

CARDIAC CONDUCTION SYSTEM & THE ECG

CN: Use blue for D and red for E. Use a very light color for B so that the patterns of dots identifying the segments (B-B³) of the ECG remain visible after coloring.

(1) Begin at upper right and color the four large arrows identifying the atria (A²) and ventricles (B³), as well as their titles. The atria and ventricles are not to be colored. (2) In the middle of the page, color the stages of blood flow through the heart, and related letters. These stages relate to voltage changes in the ECG below. (3) Color the ECG and related letters, starting at the left and working to the right. The parts of the ECG are related to the activity of the conduction system or related myocardial activity. (4) Color the horizontal bar below the time line.

CONDUCTION SYSTEM

- SA (SINOATRIAL) NODE_A
- INTERNODAL PATHWAY_{A'}
- AV (ATRIOVENTRICULAR) NODE_B
- AV BUNDLE / BRANCHES_{B'}
- PURKINJE PLEXUS_{B²}

Cardiac muscle cells contract spontaneously. They do not require motor nerves to shorten. However, the intrinsic contraction rate of these cells is too slow and too unorganized for effective pumping of the heart. Happily, groups of more excitable but non-contractile cardiac cells take responsibility for initiating and conducting electrochemical impulses throughout the cardiac musculature. Such cells effect a coordinated, rhythmic sequence of cardiac muscle contractions that result in blood being moved through the cavities of the heart with appropriate volumes and pressures. These cells constitute the *cardiac conduction system*. Impulses generated at the *sinoatrial (SA) node* are distributed throughout the atria and to the *atrioventricular (AV) node* by way of non-discrete *internodal pathways*. Impulses travel from the AV node, down the AV bundle and its branches, to the *Purkinje plexus* of cells embedded in the ventricular musculature.

