	Doxy	Gent	Mero	TMP/SMX	StAMP MIC (µg/ml)*
E. coli	RB001	S	S	S	S	I	S	S	S	1.56
E. coli	RB002	R	R	R	R	R	-	-	I	1.56
P. aeruginosa	RB019	-	S	-	S	-	-	S	-	3.12
P. aeruginosa	RB020	-	R	-	I	-	-	-	-	1.56
K. pneumoniae	RB040	-	S	-	S	-	S	-	-	6.25
K. pneumoniae	RB013	-	R	-	R	-	I	-	-	3.12
A. baumannii	RB197	-	-	-	S	-	S	S	S	1.56
A. baumannii	RB206	-	-	-	R	-	R	R	R	1.56

S=Susceptible, I=Intermediate, R=Resistant; Amp=Ampicillin, Ceftaz=Ceftazidime, CTX=Ceftriaxone, Cipro=Ciprofloxacin, Doxy=Doxycycline, Gent=Gentamicin, Mero=Meropenem, TMP/SMX=Trimethoprim/sulfamethoxazole
*Geometric Mean

Mourtada et al. *Nat. Biotech.* **2019**

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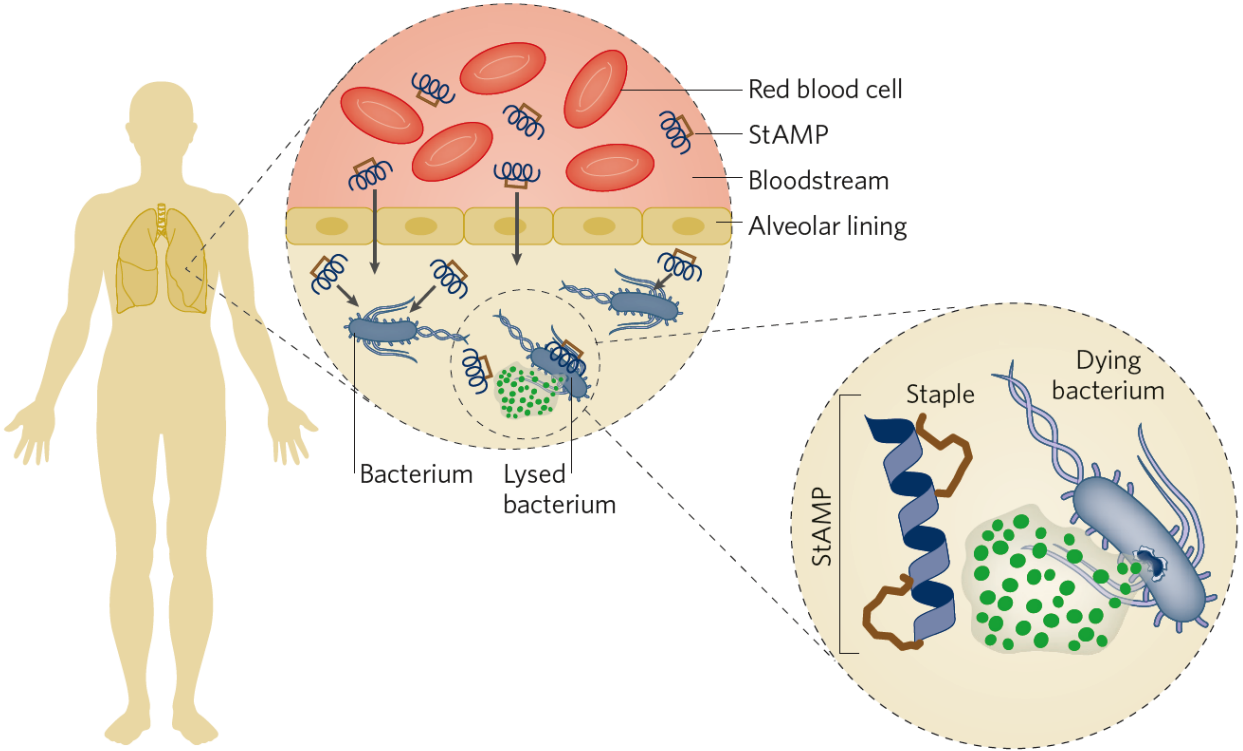
StAMPs: A New Class of Antimicrobials to Treat MDR Pneumonia



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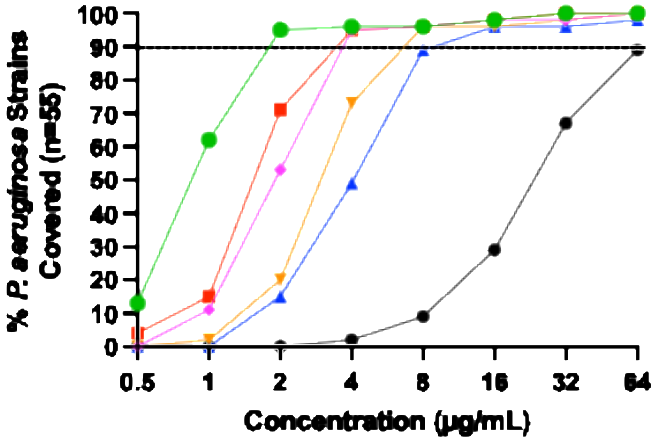
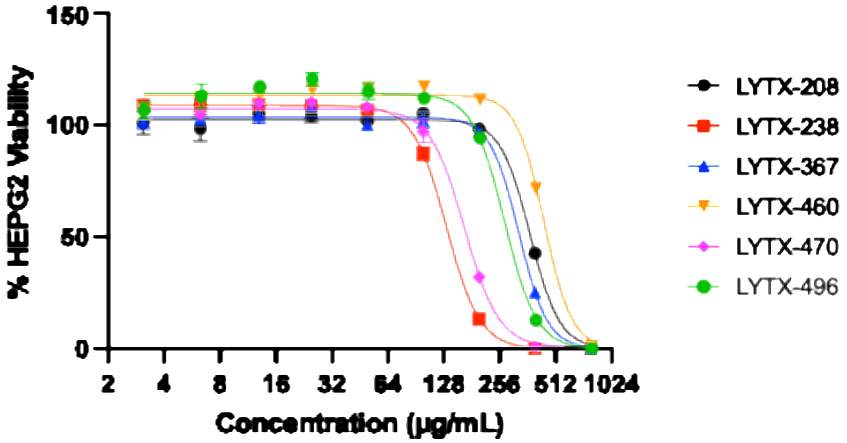
Optimization of StAMP Therapeutic Index





