

# Australian and New Zealand College of Anaesthetists

Faculty of Pain Medicine



## Project Grant Simulation/Education Grant Application Guide

**2013**

### ADVICE AND INSTRUCTIONS TO APPLICANTS

To be used in conjunction with Project Grant/Simulation-Education Grant  
Application Form

**CLOSING DATE: 5 PM EDST 1 April 2012**

Research and Administration Coordinator  
Australian and New Zealand College of Anaesthetists  
630 St Kilda Road  
MELBOURNE VIC 3004

*Revised by the ANZCA Research Committee  
November 2011*

## IMPORTANT POINTS FOR COMPLETING ANZCA GRANT APPLICATIONS

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- Read the ANZCA Research Grant Policy before completing the application form (<http://www.anzca.edu.au/fellows/Research/anzca-research-information.html>)
- An ANZCA REGKEY must be obtained and included in the header of the application form. Double-click on the header to add your REGKEY. Contact Ms Susan Collins (email: [scollins@anzca.edu.au](mailto:scollins@anzca.edu.au)) to obtain your REGKEY.
- Do not include or copy the cover sheet. Start your application with the page headed "In Confidence".
- A font size no smaller than 10 point must be used. The minimum margin is 2 cm.
- You may add rows to tables where this is allowed in these guidelines (e.g. list of chief investigators, list of current research grants). Do not exceed prescribed word/page counts. Text that exceeds prescribed word counts will not be considered
- Ensure that each page is numbered consecutively in the application.
- A written quotation for equipment costing AUD10,000 or more, as requested in the budget section, must be attached to each copy of the application.
- The application must be submitted **electronically via email** to [scollins@anzca.edu.au](mailto:scollins@anzca.edu.au). Only files of 6MB or less will be accepted.
  - The electronic copy of the complete application including the signature page with scanned or electronic signatures (via email)
  - The electronic copy of the complete application excluding the signature page (via email), and a hard copy of the signature page (via post or fax)
- Electronic copies must be in PDF format (converted word files only, not scanned documents) or Microsoft word format. Note for older versions on Microsoft Word please install the official update from <http://www.microsoft.com/download/en/details.aspx?id=9943>. This update will allow Microsoft office 2007 save documents to .PDF format.
- **The complete** application must be received by the Research and Administration Coordinator by 5 PM EDST on the closing date for applications.
- Late applications WILL NOT BE ACCEPTED.
- Incomplete applications or those that do not follow these guidelines WILL NOT BE ACCEPTED.
- ANZCA cannot amend an application once it has been submitted.

## **A. CONDITIONS OF ANZCA GRANTS**

### **1 Payment**

Sums awarded will be paid upon request after **1 January** each year for the duration of the grant. All payments will be made in Australian Dollars, upon receipt of a fully correct tax invoice from the administering institution.

### **2 Conditions of professional research personnel**

The conditions for professional research personnel shall be those of the institution in which the work is carried out or as the College may determine in particular circumstances. This includes annual leave and sick leave. However, the College does not provide for long service leave.

### **3 Alterations in research program budget**

The CIA is expected to adhere to the approved research program or budget, and to notify any absences other than for short periods (e.g. three to four weeks). Full details of any proposed major alterations to either program or budget, or of any absences during the course of the grant, should be submitted in advance by the CIA to the Research and Administration Coordinator for approval by the Chair of the Research Committee (or his or her delegate).

### **4 Reporting requirements**

Eligibility to apply for future funding will be contingent on complying with the reporting requirements below. The CIA may request in writing a time-only extension of up to 12 months in the event of any unforeseen delays in the commencement or conduct of the research project.

#### **4.1 Progress report**

The CIA is required to forward a progress report on the approved form to the College, by **September 1** in each year of the award. This form can be found on the ANZCA website. If a progress report is not received by the due date, any funding for multi-year projects may be withheld and/or any future funding requested in subsequent years by the CIA may not be considered.

#### **4.2 Final report**

The CIA is required to forward a final report on the approved form to the College, by **September 1** in the year after the grant has concluded. This form can be found on the ANZCA Website. The final report must include a statement of expenditure charged to the grant. Any unexpended balance of the grant should be returned to the College and must not be used on other projects.

### **5 Publications and presentations**

The College requires that its contribution be acknowledged in all publications and presentations of the research project, for example *"This study was supported by a Grant from the Australian and New Zealand College of Anaesthetists"* and that a presentation relating to the project be made at a major College meeting. A hard copy or pdf of the reprint should be sent to the Research and Administration Coordinator. If the protocol is registered with a journal or other relevant organisation, the College must receive a copy of the registration certificate

### **6 Patents**

Any discovery arising out of work supported by the College must not be the subject of application for patent except with the written approval of the College and the agreement of the institution in which the work is carried out.

### **7 Major equipment**

Items of equipment, either single items or integrated assemblies, will remain the property of the College which may arrange removal or transfer of such equipment between laboratories at any time after completion of the original research projects or at such time as in the opinion of the College the equipment is no longer required for the purposes of the project.

### **8 Termination of grant**

A grant may be terminated if the conditions of the grant are not observed. A grant will terminate, unless other arrangements satisfactory to the College are made, if the CIA leaves the institution before the expiry of the grant. In such an eventuality, the recipient and the Head of the Department are expected to notify the College CEO. When a grant terminates any unexpended balance must be returned to the College.

## B. GENERAL INFORMATION FOR APPLICANTS

### 1 Introduction

Funding for medical research in Australia, New Zealand, Hong Kong, Malaysia and Singapore is necessary if medical science is to maintain a high international standing. The most important single national source of funding for medical research in Australia is provided by the Commonwealth Government through the Medical Research Endowment Fund, which is administered by the National Health and Medical Research Council (NHMRC). In New Zealand, funding is administered by the Health Research Council (HRC).

The NHMRC provides the opportunity for individuals or research teams to obtain support for research projects in all fields of public health, medicine and dentistry in Australia, through the Project Grant and Fellowship schemes. In New Zealand the HRC serves an equivalent role. The award of a project grant is ANZCA's main avenue for the support of projects in biomedical research in Universities, medical schools, hospitals and other research institutions. The purpose of such schemes is to provide support for work on problems which are capable of solution in a relatively short period of time. ANZCA aims to supplement, complement, and in some cases act as an alternative to NHMRC/HRC. Wherever possible and appropriate ANZCA encourages applicants to also apply to HRC or NHMRC, or to the appropriate body in their home country.

### 2 Grants

Project Grants and Simulation/Education Grants are awarded to support research proposed by Fellows of ANZCA, or FPM and their collaborators (trainees, scientists, students etc). The policy in relation to chief investigators is:

- The "chief investigator A" (i.e. the first-named investigator) must be a Fellow or registered trainee of ANZCA or FPM, be financial and in good standing with ANZCA.
- If "chief investigator A" is a registered trainee, one of the other chief investigators must be a Fellow of ANZCA or FPM or another suitable supervisor with qualifications acceptable to the Research Committee.
- For Project Grants, other chief investigators may include Fellows or registered trainees of ANZCA or FPM, other medical practitioners, health care professionals, scientists, research students, professional research personnel etc.

