

The Engineered Antimicrobial Peptide, PLG0206, has Potent Biofilm and Planktonic Activity Against Multi-Drug Resistant ESKAPE Organisms

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Disclosures/Disclaimer

“I and/or my co-authors have something to disclose.”

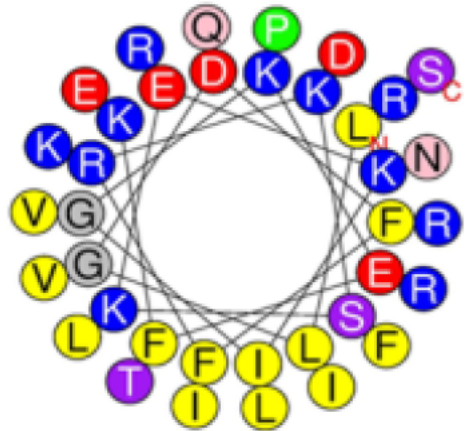
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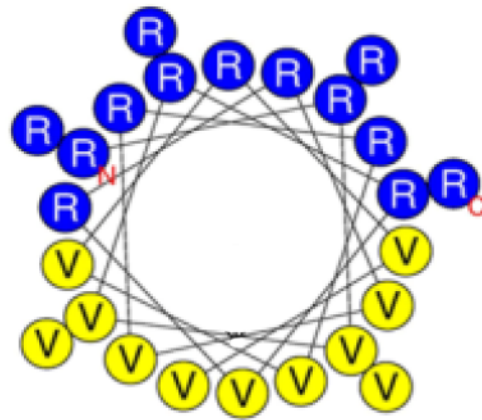
Background

- Total knee arthroplasty (TKA) is the most common surgery in US
- Most common reason for failure is periprosthetic joint infection (PJI)
- DAIR is an ideal treatment for PJI, but failure rates are 60%
- Failure is a result of biofilm antibiotic tolerance & low antibiotic penetration

PLG0206: An Engineered Antimicrobial Peptide



LL37



PreIND: WLBU2

IND: PLG0206

Antimicrobial Peptides Limitations

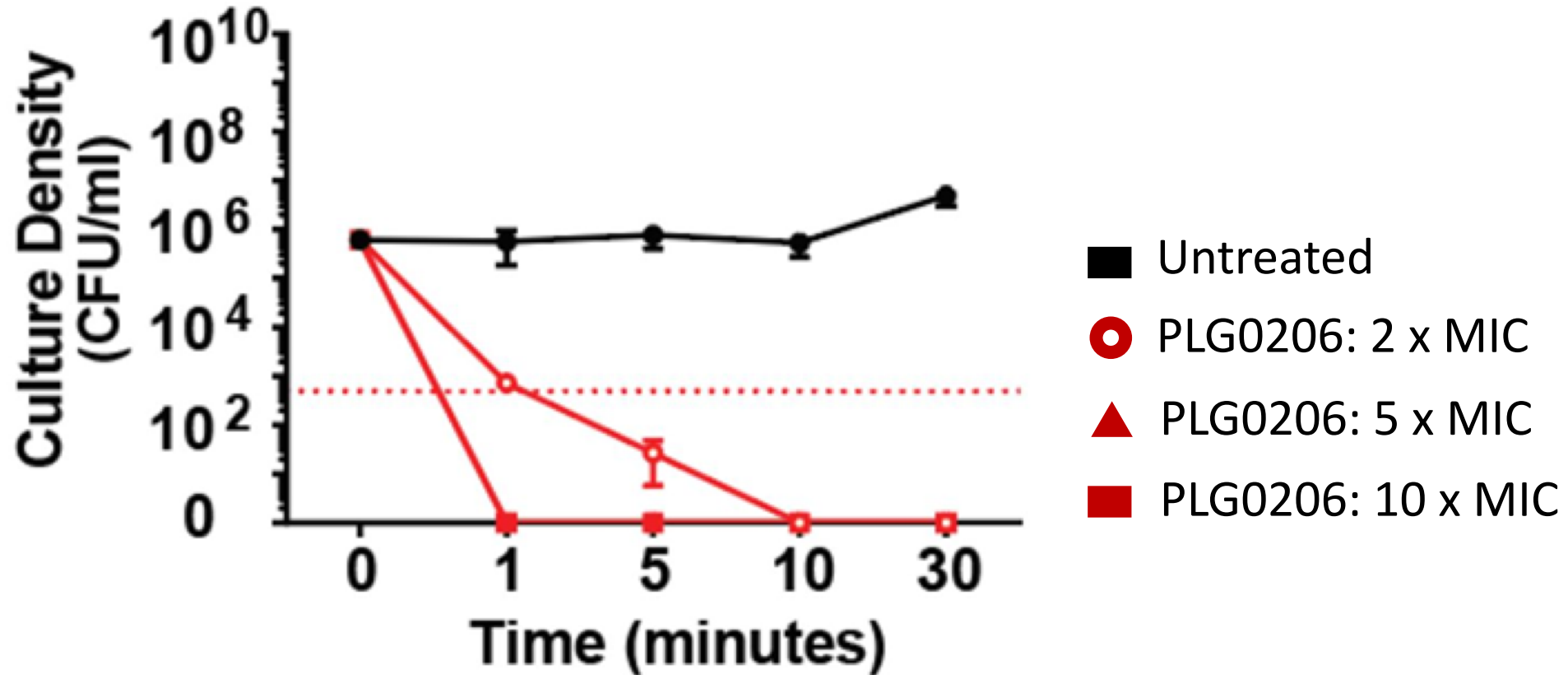
1. Limited Coverage
2. No Biofilm Activity
3. Toxicity
4. Limited Pharmacokinetics

