Strategic Plan for Research (2011-2016)

**Goal**: To develop a number of highly innovative research programs, spanning from the bench to the bedside and to the population, which will generate new knowledge, benefit patient care, complement clinical training of residents and fellows, and help launch the careers of new faculty. The Department of Anesthesiology will be considered one of the top academic programs in the USA.

**Major Strengths:**

* Outstanding faculty consisting of basic and clinician scientists committed to working in groups; senior faculty with international reputations in their areas of research; junior faculty with exceptional potential in developing into productive investigators
* Significant resources dedicated to the research enterprise: annual support from the School of Medicine; three endowed chairs; four endowed professorships; substantial extramural support
* Administrative and grant management support team paid by departmental funds
* State of the art equipment and facilities
* Unique sources of patients for translational, clinical and outcome studies: operating theatres, pre-operative evaluation clinic, surgical and neurological intensive care units, and pain management clinics
* Highly supportive chair with distinguished record as a clinician scientist willing to contribute effort and resources into the research mission

**Major areas of research**:

* Basic mechanisms by which reactive species and nitric oxide contribute to the pathophysiology of pulmonary and systemic diseases (such as cancer and liver diseases)
* Involvement of inflammatory mediators and coagulation to the pathophysiology of acute lung injury and adult respiratory distress syndrome
* Basic mechanisms of coagulation abnormalities after severe trauma-hemorrhage
* Basic and translational studies on antioxidant supplementation in the prevention and mitigation of lung injury
* Basic mechanisms of acute lung injury induced by pathogenic bacteria
* Bladder hyperalgesia and mitigation of interstitial cystitis
* Mechanisms and sequalae of viral injury to key components of the alveolar epithelia
* Regulation of endothelial permeability by inflammatory mediators
* Developing objective criteria to assess pain
* Role of anesthetics on airway reactivity and smooth muscle function
* Assessment of sensory perception by functional magnetic resonance imaging
* Predictors of health related quality of life in pediatric pain
* Hormonal modulation of sensation and physiological outcomes

**Research Goals during the next five years:**

1. Encourage and expand participation of Anesthesiology residents in active research projects by expanding the Resident Academic Career Development Program and establishing the Resident Mentored Research Experience Track (RMRET)(**see Appendix I**)
2. Encourage and expand participation of fellows in clinical fellowship programs (i.e. Cardiothoracic Anesthesia, Critical Care and Perioperative Medicine and Pain Medicine) in research endeavors by expanding their fellowships to include a year of dedicated research time
3. Develop multi-disciplinary translational research programs (PPGs, SCOR, T32s, U54 and Center grants) under the leadership of Anesthesiology faculty. Specific goals as follows:
4. Training grants for physician-scientists
5. Multi-investigator grants on: (i) mechanisms and treatment of acute lung injury and repair; (ii) trauma related diseases; (iii) pain
6. Establish School of Medicine Centers in:
7. Pain Research, under the leadership of Drs. Ness and Robbins
8. Trauma Pathophysiology, under the leadership of Dr. Pittet
9. Convert the existing School of Medicine Center on Pulmonary Injury and Repair ([www.lunginjury.uab.edu](http://www.lunginjury.uab.edu)) to a University Center, under the leadership of Dr. Matalon
10. Recruit three Assistant Professors, tenure earning track, in active areas of research
11. Establish a program to enable non-tenure track Assistant Professors to compete for independent extramural support
12. Increase interactions among basic and clinical faculty with the goal of expanding translational research
13. Establish effective mentoring programs for junior faculty so they can develop into independent and productive investigators

**Administrative Goals during the next five years**

1. Develop a financial structure to encourage participation of clinical faculty in research
2. Increase research revenue by:
3. Encourage and enable faculty to apply for extramural support
4. Work closely with UAB administration to identify funds from philanthropy
5. Expand collaborations with industrial partners
6. Establishment of UAB Centers
7. Establish criteria and guidelines for the reporting of research faculty, directors of research as well as of the chairpersons of various research committees
8. Evaluate the contributions of the Human Subjects Research Committee on the development of clinical and translations research programs and make specific recommendations to improve its effectiveness
9. Update and maintain a Research webpage (under a subheading of the Department of Anesthesiology) to enable medical students, prospective residents and fellows, postdoctoral fellows, as well as potential donors, to become familiar with current research activities and their potential impact on health care
10. Train a research support person to facilitate and coordinate the submission of applications to IACUC and other UAB regulatory services

