## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
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| NAME | POSITION TITLE |
|---|---|
| P. Jack Hoopes, DVM, PhD | Professor of Surgery and Radiation Oncology<br>Adjunct Professor and Senior Lecturer, Biomedical Engineering |
| eRA COMMONS USER NAME (credential, e.g., agency login)<br>P_Jack_Hoopes | |

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

| INSTITUTION AND LOCATION | DEGREE *(if applicable)* | MM/YY | FIELD OF STUDY |
|---|---|---|---|
| Oklahoma University, Norman, OK | | 1969-71 | Liberal Arts |
| Oklahoma State University, Stillwater, OK | D.V.M. | 1972-76 | Veterinary Medicine |
| NIH Graduate School, Bethesda, MD | | 1977-78 | Pathology |
| Colorado State University, Fort Collins, CO | Ph.D. | 1980-84 | Pathology/Rad Biology |
| Colorado State University, Fort Collins, | Fellowship | 1984-86 | Radiation Pathology |
| North Carolina State University, Raleigh, NC | Fellowship | 1986-1988 | Radiation Oncology / |
| Duke University Medical Center, Durham, NC | | | Cancer Therapeutics |

### A. Personal Statement

***Training and education:*** I am a veterinarian with specialty training in veterinary pathology and academic graduate training in radiation biology / radiation oncology and experimental cancer therapeutics. Post-doctoral training in experimental radiation and hyperthermia cancer therapeutics at the Duke University Medical Center / Radiation Oncology. Virtually all post-veterinary and graduate training was performed in an NIH-PPG/R01 funded, translational (animal model /spontaneous animal / human cancer treatment) setting. ***Expertise:*** Twenty five years of experience in the development and use animal models for many types of translational biology (primarily radiation, hyperthermia and cancer), imaging and therapy, including MRI, CT, ultrasound, PET, fluoroscopy and fluorescence imaging for large and small animal models. Continually funded by NIH and corporate ventures for more than 25 years. ***Administration:*** Director of the Dartmouth Center for Comparative Medicine and Research (Dartmouth Animal Care and Use Program / Surgical Research Laboratories) and Dartmouth Norris Cotton Cancer Center based Irradiation and Small Animal Irradiation Shared Resource. Co-investigator in the novel Advanced Surgical Center /intraoperative MRI-CT imaging/surgery facility (PI: Paulsen). ***Teaching and Research:*** Current laboratory research focus is: 1) "antibody and non-antibody directed iron oxide nanoparticle cancer treatment" (NCI-NIH Cancer Center for Nanotechnology Excellence award, project PI and research core co-PI) and 2) ongoing large animal surgical models including a major effort in ***kidney transplantation and ex vivo kidney perfusion models (Dartmouth Transplantation Research Program)*** primarily using porcine models. I am primarily a translational scientist; PI of five ongoing preclinical studies and PI or co-investigator on five funded NIH grants. The strengths of my laboratory /group lie in the collaborative development of biomedical and biomedical engineering innovations such as the magnetic nanoparticle cancer treatment, radiation induced cancer and normal tissue effect and the kidney transplant research and models. Current laboratory consists four PhD students (cancer biology, biomed engineering, MD/PhD students) and 4 undergrads. Mentored more than 20 grad students and 30 surgery residents (laboratory research years) in the past 25 years. Teach two courses: "Introduction to Biomedical Engineering" (undergraduate course, Thayer School of Engineering) and "Quantitative Pathology for Biomedical Engineers" (graduate course, biomedical engineers). ***I have worked with Dr Paulsen for almost two decades on all kinds of biomedical engineering projects in which small and large animal models have been used and look forward to participating in the Center for Surgical Innovation at Dartmouth***.

