- AIRC -

Associazione Italiana per la Ricerca sul Cancro

CALL FOR PROPOSALS 2011

Investigator Grant (IG)

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Foreword

The Associazione Italiana per la Ricerca sul Cancro (AIRC) is inviting applications for Investigator Grants (IG) in the area of Cancer Research. These grants are intended to support the research of established, independent scientists, leading an existing research unit. The scientific activity must be carried out in a non-profit research institution located in Italy (University, hospital or other research center). Support will be provided for a period of three years, provided that AIRC has available funds.

No scientist can be the Principal Investigator of more than one active AIRC grant at the same time in the following categories: Investigator Grant, Start Up Grant or My First AIRC Grant. Thus, holders of any active AIRC grant in the above-mentioned categories are not eligible for application unless their active grant expires before the beginning of the new one (recipients of three-year AIRC grants awarded in 2008, e.g. IG 2008, can apply to this Call).

Only one application, either IG, or Start Up, or My First AIRC Grant (MFAG) per applicant can be submitted in this Call.

Eligibility criteria

Applicants, henceforth defined Principal Investigators (PI), can be of any nationality. They should have achieved scientific independence and leadership, and **should have a strong track record** as demonstrated by last-author publications in high level peer-reviewed journals. If the total Impact Factor of all papers published by an applicant in the last five years is below 50, the probability of success are extremely low. An analysis of the results of the last three Calls showed that for these investigators the approval rate has been 2.7%.

Applicants must operate in a non-profit Italian Institution at the time of the application submission and for the entire duration of the grant. AIRC reserves the right to reject proposals from PIs who, even if jointly affiliated to an Italian and a foreign institution, do not meet criteria for continuous presence in the Italian institution.

An IG proposal that has been rejected twice in the past cannot be resubmitted a third time. See “Resubmission of revised applications” for further details.

The research plan

All proposed research plans must have a clear focus on cancer, and should fall into one of the following areas of research:

1. angiogenesis
2. tumor microenvironment
3. cancer genetics
4. cell adhesion, cell migration, invasion and metastasis
5. cell cycle control and cell division
6. cell death and apoptosis
7. control of gene expression and epigenetics
8. DNA damage and molecular responses to damage
9. signal transduction and intracellular trafficking
10. animal models: mouse technologies and non-mammalian systems
11. cancer stem cells
12. infection, inflammation and cancer

13. tumor immunology
14. immunotherapy: active and adoptive
15. gene therapy
16. targeted therapy
17. drug resistance
18. epidemiology and chemoprevention
19. radiobiology and radiotherapy
20. imaging
21. clinical studies: screenings, diagnosis, and prognosis
22. clinical studies: therapies
23. systems biology
24. structural biology

In principle, AIRC believes that rigid guidelines as to the research plan should not be provided for this type of grant since inventor-driven discovery is one of the most potent engines of scientific progress.

At the same time, AIRC feels that phenomenological, descriptive-at-best, proposals should be discouraged. The following kinds of proposals will receive **low priority** and have marginal chances of being funded:

- Studies which are essentially confirmatory in nature or represent marginal "variations-on-the-theme" of well established concepts in cancer research.
- Studies contemplating descriptive screenings of molecules and/or phenotypes without mechanistic insights and/or elements of innovative discovery. These include purely descriptive microarray and proteomic profiling studies that are not associated with a strong strategy for clinical application.
- Generation of reagents and/or optimization of technologies, or creation of services/technological facilities in the absence of a coherent and innovative research plan.
- Chemical and/or viral carcinogenesis studies not embodied in the framework of mechanistic studies.
- Requests for on-going routine collection of current statistics, such as cancer registry.
- Descriptive epidemiology.
- Clinical studies that are clearly drug company-driven, in such a way that free exchange of reagents and information would be impaired, the PI or the Institution would be deprived of the intellectual property of the data, or the company could veto publications of results. This does not exclude collaborative studies with industry.
- Clinical studies that do not contribute to build or expand an original and independent line of research characterizing the proponent group.

As for clinical/epidemiological studies, AIRC has interest in evaluating proposals falling into the following categories:

a) Proposals aimed at studying:
- interactions between environmental risk factors, genetic profiles and intermediate biomarkers;
- the natural history of cancer by linking the different phases of disease to specific biological/genetic profiles.
b) Clinical studies of innovative diagnostic procedures, such as molecular or imaging procedures, or of procedures aimed at evaluating in terms of outcome and quality of life, the efficacy of diagnostic and therapeutic approaches in clinical practice.
c) Pilot clinical studies of new therapeutic drugs, procedures or strategies.

d) Proposals aimed at a critical evaluation of last generation drugs and at elucidating their activity by mechanistic insights.
e) Clinical trials on types of cancer or types of treatment that generally receive low financial support from other funding agencies, such as studies on rare tumors and/or orphan drugs, may have preferential evaluation.