R Arginine

V Valine

W Tryptophan

Preliminary Data in *S. aureus*



- PLG0206 is able to eliminate *S. aureus* biofilm
- Mechanism: Metabolic independent membrane destabilization

Study Objectives

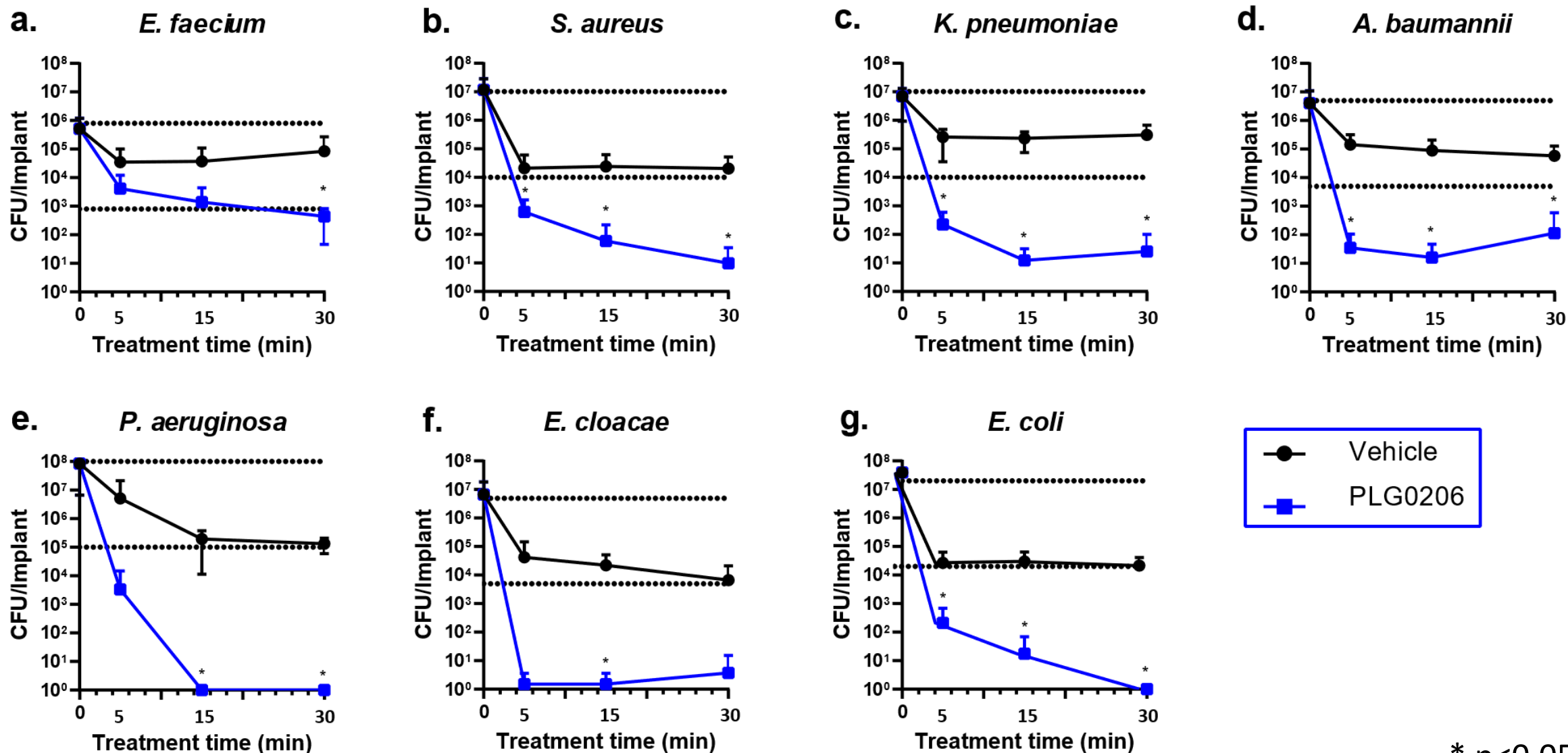
1. Determine PLG0206 activity against ESKAPE planktonic cells (MIC)
2. Determine PLG0206 activity against ESKAPE biofilm (MBIC)