Through an iterative SAR campaign, StAMP potency was optimized while maintaining low cellular toxicity

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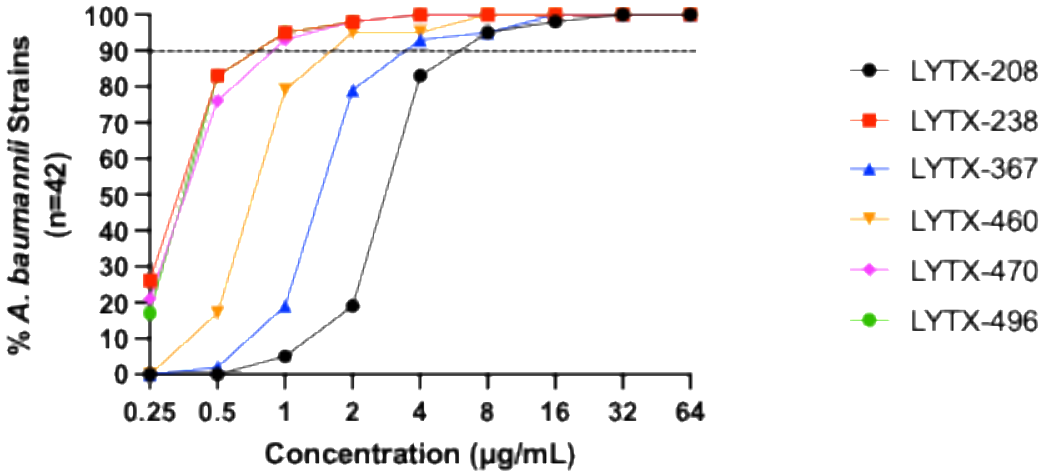
MIC_{90} in CDC MDR *A. baumannii* panel



Enhancement in potency against *P. aeruginosa* resulted in potent activity against MDR *A. baumannii* including colistin-resistant strains

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Antimicrobial Efficacy and Cytotoxicity of Optimized StAMPs

StAMP	*P.aeruginosa* MIC_{90} (µg/mL)	*A.baumannii* MIC_{90} (µg/mL)	Cytotoxicity (IC_{50} in µg/mL)		Therapeutic Index	
			RPTEC	HEPG2	RPTEC/P.ae	RPTEC/A.ba
LYTX-208	~64	8	367	375	6	46
LYTX-238	4	1	103	133	26	103
LYTX-367	~8	4	356	327	44	89
LYTX-460	8	2	263	441	33	132
LYTX-470	4	1	172	167	43	172
LYTX-496	2	1	316	270	158	316

Shortlisted StAMPs show greater bacterial selectivity than initial hits

MIC_{90} estimated from sub-panel results. CDC AR-bank *P. aeruginosa* (55 strains) and *A. baumannii* (42 strains) panels were used for MIC_{90} calculations.

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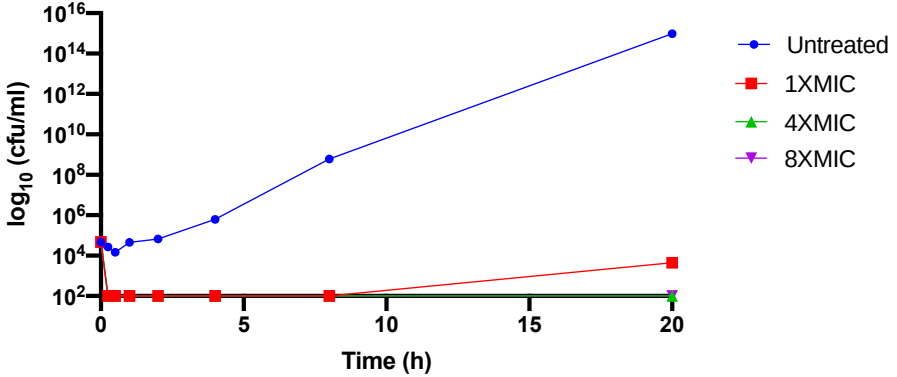
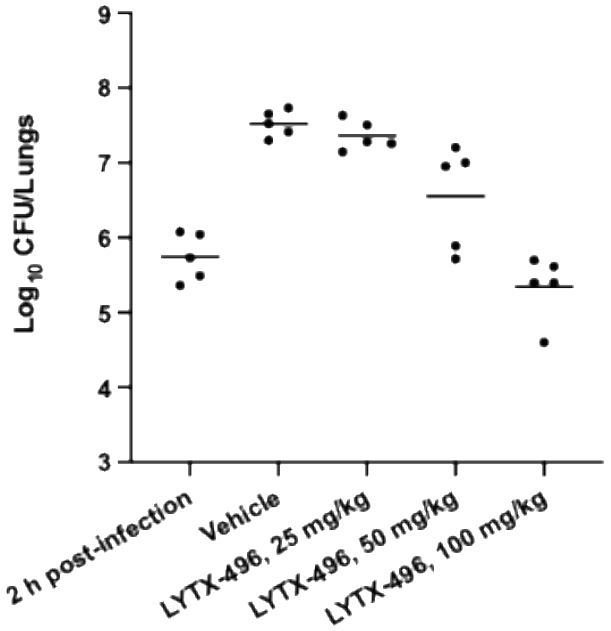
LYTX-496 Displays Rapid *In Vitro* and *In Vivo* Killing Kinetics





Within 4 hours post-administration, LYTX-496 reduced *P. aeruginosa* burden in lung tissue

