

CFTR MUTATION CLASSES

DESCRIPTION

Normal

CFTR protein is created, moves to the cell surface and allows transfer of chloride and water.

Class I

No functional CFTR is created.

Class II

CFTR protein is created, but misfolds, keeping it from moving to the cell surface.

Class III

CFTR protein is created and moves to the cell surface, but the channel gate does not open properly.

Class IV

CFTR protein is created and moves to the cell surface, but the function of the channel is faulty.

Class V

Normal CFTR protein is created and moves to the cell surface, but in insufficient quantities.

% of people with CF who have at least one mutation in that class

22%

88%

6%

6%

5%

MUTATION EXAMPLES

No mutation

G542X
W1282X
R553X

aka "production mutations," which include nonsense mutations, some splice mutations and deletions

F508del
N1303K
I507del

aka "processing mutations"

G551D
S549N

aka "gating mutations"

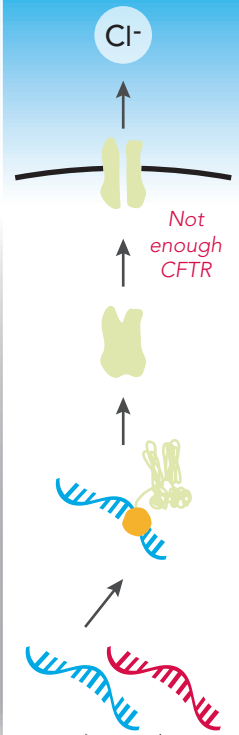
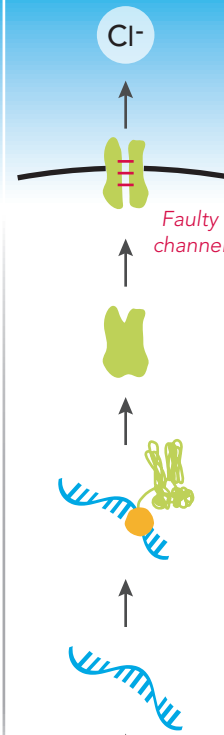
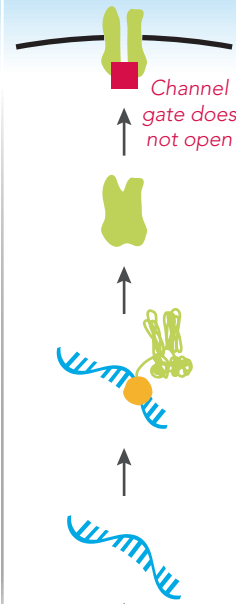
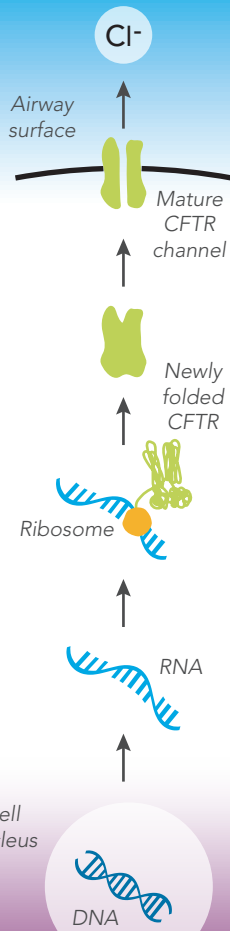
D1152H
R347P
R117H

aka "conduction mutations"

3849+10kbc→T
2789+5G→A
A455E

includes some splice mutations

WHAT'S HAPPENING IN THE CELL



POTENTIAL THERAPIES

Read-through compounds may allow production of full-length CFTR for nonsense mutations

Correctors such as lumacaftor or tezacaftor help defective CFTR fold correctly

Potentiators such as ivacaftor help open the CFTR channel, and also help increase the function of normal CFTR