All proposals must contain appropriate provisions for study design, statistical analysis and sample size (whenever applicable), in particular for studies with human subjects (clinical and epidemiological). If such information is missing or insufficient, the research proposal will be rejected.
Proposals of clinical studies that are property of companies producing drugs or diagnostic tools and that receive economic support from such companies will not be considered. Drug supply and economic support from producing companies does not preclude AIRC evaluation provided that the PIs have the full property of data and results, and that companies have no right to veto the publication of results at any time. A statement that the management of the study, data acquisition and analysis and data property are completely independent of any company producing/marketing drugs or diagnostic tools or with any type of economic interest in the study, must be clearly reported in the Existing/Pending Support Justification section of the proposal; a clear indication on whether the company provides its product(s) to the PI for free or not must be included in that section as well. Failure to provide such information will result in the rejection of the proposal.

The approval of the local Ethics Committee/Institutional Review Board is mandatory for clinical trials involving human subjects, and for studies with human biological samples. A copy of such approval, together with a copy of the informed consent (if applicable), should be attached to the application. If not available by the submission deadline, this documentation must be sent to the AIRC Peer Review Office by **November 15th 2011** (see the Bio-ethical requirements section in the Guide to proposal preparation for further details). Research proposals will not be funded if the Ethics Committee approval is not presented. AIRC does not accept any liability for harm to participants in AIRC funded trials.

Animal experimentation must conform to all regulations protecting animals used for research purposes according to current international and national rules. See the "Bio-ethical requirements" section of the Guide to proposal preparation for further details on the documentation required; research proposals will not be funded if such documentation is not presented by the deadline.

Funding

Grants are for a three-year period and subjected to a yearly renewal system. Funded projects will officially start on December 31st 2011 and end on December 30th 2014. Applicants must indicate the requested support in the budget section of the application, providing a detailed financial breakdown of the anticipated expenditures.

The following costs are permitted:
- Direct research costs (inclusive of consumables and supplies, small bench instrumentation, services, maintenance contracts, publication costs, meetings/travel costs).
- Support for fellows. Support will be provided only for fellows at 100% of time on the project. Applicants should ascertain that their own Institution can take on fellows.
- Indirect costs, up to 15% of the direct costs (fellowships included). Indirect costs are related to services and/or other items of expense that cannot be directly ascribed to a research project. They are normally calculated on a percentage basis, on criteria such as area of the various units, number of employees, etc. Proponents and their Institutions will be asked to specify the indirect costs for which support is required.

- Overheads, for not more than 10% of the total.

Renewals must be submitted yearly (see Deadlines), through appropriate online forms, and will be automatically approved for the second and third year, provided that AIRC has available funds. At the end of the third and last year, a final report (scientific and administrative) will be required. **This report will strongly impact the evaluation of future AIRC grant applications.**

The Review Process

Applications from researchers who meet the eligibility requirements undergo a peer review process that ensures a fair, independent and expert evaluation of the scientific quality of the applications. AIRC relies on the expertise of internationally recognized Italian scientists members of the "Comitato Tecnico Scientifico" AIRC (CTS) and well established foreign investigators for the evaluation of IG applications. Reviewer assignments are made in compliance with conflict of interest and appearance of conflict rules to ensure a review free from inappropriate influence (e.g. no application from a given research Institution is assigned to reviewers from the same Institution or from the same city). Applicants may request to exclude up to two scientists as reviewers through the online application form.

IG applications are independently reviewed by three reviewers with expertise in the specific area of the research plan: two foreign reviewers (primary and secondary) and one member of the CTS. In case the needed expertise is not available in the CTS, a scientist with the appropriate expertise, of any nationality, will be recruited to serve as third reviewer.

The review criteria that will be used to evaluate the applications are:

a) significance and relevance to cancer
b) track record and international standing of the investigator in cancer research (to determine whether the proponent shows enough independence and maturity to predict his/her success as a group leader)
c) innovation
d) approach and feasibility
e) environment and standing of the host Institution at the international level (including an analysis of the resources in the host Institution to determine if they are sufficient to grant success to the endeavour)
f) budget (to determine if the proposed budget is reasonable)

In case there are major discrepancies in the reviews of an application, an editor is appointed, in observance with conflict of interest rules. Editors do not provide their own review but instead serve as "*super partes* arbiters", assessing and balancing the three evaluations.

