23. A method of making the biocompatible conductive biomaterial of any one of claims 1 to 10, or the hydrogel of any one of claims 11 to 16, the method comprising conjugating a conductive polymer and a biocompatible component, the conductive polymer comprising an aminomethoxybenzoic acid (AMBA) polymer.

24. The method of claim 23, for making the hydrogel comprising gelatin, the method comprising combining AMBA and gelatin, polymerizing the AMBA and gelatin to produce conjugated AMBA-gelatin, and cross-linking the AMBA-gelatin or cooling the AMBA-gelatin.

25. The method of claim 23 or 24 wherein the AMBA and gelatin are polymerized using APS.

26. The method of any one of claims 23 to 25, wherein the AMBA-gelatin is cross-linked using EDC.

27. The method of any one of claims 23 to 26 further comprising adding culture media and/or cardiomyocytes and growing the cardiomyocytes.

28. Use of the biocompatible conductive biomaterial of any one of claims 1 to 11, the hydrogel of any of claims 12-16, the device of any one of claims 17 to 21 or the kit of claim 22 for ameliorating or treating a heart condition, optionally a heart condition described herein.

29. Use of the conductive hydrogel of any one of claims 12 to 16, a device comprising said conductive hydrogel or a kit for making said hydrogel for ameliorating or treating a heart condition, optionally a heart condition described herein.

30. The use of claim 28 or 29, wherein the heart condition is myocardial infarction, ischemic myocardium, myocardial fibrosis, heart failure, atrioventricular block, arrhythmia, bradycardia or a conduction abnormality, optionally resulting from cardiac surgery.

31. The use of claim 30, wherein the heart condition is atrioventricular block and the biocompatible conductive biomaterial is for restoring atrioventricular conduction or the heart condition results from cardiac surgery after replacing a cardiac valve.

32. The use of claim 30, wherein the heart condition is myocardial fibrosis and the biocompatible conductive biomaterial is introduced into or onto fibrotic scar tissue.

33. The use of any one of claims 28 to 32, wherein the biocompatible conductive biomaterial is for reducing the pacing threshold of a cardiac pacemaker and/or for increasing myocardium reactivity to heart pacing in the subject.