THE PUMP KING POKER

pumpkin

The goal of our **Pump King Poker** is to get a functional cycle of a P-type pump, a functional P-type pump or a crystal of a pump, but be aware, someone else might inhibit you!

THE RULES

1. Each player gets **two cards** from the dealer.
2. The two cards on the player's hand **must be combined with two cards from the table** for the best possible hand.
3. The dealer opens one card.
4. Each player may **exchange one or two cards** by new ones from the dealer.
5. The dealer opens a second, third and fourth card.
6. Players with a good hand can stop at any time and reveal their hand, after the second card has been opened.
7. If a player decides to stop the game before all cards have been opened, **he must win**, otherwise he is out.
8. When the game is stopped or the fourth card opened, all players compare their hands. The player(s) with the least score has to leave the table.
9. The game ends, when only one player is left at the table. **He wins the donut.**

Additional rules:

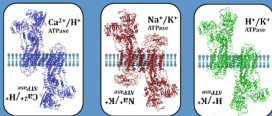An inhibitor card extinguishes all cards of its target pump, except for the player who has the inhibitor.

Early stopping of a game inactivates inhibition.

Superinhibition: If a player gets two inhibitor cards at any time, he is out immediately.
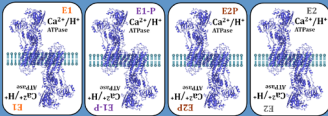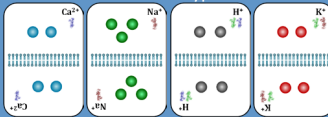
CARDS

Pumps

Three different P-type pumps

Ca^{2+}/H^+ ATPase — 8 x
Na^+/K^+ ATPase — 8 x
H^+/K^+ ATPase — 8 x

Each pump exists in four different states:

E1 Ca^{2+}/H^+ ATPase — 2 x
E1-P Ca^{2+}/H^+ ATPase — 2 x
E2P Ca^{2+}/H^+ ATPase — 2 x
E2 Ca^{2+}/H^+ ATPase — 2 x

Ions

Four different types of ions

Ca^{2+} — 4 x
Na^+ — 4 x
H^+ — 6 x
K^+ — 6 x

Two types of ions are compatible with each pump

ATP
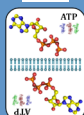
ATP — 12 x

Inhibitors

Block a specific pump
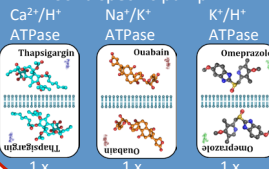
Ca^{2+}/H^+ ATPase — Thapsigargin — 1 x
Na^+/K^+ ATPase — Ouabain — 1 x
K^+/H^+ ATPase — Omeprazole — 1 x
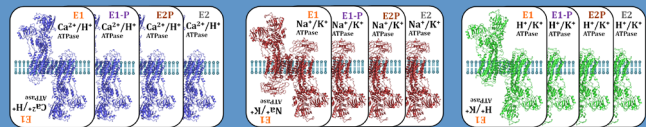
PUMP KING POKER HANDS

Full Functional Cycle

Four different states of the same pump

All P-Type ATPases need to go through different states to fulfill their function, 'P' means phosphorylation of a conserved Asp residue.
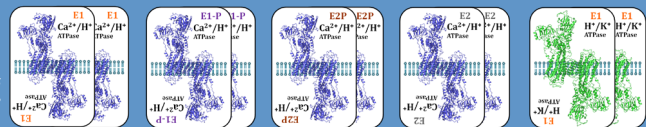
Functional Pump

Any pump + ATP + ions + counter-ions

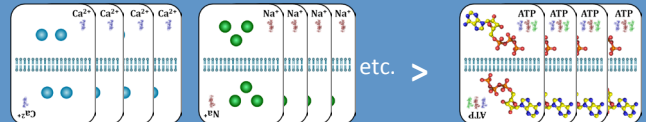*A P-Type ATPase pumps ions in one direction and counter-ions in the opposite direction by consuming the energy of ATP.*
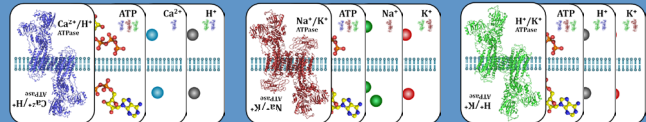
Crystal

Twice the same pump in the same state

Crystallographers need a homogenous sample of pump molecules in the same state to make them crystallize.
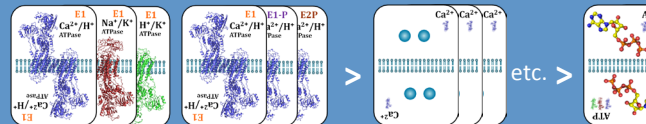
Four of a kind

Four identical cards

Ions rank higher than ATP

Three of a kind

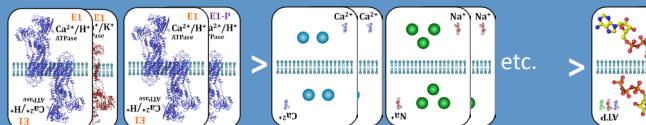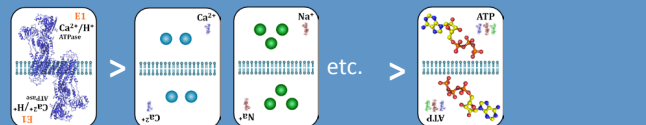Three of the same pump or same states or three identical cards

Two Pairs

2 x two of the same pump or the same state or two identical cards

One Pair

Two of the same pump or the same state or two identical cards

Singles

Pumps rank higher than ions

Ions rank higher than ATP