

Texas Medical Center Training Program in Antimicrobial Resistance (TPAMR)

TPAMR Foundations Course. This is an intensive 6-week course focused primarily on the mechanisms of action and resistance of the most common antibiotics used in clinical practice, with important components related to antifungal resistance, genomics, microbiome science, the pharmacology of antibiotics, antibiotic stewardship and the important problem of *C. difficile*. This course, required for TPAMR trainees, will serve as a unifying tool and a cohesive feature for our newly appointed trainees. It will be taught every year and will consist of lectures twice weekly. The objectives of each session are listed in the table below. A certificate of completion will be provided at the end of the course after a comprehensive exam.

Wk	Topic (faculty)	Objectives
1	AMR: a global public health threat (Arias)	Provide an overview of main AMR problems, impact in clinical practice
	Mechanisms of AMR I: β -lactams, fosfomycin, glycopeptides and derivatives, daptomycin and polymixins (Miller, Palzkill)	Review mechanism of action and resistance and explore implications for research and drug development
2	Mechanisms of AMR II: macrolides, lincosamides, tetracyclines, oxazolidinones, aminoglycosides, quinolones (Shamoo, Zechiedrich)	Review mechanism of action and resistance and explore implications for research and drug development
	Genomics and AMR (Arias, Hanson)	Provide overview of current genomic tools used to study dissemination and spread of AMR organisms
3	Microbiome and AMR (Shelburne, Jenq)	Discuss the important interactions of antibiotics with the microbiome and the evolution of AMR organisms
	Pharmacokinetics / pharmacodynamics (Tam, Tran)	Review relevant concepts of PK/PD and their influence on development and prevention of resistance
4	Antibiotic stewardship, infection control (Garey, Septimus)	Review most effective approaches for infection control and antibiotic stewardship in the context of emergent resistance in hospital pathogens.
	New diagnostic approaches in clinical microbiology for diagnosis of resistance (Hanson, Miller)	Discuss new emerging technologies for identification and diagnosis of multidrug-resistant organisms
5	AMR and the environment (Chopra, Garsin)	Summarize the main influence of AMR in the environment in relation to dissemination of AMR determinants and their effect on human health.
	Drug discovery, non-traditional antibiotics (Britton, Hurdle)	Discuss non-traditional antibiotic approaches to combat antibiotic-resistant bacteria.
6	Antifungal resistance (Lorenz, Kontoyiannis)	Review major mechanisms of fungal resistance and their clinical impact
	<i>C. difficile</i> : pathogenesis and treatment strategies (Darkoh, Garey)	Examine current concepts related to pathogenesis of <i>C. difficile</i> infections and therapeutic approaches.