WHAT IS CLAIMED IS:

1. A method of generating a three-dimensional image of a target using two-dimensional images, comprising:

generating a three-dimensional map of a target area associated with one or more fiducial markers, wherein the three-dimensional map is generated using infrared light;

capturing a two-dimensional white light image of the target area and the one or more fiducial markers;

creating a three-dimensional white light image from the two-dimensional white light image and the three-dimensional map;

capturing a two-dimensional fluorescence image of the target area and the one or more fiducial markers;

creating a three-dimensional fluorescence image from the two-dimensional fluorescence image and the three-dimensional map; and

aligning the three-dimensional white light image and the three-dimensional fluorescence image using the one or more fiducial markers to form a three-dimensional superimposed image.

2. The method of claim 1, wherein the capturing of the two-dimensional fluorescence image of the target area and the one or more fiducial markers comprises:

illuminating the target area and the one or more fiducial markers with an excitation light, and

receiving at least one fluorescence emission responsive to illumination of the target area with the excitation light.

3. The method of claim 2, wherein the excitation light is between 400 nm and 450 nm.

4. The method of claim 2, wherein the excitation light has a wavelength of 405 nm.

5. The method of claim 1, wherein the capturing of the two-dimensional fluorescence image of the target area and the one or more fiducial markers comprises capturing an emission of at least one fluorescent molecule.

6. The method of claim 5, wherein the at least one fluorescent molecule comprises an endogenous molecule capable of fluorescing.

7. The method of claim 5, wherein the at least one fluorescent molecule comprises an exogenous molecule capable of fluorescing or a molecule comprising an exogenously added moiety capable of fluorescing.

8. The method of claim 7, wherein the at least one fluorescent molecule comprises aminolevulinic acid (ALA) induced porphyrins.

9. The method of claim 1, wherein the three-dimensional map is generated using near infrared light.

10. The method of claim 1, wherein generating the three-dimensional map comprises:

projecting infrared radiation at the target area;

receiving infrared radiation reflected by the target area; and

measuring depth of the target area based on the reflected infrared radiation to generate the three-dimensional map.

11. The method of claim 10, wherein the infrared radiation is projected as a beam split into a light pattern, the reflected infrared radiation comprises a distortion of the light pattern, and the depth is measured based on the distortion of the light pattern.

12. The method of claim 11, wherein the light pattern is formed by a diffraction grating and the light pattern comprises a plurality of dots.

13. The method of claim 10, wherein the depth is measured by time-of-flight based on a phase shift between the projected and the reflected infrared radiation.

14. The method of claim 1, wherein the target area comprises at least one wound.

15. The method of claim 14, wherein the wound comprises at least one bacterium comprising at least one fluorescent molecule.

16. The method of claim 14, wherein the method further comprises determining one or both of a surface area and a volume of the wound.

17. The method of claim 14, wherein the method is performed at least twice, the two performances comprising a first performance and a second performance separated by a time period of at least three hours, the three-dimensional superimposed image of the first performance being a first three-dimensional superimposed image and the three-dimensional superimposed image of the second performance being a second three-dimensional superimposed image, the method further comprising comparing the first and second three-dimensional superimposed images to determine a difference in a size and/or a volume of the wound.

18. The method of claim 17, wherein the time period is at least one day.

19. The method of claim 17, wherein the comparison further comprises tracking a topography of the wound.

20. The method of claim 1, wherein the target area comprises a tissue excised from a subject organism.

21. The method of claim 20, wherein the tissue comprises a cancerous tissue.

22. The method of claim 21, wherein the cancerous tissue comprises a tumor.

23. The method of claim 22, wherein the tumor is a breast tumor and the excised tissue comprises a lumpectomy.

24. The method of claim 20, wherein the excised tissue comprises a fluorescent molecule associated with a probe targeting a tumor receptor, an enzyme-activated fluorescent molecule, or a genetically modified oncolytic virus-induced fluorescence, or any combination thereof.