When all reviews have been completed, applications are discussed by all members of the CTS in the course of study section meetings. The productivity and scientific accomplishments of applicants who were funded by AIRC in the past years, described in the Final Reports, will be taken into consideration during these meetings. In the final plenary session, all endorsed grants, with their proposed budgets, are ranked in order of fundability. AIRC will then automatically fund grants by going down the list, until allocated money is available. At the end of the review process, on the date indicated in the Deadlines table, all proponents will be notified of the final decision on their application with an official communication from AIRC, and the anonymous reviewers' comments will be available online for each proponent.

To avoid conflicts of interests, research proposals submitted by members of the CTS will be reviewed by foreign reviewers only (at least three). The Scientific Director will make the funding decision following the indications received from the reviewers.

Please note that even after the awarding of a grant, AIRC reserves the right to site-visit the PI's laboratories and Institutions, at any time.

Resubmission of revised applications

AIRC allows only one resubmission for applications that were not funded. The revised application must include a response to the reviewers' comments in the "Revision" section of the online form.
Applicants who fail to receive funding after two submissions (i.e. the original and the revised application) **may submit a new application only if its research plan is fundamentally different in content and scope from the two that were previously considered not fundable**.
An application submitted for the third time will not be sent out for review and will automatically be rejected.

Deadlines

DEADLINES ARE STRICTLY ENFORCED: applications submitted after the deadline will not be accepted.

Deadlines for applications (by midnight, Central European Time, of the indicated dates).

New applications	online form release date	January 21, 2011
	electronic submission deadline	March 7, 2011
	paper submission (postmark) deadline (*)	March 9, 2011
	notification of results	November 30, 2011
	start of grants	December 31, 2011

(*) Only the following pages are required in paper format and must be sent by the indicated deadline:

• the Title Page, signed by the PI and the Institutional Legal Representative
• the Abstract
• the Budget form, signed by the PI
• the Bio-ethical requirements page, signed by the PI
• only if research in humans is planned: the Addendum C, i.e. the Clearance from the Ethics Committee and, if applicable, a copy of the informed consent.

Send all paper documentation to the following address:

AIRC
Direzione Scientifica
via Corridoni 7
20122 Milano

***** Paper documentation marked with "draft" on the side is not valid. Please print the requested pages only after completion of the submission online *****

If these documents are not sent by the indicated deadline, or if AIRC does not receive them, applications will not be reviewed.

Deadlines for renewals and final report (by midnight, Central European Time, of the indicated dates).

Renewal for 2nd year of funding	online form release date	April 16, 2012
	electronic submission deadline	June 4, 2012
Renewal for 3rd year of funding	online form release date	April 13, 2013
	electronic submission deadline	June 3, 2013
Final report (scientific and administrative) (*)	online form release date	July 1, 2014
	electronic submission deadline	September 1, 2014

(*) Final administrative report: terms and conditions
At the end of the fifth year, grant recipients must submit a Final administrative report. In case the grant is paid with funds from revenues of the «5 per Mille», AIRC must send a copy of this report to the competent Ministries.
The grant is subject to recoupment in any of the following situations:
- if the Final administrative report is based on false statements;
- if no Final administrative report is submitted;
- in the absence of receipts and payment accounts for the amounts supplied during an audit;
- under any circumstances where the PI fails to comply to the terms and conditions indicated in this Call and in all official communications sent by AIRC relative to the awarded grant.

The Final administrative report and all supporting financial documentation (receipts etc) must be related to the research proposal carried out between December 31st 2011 and December 30th 2014. AIRC reserves the right to check at any time such documentation, which must be kept in the appropriate offices of the host Institutions for 10 years after the end of the grant.

Rendiconto amministrativo: regole di rendicontazione
Alla fine del quinto anno AIRC richiederà un rendiconto amministrativo. Qualora il progetto fosse finanziato con fondi provenienti dal contributo del 5 per mille, questo rendiconto dovrà essere inviato da AIRC ai ministeri di competenza che hanno erogato detto contributo.
AIRC si riserva la facoltà di verificare la corrispondenza della documentazione contabile a supporto del predetto rendiconto, che dovrà essere conservata per 10 anni presso la sede legale dell'istituto ospitante e potrà essere soggetta a controlli.
AIRC si riserva la facoltà di recuperare le somme erogate per il finanziamento del progetto qualora le somme non siano state oggetto di rendicontazione o che la rendicontazione sia determinata in base a dichiarazioni mendaci, o comunque nei casi in cui non vengano rispettate le linee guida che AIRC renderà disponibili nella comunicazione di assegnazione dei fondi al progetto selezionato. La rendicontazione e la relativa documentazione contabile a supporto farà riferimento al periodo di progetto 31/12/2011-30/12/2014.

Guide to proposal preparation

To apply, click on the "Area Ricercatori" of the site www.airc.it. Log on in the "Personal Area" with your username and password. First-time applicants must register in our system: please click on "Registration" and provide the requested information. The registration will be confirmed by e-mail and a username and password will be provided.

