Table S1. Evaluation of various mucoid and nonmucoid CF clinical isolates from 5 different CF clinics in the United States and Canada. Strains were obtained from patients from the designated clinics and the *mucA* genes were sequenced. Each strain was tested for sensitivity to 15 mM NO_2^- under anaerobic conditions as described in Figure 2B. The antibiotic resistance category under the moniker "notes" indicates that the "highly resistant" organisms are those that are resistant clinical to amikacin, ciprofloxacin, cefapime, tobramycin,

Clinic Location	mucA mutation	mutation type	Log10 [CFU in 4 days / CFU in inoculum]	Patient age	Notes
Seattle	Yes	stop at 441	-2.15	N/A	
Seattle	Yes	stop at 369	-1	N/A	
Seattle	Yes	stop at 387	-0.3	N/A	
Seattle	**No**		0.3	N/A	
Wichita	Yes	stop at 351	-2.52	N/A	
Cleveland	Yes	stop at 351	-4	N/A	
Kansas city	Yes	stop at 387	<-5	N/A	
San Francisco	Yes	stop at 426	-3.52	N/A	
Jackson	Yes	stop at 441	-4.7	N/A	
Omaha	Yes	stop at 351	<-5	N/A	
Boston	Yes	stop at 480	<-5	N/A	
Gainsville	Yes	stop at 441	<-5	N/A	
Gainsville	Yes	stop at 426	-0.53	N/A	
Gainsville	Yes	No stop codon, 4 bp insertion	-4.22	N/A	
Columbia U.	Yes	stop at 369	-4.1	21	
Columbia U.	Yes	stop at 387	<-5	20	
Columbia U.	Yes	stop at 354	-4.52	20	
Columbia U.	Yes	stop at 351	-3.53	25	
Columbia U.	**N/D**		<-5	63	No PCR product
Columbia U.	**No**		-1.69	34	
Columbia U.	Yes	stopat 342	-2.54	27	
Columbia U.	Yes	No stop codon, 127 bp deletion	<-5	59	
Columbia U.	**No**		-3.7	39	
Columbia U.	Yes	stop at 354	<-5	22	
Columbia U.	Yes	stop at 441	-1.523	22	
Columbia U.	Yes	stop at 423	<-5	20	
Columbia U.	Yes	stop at 291, 5 bp insertion	-1.52	28	
Columbia U.	Yes	stop at 354	<-5	25	
Columbia U.	Yes	stop at 387	<-5	14	
Columbia U.	Yes	stop at 441	<-5	36	

Columbia U.	Yes	stop at 441	<-5	45	
Columbia U.	Yes	stop at 387	-3.3	N/A	
Columbia U.	Yes	stop at 120	-3.5	N/A	
Columbia U.	Yes	stop at 120	-2	N/A	
Columbia U.	Yes	stop at 387	-3	N/A	
Columbia U.	Yes	stop at 288, 2 bp insertion	-3.3	N/A	
Columbia U.	Yes	stop at 330	-3.78	N/A	
Columbia U.	Yes	stop at 387	-3.18	N/A	
Columbia U.	Yes	stop at 441	-3.9	N/A	
Columbia U.	Yes	stop at 354	-3.3	N/A	
Columbia U.	Yes	No stop codon, 23 bp insertion	-2.15	N/A	
Columbia U.	Yes	stop at 441	-3.6	N/A	
Columbia U.	Yes	stop at 387	-3.48	N/A	
Columbia U.	Yes	No stop codon, 46 bp deletion	-1.35	N/A	
Columbia U.	Yes	stop at 285	-3.6	N/A	
Columbia U.	Yes	stop at 441	-2.7	N/A	
Columbia U.	Yes	No stop codon	-3.7	N/A	
Columbia U.	**No**		-0.31	N/A	
CH Boston	Yes	stop at 441	<-5	26	
CH Boston	Yes	stop at 369	-3.22	45	
CH Boston	Yes	No stop codon	<-5	24	
CH Boston	Yes	stop at 441	-3.3	39	Highly resistant to antibiotics
CH Boston	Yes	stop at 351	-2.11	11	
CH Boston	Yes	stop at 396, 45 bp deletion	-3.15	37	
CH Boston	**No**		-1.12	27	
CH Boston	Yes	stop at 483, 7 bp insertion	<-5	20	Highly resistant to antibiotics
CH Boston	Yes	stop at 441	-2.15	50	
CH Boston	Yes	stop at 378, 100 bp deletion	<-5	25	
CH Boston	Yes	stop at 441	-1.39	7	
CH Boston	Yes	stop at 426	-1.78	13	
CH Boston	Yes	stop at 369	<-5	56	
CH Boston	Yes	stop at 285	-3.05	23	Highly resistant to antibiotics
CH Boston	Yes	stop at 441	-1.52	6	
CH Boston	Yes	stop at 354	-3.3	29	Highly resistant to antibiotics
CH Cincinnati	**No**		0.75	N/A	
CH Cincinnati	Yes	stop at 441	<-5	N/A	
CH Cincinnati	Yes	stop at 384	-2.15	N/A	
CH Cincinnati	**No**		1.01	N/A	
CH Cincinnati	Yes	stop at 441	-3.78	N/A	
CH Cincinnati	**No**		0.41	N/A	
CH Cincinnati	Yes	stop at 369	-4.25	N/A	
CH Cincinnati	Yes	stop at 369	-1.98	N/A	
CH Cincinnati	Yes	stop at 441	-2.79	N/A	
CH Cincinnati	Yes	stop at 426	<-5	N/A	