25. The method of claim 24, wherein the tumor receptor comprises HER2, a folate receptor, CXCR4, a hormone receptor, an EGFR, or a VEGF, or a combination thereof; and the enzyme comprises a protease, a carbohydrase, a lipase, a transferase, an oxidoreductase, a matrix metalloprotease (MMP), a caspase, a cathepsin, a kallikrein, serine protease, isocitrate dehydrogenase, or an enzyme overexpressed by tumor cells, or a combination thereof.

26. The method of claim 1, wherein the target area comprises a surgical bed from which a tissue has been excised.

27. The method of claim 26, wherein the surgical bed and the excised tissue comprises a cancerous tissue.

28. The method of claim 1, wherein the method is performed at least twice, in either order, the two performances comprising a first performance and a second performance, the first performance performed on the target area, the target area being a first target area comprising an excised tissue, the second performance performed on a second target area comprising a surgical bed from which the tissue is excised, the three-dimensional superimposed image of the first performance being a first three-dimensional superimposed image and the three-dimensional superimposed image of the second performance being a second three-dimensional superimposed image, the method further comprising comparing the first and second three-dimensional superimposed images to determine a fluorescent continuity between the excised tissue and the surgical bed based on an orientation of the excised tissue relative to the surgical bed.

29. The method of claim 1, further comprising:

capturing a companion three-dimensional image of the target area and the one or more fiducial markers using an imaging technique comprising one or more of computerized tomography (CT), magnetic resonance imaging (MRI), photoacoustic imaging, ultrasound, and optical coherence tomography; and

superimposing the three-dimensional superimposed image, the superimposed image being a first three-dimensional superimposed image, with the companion three-dimensional image to form a second three-dimensional superimposed image.

30. The method of claim 29, wherein the one or more fiducial markers comprise a first set of fiducial markers and a second set of fiducial markers.

31. The method of claim 29, wherein the companion three-dimensional image is captured using computerized tomography and the one or more fiducial markers comprise at least one fluorescent molecule and at least one CT contrast agent.

32. The method of claim 29, wherein the companion three-dimensional image is captured using photoacoustic imaging, and the target area comprises a breast tumor and an anti-HER2 dual fluorescence-photoacoustic probe.

33. An imaging device comprising:

an excitation light source configured to emit a first radiation capable of exciting a fluorophore;

a filter configured to prevent passage of reflected excitation light and permit passage of fluorescence emitted by the fluorophore;

an imaging lens;

a visible light source configured to emit a second radiation;

an infrared light source configured to emit a third radiation;

at least one image sensor configured to detect radiation; and

a processor configured to receive the detected radiation and to output data associated with the detected radiation,

wherein the imaging device is configured to perform the method of claim 1.

34. The imaging device of claim 33, wherein the imaging device is configured to be handheld.

35. The imaging device of claim 33, wherein the imaging device is configured to visualize a wound.

36. The imaging device of claim 33, wherein the imaging device is configured to visualize one or more of a precancerous cell, a cancerous cell, and a satellite lesion in a surgical margin.

37. The imaging device of claim 36, wherein the excitation light source is further configured to excite autofluorescence emissions of tissue cells and fluorescence emissions of induced porphyrins in tissue cells of the surgical margin.

38. The imaging device of claim 37, wherein the filter is further configured to prevent passage of reflected excitation light and permit passage of emissions having a wavelength corresponding to the autofluorescence emissions of the tissue cells and the fluorescence emissions of the induced porphyrins in the tissue cells.

39. The imaging device of claim 38, wherein the image sensor is further configured to detect the filtered autofluorescence emissions of the tissue cells and the fluorescence emissions of the induced porphyrins in the tissue cells of the surgical margin.

40. The imaging device of claim 39, wherein the processor is further configured to receive the detected emissions and to output data regarding the detected filtered autofluorescence emissions of the tissue cells and the fluorescence emissions of the induced porphyrins in the tissue cells of the surgical margin.

41. The imaging device of claim 33, wherein the second radiation comprises white light.

42. The imaging device of claim 33, wherein the second radiation comprises monochromatic visible light.

43. The imaging device of claim 33, wherein the third radiation comprises infrared radiation.

44. The imaging device of claim 43, wherein the infrared radiation comprises near infrared radiation.

45. The imaging device of claim 33, wherein the at least one image sensor is configured to detect radiation comprising the fluorescence, reflected white light, and reflected infrared light.