**Appendix I**

**Enhancing the Involvement of Anesthesiology Resident in Research**

The Department of Anesthesiology, under the leadership of Dr. Keith A. (Tony) Jones, aims to enhance the training of Anesthesiology residents by providing opportunities for them to become involved in research projects. For this reason, Dr. Jones has established the highly successful **Resident Academic Career Development Program (RACD)** to attract outstanding resident applicants interested in a career combining the practice of Anesthesiology with original research. **This program, best suited for residents with advanced degrees, should be continued and expanded**. In addition, we propose that a new **Resident Mentored Research Experience Track (RMRET)** be established for residents with limited research experience. Finally, we encourage the development of **Research Fellowships in Anesthesiology** to allow clinical fellows in the various divisions to identify a mentor and spend a year conducting basic, translational or clinical research. Each program is described below:

**I. The RACD Program**

The purpose of the Resident Academic Career Development Program is to attract outstanding resident applicants, with significant research experience (as evidenced by advanced degrees and peer reviewed publications) interested in a career combining the practice of Anesthesiology with original research in one of the listed areas of strength in the department (see Appendix II for a more thorough description of the program). This program has helped us recruit outstanding physician scientists who ordinarily would have chosen other institutions for their training. The following modifications to the RACD are suggested:

1. Increase the number of positions from one to two residents per year
2. Expand its academic activities to include:

**A series of lectures during the CA1 year which address**:

1. The RACD Program Opportunities

2. Basics of Scientific Design

Hypothesis generation

Specific Aims generation

Significance-Innovation-Approach-Environment Issues

3. Basics of Scientific Design related to Clinical Research Studies

Types of clinical studies

Ethical issues

Basics of informed consent, patient rights, etc.

4. Overview of departmental basic science research activities

5. Overview of departmental clinical research activities

6. Regulatory issues: Institutional Review Board for Human Studies Training; Animal Care; Dangerous agents etc.

7. Biostatistics, power analysis

8. How to search medical/scientific literature

9. Evidence based medicine

1. In addition to the six-month rotation during the CA-3 year, the RACD scholars will spend **three one-week research rotations** during the CA1 or CA2 years to become familiar with ongoing basic, translational and clinical projects within our department.

**II. The Resident Mentored Research Experience Track (RMRET)**

The purpose of the RMRET program would be to enhance involvement of up to six residents per class in ongoing basic, translational, clinical and outcome research projects during their residency directed by a faculty member of the department (“Mentor”). Residents interested in this program should have previous research experience, but residents without prior research experience will be considered. Publications are desirable but not required. Participation in the RMRET program would entail the following:

1. Attending the RACD lectures.

2. Work closely with the mentor to generate and perform a research project

Participants would be allowed freedom from daily clinical responsibilities for usually three but up to six months of their CA3 year in order to perform their research project. Time free from clinical duties would be determined based on the needs of the project. This time could also be spread out into separate smaller time periods. Participants will be expected to present the results of their research project during the CA3 year and write a brief report with a rationale, introduction to the topic and result summary. If they have collected sufficient data for an abstract, they will be encouraged to submit it for presentation to a regional or national meeting and if accepted, time and travel funds will be allocated to attend the meeting and present their work.

**Administrative oversight of the RACD/RMRET Programs**

The administrative structure of the RACD/RMRET programs should consist of the following:

1. Primary day-to-day oversight by two Co-Directors: one responsible for the direction, development and oversight of basic science projects and one performing similar duties for clinical research projects. The co-directors will ensure that each applicant become familiar with all active research projects by members of the Department of Anesthesiology and their close collaborators. They will be responsible for selecting the Scholarly Oversight Committee and identify lectures for the didactic program.

2. Overall program oversight and direction will be by the Scholarship Oversight Committee (SOC) which will meet twice per year. The SOC itself will consist of five faculty members (the two Co-Directors who will jointly chair it and three other faculty members representing the different research divisions). The Vice Chairs for Research and Education will participate in an ad hoc capacity. Formal duties of the SOC will include the following:

I. Selection of residents for these two programs

II. Approval of the mentors and projects

III. Periodic evaluation of the resident’s research efforts

IV. Evaluation of the effectiveness of the mentor

V. Initiate any changes to the programs

**III. Research fellowships in Anesthesiology**

It will be very desirable to offer the opportunity to clinical fellows to devote a year pursuing a research project under the mentorship of an Anesthesiology faculty member, once they have completed their clinical fellowships. Fellows should have previous research experience and identify a mentor who will be willing to cover (at least in part) their salary and research expenses. A research fellowship is the best springboard for a career in academic medicine.