CH Cincinnati	**No**		0.23	N/A	
CH Cincinnati	Yes	stop at 438	-2.15	N/A	
CH Cincinnati	Yes	No stop codon, 20 bp deletion	<-5	N/A	
CH Cincinnati	Yes	stop at 441	-4.21	N/A	
CH Cincinnati	Yes	stop at 441	<-5	N/A	
CH Cincinnati	Yes	No stop codon, 2 bp insertion	<-5	N/A	
CH Cincinnati	Yes	stop at 285	<-5	N/A	
CH Cincinnati	Yes	stop at 384	-2.17	N/A	
UBC	Yes	No stop codon, 4 bp deletion	-4.10	13.7	
UBC	Yes	stop at 387	0.3	3.4	
UBC	Yes	No stop codon, 5 bp insertion	<-5	11.8	
UBC	Yes	stop at 441	-4.2	16.3	
UBC	**No**		0.8	15	
UBC	Yes	stop at 354	-4.3	6.5	
UBC	**No**		0.3	5.5	
UBC	Yes	stop at 441	-2.1	9.3	
UBC	Yes	stop at 369	-2.7	9.7	
UBC	Yes	stop at 441	<-5	9.9	
UBC	**No**		0.1	9.6	
UBC	Yes	stop at 441	0.41	7.7	

Table S2. Kinetic Simulations Details of Acidified Nitrite Decomposition in Anaerobic Buffer and With Added Carboxy-PTIO. (All rate constants are in M^{-1} s^{-1}, except one, as shown.)

No.	reaction	forward rate constant	reverse rate constant
1	$HNO_2 \leftrightarrow NO_2^- + H^+$	5.0×10^7 s^{-1}	1.0×10^{11}
2	$HNO_2 + HNO_2 \leftrightarrow NO + NO_2^\bullet + H_2O$	13.4	1.6×10^8
3	$NO_2^\bullet + NO_2^\bullet + H_2O \rightarrow NO_2^- + NO_3^- + 2H^+$	8.4×10^7	0
4	Carboxy-PTIO + NO $\rightarrow$ Carboxy-PTI + $NO_2^\bullet$	1.0×10^4	0

Precise time dependencies for all species are obtained by numerically solving a set of differential equations that includes rate laws for each species, except H^+ and H_2O, which are kept constant.

Input parameters: initial concentrations of NO_2^- and Carboxy-PTIO, pH

The rate data are compiled from the following:

Reactions 1-3. Park, J.-Y., and Lee, Y.-N. 1988. Solubility and Decomposition Kinetics of Nitrous Acid in Aqueous Solution. *J. Phys. Chem. A* 92:6294-6302.

Reaction 4. Akaike, T., Yoshida, M., Miyamoto, Y., Sato, K., Kohno, M., Sasamoto, K., Miyazaki, K., Ueda, S., and Maeda, H. 1993. Antagonistic action of imidazolineoxyl N-oxides against endothelium-derived relaxing factor/•NO through a radical reaction. *Biochemistry* 32:827-832, and Joseph, J., Kalyanaraman, B., and Hyde, J.S. 1993. Trapping of nitric oxide by nitronyl nitroxides: an electron spin resonance investigation. *Biochem Biophys Res Commun* 192:926-934.

Several features of the HNO_2 decomposition born out by modeling are pertinent to the results shown in Figure 4:

(a) The concentration of $NO_2^\bullet$ remains well below 1% of the NO concentration from 15 minutes onward upon NO_2^- addition under conditions of Figure 4B.

(b) The accumulated NO levels reached at 5 hours in neat buffer are strongly pH-dependent, increasing by a factor of ~20 per one-unit pH decrease from 7.5 to 6.5 and then to 5.5.

(c) A one-unit pH change is equivalent to a 10-fold change in the concentration of added NO_2^-; *e.g.*, the NO accumulation profiles are identical in buffered 15 mM NO_2^-/pH 6.5 and 1.5 mM NO_2^-/pH 5.5, thereby explaining the results in Figure 4A.

(d) The addition of 200 nM Carboxy-PTIO results in 90% NO depletion in 25 minutes, as observed in Figure 4B.

(e) Under the conditions of Figure 4C, Carboxy-PTIO will persist in solution for several weeks, keeping NO concentrations at picomolar levels.