

Assembly Instructions

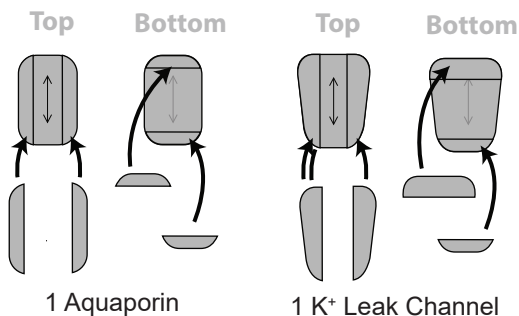
Please allot approximately 45 minutes to assemble protein channels and affix stickers to pieces before use (per kit). Follow these step-by-step instructions to ensure proper assembly. (Multiply the number of proteins and pieces by 3 if you have the 3-Group Kit.)

Channel Assembly

Punch out each gray, foam channel protein while using the letters (A,B,C,D,E) as guides to match up the corresponding gray, sticky-back foam pieces and gray, foam paddles.

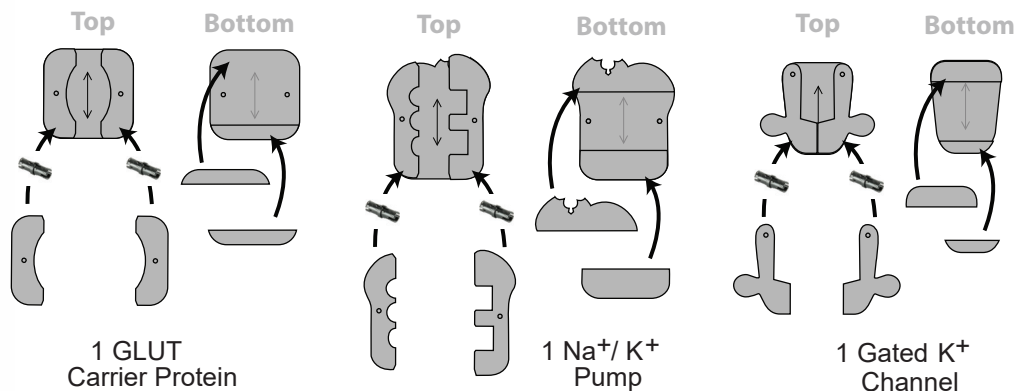
1 Aquaporin (D) and 1 K⁺ Leak Channel (E)

Affix 2 top and 2 underside gray, sticky-back foam pieces to each of these channels, as shown in the illustrations to the right. The longer top pieces should be affixed to the side with the deepest imprinted arrow, **parallel** with the arrow. The shorter underside pieces should be affixed to the back, **perpendicular** to the arrow. Please note: all gray, sticky-back pieces should line up with the edges of the channels when you attach them.



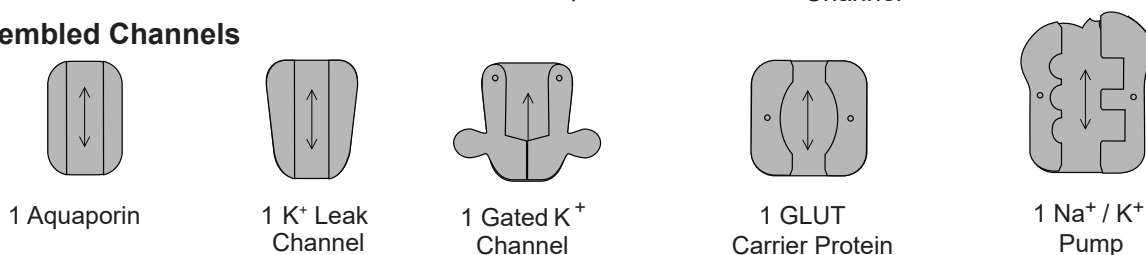
1 GLUT Carrier Protein (A), 1 Na⁺/K⁺ Pump (C) and 1 Gated K⁺ Channel (B)

The gray, sticky-back foam pieces that correspond with each of these channels go on the underside only (where the imprinted arrow is fainter), **perpendicular** to the arrow. Again, all gray, sticky-back pieces should line up with the edges of the channels. Once the underside pieces are affixed, flip the channels over and proceed with paddle assembly, following the illustrations and directions below.



Insert plastic pegs in the top pieces, as shown in the illustrations to the left. Then, attach those pieces to the bottom pieces (with the deepest-imprinted arrows up and sticky-back foam down.)

Assembled Channels



We have provided optional sticker labels for the channel proteins. You may elect to use either the name labels or the letter labels, or both. They may be placed on the tops or undersides of the pieces.

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50 Mini Phospholipids



● Negative Charge

Affix medium red stickers with black negative charge symbols to the yellow, foam mini phospholipids pieces, as shown in the illustration.

5 Glucose and 1 ATP

Affix stickers to the 5 gray, foam glucose pieces and 1 gray, foam ATP piece, as shown in the illustration.

30 H₂O



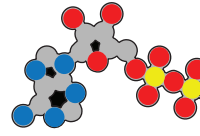
Affix small red stickers to the 30 white, foam H₂O pieces, as shown in the illustration.

CPK Color Scheme

	Oxygen
	Nitrogen
	Phosphorus
	Hydrogen
	Carbon



5 Glucose



1 ATP



Large Phospholipids

Affix large red, blue and yellow stickers and medium white stickers to the gray, foam phospholipid pieces, as shown in the illustrations below.



1 Piece

Saturated Fatty Acids Tails



2 Pieces



9 Hydroxyl Groups



2 A Pieces

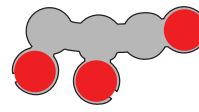
Unsaturated Fatty Acids Tails



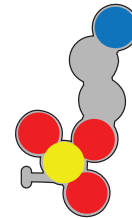
9 Hydrogen
(no stickers required)



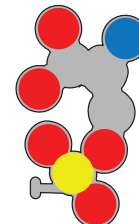
2 B Pieces
(no stickers required)



1 Glycerol Backbone



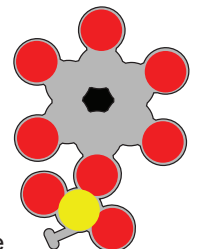
1 Phosphatidylethanolamine Head



1 Phosphatidylserine Head



1 Phosphatidylcholine Head



1 Phosphatidylinositol Head