

IN VIVO IMAGING RESEARCH CLUSTER – S.J. Black, Veterinary and Animal Sciences on behalf of the Life Sciences Community

Faculty Positions and Mandate: *Three (3) tenure system faculty hires are requested, at least one at the Associate Professor level.* The research focus of the imaging cluster will be to develop and use *in vivo* deep tissue imaging technologies to answer fundamental questions in i) immunology (including cancer immunology), ii) organ morphogenesis and regeneration and iii) *in vivo* processing of biomaterials. This cluster will enhance existing bases of excellence in Immunology, Developmental Biology, Tissue/Organ Engineering and Biomaterials research on campus and synergize with research initiatives in Electrical and Computer Engineering. The proposed *in vivo* imaging facility would serve a large campus community

Space and Contributions of Colleges and Departments: It is anticipated that the new faculty members would be housed in adjacent laboratories in renovated space in Paige Laboratory, or Goessmann Hall, or Lederle Grad Research Tower, or in the NSB, that these labs would have a common *in vivo* imaging facility holding multiple imaging modalities and a neighboring/adjacent short-term animal holding space. The Chairs of the Departments of Biology, Biochemistry and Molecular Biology, Chemical Engineering, Chemistry, Electrical and Computer Engineering and Veterinary and Animal Sciences as well as Directors of ICE and PVLSI have expressed support for the cluster hires as indicated in the attached letters, and there is wide support for the cluster across the Life Sciences Community as indicated in the list of affiliated faculty below. Specific Department homes will be identified through discussion with the Deans if the cluster hire is approved by the Chancellor. We in VAS would be enthusiastic to have one of the proposed faculty hires attached to this Department.

Justification: The capture of real time data within tissues by non-invasive, sensitive, high resolution, deep imaging technologies including MRI, coupled with selective expression of tracking indicators, i.e., isotopes, dyes, fluorochromes and light emitting systems in specific cell populations, drug delivery systems and implanted biomaterials will be a powerful addition to the research capability of the campus.

Funding Opportunities: Numerous, primarily from NSF, NIH, and DOE

Department Heads/Institute Directors who support the cluster hires: S. Black (Veterinary and Animal Sciences), K. Hollot (Electrical and Computer Engineering), R. Karlstrom (incoming chair, Biology), T.J. Mountziaris (Chemical Engineering), D. Schnell (Biochemistry and Molecular Biology), S. Roberts (Institute of Cellular Engineering), L. Schwartz (PVLSI), B. Jackson., C. Martin (Chemistry)

Deans who have expressed support: Steve Goodwin, Mike Malone

Faculty who have expressed interest in being associated with the *in vivo* imaging cluster:

Biochemistry and Molecular Biology – Gierasch, Heuck

Biology – Bittman, Dumont, Karlstrom, Lee, Hepler, Schwartz, Wadsworth

Chemistry – Hardy, Martin, Rotello, Thayumanavan,

Chemical Engineering - Bhatia, Forbes, Mountziaris, Roberts, Sun

Electrical and Computer Engineering – Salthouse

Physics - Ross

Polymer Science and Engineering – Santore, Tew

Veterinary and Animal Sciences – Alfandari, Anguita, Baldwin, Black, Fissore, Mager, Minter, Osborne, Tremblay, Visconti

Proposed Teaching Responsibilities: Upper level laboratory skills courses serving the life sciences community

Assessment Plan: Success of the cluster will reflect success of each member as well as success of collaborations and new teaching/research initiatives arising from the cluster. Performance parameters to be tracked are: i) Funding Success, PI and CoI, ii) Publications including impact, iii) Teaching Excellence, iv) Professional Service, v) Tenure/Promotion success. These data are available annually in faculty reports.