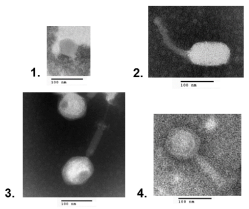
cell transplant (HCT) recipients. VRE colonization of the gastrointestinal tract could be associated with VRE bacteremia and worse outcomes in HCT recipients. The use of systemic antibiotics to eradicate VRE colonization is highly discouraged because of the lack of efficacy, the rapid onset of antibiotic resistance, and the disruption of the normal microbiota. Bacteriophages (phages) may constitute a good alternative to antibiotics to eliminate specific pathogens without disrupting the patient's normal microbiota.

Methods. Sewage samples were collected from the City of Houston for phages isolation. Samples were centrifuged, filtered and exposed to several targeted VRE host strains. After several amplification, the final filtrate was titrated and checked for the presence of VRE-specific phages. Isolated phages were observed under electron microscopy and were tested against multiple VRE strains isolated from different sources including patients' stool samples, patients' room environment, sewage samples, clinical isolates of daptomycin-resistant VRE strains or vancomycin-susceptible *Enterococcus faecium* (VSEF) and *Enterococcus faecalis* (VSEf) strains.

Results. Four VRE-specific phages were isolated from sewage samples (MDA1, MDA2, MDA3, and MDA4). All phages belong to the *Caudovirales* order. Phage MDA1 belongs to the *Podoviridae* family, phage MDA2 is a *Siphoviridae*, whereas MDA3 and MDA4 belong to the *Myoviridae* family (Figure 1A). All phages were lytic and were able to inhibit at least four VRE strains and only MDA1 had activity against VSEF and MDA4 against VSEf. The efficacy of these lytic phages complemented one another as the combination of these four phages inhibited all different VRE strains (Figure 1B).

Conclusion. Our results highlight the feasibility and the potential success of these phages in inhibiting VRE *in vitro*. These VRE-specific phage cocktails may be used in future studies to reduce VRE colonization and subsequent infections in HCT recipients.



A. **Phages MDA1, MDA2, MDA3, and MDA4 under the electron microscope** (numbered 1, 2, 3, and 4, respectively). Scales indicate 100 nm.

Activity of phages against VRE isolated from different sources. White boxes indicate the ability of the phage to lyse the VRE strain tested. Black boxes indicate that the phage has no effect on the tested bacterium.

Bacteria				Phages			
				MDA1	MDA2	MDA3	MDA4
Patient-strains	Stool	Dapto-resistant	VRE001				
			VRE002				
			VRE004				
			VRE008				
			VRE335				
			VRE85				
Environmental strains	Room	Sewage	VREsewage1				
			VREsewage2				
	Others		VRE1147				
			VRE1181				
			VSEF				
			VSEf				

B. Abbreviations: VRE, Vancomycin-resistant *Enterococcus faecium*; VSEF, Vancomycin-susceptible *Enterococcus faecium*; VSEf, *Enterococcus faecalis*; Dapto-resistant, Daptomycin-resistant.

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737. Novel Glycans Reduce Carbapenem-Resistant *Enterobacteriaceae* and Vancomycin-Resistant *Enterococci* Colonization in an *Ex Vivo* Assay by Supporting Growth and Diversity of Commensal Microbiota at the Expense of MultiDrug-Resistant Organisms (MDRO)

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Session: 68. Novel Antimicrobials and Approaches Against Resistant Bugs
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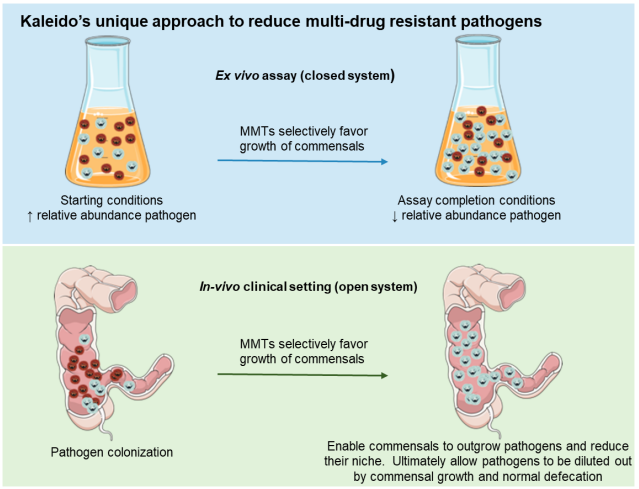
Background. Infections with Carbapenem-resistant *Enterobacteriaceae* (CRE) and vancomycin-resistant *Enterococci* (VRE) can result in a 50% mortality rate in compromised hosts. A major risk factor for clinical infection is intestinal colonization with CRE or VRE. There are currently no FDA-approved compounds to decolonize these organisms from the gastrointestinal tract (gut). Commensal microbes offer protection from pathogen infection; however, in immunocompromised hosts or with antibiotic treatment, the protective properties of the microbial community are compromised, leaving the gut susceptible to pathogen colonization. Higher concentrations of pathogens within the gut correlate with an increased risk of infection with MDROs. Our hypothesis is that reducing colonization of the gut with MDROs would reduce the likelihood of a clinical infection.