PLG0206 MIC against MDR ESKAPE pathogens and *E. coli*

		Number Tested	MIC range	MIC ₅₀	MIC ₉₀
E	<i>E. faecium</i>	46	<0.03-0.5	0.06	0.25
S	<i>S. aureus</i>	174	0.12-2	0.5	1
K	<i>K. pneumoniae</i>	300	0.5-32	8	16
A	<i>Acinetobacter spp</i>	298	0.125-4	0.5	1
P	<i>P. aeruginosa</i>	297	0.06-4	1	2
E	<i>Enterobacter spp.</i>	152	0.5-32	4	16
E	<i>E. coli</i>	299	1-32	8	16

PLG0206 broad-spectrum against >1,500 ESKAPEE clinical isolates

PLG0206 is rapidly bactericidal against MDR ESKAPE biofilms



Conclusion

1. PLG0206 had broad spectrum activity against MDR organisms
2. PLG0206 maintained high activity against MDR ESKAPEE biofilms.
3. This data supports initiation of clinical development of PLG0206.

PLG0206: A New Class of Antimicrobials

Biofilm Activity	Mandell 2017 Nature Sci Reports
Rapid Acting	Mandell 2017 Nature Sci Reports & AAOS 2022
Broad Spectrum (ESKAPE)	AAOS 2022
Mechanism: Membrane Destabilization	Mandell 2017 Nature Sci Reports Kumagai 2019 Soft Matter
Safety	
Systemic Safety & Pharmacokinetics	Phase I Clinical Study: ACTRN12618001920280 Huang AAC 2022
Acute Postop TKA PJI (Ongoing)	FDA Phase 1b; clinical.trial.gov: NCT05137314

Thank You



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- **Kenneth Urish MD PhD**
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- **Masashi Taguchi MD**
- **Dana M Parker**
- Beth Knapick
- Charles Gish



- **David Huang**
- **Nicholas Pachuda**
- **Despina Dobbins**
- **Jonathan Steckbeck**

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- **Chris Pillar**
- **Dean Shinabarger**

ClinicalTrials.gov NCT05137314

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Trial Questions - David Huang MD PhD: david.huang@peptilogics.com