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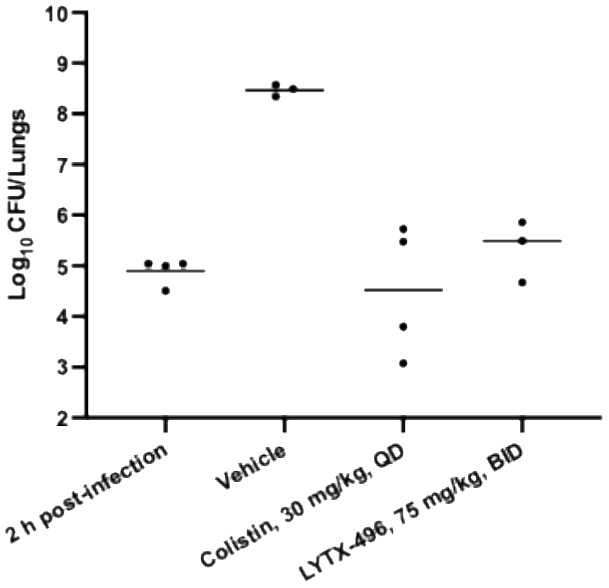
Twice a Day Dosing of StAMP Results in a Sustained Response in a Neutropenic Murine Model of Pneumonia



Two doses of LYTX-496 resulted in a 3-log difference in *P. aeruginosa* burden in lung tissue when compared to vehicle

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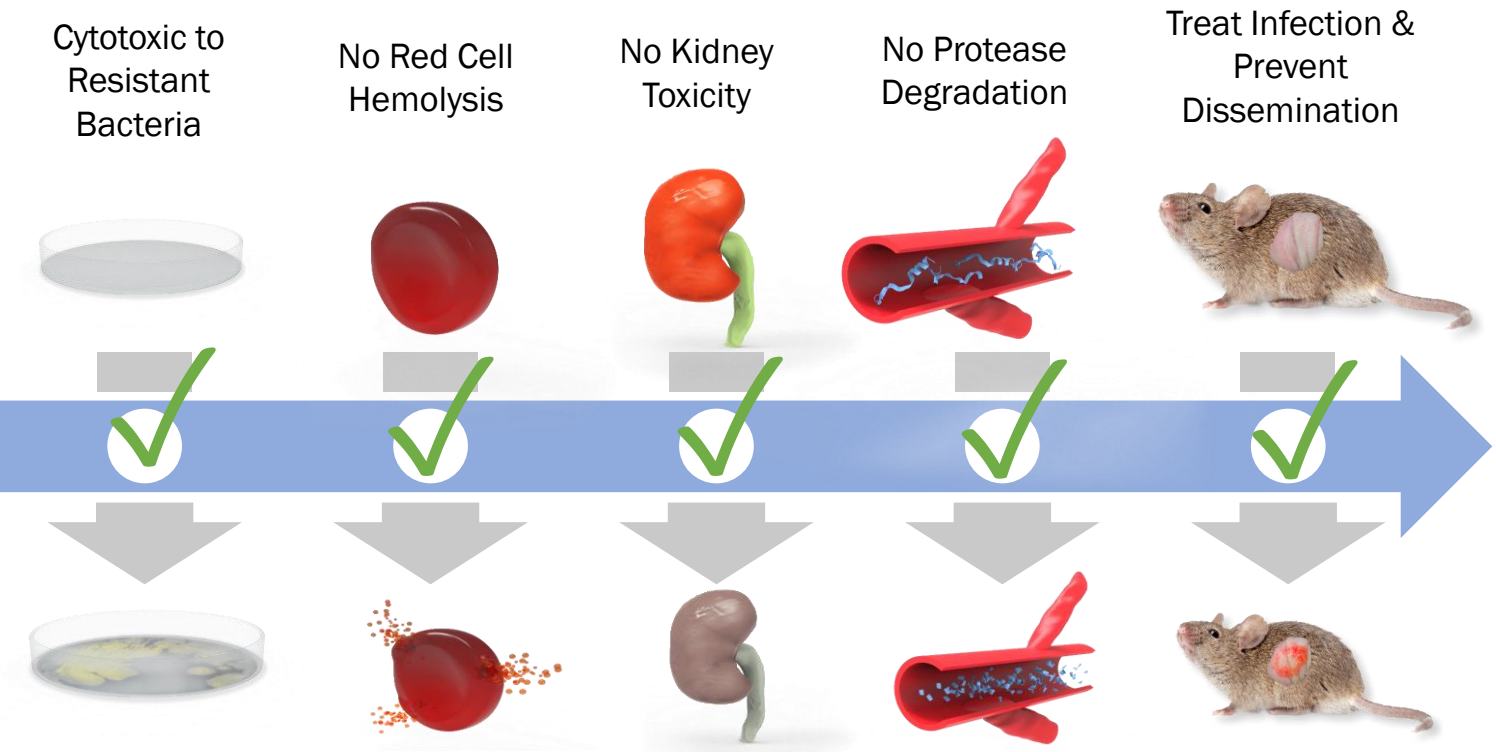
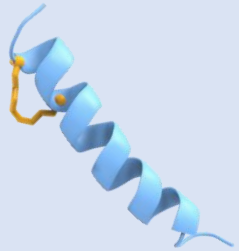
Stapled Antimicrobial Peptides (StAMPs): A Promising New Class of Antibiotics



- **Bacterial selective**
- **Toxic to resistant bacteria**
- ***In vivo* use**



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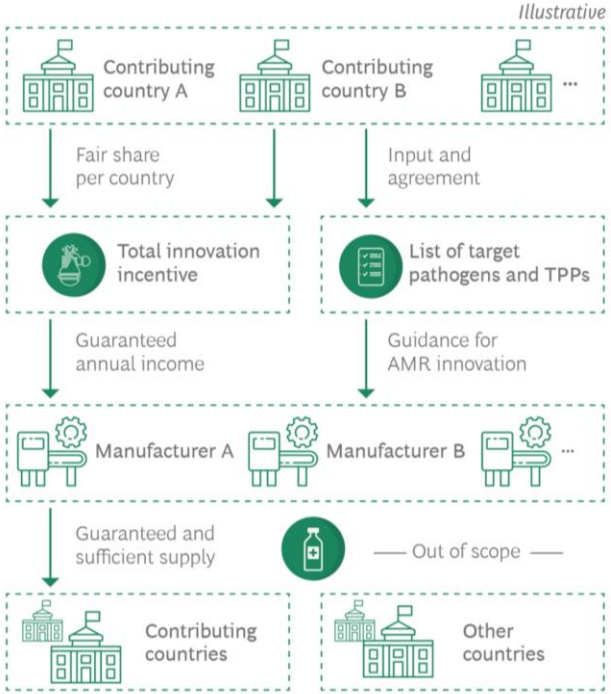
A New Economic Model is Needed for a Sustainable Antibiotic Pipeline: A Subscription Model



Source: BCG analysis.

