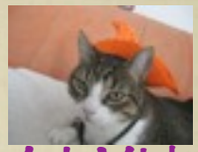
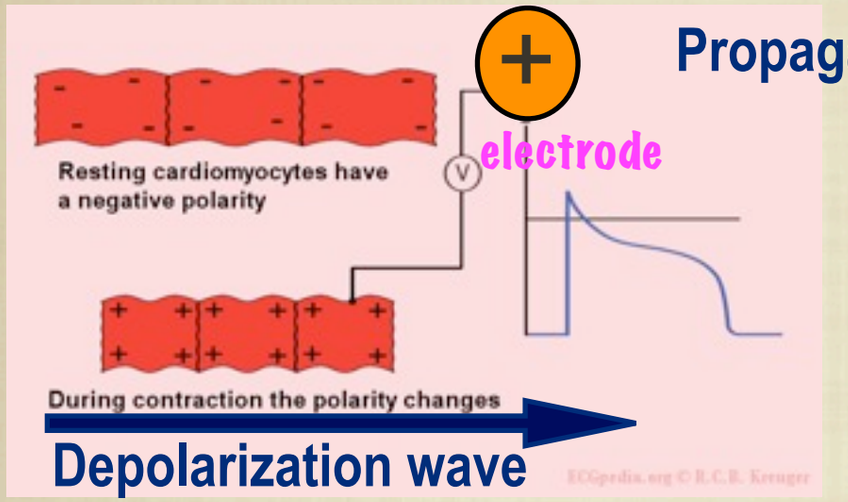
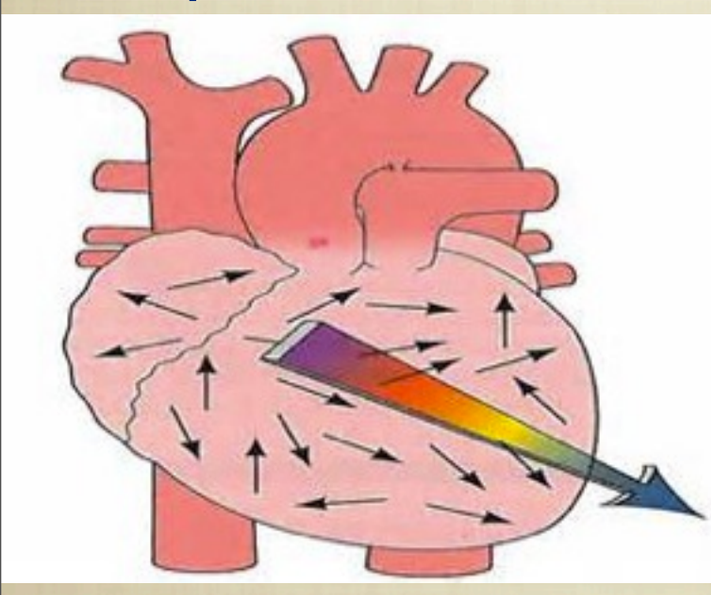
EKG: Depolarization Waves