### B. Positions and Honors

**Positions and Employment**

1976 – 1977 Intern, Meriweather Veterinary Hospital, Miller, SD
1977 – 1979 Intern, Exotic Animal Med and Pathology, National Zoological Park, Washington, DC
1979 – 1982 Resident, Pathology, Colorado State Univ, College of Vet Med , Fort Collins, CO
1981 – 1984 Graduate Student, Pathology/Radiation Biology, Colo State Univ., Fort Collins, CO
1984 – 1985 Post-Doctoral Fellow, Pathology/Rad Oncology, Colo State Univ., Fort Collins, CO

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| 1985 – 1988 | Post Doctoral Fellow and Pathologist (NC Animal Cancer Treatment Program), School of Veterinary Med, NC State Univ., Raleigh, NC & Duke Univ. Med Ctr., Durham, NC |
| 1988 – 1996 | Assist Prof Medicine (Radiation Oncology), Dartmouth Medical School (DMS), Norris Cotton Cancer Center (NCCC), Dartmouth-Hitchcock Medical Center (DHMC), Hanover, NH |
| 1989 – 1990 | Acting Director Animal Research Facility, Dartmouth Medical School (DMS) |
| 1989 – 1996 | Adjunct Assist Prof Biomed Engineering, Thayer School of Engineering, Dartmouth College |
| 1992 – pres | Director, Irradiation Shared Resource, NCCC, DMS/DHMC |
| 1992 – 1997 | Director, Radiation Oncology/Bioengineering Research Program, NCCC, DMS/DHMC |
| 1996 – pres | Director, Surgery, Rad Onc and Bioeng Res Laboratories, NCCC, DMS, DHMC, Thayer School of Engineering |
| 1996 – 2008 | Assoc Prof Surgery and Radiation Oncology, DMS/NCCC;<br>Adjuct Assoc Prof Biomedical Engineering, Thayer Engineering School, DC |
| 2002 – 2010 | Chairman, Radiation Safety Committee, Dartmouth College |
| 2005 – pres | Vice Chairman, Dartmouth College Institutional Animal Care and Use Committee (IACUC) |
| 2005 – pres | Co-Director, NCCC Cancer Nanotechnology Working Group |
| 2008 – pres | Professor of Surgery and Radiation Oncology (tenure), DMS/NCCC<br>Adjunct Prof Biomedical Engineering, Thayer Engineering School, DC |
| 2009 – pres | Director, Center for Comparative Medicine and Research / Animal Care and Use Program, Dartmouth College |
| 2010 – pres | Director, Small Animal Imaging Shared Resource, Norris Cotton Cancer Center, GSM /DHMC |

**Honors, Invited Presentations, Review Committees** (partial list):

Member: NIH -NCI Program Project Grant Rev Teams (30 teams, 1991-present); Member: US Army Breast and Prostate Cancer Research Program 1998 – 2006, Member: Smithsonian Inst Scholarly Studies Grant Rev Program (1998-2002); Member: 4 NIH-NCI Study Sections (1998-2012); NCI Cancer Center Review: 15 teams (2002-12); Chairman's Award, Department of Surgery, DHMC (2001); Member: WHO Panel on Adverse Temperature Levels in the Human Body, Geneva, Switzerland (2002); Faculty / Speaker: 2004 J&J International Energy Based Therapy Conf, Princeton, NJ (2004); Member: NIH-NCI L30 Review Panel (2004-06); Invited Faculty/Speaker: IEEE/COST 281 Thermal Physiology Wshp at INERIS, Paris, France (2004); Member NIH/NCI Panel: Cancer Nanotech Platforms (2005); NIH Rev Panel: Centers for Medical Counter Measures Against Radiation Exposure (2005); Member NIH Rev Panel: Sm Animal Imaging Program; Member NIH Rev Panel: K99/00 Grants (2006); Member NCIC (Canada) Radiation Biology Rev Panel: (2007-09), Chairman, NIH Nanotechnology SBIR Review Panel (2008-11); Invited speaker 2008 NCI-NIST Sym on Nanotech for Cancer Prevention, Diagnosis and Treatment, JHUMC/Radiation Oncology – Nanotechnology cancer treatment:, Invited Speaker (2008): Univ of Conn /Molecular Medicine: Invited Speaker (2009): NCCC 29th Annual Prouty: Nanotechnology and the Future of Cancer Therapy (2009). Invited Speaker (2010): Workshop on Adverse Temperature Levels in the Human Body, Gaithersburg, MD; Invited Speaker (2010): Dartmouth Community Medical School, Hanover, NH; Invited Speaker (2010): Univ MN Nanotechnology Conf. Invited speaker (2011) Gordon Conf on Cancer Nanotechnology, Colby College, 2012 NCI Centers for Cancer Nanotechnology Excellence Annual Meeting. Invited Speaker (2012): 1stASME NanoEngineering for Medicine and Biology (NEMB) Workshop "Challenges for Engineers in Biomed & Clin Sciences, NCI Centers for Cancer Nanotechnology Excellence Annual Meeting, 10th Univ Vermont Breast Cancer Symposium, 40th Anniversary NCCC. 2012: Elected Editorial Board: Nanomedicine: Nanotechnology, Biology and Medicine. Elected Councilor for Medicine: Society for Thermal Medicine. 2013: Track Chair: ASME 2nd Global Congress on Nanoengineering, Boston, MA