Note: AMR = antimicrobial resistance; TPP = target product profile.

Key characteristics of subscription model

Appropriate and sustainable financial incentive for manufacturers to innovate antimicrobials to which G7 countries, the rest of the EU, and China contribute their fair share

- Increased ecosystem viability

Globally relevant pathogen list and TPPs to guide innovation efforts, with global cumulative values assigned to each TPP

- Continuous innovation
- Portfolio diversity

Sufficient local product availabilities ensured by manufacturers in return for guaranteed annual income (delinked from volume sold) over set period

- Supply certainty
- Stewardship and surveillance

https://www.bcg.com/publications/2022/model-for-tackling-antimicrobial-resistance

Lytica

Gregorio Iraola

Gregorio Iraola is co-founder and CEO of Kinzbio, a biotech startup developing preventives and therapeutics for antibiotic-resistant bacteria using an innovative technology platform based on the biology of jumbo phages. He is an International Fellow at the Wellcome Sanger Institute (UK) and Adjunct International Professor at the Universidad Mayor (Chile). His research focuses on understanding and combating bacterial infections and AMR from a one-health perspective, integrating the human microbiome with its surroundings.

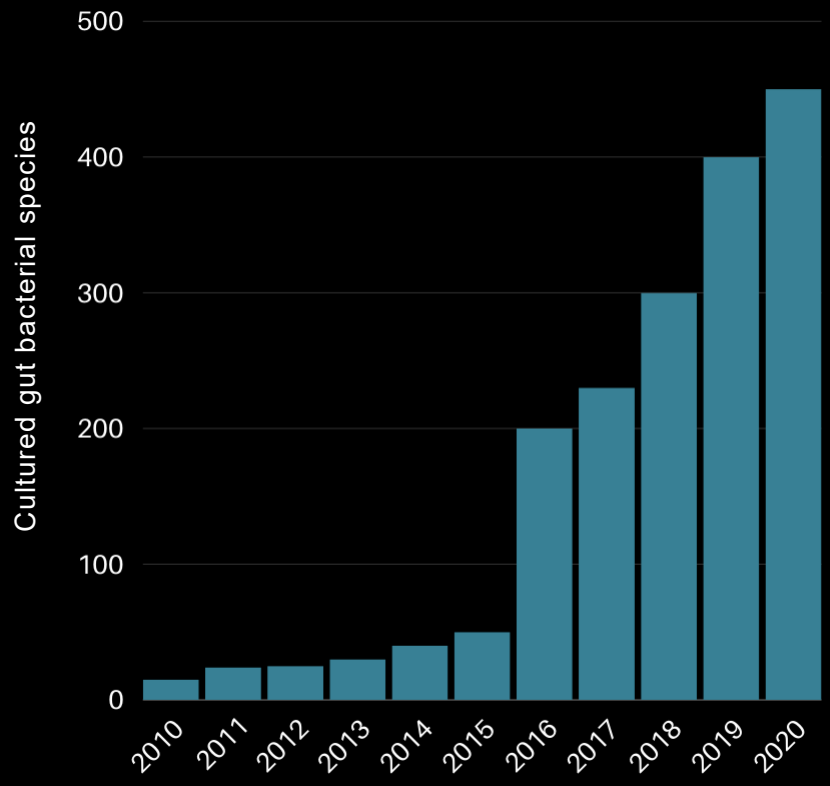
Gregorio completed his bachelor’s degree in biology and went on to complete his master's degree in bioinformatics and PhD in computational microbiology at Institut Pasteur Montevideo, Uruguay.

kinzbio®

Preventing and treating bacterial infections with non-traditional antimicrobials developed from non-traditional phages

Dr. Gregorio Iraola
CEO

Phages are the most abundant and genetically diverse entities in nature but only a small fraction of them can be isolated in the lab and are currently being used for industrial and biotechnological applications


Cultured gut bacterial species
500
400
300
200
100
0
2010
2011
2012
2013
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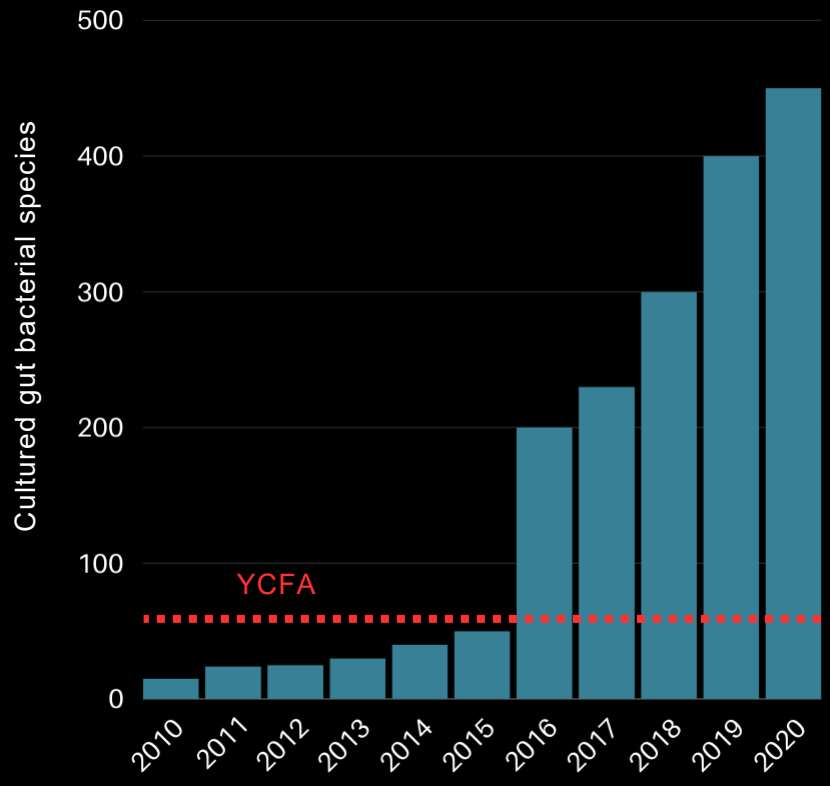
2015
2016
2017
2018
2019
2020