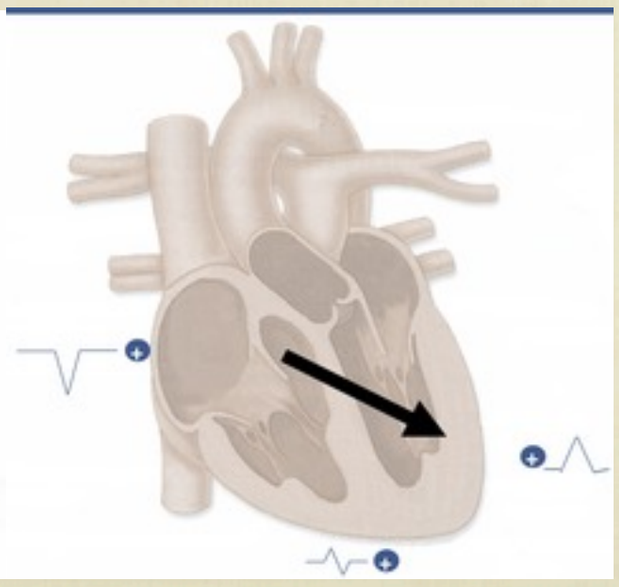


Depolarized cell





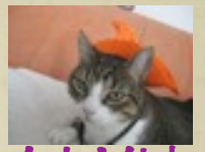
Summation vector

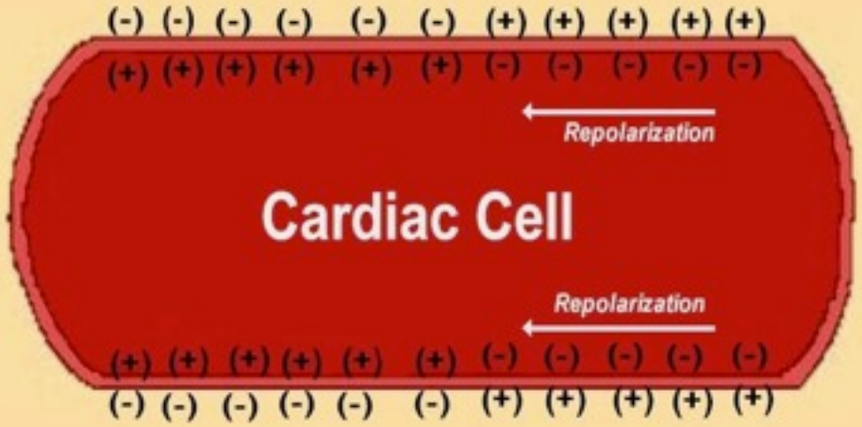


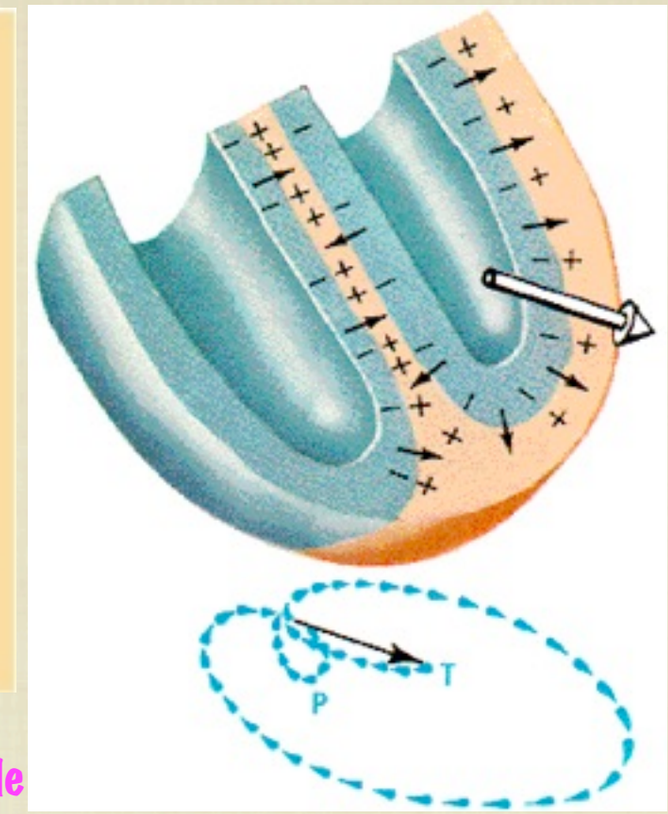
Waves up, down, biphasic

- Depolarization: cell more positive inside than outside.
- Negative charges propagate toward positive electrode.
- Summing up all the individual directions of depolarization we obtain a summation (integral) vector of depolarization.
- If the vector is toward the electrode, the wave registered on EKG is up, if away from the electrode , the wave is down and if perpendicular to the electrode the wave is biphasic
- the peak of the wave= tissue fully depolarized and the isoelectric line= all charges reached the electrode and were neutralized.