An individual may only be named as a chief investigator, associate investigator or professional research person on a **maximum of TWO applications** in any one year. This includes Project Grants, Novice Investigator Grants, the Simulation/Education Grant and the Academic Enhancement Grant. It does NOT include the Douglas Joseph and Lennard Travers Professorships. Fellows and registered trainees must be financial and in good standing with ANZCA or FPM.

Funding is available for research either wholly or partly conducted overseas by Fellows and registered trainees under the following conditions:

1. A Fellow must have a certified ongoing appointment in Australia, New Zealand, Hong Kong, Malaysia or Singapore.
2. A trainee must return to Australia, New Zealand, Hong Kong, Malaysia or Singapore to complete their training program or return to a guaranteed specialist appointment.
3. The researcher who is conducting research overseas must be a chief investigator.
4. The research proposed would normally be completed during the tenure of the grant.
5. The applicant must demonstrate in the application how the project will benefit research in Australia, New Zealand, Hong Kong, Malaysia and/or Singapore.

The investigation will have objectives of mutual interest to ANZCA, the recipient institution, and the investigator. Whilst the grants may specify financial support for individual professional research personnel, the institutions are responsible for administration of the grant.

Awards of grants will normally be announced in October of each year. No payment of the grant will be made until written communication accepting the offer and agreeing to the conditions, and a fully correct tax invoice, are received by the College, and all necessary clearances have been obtained. Funding is made available after 1 January in the following year until 31 December unless an extension of time is successfully requested via the ANZCA Research Committee.

#### **4 Other funding agencies**

Liaison between ANZCA and other major funding bodies, both government and private, has been established to preclude duplication of support for identical proposals, as far as possible.

#### **5 Procedure for evaluation of grant applications**

The procedure for the evaluation of ANZCA grant applications is modelled on the NHMRC review process. Each application is assessed by three reviewers, who have been carefully chosen for their expertise in relation to the particular grant application.

To assess the scientific merit of the project and to determine the ability of the investigators to carry out the research, reviewers are requested to (i) rate the grant application and (ii) provide a written report. A spokesperson for each application is also appointed.

Applications are rated on a seven-point scale (ranging from “outstanding” through to “poor”) along a set of six research criteria (track record, scientific merit, originality, design/methods, feasibility and international competitiveness).

The written report addresses the scientific merit of the application (originality of hypothesis, substantiation of objective, soundness of research plan and methodology, and feasibility of the project), the track record of the applicant and the budget, and raises questions on areas of the research which require clarification, including problems and limitations likely to be encountered. The written report is forwarded to the applicant for comment. If the applicant responses are not received by the due date, they will not be considered in the ranking of the application.

The Research Committee then considers all the materials, as presented by the spokesperson. Each member allocates a score out of 7 to the grant, these scores are averaged and the final ranking of each grant application is determined. The Research Committee determines a rating score as a cut-off point, below which funding is not available. Those applications that are close to the cut-off score are considered in more detail. An application identified to receive the grant is then exhaustively reviewed to determine the level of funding to be awarded.

The Research Committee recommends to Council the award of the project grant and the applicant(s) are notified of the outcome following the ANZCA October Council Meeting.

**Successful Grant Applicants will be expected to participate in reviewing ANZCA grant applications in future years as a condition of accepting the grant**

#### **7 Confidentiality**

Applications for grants are received by ANZCA on an ‘IN CONFIDENCE’ basis. This means that the application document will not be released other than in compliance with any waiver or consent given by the applicant.

## C. GRANT INFORMATION FOR APPLICANTS

### 1. PROJECT GRANTS

The maximum amount available for a project grant is **AUD\$60,000** per year, and nearly all grants are funded for one year only. **For administrative purposes, single year grants are treated as running over two years from the start of the year in which the grant is awarded.**

Project grants may be funded for more than one year under specific circumstances. In general, multi-year project grants will only be considered for the highest-ranking applications or those that support a Fellow or trainee enrolled in a higher degree (see below). **Funds for subsequent years will only be made available if a satisfactory report on the progress of the grant is provided by September 1 each year.** At its discretion, the Research Committee may elect to fund the first year of a grant only and require the applicants to submit a complete project grant application requesting funding for subsequent years.

#### **Scholarships**

Scholarship grants are made within the ANZCA project grant scheme. The Fellow or registered trainee seeking salary support must be: 1) the chief investigator or one of a group of chief investigators seeking support for a scientific investigation; 2) a Fellow or trainee of ANZCA or FPM; 3) enrolled in a higher degree (i.e. MD or PhD) and 4) normally working full-time on the research (0.8 FTE or more). Half-time research may be negotiated on a pro-rata basis upon application. The maximum amount available for a project grant that includes a scholarship grant is AUD\$80,000 per year, AUD\$40,000 of which supports the salary of the scholarship grant applicant.

Scholarship grants are usually funded for 3 years. **Funds for years two and three will only be made available if a satisfactory report on the progress of the grant is provided by September 1 each year.** At its discretion, the Research Committee may elect to fund the first year of a grant only and require the applicants to submit a complete project grant application requesting funding for subsequent years.

Chief investigators and associate investigators, who are Fellows or trainees of ANZCA or FPM, **MAY NOT** apply for salary support unless they fulfil the eligibility criteria for a Scholarship.

Associate investigators may include Fellows or registered trainees of ANZCA or FPM, other medical practitioners, health care professionals, scientists, research students, professional research personnel etc.

Professional research personnel may include nurses, scientists, research assistants and the like. Full-time students, Fellows and trainees may not be included as professional research personnel.

### 2. SIMULATION/EDUCATION GRANTS

The College recognises the need for high quality research in medical simulation and education in human factors as they relate to our specialties. In order to specifically encourage research in this area and because of the challenges in comparing clinical and laboratory research with research in education, the College established a specific simulation/education grant. Investigators conducting research in medical simulation and education in human factors may also apply for funding through the ANZCA Project Grant, Novice Investigator Grant, Academic Enhancement Grant and Scholarship schemes. However, only one application may be made for each specific research project except in relation to AEG grants which may cover the same project or may cover a research project that is a subject of another grant application (note that only one of these applications will be funded). The maximum amount for a simulation/education grant is **AUD\$60,000 per year** and grants are funded for one year only.

The funding can be for one or more projects at the discretion of the Research Committee. If there are more highly ranked simulation/education grants than can be funded within the available \$60,000, they will automatically be put in the pool to be competitive with the project grants and funding allocated if appropriate.