Cultured gut bacterial species
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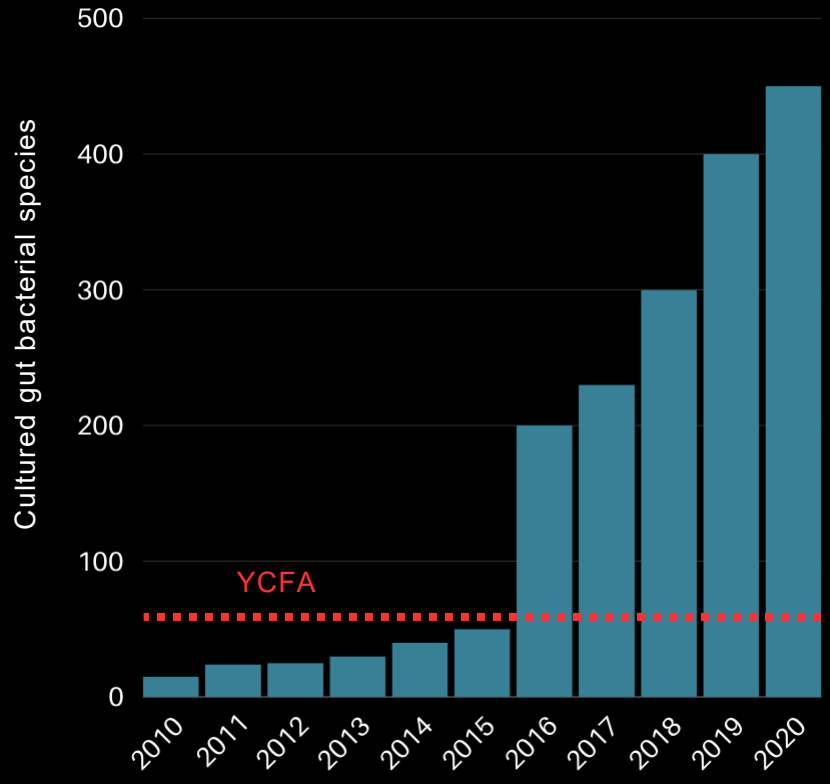
Cultured gut bacterial species
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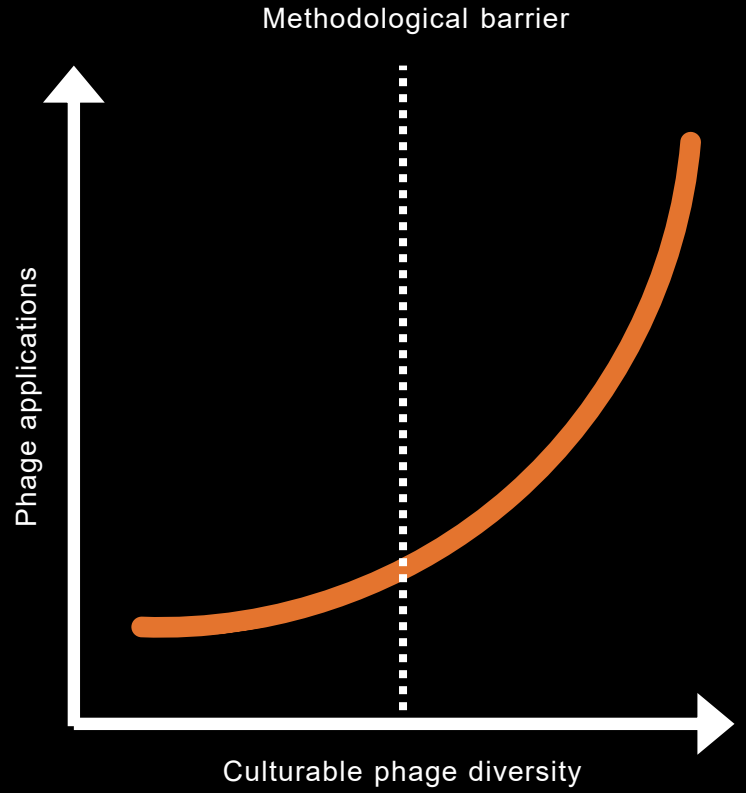
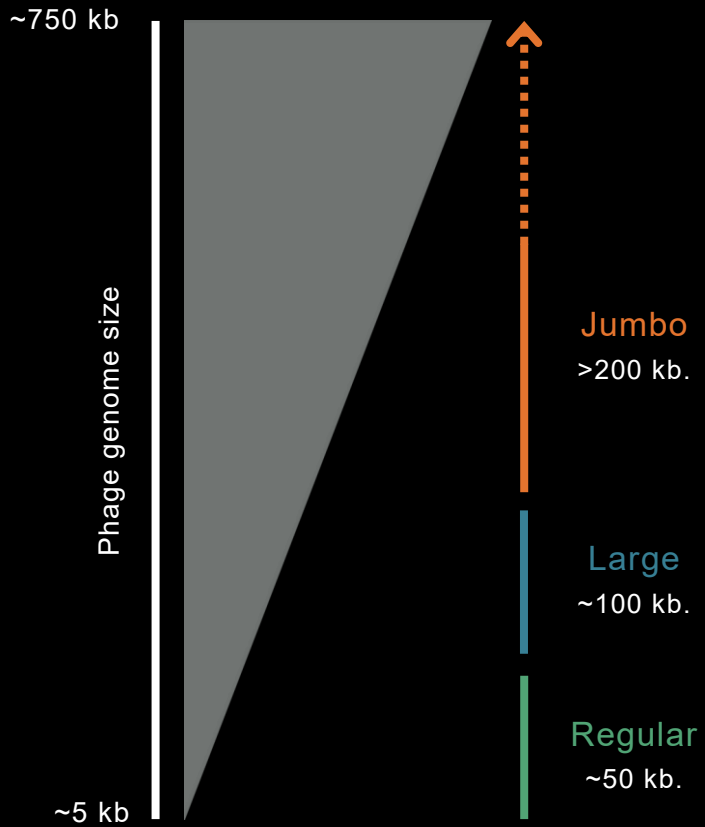
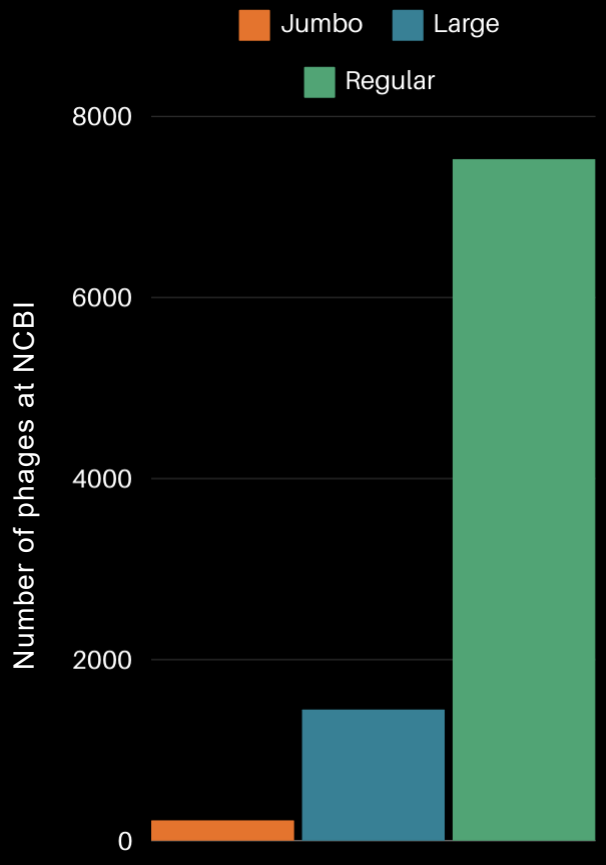