EKG: Repolarization Waves







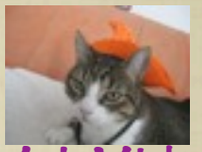
Repolarization summation vector

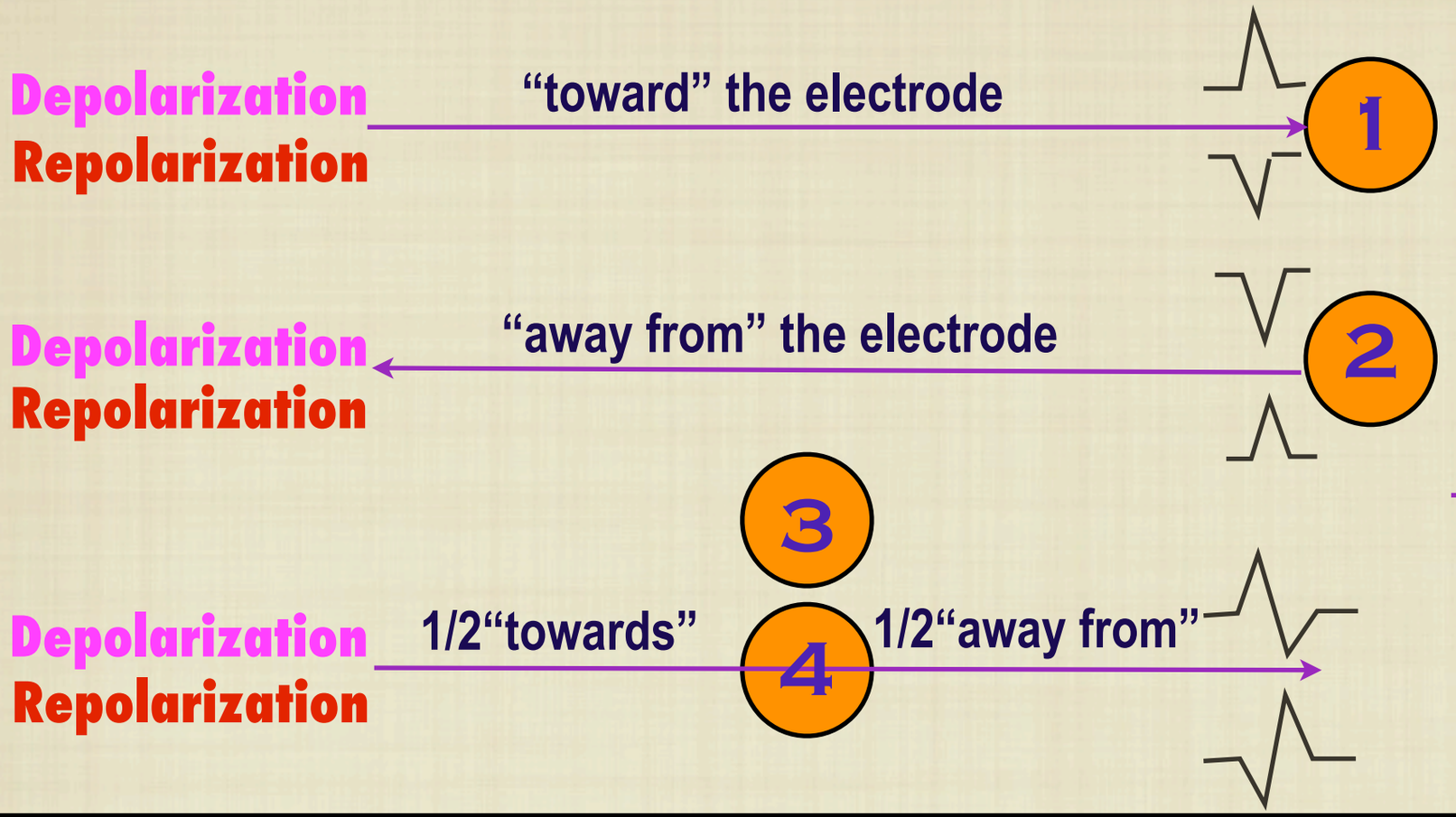
electrode

Repolarized cell

- Repolarization: comes after depolarization and cell turns negative inside from positive.
- Repolarization begins where the depolarization ends up and goes all the way back until all the tissue(cells) is fully repolarized.
- Despite reverse polarity during repolarization, the summation vector points the same direction as the depolarization one, so the repolarization wave (T wave) points in the same direction as the depolarization one(R wave).

EKG at Rest: All Waves(1)


