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## COMPOSITIONS AND METHODS FOR TREATMENT OF FILOVIRUS-MEDIATED DISEASES

### BACKGROUND OF THE INVENTION

The invention relates to the treatment of diseases caused by a filovirus.

Diseases caused by viruses are major health problems worldwide. Filoviruses are particularly deadly viruses that cause severe hemorrhagic fever in humans and non-human primates. Filoviruses are sporadically transmitted to humans from a natural reservoir species thought to be fruit bats, after which the virus can easily spread from the human having the infection to a caregiver through bodily fluids. Infection with a filovirus of the Ebola or Marburg genus causes death in 25% to 90% of human victims, often within 10 days from the first appearance of symptoms.

No known anti-viral therapies are effective for treating filovirus-mediated diseases. Filoviruses thus pose serious unmet health and bioterrorism concerns. Given the lack of safe and efficacious therapies for filovirus-mediated diseases, there is a need for such therapies.

### SUMMARY OF THE INVENTION

Based on the results of our screen identifying compounds and combinations of compounds having inhibitory activity against a model filovirus, the present invention features com-

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positions, methods, and kits for the treatment of filovirus-mediated disease, e.g., one caused by an Ebola virus or Marburg virus.

Accordingly, in a first aspect, the invention features a method for treating a patient with a filovirus-mediated disease, e.g., a disease caused by an Ebola virus or Marburg virus. The method includes administering to the patient a first agent selected from the agents of Table 2, or an analog thereof, in an amount that is effective to treat the patient. Preferably, the first agent is selected from the agents of Table 1. More preferably, the first agent is clomiphene, toremifene, astemizole, bepridil, clomopramine, lomerizine, sertraline, or an analog thereof. In another embodiment, the method further includes administering a second agent selected from the agents of Table 1. Preferably, the first and second agents are both selected from Table 1. More preferably, the first and second agents are selected from the agent pairs of Table 3.

TABLE 1

Azacitidine	Thioridazine	Piperacetazine
Clomiphene	Prochlorperazine	Fluphenazine
Toremifene	Sertraline	Aripiprazole
Lomerizine	Paroxetine	Maprotiline
Bepridil	Clomipramine	Dasatinib
Strophanthin	Pimozide	Vinorelbine
Atovaquone	Flupentixol	Teicoplanin
Mycophenolate Mofetil	Clemastine	Hycanthone
Terconazole	Astemizole	Quinacrine
Simvastatin	Benzotropine	Efavirenz

TABLE 2

Cetrimide	Bafilomycin A1	Homochlorcyclizine
Pentamidine	2-Methoxy-antimycin A3	Desloratadine
Hexachlorophene	Oligomycin	Flunarizine
Emetine	Antimycin A	Loratadine
Puromycin	Rotenone	Doxylamine
Thiostrepton	FR122047	Propoxyphene
Gramicidin	Fenopropfen Calcium	Benzotropine
Chlorhexidine	Perhexiline Maleate	Dicyclomine
Teicoplanin	PDMP	Piperacetazine
Cephapirin	Licochalcone-A	Vanoxerine
Pyrithione Zinc	Tiratricol	Pergolide
Haloproglin	CAPE	Acetophenazine
Ciclopirox	Amlodipine	Bromocriptine
hycanthone	Diphenylethylidenehydrazide	Fluphenazine
Niclosamide	Terconazole	N-(4-Aminobenzoyl)-L-glutamic acid
Efavirenz	Sulconazole	Aripiprazole
Ritonavir	Tioconazole	Drotaverine
Chromomycin A3	Oxiconazole	Maprotiline
Azacitidine	Simvastatin	CK17
(-)-Arctigenin	Cerivastatin	Triptolide
Danazol	Metergoline	NSC 625987
Bicalutamide	Thioridazine	Bay 41-2272
Hydroxyprogesterone	Thiethylperazine	Alverine
Equilin	Cyproheptadine	Tannic Acid
Clomiphene	Prochlorperazine	IMD-0354
Quinestrol	Triflupromazine	Arbidol
Tamoxifen	Paroxetine	Andrographis
Raloxifene	Sertraline	Pyrvinium
Tamoxifen	Clomipramine	Deguelin
Toremifene	Fenretinide	Dasatinib
PGG	Ciclesonide	5-Iodotubercidin
Diethylstilbestrol	Brefeldin A	SP 600125
Tibolone	PGG (1,2,3,4,6-b-O-Pentagalloyl glucose)	Carbobenzoxy-valinyl-phenylalaninal
Lomerizine	BML-248	Cepharanthine
Maduramicin	Leupeptin	Sangivamycin
Bepridil	Tunicamycin	PKR inhibitor
Loperamide	MG115	Okadaic Acid
6-Azauridine	MG-132	Sorafenib
Strophanthin	Epoxomicin	Sodium Vanadate
Beta Escin	Anisomycin	Nocodazole
Auranofin	CGS 15943	Mebendazole
Calcimycin A23187	Pimozide	TN-16