**C. Selected Publications** (peer reviewed only, from 200+)

**Most relevant to the current application**


1. **Hoopes PJ**, Gillette EL, Benjamin SA. Pathogenesis of radiation nephropathy. Rad Res 104:406-419, 1985.
2. Gillette EL, McChesney SL, **Hoopes PJ**. Isoeffect curves for radiation-induced cardiomyopathy in the dog. Intl J Rad Oncol Biol Phys 11:2091-2097, 1985.
3. **Hoopes PJ**, Gillette EL, Benjamin SA. Radiation nephropathy in the dog. Br J Cancer 53:273-276, 1986.
4. Gillette EL and **Hoopes PJ**. Response of canine oesophagus to dose per fraction. Br J Cancer 53:273-276, 1986.

5. **Hoopes PJ**, Gillette EL, Withrow SJ. Intraoperative irradiation of the canine abdominal aorta and vena cava. Intl J Rad Oncol Biol Phys 13 (5):715-722, 1987.
6. **Hoopes PJ**, Bischoff JC, Pearce JC, Giustini AJ, Petryk AA et al In vivo imaging and quantification of iron oxide nanoparticle uptake and biodistribution. 2012 SPIE vol 8317-26
7. Samkoe KS, **Hoopes PJ**, Hasan T, Pogue BW et al. High vascular delivery of EGF, but low receptor binding rate is observed in AsPC-1 tumors as compared to normal pancreas. Mol Imaging Biol. 2012 Aug;14(4):472-9. PMID: 21847690
8. Giustini AJ Petryk AA, **Hoopes PJ**, Ionizing radiation increased systemic nanoparticle accumulation. Nanomedicine. 2012 Aug;8(6):818-21 PMID: 22633900
9. Toraya-Brown S, Sheen MR, Baird JR, Barry S, Demidenko E, Turk MJ, **Hoopes PJ**, Conejo-Garcia JR, Fiering S. Phagocytes mediate targeting of iron oxide nanoparticles to tumors for cancer therapy. Integr Biol (Camb). 2012 Aug 30 PMID: 22935885
10. Giustini AJ, Perreard I, Rauwerdink AM, **Hoopes PJ**, Weaver JB Noninvasive assessment of magnetic nanoparticle-cancer cell interactions. Integr Biol (Camb). 2012 Oct;4(10):1283-8. PMID: 22945022