Methodological barrier
Phage applications
Culturable phage diversity


~750 kb
Phage genome size
~5 kb
Jumbo
>200 kb.
Large
~100 kb.
Regular
~50 kb.


Jumbo
Large
Regular
8000
6000
4000
2000
0
Number of phages at NCBI

Phage isolation methods effectively recover only a biased fraction of phages of small-sized genomes

Phage isolation methods effectively recover only a biased fraction of phages of small-sized genomes

Phages enclosing bigger genomes, hence expanded genetic and metabolic repertories, are rarely recovered despite they are abundant in nature, hampering the exploration of their biotechnological applications

Development of methods to discover jumbo phages from nature

Previously unknown jumbo phage species

Development of methods for genomic analysis, propagation and manufacturing

* Proprietary biobank made of unique jumbo phages that offer advantages and others cannot find

* Proprietary software for AI-enhanced phage characterization and manufacturing optimization

Advantages of jumbo phages

- SAFE >>> Are almost exclusively virulent, minimizing the chance of lysogeny (integration to the bacterial genome and undesired HGT)
- RESILIENT >>> Pose natural defense mechanisms against bacterial anti-phage machineries (CRISPR-Cas, RM systems, etc.)
- BROADER >>> They are broad-spectrum phages, meaning that one single phage can kill a wide diversity of target bacteria
- RESISTANT >>> Naturally adapted to survive in stressful environmental conditions, improving their activity and stability in formulations
- HIGH POTENTIAL >>> >90% of their genomes harbor genes of unknown function, enabling future phage-derived biotechnologies
- STABLE >>> Their bigger genomes may tolerate bigger genetic modifications in favor of other applications beyond killing bacteria

* Kinzbio's technology is backed by a fully-owned intellectual property pacakge that incudes patents, industrial secrets, proprietary databases, biobanks and software

PERSONALIZED MEDICINES

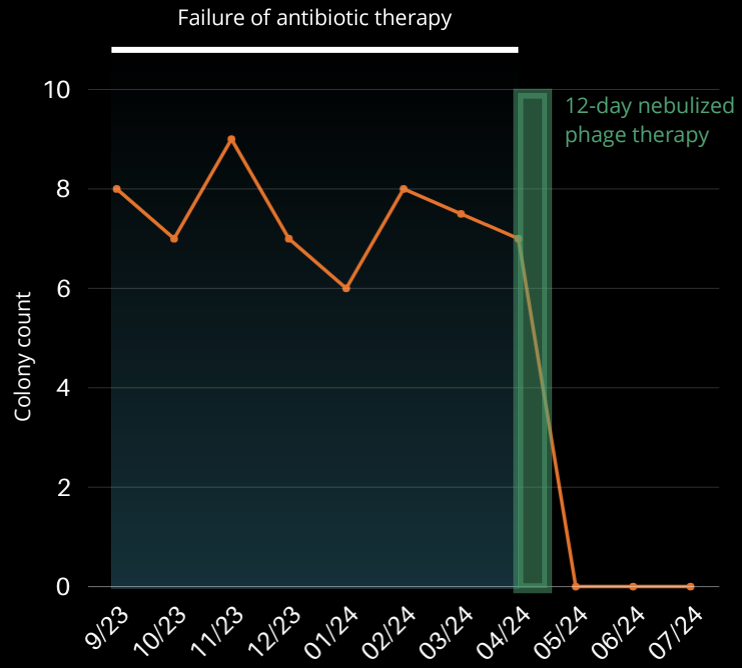
Kinzbio has developed a personalized phage therapy platform that is currently applying and commercializing in Latin America to treat antibiotic-resistant infections

Kinzbio’s core technology

INFECTION PREVENTION AND CONTROL

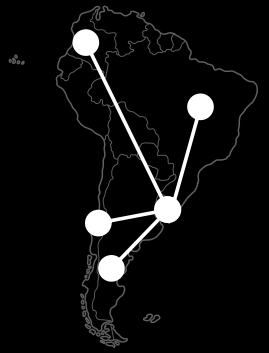
Through partnerships with global leader companies and organizations, Kinzbio is developing phage applications to prevent bacterial surface contamination in hospital and domestic environments