If the CIA is in doubt as to whether his/her research proposal qualifies for a simulation/education grant please contact the Research and Administration Coordinator.

## **Scholarships**

Scholarship grants are made within the ANZCA project grant scheme. Therefore, researchers in medical simulation and education seeking salary support, as well as general project support, should apply through the ANZCA Project Grant Scheme (see above).

## **D. INSTRUCTIONS TO APPLICANTS FOR COMPLETING FORM**

Indicate the type of application being applied for by ticking the appropriate box.

- Project Grant  
 Project Grant including Scholarship  
 Simulation/Education Grant

### **1 Scientific project title**

The scientific title will be used to identify the application at all times and should accurately describe the nature of the project. Use no more than 120 characters, including spaces. Additional characters will not be recorded.

### **2 (a) Chief investigators**

"Chief investigator A" (CIA) **MUST** be a Fellow or registered trainee of ANZCA or FPM. The CIA will be regarded as the contact person for the application and will, in all instances, be assumed to be acting on behalf of, and with the concurrence of, all chief investigators named in this section. An individual may only be named as a chief investigator, associate investigator or professional research person on a **maximum of TWO applications** in any one year. This includes Project Grants, the Simulation/Education Grant and the Academic Enhancement Grant. It does NOT include the Douglas Joseph and Lennard Travers Professorships. Fellows and registered trainees must be financial and in good standing with ANZCA or FPM. (Add more rows if necessary).

### **2 (b) Chief investigator for whom a scholarship is requested**

If one of the chief investigators is applying for salary support under the ANZCA scholarship scheme, name that individual here.

### **2 (c) Associate investigators**

Associate investigators may be Fellows, trainees, students or professional research personnel, who assist with the research or bring a particular skill (e.g. statistics, assays) to the team. They may or may not be fully conversant with all aspects of the work. Associate investigators do not receive salary support from ANZCA. Add rows to any of the items if necessary.

### **3 Administering institution**

The full name and full address of the institution responsible for administering the grant must appear here (e.g. Royal Prince Alfred Hospital, Missenden Road, Camperdown NSW 2030). While there may be instances where a research project is carried out in more than one location, there can be only one administering institution for each grant.

### **4 Institution(s) where research will be carried out**

The name(s) of the department and name(s) and address(es) of the institution(s) where the proposed research will actually be undertaken is (are) required (e.g. Department of Anaesthesia, Royal Melbourne Hospital VIC 3050). (Add more rows if necessary).

### **5 Area of research**

Specify anaesthesia (01), intensive care medicine (02), pain medicine (03), perioperative medicine (04) or other (05).

## **6 Keywords**

Select up to five (5) keywords or phrases from the list at the end of this guide. If appropriate words are not found in the list, applicants may add their own keywords in this section. The keywords will be used to identify suitable reviewers.

## **7 Lay description of research**

Provide a brief description of the department and/or chief investigator(s), the achievements of the department and/or chief investigator(s), and the proposed research and its significance [suitable for a media release]. No more than one page is allowed. Please provide a lay title.

## **8 Grant synopsis**

This information is used primarily to assign the application for review. This one page synopsis should describe the project and include a description of the aims, significance, context, objectives, methods and likely benefits of the research plan to the research group and the specialty.

Requested non-reviewers: Applicants preferring particular reviewers NOT to be approached to assess their application should attach a letter containing details of up to two non-requested non-reviewers. This letter should be attached to the original application only. These requests will be considered by the ANZCA Research Committee.

## **9 Research plan**

Describe your research project in this section. Do not use more than seven (7) pages in total, including references. Note that the minimum page margin is 2 cm and the minimum font size is 10 pt. Any additional pages will be removed prior to review.

You **must** use the headings listed below to describe your research.

- 9.1 Aims and significance:** Use this space exclusively to describe the broad aims and potential significance of the research. Hypotheses to be tested **must** be clearly stated.
- 9.2 Background:** Describe the significance of the broad area of research, the objectives of the research and the background including scientific aspects.
- 9.3 Methods:** Include details of the experimental design of the project and statistical methods to be used. Include sample size estimations.
- 9.4 Feasibility:** You must provide evidence that the proposed study can proceed in a timely fashion (i.e. recruitment of subjects is assured, instruments have been developed and piloted).
- 9.5 References:** References should be provided within the seven-page count. Do not attach copies of any references. When citing references to other work, include the title of the paper.

Explanatory Appendices are not permissible, nor is it appropriate to use such phrases as 'refer to last year's application'.

## **10 Professional research personnel**

Professional research personnel may include nurses, scientists, research assistants and the like. Full-time students, Fellows and trainees may not be included as professional research personnel.

Where appropriate, request for professional salaries should be in accordance with the official salary scales (such as NHMRC or nursing scales). Personnel should be named where known. Where the personnel are unknown the required salary should be determined on the basis of the appropriate scale. Requests for new senior research officer positions only must provide a curriculum vitae with the application. Include provision for payroll tax, workers' compensation insurance, superannuation or other institutional legal liabilities. Nursing awards may also be appropriate for calculating salaries.

Add more rows to any of the tables in this section if necessary and repeat for each named professional research person.

## 11 *Budget items*

Please note that applications for more than the maximum amount will be returned.

The budget must be constructed in Australian dollars. The maximum amount available for the project grant is AUD\$60,000 (or AUD\$80,000 if supporting a scholarship) and the maximum amount for the simulation/education grant is AUD\$60,000. Whilst columns are provided for 3 years, one-year grants are the norm (see above). All items, listed in the space provided, are to be classified under these headings:

- 11.1 Personnel:** Chief investigators and associate investigators may not receive salary from project grants, unless they are eligible for scholarship support (see above). Requests for professional research personnel salaries including initial, promotion and renewal requests, should be in accordance with the official NHMRC or MRC designations and salary scales, or appropriate nursing awards. Include provision for payroll tax, workers' compensation insurance, superannuation or other institutional legal liabilities and on-costs.
- 11.2 Equipment:** Equipment requests should not include the type of apparatus normally provided from institutional funds (such as equipment used in the normal course of patient care); requests should cover only those items individually costing over \$800, which are essential to the project. Where the cost of a specific item of equipment, plus related accessories, is in excess of \$10,000, a firm written quotation based on current prices, not incorporating any component for customs duty, must be submitted. Applicants should ensure that the institution is prepared to meet all service costs in relation to equipment awarded.
- 11.3 Maintenance:** Enter those items not included within other categories, i.e. such items as equipment costing less than \$800, consumables (under major headings), printed materials, microfilms, survey or field expenses and computing charges.
- 11.4 Other Items:** Include all other budget items here. ANZCA will consider requests for funding for computer programming and preparation, and storage of data, but will not normally provide funds for the hire of computer time on a computer within the applicant's institution. Requests for funds for programming, preparation and data storage or the hire of external computer time must be fully justified. Funds for purchase of computer equipment and hire of computer personnel should be itemised under 'Equipment' and 'Personnel' respectively.
- 11.5 Justification of budget:** It is important to note that realistic budgetary details for the whole period are provided, as no supplementary requests will be granted. A genuine assessment is therefore required for funding of the grant. Amounts requested should reflect the real needs of the project

## 12 *Chief investigators*

The Chief investigator(s) is (are) pivotal to the concept, design and conduct of the research, analysis of the data and/or preparation of the manuscripts. The Chief investigator(s) is (are) fully conversant with all aspects of the research. Chief investigators **DO NOT** receive salary support, unless they are applying for a scholarship.