**Appendix II**

**ANESTHESIOLOGY RESIDENT ACADEMIC CAREER DEVELOPMENT PROGRAM**

## UNIVERSITY OF ALABAMA AT BIRMINGHAM

The Department of Anesthesiology at the University of Alabama at Birmingham (UAB) encourages residents to consider and pursue a career in academic medicine. The goal of the UAB Anesthesiology Resident Academic Career Development Program is to attract excellent candidates into our residency program to become academic anesthesiologists and productive physician-scientists. The Scholarship will also help support these residents during the formative years of their training. The successful applicant will have had previous significant research experience to have made the determination that they are highly interested in a career in academics. The ideal candidate might have previous post-graduate training and experience in research, peer-reviewed publication(s) one of which the candidate is first or second author, or a Ph.D. degree.

As many as two incoming residents per year shall be appointed to the three-year Anesthesiology Resident Academic Career Development Program. The Research Scholarship will begin at the start of the recipient’s clinical anesthesiology training at UAB (PGY2). Each Scholar will receive $10,000 per year salary supplement for three consecutive years, contingent upon satisfactory progress toward the program goals during each academic year as determined by the Resident Academic Career Development Committee. The Scholarship payments will be independent of the PGY salary.

Pending satisfactory clinical and academic progress, as well as successful fulfillment of licensure, credentialing, and regulatory requirements, it is anticipated (but not guaranteed) that the Department Chair will recommend appointment of the Research Scholar to the UAB Anesthesiology faculty following the completion of residency training. The Scholar will then be expected to serve as a faculty member in the department of anesthesiology for at least two years and perform research in the basic or clinical sciences as well as appropriate clinical and educational duties.

Applications for this program will be accepted following release of the NRMP results. Candidates who wish to apply for an Academic Career Development Award should send the following directly to the Office of the Department Chair.

* Description of research background and experience
* Description of research they plan to pursue and why they have identified this area of research
* Description of career goals and objectives
* Two letters of reference that specifically address the applicant’s potential for success in research

**These materials must be submitted by December 31 of PGY 1.**

It should be emphasized that the eligibility for a UAB Anesthesiology Resident Academic Career Development Program depends on the applicant first obtaining a position in the UAB Anesthesiology Residency Program. The Anesthesiology Resident Academic Career Development Program is not offered as an independent program outside of the UAB Anesthesiology Residency Training Program.

Application materials should be forwarded to:

Keith A. (Tony) Jones, M.D.

Alfred Habeeb Professor and Chair

Department of Anesthesiology

University of Alabama at Birmingham

619 South 19th Street

Birmingham, Alabama 35249-6810

The UAB Department of Anesthesiology is an Equal Opportunity/Affirmative Action Employer. Applications for these scholarships from minorities and women are encouraged.

Resident Academic Career Development Program Timeline

|  |  |
| --- | --- |
| Sept PGY 1 | Presentation to residents of research programs of potential mentors |
| Dec 31 PGY 1 | Application submitted |
| April 1 PGY 1 | Research Scholar selected by committee |
| Sept CA 1 | Meeting of Research Scholar with each Director of the Divisions of Critical Care and Preoperative Medicine and of Pain Treatment to identify research options and potential Mentors. |
| Dec 31 CA 1 | Mentor identified, with Mentor or Co-Mentor being a member of the Department of Anesthesiology. Letter of commitment from Mentor submitted to RACD Committee for approval including general focus and direction of planned research |
| Jan 1 CA 1 – Jan 1 CA 2 | Development of relationship between Research Scholar and Mentor/Mentor laboratory. Identification by Scholar and Mentor of specific objectives and goals. |
| Apr 1 CA 2 | Final Proposal to include Hypothesis (1p) Background/Significance (2-3 pp), Description of Experimental Model (1-2 pp), and Academic Career Development Program\* (2-3 p) submitted to RACD Committee for approval. |
| 1st 6 months CA 3 | Carry out research |
| January CA 3 | Formal presentation of progress to RACD Committee. |
| 2nd 6 months CA 3 | Write manuscript and/or grant application for external funding, abstracts, plan for presentations |
| April - June CA 3 | Presentation of research experience to the Department of Anesthesiology |

\* The Academic Career Development Program section recognizes the fact that a career in academics requires a broad and varied set of talents and skills, in addition to research competence. This section should address the broad objectives of the comparable section of an [NIH K01 award](http://grants1.nih.gov/grants/guide/pa-files/PA-06-001.html), involving utilization of relevant research and educational resources to achieve training in activities such as: scientific writing, presentation, and grantsmanship; meetings and seminars; teaching; and the Responsible Conduct of Research. An excellent resource is the [UAB Office of Postdoctoral Education](http://www.postdocs.uab.edu/) and the Scholar is encouraged to actively participate in this excellent program.