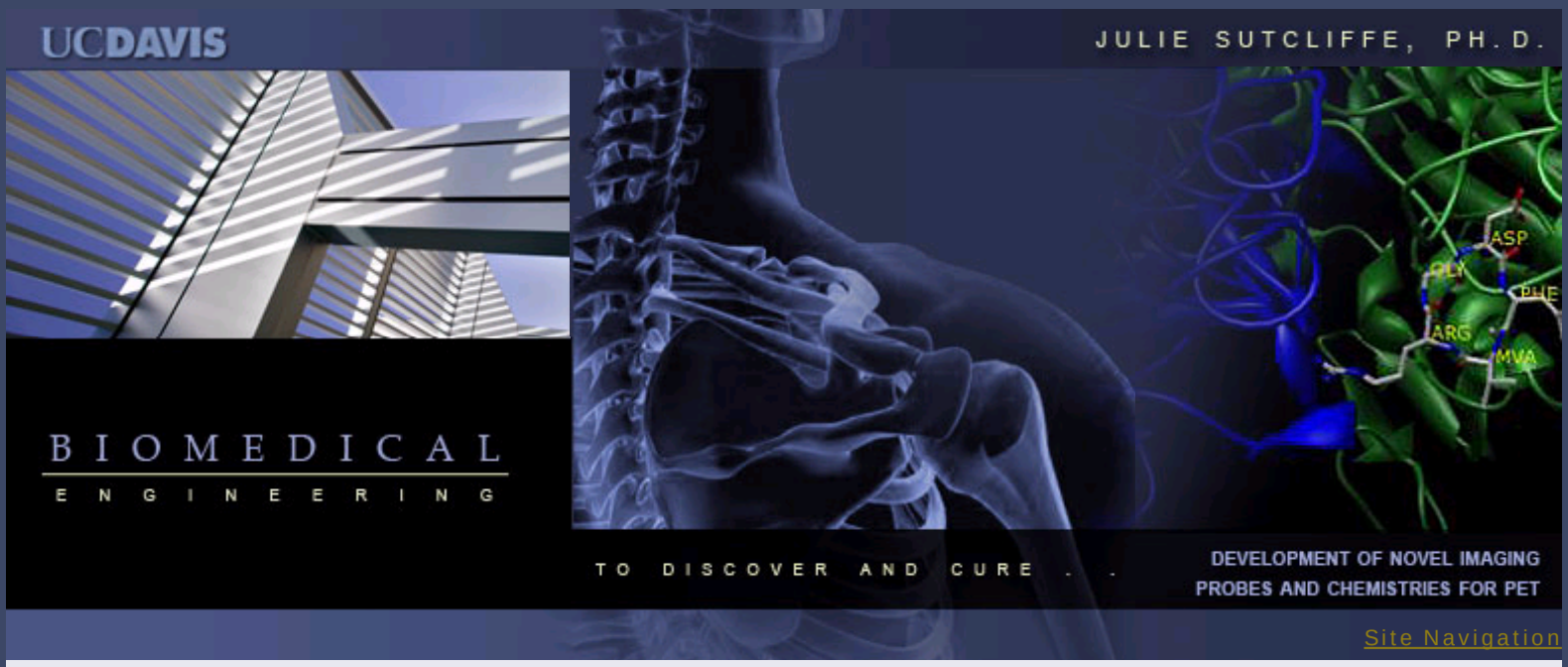

Site Navigation

JULIE L. SUTCLIFFE, PH.D.

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PERSONAL EDUCATION

Ph.D. in Medicinal Chemistry, 2002, King's College, London

AFFILIATION

Biomedical Engineering Graduate Group

RESEARCH INTEREST

Development of Targeted Molecular Imaging Agents

Dr. Sutcliffe's research involves the design, synthesis and *in vivo* evaluation of targeted molecular imaging agents with a focus on PET. Her group has developed rapid radiolabeling technologies using both solid-phase and solution-phase chemistries to incorporate the short half-life PET radionuclide 18F into peptides. Peptide based radiopharmaceuticals are gaining extensive attention as targeted molecular imaging agents. It is therefore important that technologies are developed that allow these agents to be synthesized rapidly and screened both *in vitro* and *in vivo* to assess their efficacy. Her group applies radiolabeled peptides to target cell surface receptors *in vivo* using small animal imaging. Major cell surface receptors of interest include the

integrin receptors alpha(v)beta(3) and alpha(v)beta(6). Integrins are cell surface glycoproteins involved in cell-cell and cell- extracellular matrix interactions. Their over expression has been associated with many diseases including cancer. In particular alpha(v)beta(6) is expressed at low or undetectable levels on normal tissue and is upregulated on many cancers including oral squamous cell carcinoma, breast cancer, pancreatic cancer and has recently been identified as a marker of prognosis in colon and lung cancer. *In vivo* imaging of this receptor could therefore have a significant impact on patient diagnosis, care and management. Dr Sutcliffe's group uses two approaches to develop targeted molecular imaging agents to image cell surface receptors A "rational approach" based on known binding structures and a " random approach" using the one-bead-one-compound molecular library methodology. Peptides are synthesized using standard Fmoc chemistries, screened *in vitro* for affinity and selectivity and subsequently radiolabeled and screened *in vivo* using small animal imaging.

RESEARCH FACILITY

Sutcliffe Lab Website

SELECTED PUBLICATIONS

2008. SH Hausner, J Marik, MKJ Gagnon, JL Sutcliffe. In vivo positron emission tomography (PET) imaging with an alpha(v)beta(6) specific peptide radiolabeled using 18F-"click" chemistry: evaluation and comparison with the corresponding 4-[18F] fluorobenzoyl- and 2-[18F]fluoropropionyl-peptides. *Journal of Medicinal Chemistry*, 51 (19), 5901-4. link

2008. CM Parsons, JL Sutcliffe, RJ Bold. Preoperative evaluation of pancreatic adenocarcinoma. *Journal of Hepato-Biliary Pancreatic Surgery*, 15, 429-35. link

2007. SH Hausner, D DiCara, J Marik, JF Marshall, JL Sutcliffe. Use of a peptide derived from foot-and-mouth-disease-virus (FMDV) for the non-invasive imaging of human cancer: Generation and evaluation of [18F]FBA-A20FMDV2 for *in vivo* imaging of integrin alpha(v)beta(6) expression with Positron Emission Tomography. *Cancer Research*, 67(16), 7833-40. link

2007. D DiCara, C Rapisarda, JL Sutcliffe, SM Violette, PH Weinreb, IR Hart, MJ Howard, JF Marshall. Structure-function analysis of Arg-Gly-Asp helix motifs in alpha(v)beta(6) integrin ligands. *Journal of Biological Chemistry*, 282(13), 9657-65. link

2007. J Marik, JL Sutcliffe. Fully automated preparation of n.c.a. 4-[18F]fluorobenzoic acid and *N*-succinimidyl 4-[18F]fluorobenzoate using Siemens CTI/CPCU chemistry module. *Applied Radiation and Isotopes*, 65, 199-203. link

2006. J Marik, J L Sutcliffe. Click for PET: Rapid preparation of [18F]fluoropeptides using Cu(I) catalyzed 1,3-dipolar cycloaddition. *Tetrahedron Letters*, 47, 6681-4.

2006. J Marik, SH Hausner, LA Fix, MK Gagnon, JL Sutcliffe. Solid phase synthesis of 2-[18F]fluoropropionyl peptides. *Bioconjugate Chemistry*, 17, 1017-21. link

MAJOR RESEARCH INTERESTS

Development of novel imaging probes and chemistries for PET.