Complete item 12 for each named chief investigator on this application. Start each chief investigator on a new page. Add rows to any of the items if necessary.

- 12.1 Contact details:** Please ensure that the details provided are complete and accurate, as this information will be used to communicate with the applicants.
- 12.2 Academic qualifications/awards:** Provide details of academic qualifications including university degrees, specialist college diplomas, research or other awards or honours, the institution or body awarding the qualification and the year it was awarded.
- 12.3 Current appointments:** List all current positions with the location (institution). Any changes during the lifetime of the grant relating require notification to ANZCA.
- 12.4 Previous appointments:** Please list relevant previous positions held.
- 12.5 Anticipated absences during grant period:** Should an investigator be absent during the project grant for a period in excess of two months, specify period of absence and give reason.

**12.6 Scholarship details:** Include the nature of the scholarship (initial appointment, reappointment or promotion). Indicate whether you have applied to NHMRC. Applicants are strongly encouraged to apply for salary support from NHMRC as well. Briefly describe the arrangements for the scholarship: where the individual will be based, who will supervise or advise on the research, the higher degree and institution and any other proposed outcomes from the research and the weekly time allocation to the research.

### **13 Research grant support**

The information sought on past, present and future support will assist ANZCA in determining the relationship between various projects and the personnel involved in them, including their time commitment. For this reason, applicants should list ALL projects for which their name is recorded as a chief investigator in each category.

In each category, indicate the year of application, ANZCA RegKey, NHMRC Application ID etc, title of grant, chief investigators, time commitment of each named investigator to each grant, period of support and funds for each year. In the column headed Publications, please identify separately, by number, each publication listed by a chief investigator which has resulted directly from each project (i.e. CIA-4: the 4<sup>th</sup> publication in the list of chief investigator A publications). Do not include the same publication more than once; include only original papers published or accepted for publication in refereed journals. Add more rows to each table if necessary.

**13.1 Completed grants:** Details of past research grant support should encompass all projects or part projects funded over the previous five year period by all sources of grants (not including the year of application), itemising the level of support for each year. Include project grants, program grants, scholarships etc. Exclude any projects which hold a current commitment (e.g. a three year project currently in its second year), to be itemised under 12.2.

**13.2 Current grants:** Include details of all currently held grants, including those that have been awarded but have not yet commenced.

**13.3 Requested grants:** Include this application and all other grant requests relating to this program of research, as well as requests related to other research. Please provide full details of ALL funding from any source. Failure to disclose full information will result in the application being removed from any further consideration by ANZCA. If you apply to another funding agency after submitting this application, you must immediately notify ANZCA in writing.

### **14 (a) Publications of chief investigators for track record consideration**

List, and number consecutively, papers published, in press or finally accepted for publication in refereed journals, by any of the chief investigators (CIA, CIB, CIC, CID etc) in the five (5) years prior to the year of application and in the year of application. The listing must indicate titles of papers, sequence of authors as shown in the paper, first and last pages, name, volume and date of journal; for recent papers not yet published, the date of final acceptance by the journal's editor is required. Quality as well as quantity of publications will be considered in the assessment of grant applications. Papers in refereed journals in which the chief investigator was not co-author, but which resulted from previous grants, should be listed at the end of that chief investigator's publications under the title 'non-chief investigator papers' (e.g. papers with scientists or PhDs supported by the grant but in which the chief investigator was not an author). Documentary evidence of final acceptance by editors must be made available to ANZCA. **Do not include abstracts or papers in preparation or submitted for publication but not yet finally accepted.**

Publications resulting directly from a specific project must be identified in the list of completed or current grants and, where applicable, in progress reports or in summary reports, and should be identified as "CIA -5" or "CIB -2"). Asterisk (\*) a maximum of five publications per chief investigator, which are considered to best reflect research contributions to date. Please include the citation index for these 5 papers and the impact factor of the journal in which they were published.

### **14 (b) Other items for track record consideration**

The chief investigators may list other items for track record consideration. For participation in multi-centre trials, the chief investigator must be the named principal site investigator. The name of the trial, the chief investigator(s) of the trial and the number of patients enrolled at the time of application must be included. For ongoing study in statistics/epidemiology/research methods, please state the

institution, name and duration of the course. Other items may include membership of research ethics committees or grant committees, supervision of research students and the like. A maximum of one page for all investigators combined is permitted.

## **15 Clearance requirements**

The Research Committee strongly encourages investigators to apply for ethics committee approval and submit the approvals to the College by **September 1st**. If a grant is awarded, funding will not be released until all relevant clearances for the initial project have been received by ANZCA. ANZCA reserves the right to request full ethics committee submissions and correspondence as part of the granting process. In addition, ANZCA requires that clinical trials are pre-registered with the appropriate agency (e.g. NHMRC).

### **15.1 Research involving humans**

- (i) Approval of the institutional ethics committee should be sought for ALL projects in humans. In the case of audit or routine testing, the ethics committee may not require a formal application, but will provide a covering letter that must be submitted to the College. Human research, in this context, includes research involving any human tissue, no matter what the source, and also includes research in which there is any intervention (physical or psychological) in the normal lives of humans. Projects supported by ANZCA are expected to conform with the general principles outlined in the NHMRC document 'Statement on Human Experimentation'. (see NHMRC website)
- (ii) Under the various privacy laws, any form of experimentation involving humans (including epidemiological research) which uses personal information that is obtained from a National or State Department or Agency must be considered by an institutional ethics committee (IEC).
- (iii) All projects involving the administration to humans of drugs, chemical agents or vaccines need to be considered by the relevant institutional ethics committee (IEC) to assess the appropriateness of their use. Clearance by the IEC is not only required for projects involving the use of imported substances, but also for projects involving the experimental use of locally produced therapeutic substances. ANZCA funds will not be provided unless appropriate clearance for the use of such substances is given. In the case of multi-centred trials, approval must be obtained from the IEC of each institution involved. In the case of drugs that are not approved for use in Australia, New Zealand, Hong Kong, Malaysia and/or Singapore, approval of the appropriate authority must be obtained before funds can be released.
- (iv) The official letter or statement of approval from the ethics committee must be forwarded to ANZCA no later than **September 1** each year, or before a tax invoice for funds is sent to the College.
- (v) ANZCA should have access, if required, to all information relating to ethical decisions arising from an application and the institutional response to the application. Provisional clearances will not be accepted.
- (vi) Under item 15.4, please summarise all the ethical implications of your research program. Do not use more than one page. Include the issues of privacy, and male-female ratios, and the cultural implications of your research (i.e. as they relate to aboriginal populations). Please refer to the NHMRC "Statement on Human Experimentation". Note that it is not sufficient to state that "the NHMRC Statement on Human Experimentation will be observed". The Research Plan must include sufficient detail to enable the project to be fully assessed with respect to ethical issues by an independent ethics committee.