Methods. Kaleido built a platform that emulates the gut environment and allows for high throughput screening of Kaleido's Microbiome Metabolic Therapies (MMT™) in human gut microbiomes *ex vivo*. Over 500 compounds were screened for their ability to reduce the levels of CRE and VRE in fecal microbial communities from both healthy subjects and critically ill patients receiving broad-spectrum antibiotics.

Results. Kaleido's lead MMTs selectively favor the growth of the commensal microbiota at the expense of pathogens, resulting in a decrease of CRE and VRE from 80% of the initial community to 5% in a single batch culture, as measured by 16S rRNA gene and shotgun metagenomic sequencing. Lead MMTs do not support growth of CRE and VRE strains in culture, nor of other pathogens frequently encountered in critically ill and immunocompromised patients, such as *Clostridium difficile* and common fungal pathogens.

Conclusion. These results suggest that intervention with MMTs may reduce CRE and VRE colonization and support further evaluation in patients colonized with CRE or VRE pathogens.



Disclosures. **All authors:** No reported disclosures.

738. Potent *In Vitro* activity of Rezafungin (RZF) Against *Aspergillus* Clinical Isolates Recovered From Lung Transplant Patients Who Have Received ≥3 Months of Triazole Prophylaxis

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Background. Emergence of azole resistance globally among *Aspergillus* species has major one health implications for humans and agriculture. At our center, isavuconazole (ISA), posaconazole (POS) and voriconazole (VOR) have been used as antifungal prophylaxis for at least 3 months or as pre-emptive therapy in solid-organ transplant (SOT) patients. We previously showed that azole breakthrough (BT) fungi were more likely to be non-*fumigatus Aspergillus* (non-*Af*) spp. In addition, azole BT isolates exhibited higher azole MICs than non-BT isolates, with 7% pan-azole resistance. RZF is an investigational echinocandin with long serum half-life, suitable for prolonged dosing intervals. We determined caspofungin (CAS) and RZF minimum effective concentrations (MECs) against *Aspergillus* isolates from our center.

Methods. *Aspergillus* recovered from 111 patients between December 2016 and April 2018 were tested. MICs (minimum inhibitory concentrations; azoles) and MECs (echinocandins) were measured. *Candida parapsilosis* ATCC 22019 and *Candida krusei* ATCC 6258 were used as QC controls.

Results. 71% (79) of isolates were from SOT patients. *Aspergillus* spp. were *A. fumigatus* (*Af*, 73), *A. flavus* (*Afl*, 12), *A. niger* (*An*, 9), *A. terreus* (*At*, 8), *A. calidoustus* (*Ac*, 7), and *A. lentulus* (*Al*), *A. glaucus, A. thermomutatus,* and *A. thermomutatus* (*At*; 1 each). 7% of *Aspergillus* isolates exhibited VOR, POS and ISA MICs ≥2, ≥8 and ≥1 µg/mL, respectively. RZF MEC_{50} and range of MEC by *Aspergillus* spp.are summarized in the Table. Overall, there was no difference in MECs between CAS and RZF ($P = 0.21$). 6% (7) and 7% (8) of the non-*Af* isolates exhibited CAS and RZF MECs >0.5 µg/mL, respectively. 5 isolates exhibited CAS and RZF MEC ≥16 µg/mL.

Conclusion. Despite concerns over azole resistance among *Aspergillus*, these agents remain frontline against invasive aspergillosis. The excellent activity of RZF and CAS shown here suggests that the drugs are potential therapeutic options for patients infected with azole BT *Aspergillus*, including azole-resistant isolates. The long-half-life and high tolerability of RZF make this agent an attractive consideration for antifungal prophylaxis. A clinical trial of RZF prophylaxis in stem cell transplant recipients is planned.

Aspergillus spp.	Caspofungin (CAS)			Rezafungin (RZF)		
	MEC_{50} (µg/mL)	MEC range (µg/mL)	MEC>0.5 µg/mL (n)	MEC_{50}	MEC range	MEC>0.5 µg/mL (n)
Ac (N=7)	0.125	0.03->16	1	0.03	0.0125->32	3
Af (N=73)	0.125	0.03->16	4	0.125	0.015->32	2
Afl (N=12)	0.125	0.015->16	1	0.06	0.015->16	1
An (N=9)	0.125	0.015-0.25	0	0.125	0.125-0.5	0
At (N=8)	0.125	0.06->16	2	0.06	0.015->16	1
Others (N=3)	0.015	0.015-0.125	0	0.015	0.015-0.125	0

Disclosures. **All authors:** No reported disclosures.

739. Prediction of Cefiderocol Pharmacokinetics and Probability of Target Attainment in Pediatric Subjects for Proposing Dose Regimens

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