**Additional recent publications of importance to the field**

1. Cubillos-Ruiz JR, **Hoopes PJ**, Fiering S, Conejo-Garciaa JR. Inflammatory and immune responses induced by nanomaterials: challenges and opportunities for future nanotherapies. Nanotechnology Perceptions 5 (2009) 195–20
2. Skourou C, **Hoopes PJ**, Gladstone DJ, Paulsen KD, Tissue permittivity: a monitor for progressive tissue fibrosis as observed in bystander tissues following experimental high dose rate irradiation. Cancer Biology & Therapy, Dec;8(23):2223-9 (2009)
3. Gibbs S, O'Hara JA, Srinivasan S, **Hoopes PJ**, Hasan T, Pogue BW. Diagnostic detection of diffuse glioma tumors *in vivo* with molecular fluorescent probe-based transmission spectroscopy. Med. Phys. Volume 36, Issue 3, pp. 974-983 (2009)
4. Davis SC, Samkoe KS, O'Hara JA, Gibbs-Strauss SL, Payne HL, **Hoopes PJ**, Paulsen KD, Pogue BW. MRI-coupled fluorescence tomography quantifies EGFR activity in brain tumors. Academic Radiology, Volume 17, Issue 3, page 271-276 (2010)
5. Eck SM, **Hoopes PJ**, Petrella BL, Brinckerhoff CE Matrix metalloproteinase-1 promotes breast cancer angiogenesis and osteolysis in a novel in vivo model Breast Cancer Research and Treatment volume 116, issue 1,pp. 79 - 90 (2010)
6. Samkoe KS, **Hoopes PJ**, Hasan T, and Pogue B W et al, Imaging tumor variation in response to photodynamic therapy in pancreas cancer xenograft models, Inter J of Radiation Onc, Bio, Phy, Vol 76:1, Pages 251-259 (2010)
7. Gibbs-Strauss SL, Samkoe KS, **Hoopes, PJ**, Hasan, T, Pogue BW et al, Detecting Epidermal Growth Factor Receptor Tumor Activity In Vivo During Cetuximab Therapy of Murine Gliomas, Academic Radiology, Volume 17, Issue 1, Pages 7-17 (2010)
8. Giustini AJ, Petryk AA, Cassim SM, Tate JA, Baker I, **Hoopes PJ**, Magnetic Nanoparticle Hyperthermia in Cancer Treatment. Nano LIFE (2010). Vol 1 (1-2) 17-32.
9. **Hoopes PJ**, Bischoff JC, Pearce JC, Giustini AJ, Petryk AA, Ryan T et al. Nanoparticle based cancer treatment: can delivered dose be and biological dose be reliably modeled and quantified. SPIE vol 7901-09 (2011)
10. Giustini AJ, Ivkov R, **Hoopes PJ**. Magnetic nanoparticle biodistribution following intratumoral administration. Nanotechnology 22(2011)
11. Samkoe K, Gibbs-Strauss KS, Hekmatyar S, **Hoopes PJ**, Kauppinen R, O'Hara J, Pogue B, and Yang H. "Protoporphyrin IX fluorescence contrast in invasive glioblastomas is linearly correlated with Gd enhanced magnetic resonance image contrast but has higher diagnostic accuracy," J. Biomed. Opt. 16, 096008 (2011); doi:10.1117/1.3622

**D. Research Support**

**Ongoing Research**

| Year(s) | Funding Source | PI/Co-PI/Co-I | Grant Title |
|---|---|---|---|
| 1992 - 2015 | NIH/NCI CCSG (Director: Israel) | Resource Director | Norris Cotton Cancer Center Core Grant (Irradiation and Small Animal Imaging Shared Resource) |
| 2008 - 2013 | Euclid Corp | PI | Noninvasive biochemical-based Cornea Reshaping |
| 2008-2013 | Intelligent Medical | PI | Preclinical Assessment of a Retinal Implant Device |

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|---|---|---|---|
| | Implants, Inc. | | |
| 2009-2013 | P01CA84203 (PI:Hasan) | Co-I | Molecular Response and Imaging-based Combination Strategies for Optimal PDT (project 4) Core C |
| 2009- 2013 | BG –Aspide Medical | PI | In vitro and in vivo assessment of novel non-woven surgical mess material (Surgimesh) |
| 2010-2013 | 1R21EB011568-01 (PI: Halter) | Co-I | Electrical Impedance-based Imaging of Brain Compliance in an Animal Model |
| 2010-2015 | Center for Cancer Nanotechnology Excellence U54CA151662 | Project 3: PI Core B: Co-PI | Multi-project institutional nanotechnology grant focused on the use of antibody and nonantibody targeted magnetic nanoparticles and AMF treatment of breast and ovarian cancer |
| 2010-2015 | NIH C06 RFA-RR-09-008 PI: Colachio | Co-I | Advanced surgical training center (ASC) at Dartmouth Hitchcock Medical Center. |
| 2011-2013 | KSP Corp | PI | Evaluation of healing, inflammation and strength of a novel closure device. |
| 2012-2014 | Trilogy Society (Chen-PI) | Co-I | Tissue Oxygenation and Optimizing Intervention in Wound Healing |
| 2012-2014 | Somahlution | PI | Kidney transplant surgery and preservation study |