### **15.2 Research involving animals**

- (i) Projects supported by ANZCA are expected to conform with the provisions of the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes, and with its general principles outlined in the Council's document 'Statement on Animal Experimentation' or the New Zealand equivalent.
- (ii) ANZCA requires a statement from the relevant institutional animal experimentation ethics committee that any project involving animal experimentation has been reviewed and is approved by the Committee as complying with the code of practice. It is the applicant's

responsibility to ensure that a copy of his or her project application is referred to the relevant institutional animal experimentation ethics committee; it also his or her responsibility to ensure that the completed approval form is forwarded to ANZCA, no later than **September 1** each year, or before the tax invoice for funds is sent to ANZCA.

- (iii) ANZCA should have access, if required, to all information relating to ethical decisions arising from an application and the institutional response to that application. Please identify the institutional animal experimentation ethics committee to which the application has been or will be referred. Provisional clearances will not be accepted.
- (iv) Applicants whose projects involve inbred strains of animals must take action to confirm that the genetic authenticity of the colony has been checked at appropriate intervals.
- (v) Ideally the health status of animals should be known and the colony regularly monitored for pathogens which may influence results in the investigator's particular area of research.
- (vi) Under item 15.5, please summarise all the ethical implications of your research program. Do not use more than one page. Include the issues related to the care and welfare of animals. Please refer to the "Statement on Animal Experimentation". Note that it is not sufficient to state that "the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes will be observed". The Research Plan must include sufficient detail to enable the project to be fully assessed with respect to ethical issues by an independent animal ethics committee. Applications involving animals must contain adequate information to allow assessment of the ethical implications of experiments, particularly where significant pain and/or distress may be caused, where death is likely to occur, or where experiments in Category 4 are to be carried out.

### **15.3 Other clearances**

**15.3.1 Genetic manipulation of organisms:** Applicants whose projects involve organisms being genetically manipulated such that they fall under current Genetic Manipulation Advisory Committee (GMAC) guidelines, must seek clearance from their institutional biosafety committee (or equivalent) and arrange for one copy of the clearance to be forwarded to ANZCA preferably prior to release of grant monies. It should be noted that GMAC continues to require its prior approval for applications which fall under Category A of the Small Scale Guidelines.

**15.3.2 Use of carcinogenic or highly toxic chemicals:** Applicants whose projects involve the use and disposal of potent carcinogenic or other highly toxic chemicals are referred to the "NHMRC Guidelines for Laboratory Personnel working with Carcinogenic or Highly Toxic Chemicals", copies of which can be obtained from the publications officer of the NHMRC. Such applicants must seek clearance to be forwarded to ANZCA prior to release of grant monies.

**15.4 Conflict of interest:** Applicants are NOT required to complete the questionnaire but rather are requested to read and understand the ANZCA Conflict of Interest Policy (available at: <http://www.anzca.edu.au/resources/corporate-policies/conflict%20of%20interest%20policy.pdf/view?searchterm=conflict%20of%20interest%20policy>) declare any conflicts, and state how such conflicts will be managed.

## **16 Progress report on ANZCA grant(s)**

A progress report must be provided for each grant being supported by ANZCA at the time of preparing this application and which has listed, as one of the chief investigators, any of the chief investigators of this application. A separate report form should be used for each progress report. It is understood that current projects may not relate to the project proposed in this application. Failure to submit all progress reports may jeopardise its outcome. Note: progress reports are NOT required for grants commencing in the year of submission of the current proposal.

At the conclusion of support for each grant, an individual summary report must be submitted to ANZCA. The deadline for this report is **September 1<sup>st</sup>** of the year after the grant support has concluded. Each chief investigator on this application who was listed as a chief investigator on any project that terminated in the December prior to submission of this application, **MUST** obtain copies of the terminating project's summary report and append it to this application. Failure to comply with

this request may jeopardise the outcome of this application. The final report must include a statement of the expenditure charged to the grant. Unused funds may not be expended on other activities and must be returned to the College.

### **17 Certification by chief investigators, head of department and of institution**

The application is invalid without the signature(s) of all the chief investigator(s). Grants will only be considered for support if the head of department/head of research committee certifies that the facilities available are appropriate to meet the needs of the application (e.g. adequately staffed and equipped laboratories/workshops, secretarial assistance, library resources, research/maintenance support including equipment maintenance, animal housing facilities etc).

When applicants are not formally attached to institutions, they should indicate whether they have access to appropriate facilities to undertake the research proposed.

ANZCA accepts as the head of institutions: the registrars of universities, the directors of independent institutes, and the managers/secretaries or medical superintendents of hospitals.

The head of the institution should note that Statements of Compliance with the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes and the NHMRC Statement on Human Experimentation - Supplementary Note 1, are required to be completed and submitted to ANZCA on request. The head of the institution is also required to certify that the institution has established administrative processes for assuring sound scientific practice in accordance with the 'NHMRC Statement on Scientific Practice'.

### **18 Referees for scholarship applications**

Applicants for scholarships should approach individuals to be referees. The applicant should provide each referee with the form and a complete application. The referee must forward their reference to the applicant to attach to the application before the closing date at 5 PM EDST on 1 April 2012.

#### **Attachments**

The attachment should be sent by the applicant to two referees if an investigator is applying for a Scholarship.

#### **Checklist**

Complete checklist and add to original application.

## APPENDIX: KEY WORDS AND PHRASES FOR USE IN ANZCA GRANT APPLICATIONS

These key words and phrases are modified from those used by the journal Anesthesiology. If the key word or phrase that describes your work is not listed here, please list in the key word section of your application.

