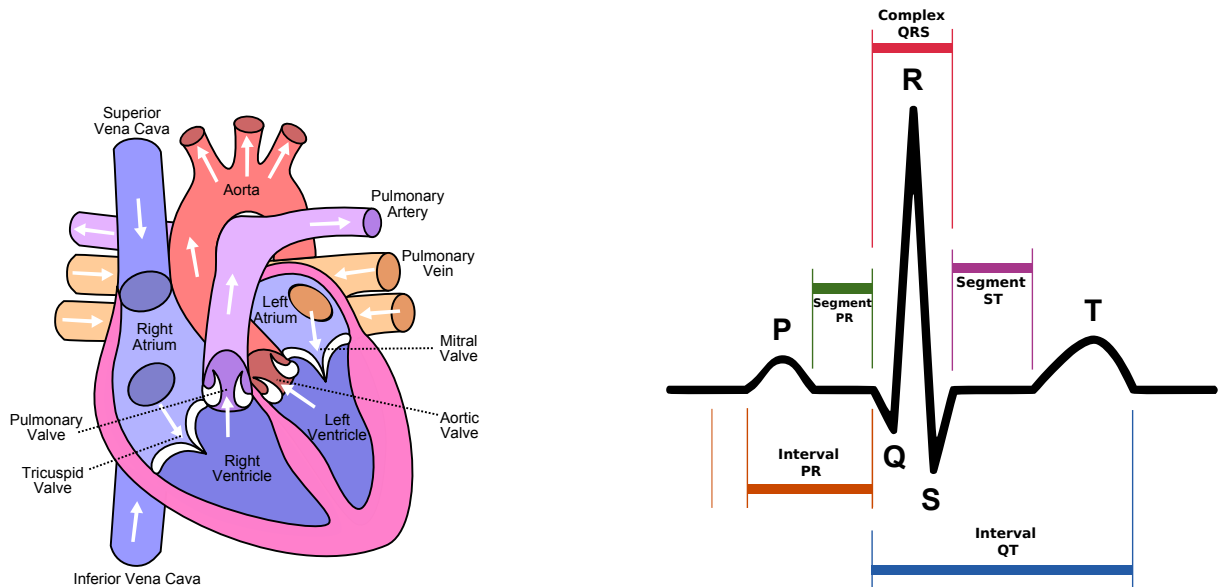


The electrocardiogram



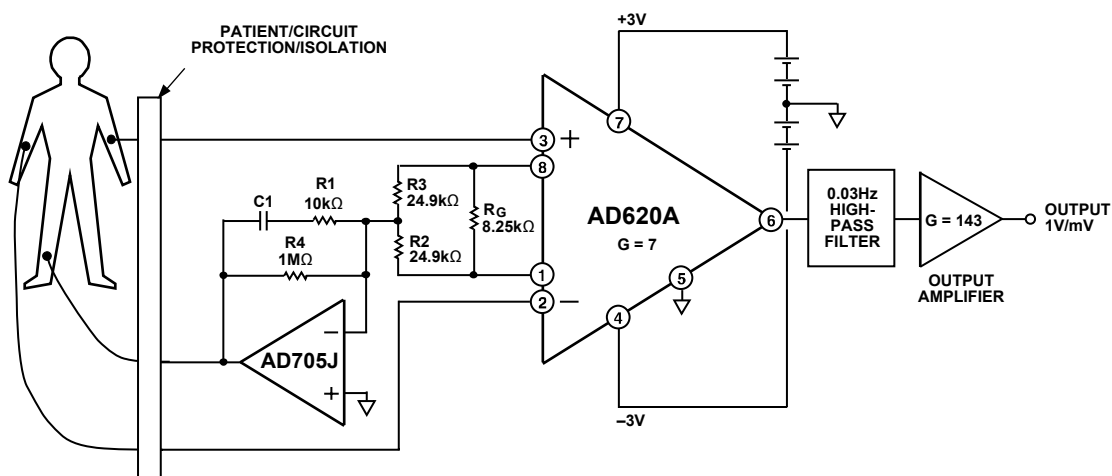
http://commons.wikimedia.org/wiki/File:Diagram_of_the_human_heart_{cropped}.svg

http://commons.wikimedia.org/wiki/File:SinusRhythmLabels_CAT.svg

The electrocardiogram (ECG) is a recording of the voltage on the surface of the human body due to the electrical activity within the heart. When at rest, the myocardial cells in the heart are at a resting potential of about -85 to -95 milliVolts. When the cell receives an electrical signal, it both contracts and changes its potential (depolarizes) to about +10 to +20 milliVolts. A typical ECG circuit, such as the sample ECG circuit shown below, responds not to the absolute electric potential but to changes in the electric potential. Thus, the change from a (relatively) large negative voltage to a small positive voltage is recorded by the ECG as a large increase in voltage.

During the P-wave, the electrical activity starts at the sinoatrial (SA) node and propagates to the atrioventricular (AV) node from the right atrium to the left atrium. During the PR segment, the electrical activity propagates from the AV node to the bundle of His, to the bundle branches and then to the Purkinje fibers. This activity does not produce any contraction directly but establishes the conditions needed to activate the tissue in both ventricles simultaneously. The depolarization of the ventricles produces the sharp QRS complex seen in the ECG signal. The repolarization of the ventricles is seen as the T-wave in the ECG.

Anomalies in the ECG are often diagnostic of serious medical conditions. Flattened or inverted T-waves are usually observed following coronary ischemia, while hyperacute T-waves may indicate the first signs of myocardial infarction.



http://www.analog.com/static/imported-files/data_sheets/AD620.pdf