

Heart Chambers

Left Atria: oxygen- **rich** blood from pulmonary veins -> left AV valve
 Right Atria: oxygen **poor** blood from vena cavae -> right AV valves
 Left Ventricle: oxygen **rich** blood, from right at--> semilunar valves
 Right Ventricle: oxygen **poor** blood from right atrium-> pulmonary artery

Nodes

SA Node AV node Bundle of His

SA node
 initiates potential and **leads**
 autorhythmicity: 70 action potentials per minute

AV node
 base of right atrium
 autorhythmicity: 50 A.P. / minute
follows SA node under normal conditions

Bundle of His
 origin: AV node
 projects to left and right ventricles

Purkinje Fibers
 terminal fibers
 extend from Bundle of His
 follows faster SA node under normal conditions

Cardiac Cycle

Systole

contraction

Diastole

relaxation

End- diastolic volume

volume of blood at end of diastole, max amount that chamber will hold

Isovolumetric ventricular contraction

Cardiac Cycle (cont)

during contraction, valves closed, no blood leaves, increase in chamber pressure

Stroke volume

amount of blood pumped out of chamber

Isovolumetric ventricular relaxation

chamber pressure decreases

ACh: Parasympathetic release

SA Node

ACh: inc. permeability to K⁺ by delaying inactivation of K⁺ channels -> more hyperpolarization

AV Node

inc permeability to K⁺, reduces excitability of node, delays response of input from SA node

Atrial contractile cells

shortens of action potentials: reducing Ca²⁺ permeability during plateau

Components

Heart Blood Vessels Blood

Valves : one way

Right AV Valve	Left AV valve	Aortic/ Pulmonary valve
tricuspid	bicuspid	semilunar

Pathways

Interatrial

cardiac cells pacemaker activity from right to left atrium

Internodal

cardiac cell pacemaker activity from SA to AV node

AV nodal delay

Slow through AV node due to thickness

Action potential in Contractile cells

Resting potential

-90mV until excited

Rising phase

rapid, Na⁺ entry due to opening of fast Na⁺ channels, close K⁺ channels

Repolarization

at peak, open transient K⁺ efflux, inactivate Na⁺ channels

Plateau

Slow Ca²⁺ entry, open of L-type Ca²⁺ channels, reduce

Falling phase

K⁺ efflux, open voltage-gated K⁺ channels

Resting Potential

maintained by opening leaky K⁺ channels



By rose208347

Not published yet.

Last updated 28th May, 2025.

Page 1 of 3.

Sponsored by **CrosswordCheats.com**

Learn to solve cryptic crosswords!

<http://crosswordcheats.com>

Heart Sounds

Murmer:

turbulent flow of blood through malfunctioning valves

Stenotic valve:

whistling, stiff narrow valve

Insufficient valve:

swishing, structurally damaged valve

Rheumatic fever:

valvular stenosis, autoimmune disease

Cardiac muscle type

Striated:

striped lines

Involuntary

moves by itself

Sarcomere

Z line

sarcomere boundary

A band

thick filament with thin filament overlap

H zone

where thin filaments don't reach

M line

middle, vertically down A band

I band

remaining thin filament that are not in A band

Muscle

Myofibril:

thin(actin) thick (myosin), sarcomeres connected together

Sarcomere:

smallest unit of muscle cell,

Myosin:

cytoskeletal protein

Thin filament

actin, tropomyosin, troponin

Types of Muscle

Endocardium - thin/ interior of each chamber

Myocardium - middle layer, thickest, intercalated disks for connection

Epicardium - thin external membrane with pericardial fluid

Pacemaker Activity

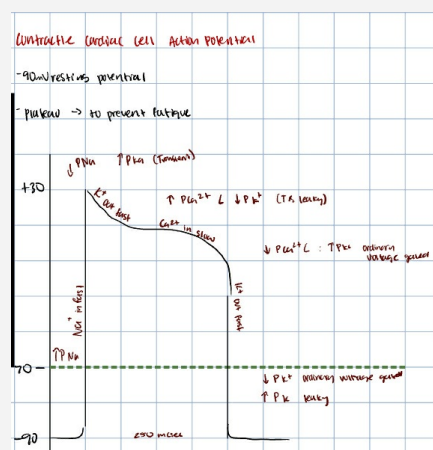
Open funny channels:

NA⁺ inward and closes K⁺ outward

Reaches threshold of -40:

Open L-type Ca²⁺ and K⁺ channels

Action potential in Contractile cells



Electrical Activity

Authorhythmicity- capability to produce own rhythmic electrical activity due to

Pacemaker activity

Only 1% of Cardiac cells

Excitation Contraction Coupling

Ca²⁺ entry into cytosol

T-tubule

contain: dihydropyridine receptors-> open Ca²⁺ into cytosol

#crossbridges proportional to cytosolic Ca²⁺ concentration

Electrocardiogram

P wave

depolarization of atria

QRS complex

depolarization of ventricles

T- wave

Repolarization of ventricles

Cardiac Output

Cardiac Output:

heart rate x stroke volume

Heart rate:

beats per minute, regulated by both parasympathetic and sympathetic nervous system



By rose208347

Not published yet.

Last updated 28th May, 2025.

Page 2 of 3.

Sponsored by [CrosswordCheats.com](https://crosswordcheats.com)

Learn to solve cryptic crosswords!

<http://crosswordcheats.com>

Excitation Contraction Coupling

ACh

- released by motor neuron axon binds to motor end plate
- results in action potential that propagates to surface membrane and down t-tubule
- triggers Ca^{2+} release from SR
- Ca^{2+} released from lateral sacs
- bind to troponin, tropomyosin moves aside to open actin binding site
- myosin crossbridge attach to actin-> bend
- > pull actin towards center of sarcomere
- Ca^{2+} taken up by SR
- tropomyosin goes back to blocking position.



By **rose208347**

cheatography.com/rose208347/

Not published yet.

Last updated 28th May, 2025.

Page 3 of 3.

Sponsored by **CrosswordCheats.com**

Learn to solve cryptic crosswords!

<http://crosswordcheats.com>