Ask Mish



1, 2 electrodes at the end of propagation way

3, 4 electrodes perpendicular on the propagation way

propagation direction

wave up

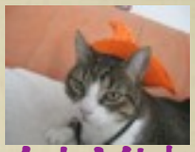
wave down

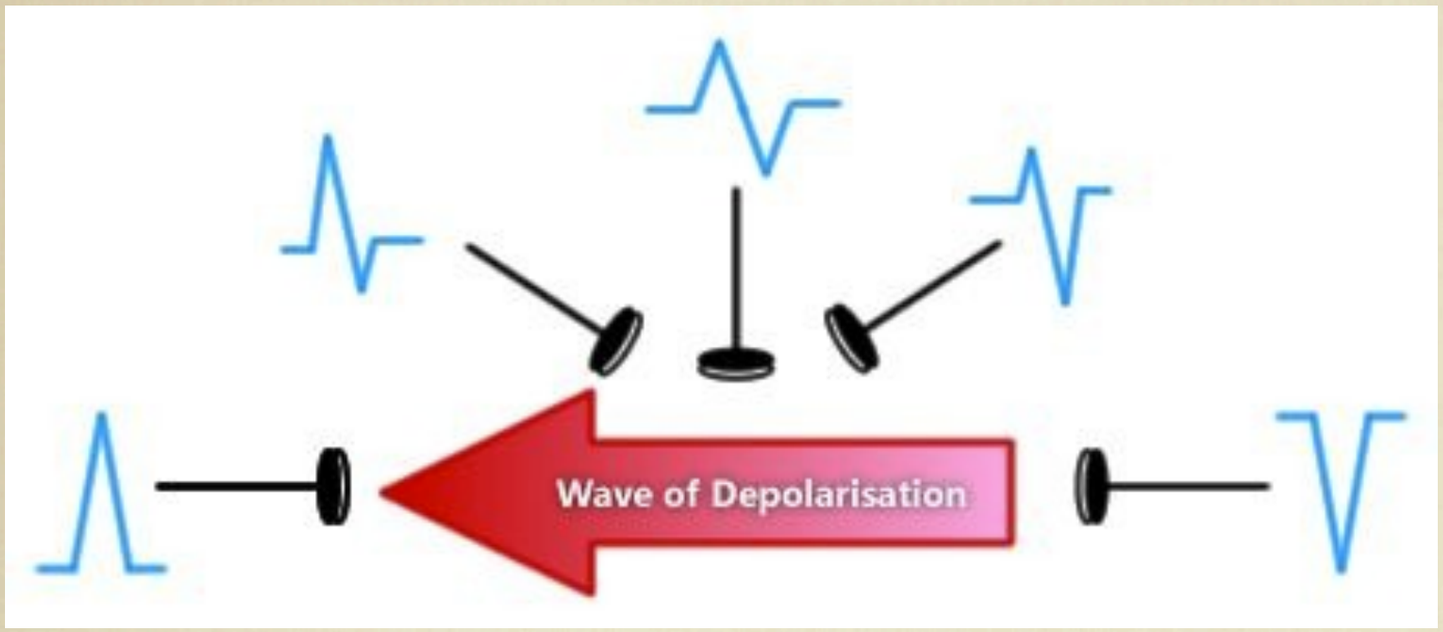
biphasic, 1st +

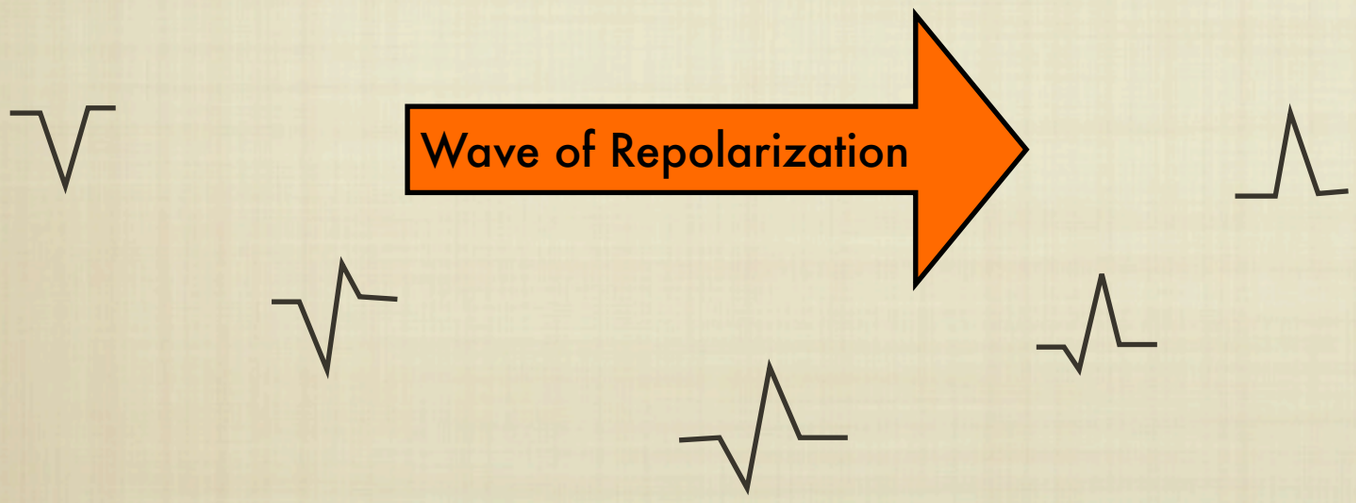
biphasic, 1st -

EKG waves	Depolarization wave	Repolarization wave
toward the electrode	UP (positive deflection)	DOWN
away from electrode	DOWN (negative deflection)	UP
reaching electrode	isoelectric line	isoelectric line
electrode perpendicular	biphasic	biphasic

EKG at Rest: All Waves(2)







- Electrodes placed in btw those situated on the propagation wave and perpendicular on the propagation wave produce various shaped waves related to the location of the electrode: on the direction of depolarization/ repolarization or away from it.