### STEMS

ACID-BASE CHEMISTRY

ADDICTION AND DRUG ABUSE

AIRWAY and AIRWAY MANAGEMENT

AMBULATORY CARE

ANAESTHESIA MACHINES and CIRCUITS

ANAESTHETICS, GASES

ANAESTHETICS, INHALATION

ANAESTHETICS, INTRAVENOUS

ANAESTHETICS, LOCAL

AUTONOMIC NERVOUS SYSTEM

### Key words/phrases

Alcohol and Alcoholism

Airway and ETT Assessment

Cervical Spine Movement

Endotracheal Tubes

LMA, ILMA and Other Supraglottic Airways

Laryngeal and Pharyngeal Function and Anatomy

Aspiration

Laryngoscopy, Direct

Laryngoscopy, Flexible and Rigid Fiberoptic

Lightwands and Other Indirect Methods

Lung Isolation Devices

Tracheostomy and Cricothyroidotomy

Anaesthesia Ventilators

Circuits and Vaporizers

CO<sub>2</sub> Absorbents and Humidification

Waste Gases and Scavenging

Nitrous Oxide

Xenon

Halothane, Enflurane and Isoflurane

Desflurane

Sevoflurane

Non-Immobilizers

Other Inhalation Anaesthetics

Anaesthetic Metabolism and Degradation

Carbon Monoxide

Compound A and Fluoride

MAC

Uptake and Distribution

Barbiturates

Benzodiazepines (and antagonists)

Etomidate

Ketamine (and related drugs)

Butyrophenones

Alpha<sub>2</sub> Agonists (as sedatives)

Propofol

Computer Controlled Infusions

Opioids (as anaesthetic supplements)

Bupivacaine, Lignocaine or Mepivacaine

Levobupivacaine

Ropivacaine

Encapsulated Agents

Other Local Anaesthetics

Cardiotoxicity

Seizures

Baroreflexes

Catecholamines

Heart Rate Variability

Microneurography

Parasympathetic Nervous System

AWARENESS and RECALL  
BLOOD COAGULATION

BLOOD TRANSFUSION, CONSERVATION and  
SUBSTITUTES

CANCER and MALIGNANCY

CARDIOVASCULAR FUNCTION, DISEASE AND  
MANAGEMENT

CARDIOVASCULAR DRUGS

CELL BIOLOGY AND PHYSIOLOGY

Sympathetic Nervous System

Enoxaparin and LMWH  
Heparin and Protamine  
Hirudin  
Fibrinolytics  
Coagulation Testing  
DIC and other Coagulopathies  
Platelets and Platelet Function  
Aminocaproic and Tranexamic Acid  
Aprotinin  
Recombinant Factor VIIa

Acute Normovolemic Hemodilution  
Cell Saver and Other Salvage Methods  
Controlled Hypotension  
Haemoglobin-Based Oxygen Carriers  
Perfluorocarbons

Mutation and Mutagenesis

Cardiac Electrophysiology and Conduction  
Cardiac Rhythm and Dysrhythmias  
Cardiac Smooth Muscle and Myocyte Function (in vitro)  
Cardiopulmonary Bypass  
Circulatory Arrest  
Circulatory Physiology and Hemodynamics  
Congenital Heart Disease and Surgery  
Coronary Circulation, Myocardial Ischemia and Infarction  
Cardiac Revascularization Surgery (CABG etc)  
Myocardial Preconditioning and Protection  
Reperfusion Injury  
Valvular Heart Disease and Surgery  
Ventricular Function  
Hypertension  
Pacing, Pacemakers and Defibrillators

ACE Inhibitors  
Alpha2 Agonists (CV Actions)  
Angiotensin Receptor Blockers  
Beta-Adrenergic Blockers  
Beta-Agonists  
Calcium Channel Blockers  
Other Antiarrhythmics  
Norepinephrine and Epinephrine (Vasopressors)  
Dopamine  
Dobutamine  
Fenoldopam  
Phosphodiesterase Inhibitors  
Amrinone and Milrinone  
Nitroprusside and Nitroglycerin  
Other Vasopressors  
Vasopressin  
Statins

Apoptosis  
ATP and Electron Transport  
Calcium and Calcium Signaling  
Calcium Binding Proteins  
Gene Expression

|   |  |
|---|--|
| CHEMISTRY, BIOPHYSICS AND PHYSICS<br>COMPLICATIONS                | Mitochondria   |
|   | Drug Related<br>Equipment Related<br>Procedure Related<br>Compartment Syndromes<br>Other   |
| CRITICAL CARE   | Burns<br>Trauma Care   |
| DERMATOLOGY<br>ECONOMICS, OR MANAGEMENT and MANPOWER<br>EDUCATION | Trainee Evaluation<br>Simulators   |
| EMBOLI and EMBOLIC DISORDERS                                      | Amniotic Fluid Emboli<br>Fat and Particulate Emboli<br>Pulmonary Thromboembolism<br>Venous and Arterial Gas Emboli   |
| ENDOCRINOLOGY   | Diabetes Mellitus and Insulin<br>Oestrogen<br>Pheochromocytoma<br>Renin and Angiotensin<br>Atrial and Brain Natriuretic Peptides                             |
| EPIDURAL and SPINAL   | Dural-Puncture Headache and Blood Patch<br>Neurologic Symptoms and Injury<br>Balance, Posture and Position Sense   |
| EQUIPMENT, TECHNOLOGY AND BIOENGINEERING<br>ETHICS                | Animal Care<br>Brain Death and Organ Harvest<br>Do Not Resuscitate Orders<br>Human Studies and Consent   |
| EYE   | Eye Injuries and Blindness<br>Eye Surgery<br>Intraocular Pressure  |
| FLUIDS, ELECTROLYTES and PLASMA<br>SUBSTITUTES                    | Hetastarch and Pentastarch<br>Hypertonic Saline<br>Osmolality and Oncotic Pressure<br>Serum Sodium, Potassium and other Electrolytes<br>Lipid and Intralipid |
| GASTROINTESTINAL PHYSIOLOGY and<br>PATHOPHYSIOLOGY                | Gastric Reflux and Emptying<br>Intestinal Motility<br>Intestinal Permeability<br>Splanchnic Circulation  |
| GENDER<br>GENETICS and GENETIC DISORDERS                          | Sickle Cell Disease<br>Genetic Testing<br>Gene Therapy   |
| GERIATRICS<br>HISTORY and HUMOR<br>IMAGING                        | CT Scanning<br>Magnetic Resonance Imaging and fMRI<br>PET Scanning   |