Scaling and making personalized phage therapy available globally



A local hub for ambulatory patients

Through a local hub in Uruguay, and taking advantage from local regulations and installed capacities, Kinzbio will focus on treating ambulatory patients that can travel to the country from the Latam region and abroad

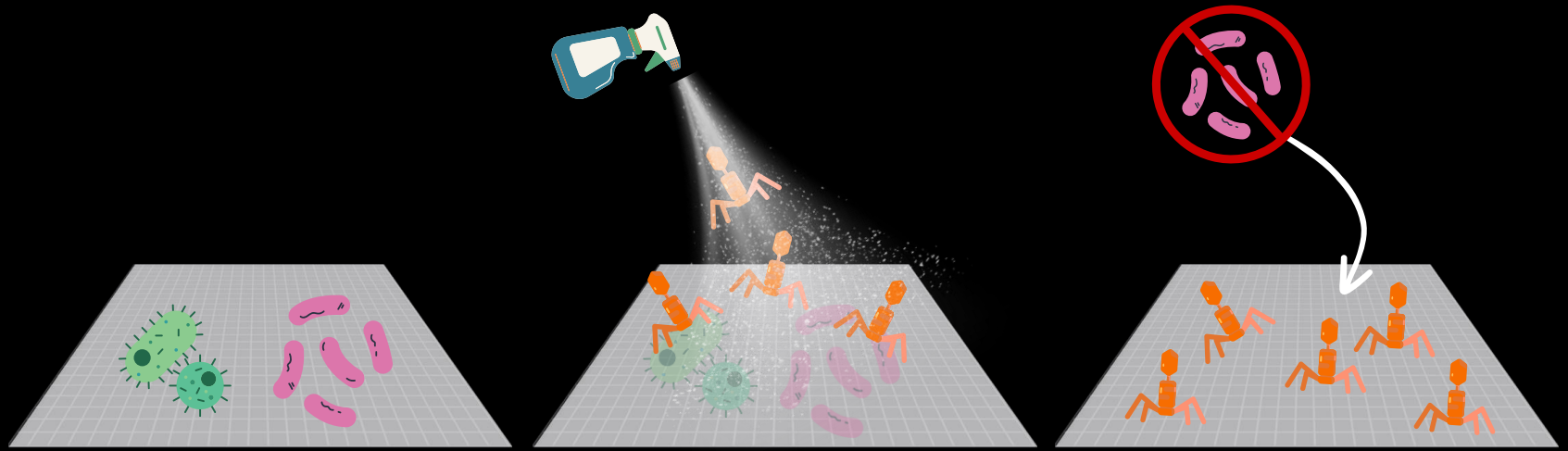


A descentralised network for critically-ill patients

Through a descentarlized network where Kinzbio subsidiary operations will be installed, we will scale to the region and beyond facilitating the treatment of critical patients

Partnering to develop the next generation of infection prevention and control tools

At Kinzbio we are preventing HAIs by providing the built-environment with broad spectrum and long-lasting protection against top-priority AMR bacteria using phage-based technologies



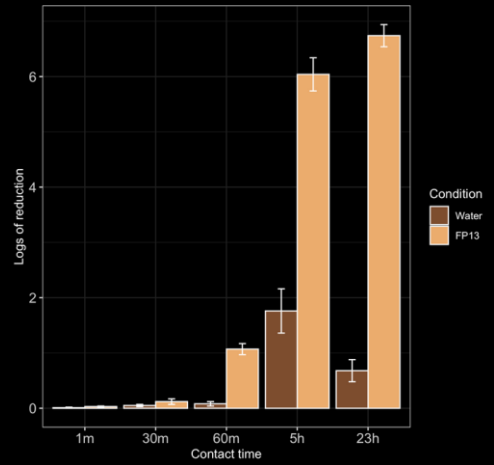
HAI-causing AMR bacteria deposit on the built-environment surfaces

Our broad spectrum phage formulations are designed to kill top priority AMR bacteria

Jumbo phages remain active on the surface during days providing long-term protection

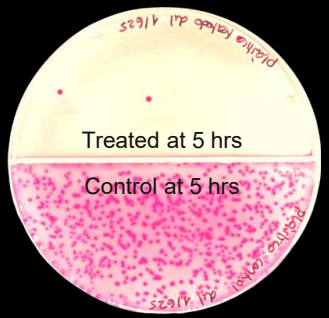
Partnering to develop the next generation of infection prevention and control tools

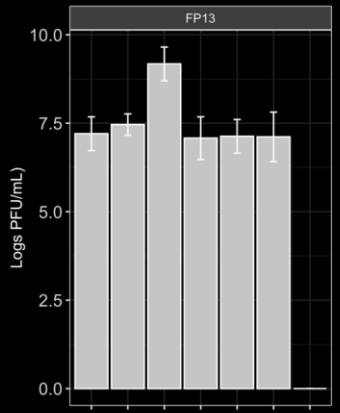
Klebsiella pneumoniae (Kp), is a phenotypically diverse top-priority pathogen with the ability to resist to last-line antibiotics and that has evolved increased capacity to colonize and persist in the hospital environment



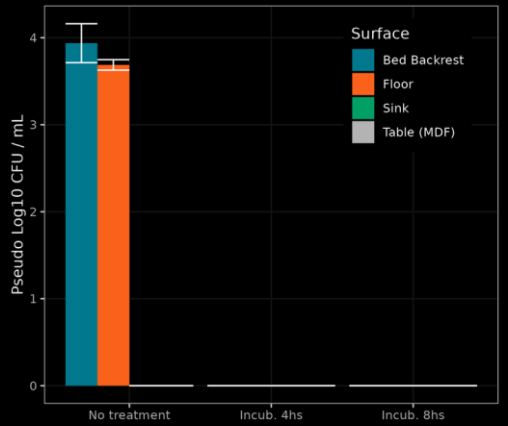
Eradication of nosocomial, multidrug resistant bacteria from experimentally-contaminated surfaces

