CLAIMS

1. A medical device comprising:

a cannulated structure having a lumen extending therethrough, and a plurality of electrodes at an outer surface of the cannulated structure, the cannulated structure configured to be at least partially implanted in a body; and

an electronics cartridge including electronics, the electronics cartridge configured to be inserted into the lumen, and to establish one or more electrical couplings between the electronics and the plurality of electrodes upon such insertion.

2. The medical device of claim 1, wherein the cannulated structure comprises a shaft and the plurality of electrodes comprise a single set of electrodes spaced apart along a length of the shaft.

3. The medical device of claim 1, wherein the cannulated structure comprises a shaft and the plurality of electrodes comprise a first set of electrodes spaced apart along a length of a first side of the shaft, and a second set of electrodes spaced apart along a length of a second side of spaced from the first side.

4. The medical device of claim 1, wherein the cannulated structure comprises a shaft and the plurality of electrodes comprise a first linear electrode at a first side of the shaft, and a second linear electrode at a second side of spaced from the first side.

5. The medical device of claim 1, wherein the cannulated structure comprises:

an electrically conductive body having an exterior surface at least partially coated with an electrically insulative material,

a first electrode of the plurality of electrodes corresponding to an exposed portion of the electrically conductive body, and

a second electrode of the plurality of electrodes that overlies a portion of the electrically insulative material.

6. The medical device of claim 5, wherein the electronics cartridge comprises:

a first electrical contact positioned to contact an inner surface of the electrically conductive body to thereby establish an electrical coupling between the electronics and the first electrode; and

a second electrical contact positioned to contact a portion of the second electrode to thereby establish an electrical coupling between the electronics and the second electrode.

7. The medical device of claim 6, wherein the electronics cartridge further comprises an insulating seal between the first electrical contact and the second electrical contact.

8. The medical device of claim 6, wherein the second electrode is partially coated with an electrically insulative material, and the portion of the second electrode that contacts the second electrical contact corresponds to an uncoated portion of the second electrode.

9. The medical device of claim 8, wherein the uncoated portion of the second electrode is located in a head portion of the lumen at a proximal end of the cannulated structure.

10. The medical device of claim 1, wherein the cannulated structure comprises:

a body having a head and an exterior surface at least partially coated with an electrically insulative material;

a first portion of electrically conductive material on the electrically insulative material forming a first electrode of the plurality of electrodes, a first electrical contact near the head, and a first conductive path between the first electrode and the first electrical contact; and

a second portion of electrically conductive material on the electrically insulative material forming a second electrode of the plurality of electrodes, a second electrical contact near the head, and a second conductive path between the second electrode and the second electrical contact.

11. The medical device of claim 10, wherein the electronics cartridge comprises:

a first electrical contact positioned to contact the first electrical contact of the cannulated structure to thereby establish an electrical coupling between the electronics and the first electrode; and

a second electrical contact positioned to contact the second electrical contact of the cannulated structure to thereby establish an electrical coupling between the electronics and the second electrode.

12. The medical device of claim 1, wherein the cannulated structure comprises:

a distal piece that includes a first electrode of the plurality of electrodes; and

a proximal piece that includes a second electrode of the plurality of electrodes.

13. The medical device of claim 12, wherein each of the distal piece and the proximal piece comprise an electrically conductive substrate with an exterior surface that is at least partially coated with an electrically insulative coating.

14. The medical device of claim 12, wherein the each of the distal piece and the proximal piece comprise a mechanical feature that enables a mechanical coupling between the distal piece and the proximal piece.

15. The medical device of claim 1, wherein the cannulated structure and the electronics cartridge comprise mechanical features that enable the electronics cartridge to be fixedly secured within the lumen.

16. The medical device of claim 15, wherein the mechanical features comprise one of: a difference in form factor between a head of the electronics cartridge and a head portion of the lumen of the cannulated structure; a projection associated with the electronics cartridge and a recess associated with the lumen of the cannulated structure; and an interlock feature associated with a shaft of the electronics cartridge for receiving an adhesive and an inner wall of the cannulated structure for engaging the adhesive.

17. The medical device of claim 1, wherein the cannulated structure and the electronics cartridge comprise mechanical features that enable the electronics cartridge to be removed from the lumen without damaging the structural integrity of either the electronics cartridge or the cannulated structure.

18. The medical device of claim 17, wherein the mechanical features comprise complementary screw threads.

19. The medical device of any of claims 1-18, wherein the medical device is sterile.

20. The medical device of any of claims 1-18, wherein the medical device has been subjected to a sterilization procedure to provide a sterile medical device.

21. A method of characterizing a fracture in boney tissue, the method comprising identifying a fracture in boney tissue, inserting a medical device according to any of claims 1-18 into the bony tissue, where the medical device is inserted across the fracture; and characterizing the fracture with a sensor located in the medical device.

22. The method according to claim 21 wherein the medical device is a screw.

23. A set of medical devices, the set comprising at least one first medical device according to any of claims 1-18, the set further comprising at least one second medical device configured for insertion into boney tissue, where the second medical device does not contain a sensor.

24. The set of medical devices of claim 23 wherein each of the first medical device and the second medical device is a screw.

25. The set of medical devices of claim 23 comprising a single first medical device and a plurality of second medical devices.

26. The set of medical devices of claim 25 wherein each member of the set is a screw.