

Warren S. Grundfest, M.D.



Professor

Department of Bioengineering
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Education

- B.A., Swarthmore College, 1974
- M.D., Columbia University, 1980

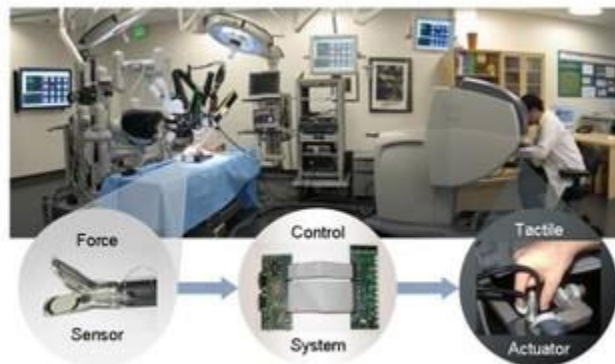
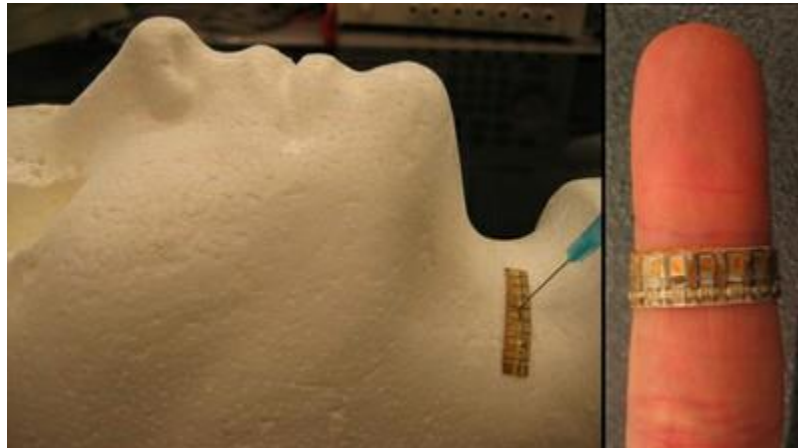
Awards and Recognitions

- Fellow, American College of Surgeons
- Fellow, American Society for Laser Medicine and Surgery
- Fellow, International Society for Endovascular Surgery
- Chair, Council of Societies, AIMBE
- Named in 100 Notable People in the Medical Device Industry

Research Interests

Minimally invasive surgery has dramatically changed the practice of medicine. A variety of mechanical and energy-imparting devices are used to manipulate and modify tissues within the

body without the need for large incisions. These procedures are guided by X-ray, ultrasound, optical, or magnetic resonance imaging techniques. These technologies allow physicians to operate without the need for large incisions, dramatically reducing the need for inpatient care and pain medication, and improving outcomes. The laboratory investigates a variety of laser applications for cardiovascular, ophthalmologic, orthopedic, urologic, and neurosurgical procedures. Studies are underway to develop improved "optical biopsy techniques" to further reduce the invasiveness of surgery. Several new technologies including terahertz imaging, laser-based destruction of bacteria, and artificial muscles for prosthetic applications are under investigation.



Recent Papers

1. Xingde Li; Grundfest, W.S., "Endomicroscopy Technologies and Biomedical Applications", Journal of Biomedical Optics, DOI: 10.1117/1.JBO.17.2.021101 Published: Feb. 2012
2. Pei-Chi Jiang; Grundfest, W.S.; Stafsudd, O.M., "Quasi-real-time fluorescence imaging with lifetime dependent contrast", Journal of Biomedical Optics, DOI: 10.1117/1.3609229 Published: Aug. 2011
3. Jiang P.C., Grundfest W.S., Stafsudd O.M., "Quasi-real-time fluorescence imaging with lifetime dependent contrast," J Biomed Opt. 2011 Aug;16(8): 086001.
4. Bennett D.B., Taylor Z.D., Tewari P., Singh R.S., Culjat M.O., Grundfest W.S., Sassoon

- D.J., Johnson R.D., Hubschman J.P., Brown E.R., "Terahertz sensing in corneal tissues," J Biomed Opt. 2011 May;16(5):057003.
5. Wottawa C., Fan R., Bisley J.W., Dutson E.P., Culjat M.O., Grundfest W.S., "Applications of tactile feedback in medicine," Stud Health Technol Inform. 2011;163:703-9.
 6. Tewari P., Taylor Z.D., Bennett D., Singh R.S., Culjat M.O., Kealey C.P., Hubschman J.P., White S., Cochran A., Brown E.R., Grundfest W.S., "Terahertz imaging of biological tissues," Stud Health Technol Inform. 2011;163:653-7.
 7. Navarro A., Taylor Z.D., Beenhouwer D., Haake D.A., Gupta V., Grundfest W.S., "Laser induced shockwaves on flexible polymers for treatment of bacterial biofilms," Stud Health Technol Inofmr. 2011;163:394-6.
 8. Taylor Z.D., Navarro A., Kealey C.P., Beenhouwer D., Haake D.A., Grundfest W.S., Gupta V., "Bacterial biofilm disruption using laser generated shockwaves," Conf Proc IEEE Eng Med Biol Soc. 2010;2010:1028-32.
 9. Culjat M.O., Son J., Fan R.E., Wottawa C., Bisley J.W., Grundfest W.S., Dutson E.P., "Remote tactile sensing glove-based system," CONf Proc IEEE Eng Med Biol Soc. 2010;2010:1550-4.
 10. Singh R.S., Tewari P., Bourges J.L., Hubschman J.P., Bennett D.B., Taylor Z.D., Lee H., Brown E.R., Grundfest W.S., Culjat M.O., "Terahertz sensing of corneal hydration," Conf Proc IEEE Eng Med Biol Soc. 2010;2010:3021-4.
 11. Suen J.Y., Tewari P., Taylor Z.D., Grundfest W.S., Lee H., Brown E.R., Culjat M.O., Singh R.S., "Towards medical terahertz sensing of skin hydration," Stud Health Technol Inform. 2009;142:362-8.
 12. Grundfest W.S., Culjat M.O., King C.H., Franco M.L., Wottawa C., Lewis C.E., Bisley J.W., Dutson E.P., "Development and Testing of a tactile feedback system for robotic surgery," Stud Health Technol Inform. 2009;142:103-8.

Courses

- Bioenegr CM102 / CM202: Basic Human Biology for Bioengineers I (Fall Quarter)
- Bioenegr CM103 / CM203: Basic Human Biology for Bioengineers II (Winter Quarter)
- Bioenegr C170 / C270: Energy-Tissue Interactions (Fall Quarter)
- Bioenegr C171 / C271: Laser-Tissue Interaction II: Biologic Spectroscopy (Winter Quarter)
- Bioenegr C172 / C272: Design of Minimally Invasive Surgical Tools (Spring Quarter)