|  |  |
|--|--|
| IMMUNOLOGY, INFLAMMATION and INFECTION | <ul style="list-style-type: none"> <li>Ultrasound</li> <li>Xray</li> <li>Allergy and Anaphylaxis</li> <li>Latex Allergy</li> <li>Histamine and Antihistamines</li> <li>Steroid Therapy (Systemic)</li> <li>Antibiotics</li> <li>Systemic Inflammatory Response/Disease</li> <li>Cytokines and Interleukins</li> <li>Tumour Necrosis Factor</li> <li>Endotoxin and Lipopolysaccharides</li> <li>Free Radicals and Scavengers</li> <li>Leukocytes, Lymphocytes and Macrophages</li> <li>Phagocytosis</li> <li>Wound Infection</li> <li>Infection Control (Hand washing, antiseptics etc)</li> </ul>  |
| IONS AND ION CHANNELS                  | <ul style="list-style-type: none"> <li>Calcium and Calcium Channels</li> <li>Potassium and Potassium Channels</li> <li>Sodium and Sodium Channels</li> <li>Ion Transport</li> </ul>  |
| PUBLISHING                             |  |
| KIDNEY and BLADDER PATHOPHYSIOLOGY     | <ul style="list-style-type: none"> <li>Bladder Function and Urinary Retention</li> <li>Renal Function Testing</li> <li>Renal Failure and Dialysis</li> </ul>   |
| LIVER PHYSIOLOGY and PATHOPHYSIOLOGY   | <ul style="list-style-type: none"> <li>Liver Blood Flow</li> <li>Liver Function Tests</li> </ul>   |
| MALIGNANT HYPERTHERMIA                 | <ul style="list-style-type: none"> <li>Diagnostic Testing</li> <li>Genetics and Genotyping</li> </ul>  |
| METABOLISM and NUTRITION               | <ul style="list-style-type: none"> <li>Glucose and Carbohydrate Metabolism</li> <li>Whole Body Metabolic Rate</li> <li>Obesity</li> <li>Protein Metabolism</li> </ul>  |
| MONITORING (CARDIORESPIRATORY)         | <ul style="list-style-type: none"> <li>Arterial Catheters and Pressure Measurement</li> <li>Blood Volume, Systemic</li> <li>Systolic Pressure Variation</li> <li>Cardiac Output Measurement</li> <li>Central Venous Catheterization</li> <li>Doppler, Other</li> <li>Doppler, Precordial</li> <li>Echocardiography, Transoesophageal</li> <li>Echocardiography, Other</li> <li>Electrocardiography</li> <li>Expired Gas Analysis</li> <li>Gastric Tonometry</li> <li>Oximetry, Pulse</li> <li>Oximetry, Mixed Venous</li> <li>Oximetry, Other</li> <li>Pulmonary Artery Catheterization</li> </ul> |
| MONITORING (CNS)                       | <ul style="list-style-type: none"> <li>BIS and Similar Techniques</li> <li>Electroencephalography (EEG)</li> <li>Evoked Potentials, Auditory</li> <li>Evoked Potentials, Motor</li> <li>Evoked Potentials, Other</li> <li>Evoked Potentials, Somatosensory</li> <li>Oximetry, Jugular Venous</li> <li>Oximetry, Transcranial</li> <li>Transcranial Doppler</li> </ul>  |

|   |   |
|---|---|
| NAUSEA and VOMITING                           | Depth of Anaesthesia Assessment                     |
| NERVE BLOCKS                                  | Antiemetics   |
|   | Brachial and Cervical Plexus Blocks                 |
|   | Celiac Plexus Block                                 |
|   | Lower Extremity Blocks                              |
|   | Intravenous Regional Anaesthesia                    |
|   | Other Regional Techniques                           |
|   | Nerve Localization Methods                          |
|   | Nerve Injury and Other Complications                |
|   | Neostigmine and Anticholinesterases                 |
|   | Neuromuscular Junction                              |
|   | Neuromuscular Monitoring                            |
|   | Nondepolarizing Agents                              |
|   | Succinylcholine                                     |
|   | Myaesthesia Gravis                                  |
| NEUROPHYSIOLOGY, BRAIN                        | Blood Brain Barrier                                 |
|   | Cerebral Blood Flow and Volume                      |
|   | Cerebral Oedema and Intracranial Hypertension       |
|   | Cerebral Ischemia and Anoxia                        |
|   | Cerebral Metabolism                                 |
|   | Cerebral Protection and Preconditioning             |
|   | Clinical Neuroanaesthesia                           |
|   | Clinical Neurology and Neurologic Examination       |
|   | Head Injury   |
|   | Hippocampus and Hippocampal Electrophysiology       |
|   | Intracranial Pressure and Intracranial Hypertension |
|   | Neuronal Electrophysiology, Other                   |
| NEUROPHYSIOLOGY, SPINAL CORD                  | Dorsal Root Ganglia                                 |
|   | Spinal Cord Electrophysiology                       |
|   | Spinal Cord Injury                                  |
|   | Spinal Cord Ischemia                                |
|   | Spinal Cord Anatomy                                 |
|   | Spinal Cord Protection and Preconditioning          |
| NEUROPHYSIOLOGY, PERIPHERAL NERVE             | Peripheral Nerve Injuries                           |
|   | Growth Factors                                      |
|   | Nerve Conduction and EMG                            |
|   | Peripheral Nerve Electrophysiology                  |
| NEUROTRANSMISSION, TRANSMITTERS AND RECEPTORS | Acetylcholine and Receptors                         |
|   | Adenosine and Receptors                             |
|   | Adrenergic Agents and Receptors                     |
|   | Cannabis and Cannabinoid Receptors                  |
|   | Capsaicin and Thermal Receptors                     |
|   | Dopamine and Receptors                              |
|   | GABA and Receptors                                  |
|   | Glutamate and Receptors                             |
|   | Glycine and Receptors                               |
|   | Neurokinins and Receptors                           |
|   | Nitric Oxide and Nitric Oxide Synthase              |
|   | Opioids and Opioid Receptors                        |
|   | Serotonin and Serotonergic Receptors                |
|   | Neurotransmitter Release and Reuptake               |
| NEUROTRANSMISSION and SIGNAL TRANSDUCTION     | G-proteins  |
|   | cAMP and cGMP                                       |
|   | Protein Kinases                                     |
| OBSTETRICAL ANESTHESIA                        | Caesarean Section                                   |