46. The imaging device of claim 33, wherein the at least one sensor comprises at least two sensors.

47. The imaging device of claim 46, wherein the at least two sensors comprise a first sensor configured to detect fluorescence and a second detector configured to detect reflected visible light.

48. The imaging device of claim 33, wherein the at least one sensor comprises at least three sensors comprising a first sensor configured to detect fluorescence, a second detector configured to detect reflected visible light, and a third sensor configured to detect reflected infrared light.

49. The imaging device of claim 33, further comprising a common radiation source configured to operate with at least one of the light sources.

50. The imaging device of claim 49, wherein the at least one light source comprises a converter to convert source radiation emitted from the common radiation source to the first radiation, the second radiation, or the third radiation, or a combination thereof.

51. The imaging device of claim 50, wherein the converter comprises a filter, a lens, a prism, a diffractor, or a quantum dot, or a combination thereof.

52. The imaging device of claim 50, wherein the excitation light source comprises a first converter, the visible light source comprises a second converter, and the infrared light source comprises a third converter.

53. The imaging device of claim 33, further comprising a display unit.

54. The imaging device of claim 53, wherein the display unit is configured to display the data output by the processor.

55. The imaging device of claim 54, wherein the data comprises a three-dimensional image.

56. The imaging device of claim 53, wherein the display unit comprises a touchscreen.

57. The imaging device of claim 33, wherein the detected radiation comprises one or more of fluorescence, reflected visible light, and reflected infrared light.

58. The imaging device of claim 33, wherein the detected radiation comprises fluorescence, reflected visible light, and reflected infrared light.

59. The imaging device of claim 33, wherein the imaging device is configured to visualize a target area of a biological target.

60. The imaging device of claim 33, wherein:

the imaging device is further configured to be handheld;

the excitation light source is further configured to excite autofluorescence emissions of tissue cells and fluorescence emissions having a wavelength of between 600 nm and 660 nm in precancerous cells, cancerous cells, and satellite lesions of a surgical margin after exposure to an imaging or contrast agent;

the filter is further configured to permit passage of emissions having a wavelength corresponding to autofluorescence emissions of the tissue cells and fluorescence emissions between 600 nm and 660 nm in the tissue cells of the surgical margin;

the at least one image sensor is further configured to detect the filtered autofluorescence emissions of the tissue cells and the fluorescence emissions between 600 nm and 660 nm in the tissue cells of the surgical margin; and

the processor is further configured to receive the detected emissions and to output data regarding the detected filtered autofluorescence emissions of the tissue cells and the fluorescence emissions between 600 nm and 660 nm in the tissue cells of the surgical margin, and to generate a three-dimensional image of one or more of the precancerous cells, the cancerous cells, and the satellite lesions in the surgical margins.

61. A system for three-dimensional fluorescence-based imaging of a target, comprising:

at least one excitation light source configured to uniformly illuminate a target surface with a uniform field of excitation light during fluorescent imaging;

at least one white-light source configured to illuminate the target surface during white light imaging;

at least one infrared radiation source configured to emit infrared radiation toward the target surface;

an image sensor;

a filter configured to permit optical signals responsive to illumination of the target surface with the excitation light and having a wavelength corresponding to one or more of bacterial autofluorescence and tissue autofluorescence to pass through the filter to the image sensor; and

a processor configured to:

receive optical signals responsive to illumination of the target with the infrared light and, based on the received signals responsive to illumination of the target with the infrared light, generate a three-dimensional map of the target surface,

receive detected optical signals responsive to illumination of the target surface with excitation light and generate a two-dimensional fluorescence image of the target surface,

receive optical signals responsive to white light illumination of the target surface and generate a two-dimensional white light image of the target surface, and

combine the three-dimensional map, the fluorescence image, and the white light image to generate a three-dimensional image of the target surface.

62. A computer program product for use with the imaging device of claim 33, the computer program product comprising a non-transitory computer readable medium, wherein the non-transitory computer readable medium stores a computer program code for image processing, wherein the computer program code is executable by the processor in the imaging device to perform the method of claim 1.