24 hours after atomization phages were recovered viable





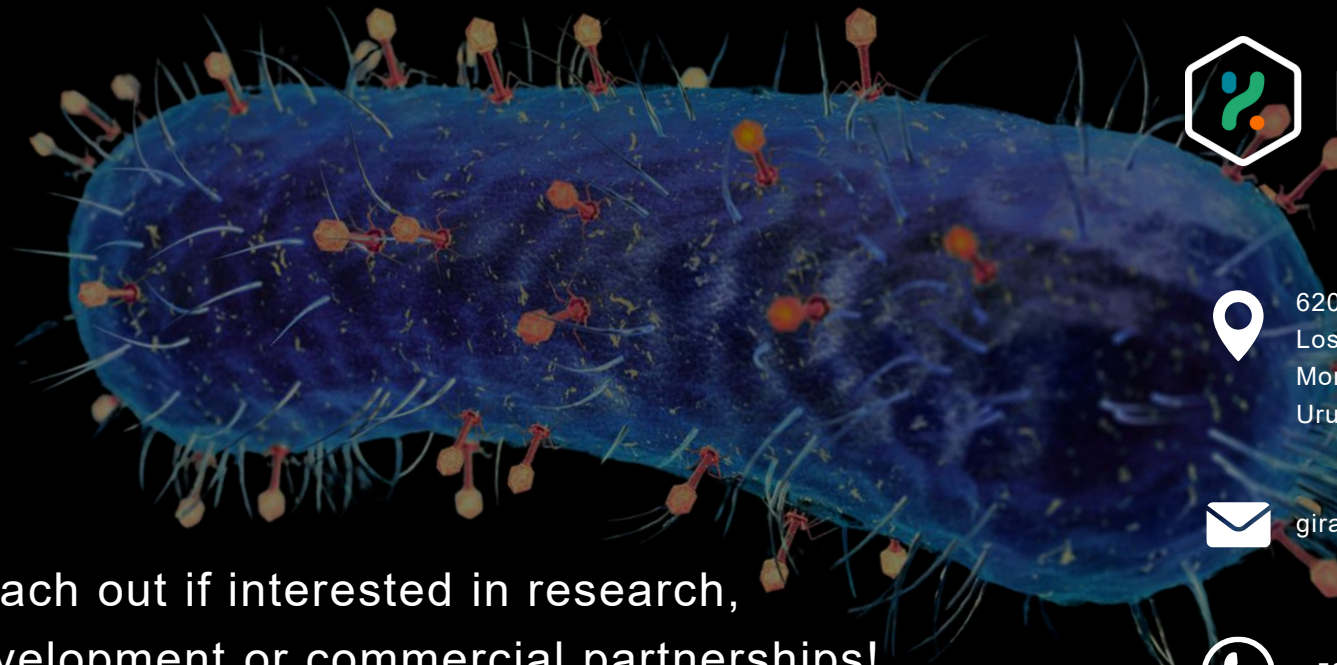
Our phages are resistant to chemicals that are commonly used in disinfectants, supporting their addition to surface protection formulations



When atomized on surfaces from hospital ICUs, phages eradicated bacterial strains thriving on the built environment and derived from infected patients in the ICU isolation boxes

Final remarks

- Kinzbio developed a phage core technology platform backed by proprietary methods allowing to expand the diversity of culturable phages, leveraging the potential of phages with expanded genetic and metabolic repertories
- Based on its unique phage biobank and manufacturing methods, Kinzbio has successfully performed personalized treatments achieving complete erradication of infecting strains
- This therapeutic option is now commercially available in Uruguay through a network of hospitals and physicians and expansion to Latin America and Europe is in progress
- Through an ongoing partnership with a global multinational company in the hygiene and human health sectors, we are developing a new generation of phage-based disinfectants for domestic environments
- Another partnership is under consideration to keep developing and expanding the use of our approach for infection prevention and control through the delivery of phages on hospital surfaces



kinzbio®

Reach out if interested in research, development or commercial partnerships!

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Los Tilos building
Montevideo 11500
Uruguay

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+598 99 39 49 82

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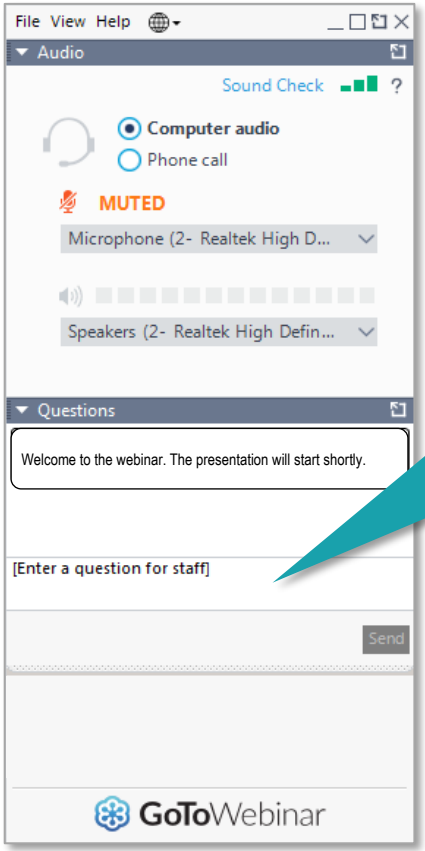
How to submit your questions

If your question is addressed to a specific speaker, please include their name when submitting the question.



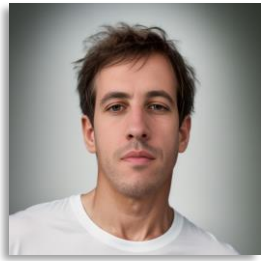
The presentation will be followed by an interactive Q&A session.

Please submit your questions via the ‘questions’ window. We will review all questions and respond to as many as possible after the presentation.

Today’s speakers

Exploring non-traditional antimicrobials: Insights from three cases

Jennifer Schneider
Chief Executive Officer
Centauri Therapeutics *(UK)*



Gregorio Iraola
Chief Executive Officer
Kinzbio *(Uruguay)*

Rida Mourtada
Chief Executive Officer
Lytica Therapeutics (USA)

Moderator:
Sina Gerbach
Deputy Head and Development Lead of the Transfer Group Anti-infectives, Leibniz-HKI and Program Manager at INCATE (Germany)

Upcoming webinars

An introduction to antibiotic research and development

With Alan Hennessy, Mo Yin & Herbert Wetli

19 September 2024, 10:00-11:30 CEST

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