|                                       |  |
|---------------------------------------|--|
|                                       | Eclampsia and Preeclampsia<br>Foetal Monitoring and Pathophysiology<br>Labour and Delivery<br>Uterine and Placental Function<br>Uterine Smooth Muscle  |
| OXYGEN and OXYGEN TRANSPORT           | Hypoxia<br>Hemodilution (physiology)<br>Tissue Oxygen Tension (PtO <sub>2</sub> )<br>Hyperbaric Oxygen   |
| PAIN MANAGEMENT, CLINICAL             | Acupuncture and Accupressure<br>Chronic Pain<br>Epidural and Other Steroid Injections<br>Neuropathic Pain and CRP<br>Stellate Ganglion Blocks<br>Lumbar Sympathectomy<br>Pain Assessment Techniques<br>Patient Controlled Analgesia<br>Postoperative Pain<br>Headache (NOT PLPH)<br>Herpes Zoster<br>Intraarticular Analgesia<br>Intrapleural and Intraperitoneal Local Anaesthetics<br>Phantom Limb Pain<br>Preemptive Analgesia (clinical)<br>TENS and Related Methods<br>Spinal Cord Stimulation<br>Epiduroscopy<br>Radiofrequency Lesions and Neurolysis |
| PAIN-RELATED PHARMACOLOGY             | Alpha 2 Agonists (Analgesics)<br>Aspirin and Acetaminophen<br>Baclofen<br>COX2 Antagonists<br>Gabapentin<br>Neostigmine<br>NMDA Antagonists<br>NSAIDs<br>Opioids<br>Opioid Antagonists<br>Opioid Tolerance<br>Tramadol<br>Nitric Oxide   |
| PAIN PHYSIOLOGY, EXPERIMENTAL         | Incisional Pain<br>Neuropathic Pain<br>Inflammatory Pain<br>Pain Assessment Techniques<br>Pain Mechanisms, Central<br>Pain Mechanisms, Peripheral<br>Pain Mechanisms, Spinal<br>Pain Models<br>Preemptive Analgesia (experimental)<br>Visceral Pain  |
| PATIENT SAFETY and MEDICOLEGAL ISSUES | Closed Claims Studies<br>Electrical and Fire Safety<br>Medicolegal Matters   |
| PAEDIATRIC ANESTHESIA and PAEDIATRICS | Neonatology  |
| PHARMACOKINETICS and PHARMACODYNAMICS | Pharmacogenetics   |
| PHARMACOLOGY (GENERAL)                | Chronopharmacology/Chronobiology   |

|   |   |
|---|---|
|   | Drug Interactions                                 |
|   | Drug Metabolism                                   |
|   | Cytochromes P450                                  |
|   | Drug Toxicity                                     |
|   | Liposomes and Microcapsule Delivery Systems       |
|   | Osmotic Pumps                                     |
|   | Stereoisomers                                     |
|   | Transcutaneous Delivery Systems                   |
|   | Transmucosal Delivery Systems                     |
| PHYSICIAN SAFETY                        |   |
| POSITIONING                             |   |
| POSTOPERATIVE CARE                      |   |
| PREOPERATIVE ASSESSMENT and CARE        |   |
| PROSTAGLANDINS and RELATED COMPOUNDS    |   |
| PSYCHOLOGY, PSYCHIATRY and BEHAVIOR     |   |
|   | Antidepressants                                   |
|   | Anxiety and Anxiolysis                            |
|   | Psychologic, Psychometric and Behavioural Testing |
|   | Electroconvulsive Therapy (ECT)                   |
| RESPIRATORY DISORDERS and MANAGEMENT    |   |
|   | ARDS and Lung Injury                              |
|   | Aspiration Pneumonia                              |
|   | Asthma and Bronchospasm                           |
|   | Barotrauma  |
|   | COPD  |
|   | Extracorporeal Membrane Oxygenation               |
|   | High Frequency Ventilation                        |
|   | Mechanical Ventilation                            |
|   | Nitric Oxide Inhalation                           |
|   | Pneumonia and Lung Infections                     |
|   | PEEP and CPAP                                     |
|   | Pulmonary Oedema                                  |
|   | Pulmonary Function Testing                        |
|   | Smoking   |
| RESPIRATORY PHYSIOLOGY                  |   |
|   | Alveolar Macrophage Function                      |
|   | Control of Respiration                            |
|   | Gas Exchange                                      |
|   | Pulmonary Blood Flow                              |
|   | Respiratory Mechanics                             |
|   | Surfactant  |
|   | Tracheal and Bronchial Smooth Muscle              |
|   | Ventilation-Perfusion Matching                    |
| RISK, OUTCOME and QUALITY MANAGEMENT    |   |
|   | Patient Safety and Satisfaction                   |
|   | Quality Assurance and Management                  |
|   | Morbidity and Mortality                           |
|   | Perioperative Risk Factors                        |
|   | Automated Record Keeping                          |
| SEIZURES and ANTICONVULSANTS            |   |
| SHOCK AND RESUSCITATION                 |   |
|   | Cardiac Arrest and CPR                            |
|   | Sepsis and Septic Shock                           |
|   | Haemorrhagic and Hypovolemic Shock                |
| SKELETAL MUSCLE                         |   |
| SLEEP and SLEEP DISORDERS               |   |
|   | Circadian Rhythm                                  |
|   | Sleep Apnoea                                      |
|   | Sleep Deprivation                                 |
| STUDY DESIGN AND TECHNIQUES, LABORATORY |   |
|   | Autoradiography                                   |
|   | Brain Slices                                      |
|   | Histopathology and Histochemistry                 |
|   | Cultured Cells and Tissues                        |
|   | Laser Doppler Flowmetry                           |

|                                       |   |
|---------------------------------------|---|
|                                       | <ul style="list-style-type: none"> <li>Microdialysis</li> <li>Patch Clamping</li> <li>PCR</li> <li>Receptor Binding</li> <li>Recombinant Methods</li> <li>Transgenic and Knockout Animals</li> <li>Isobolographic Analysis</li> <li>Analytic Chemistry (Chromatography etc)</li> <li>Molecular Modeling</li> </ul>  |
| STUDY DESIGN AND TECHNIQUES, CLINICAL | <ul style="list-style-type: none"> <li>Clinical Trial</li> <li>Epidemiology</li> <li>Mathematical Modeling</li> <li>Metaanalysis</li> <li>Statistics</li> <li>Survey</li> </ul>   |
| SURGERY, MISCELLANEOUS                | <ul style="list-style-type: none"> <li>Laparoscopy</li> <li>Neurosurgery</li> <li>Oral Surgery</li> <li>Orthopaedic Surgery</li> <li>Joint Replacement Surgery</li> <li>Otolaryngology</li> <li>Plastic Surgery</li> <li>Aortic Aneurysm (Abdominal and Thoracic)</li> <li>Carotid Endarterectomy</li> <li>Thoracic Anaesthesia and Surgery</li> <li>Vascular Surgery</li> <li>Other Surgical Procedures</li> </ul> |
| TEMPERATURE REGULATION and MANAGEMENT | <ul style="list-style-type: none"> <li>Hypothermia</li> <li>Hyperthermia and Fever</li> <li>Shivering</li> </ul>  |
| TRANSPLANTATION                       | <ul style="list-style-type: none"> <li>Heart Transplantation</li> <li>Liver Transplantation</li> <li>Lung Transplantation</li> <li>Immunosuppressants</li> </ul>  |
| VASCULAR PHYSIOLOGY                   | <ul style="list-style-type: none"> <li>Rheology and Viscosity</li> <li>Endothelium</li> <li>Endothelin</li> <li>Leukocyte Adhesion</li> <li>Nitric Oxide, Nitric Oxide Synthase and EDRF</li> <li>Selectins</li> <li>Vascular Smooth Muscle</li> <li>Vascular Growth Factors</li> <li>Vascular Electrophysiology</li> <li>Microcirculation</li> </ul>   |