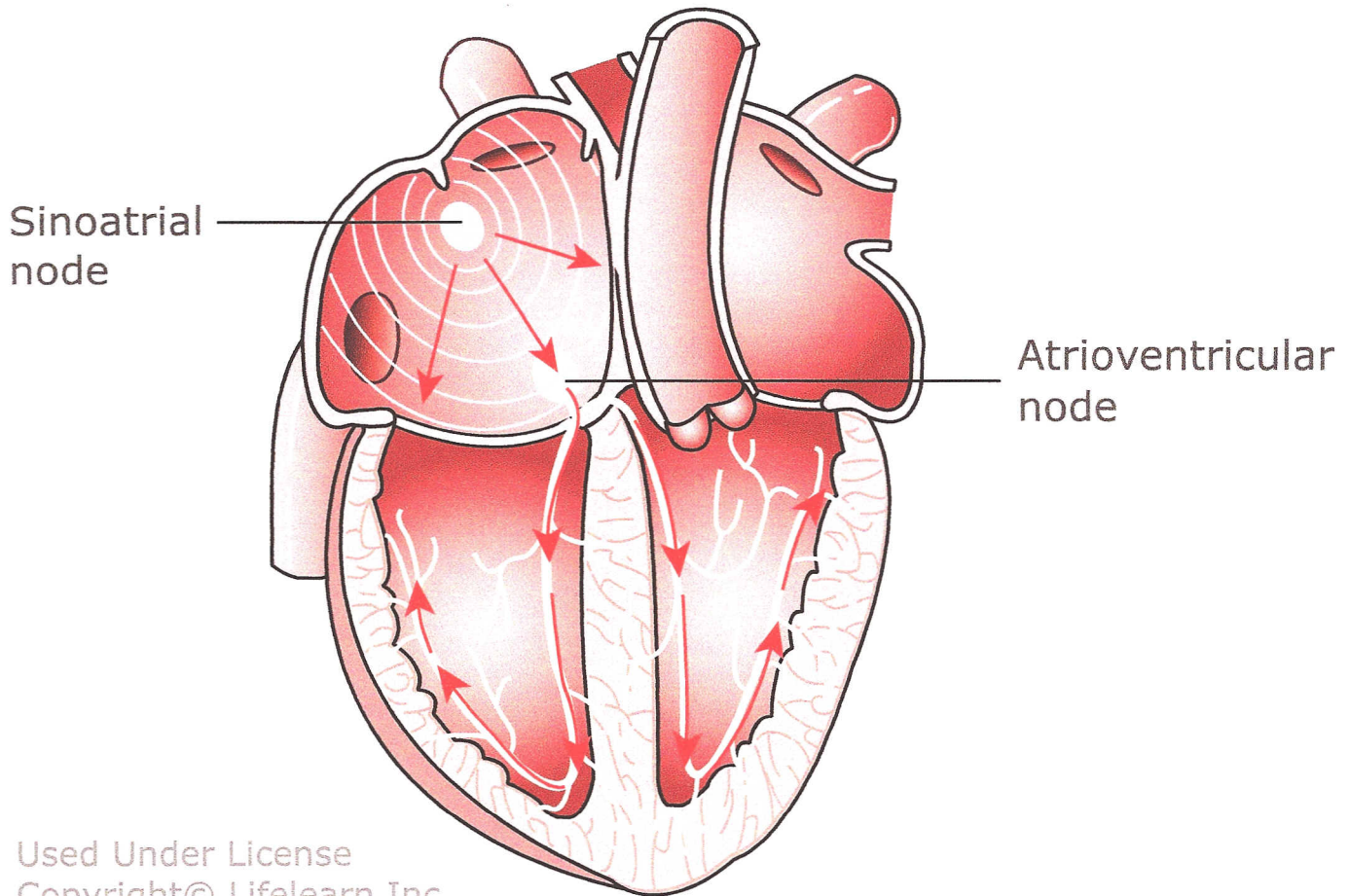


Heart - Conduction System: Conduction pathways in the heart, arrhythmias.



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The contraction of the heart is controlled by electrical impulses that are generated in specialized cardiac tissues called the sinoatrial (SA) node and the atrioventricular (AV) node. The SA node fires first, causing both atria to contract simultaneously and sending a signal to the AV node. The AV node then fires, causing the ventricles to contract. The SA node fires automatically at a rate that varies by species. In dogs, the average rate of firing is 70-120 times per minute, while in cats the average is 120-150. If the SA node fails to fire, the AV node will eventually fire, producing what is called an 'escape beat' and causing ventricular contraction; escape beats are slower, at about 60-70 beats per minute. Pathologic heart arrhythmias result if either of the nodes becomes diseased, if there is a physical disturbance in the pathway between the 2 nodes, or if there is an electrolyte imbalance within the body that changes the sensitivity of the nodal tissue to electrical stimuli. They may be faster or slower than the normal rate.