To launch the application form for the first time, click on "Bandi/Calls", go to "Grant Proposal", click on "Grant Proposal", and then click on "Apply" in the IG box.
Subsequently, to access the application in progress, click on "Bandi/Calls", select "Grant Proposal", then "Submissions", and then click on "Enter" in the IG box.

- Once in the Index page, a list of forms that need to be filled out is provided: click on each one of them and fill in all the mandatory fields (marked by an asterisk), then click on "Confirm" after completing each form. For your convenience, the incomplete/complete state of each form will be visually indicated on the right side of the list by a red or green flag, respectively.
- The forms can be filled out at different times and the work can be interrupted/resumed at will.
- A number of forms will have to be submitted as PDF files. **Each file cannot exceed 2Mb**. Any file exceeding such a limit will be automatically rejected by the system. These sections need to be written using an A4 format, single spaced, with margins not less than 2 cm and **a font not smaller than 12 point** (preferably Palatino, Times, Arial). **Do not exceed the page limit indicated for each section.**
- The application can be viewed and printed in its incomplete/complete state anytime, by clicking on "Create PDF Draft" at the bottom of the page: the system will automatically produce a PDF Draft.
- Once the application is complete and ready to be submitted, please click on «Submit». Please be aware that after clicking on "Submit" it will not be possible to make any further modifications.
- The complete proposal is automatically assembled as a whole PDF file at the end of the online procedure.
- The application must be written entirely in English.

Principal Investigator (PI)

Please fill in the requested fields, inserting:
• the PI's title (Doctor, Professor, Engineer, Mr., Mrs., Miss), and qualification (i.e. current position). The PI is the researcher who is primarily responsible for the proposed research.
• the title of the proposal. The title must not exceed 110 characters, small cases, spaces included. It should be neither too specific (with abbreviations of name of molecules such as role of PGCI in tumor progression) nor too vague (such as analysis of tumor metastatization).
• the research area. Select one of the 24 Research areas provided in the menu, according to the topic of the research activity that will be carried out with the grant.

Your Contact Data

Please provide the PI's Institution, Department, Address, Phone, FAX and e-mail. If possible, please provide the PI's mobile phone number as well. The affiliation should correspond to the research center where the PI will carry out his/her research activity.

Administrative Data

Please provide the requested information about the Legal Representative (*legale rappresentante*) that can conduct negotiations on behalf of the PI.

Project Keywords

Carefully choose a maximum of five keywords from the list provided. The selected keywords will be used by the AIRC peer review office to assign each application to the most appropriate reviewers. Therefore, **a good choice of keywords is extremely important to ensure that reviewers with the most adequate expertise will evaluate the application**. Click on "Add", then to view the alphabetical list of keywords available, leave the query field empty and hit the Search button. Alternatively, type in a specific keyword and click on "Search". After selecting the keyword, scroll down to the end of the list and click on "Confirm". The alphabetical list of keywords is also available at the end of this Call for Applications. In addition, we have divided the keywords very broadly into fourteen "topics" (listed at the end of this Call for Applications), which should facilitate the search of keywords by subject as an alternative to going through the entire alphabetical list.

Abstract

Please **do not exceed the one-page limit** (500 words). The Abstract must be attached as PDF file.
Extreme care must be placed on the Abstract preparation. The Abstract must provide an immediate understanding as to why the research plan is proposed, what will be done immediately after the first findings, and the potential relevance of the whole line of research. Owing to the importance of Abstracts in facilitating the review process, inadequate Abstracts will strongly influence the whole evaluation process.
Be aware that the Abstract page of all funded research projects may be posted on the Internet.

Revision

Complete this section only if submitting a revised application, i.e. only if resubmitting an application that was not funded with the previous Call. The Revision must be attached as PDF file.
Please provide a point-by-point reply to the criticisms and issues raised by the reviewers, explaining how they have been addressed and indicating all changes (additions, deletions, modifications) introduced in the research plan for this purpose. Please do not exceed two pages (approx. 1000 words).
The Peer Review Office will try to assign revised applications to the same reviewers that evaluated it in the previous Call. However, please be aware that this is not always possible as some reviewers may not be available in every round of review. Therefore, please make sure to describe all issues raised in the original evaluations, so that potentially new reviewers can understand how the application has been modified to address the criticisms. Exceptionally, and by presentation of a cogent argument only, applicants may request not to have their application reviewed again by one of the three previous reviewers. Refer to the "Reviewers to be excluded" section for further details.
An application submitted for the third time as IG with the same research plan will not be sent out for review.

Proposal Main Body

This section should not exceed the 10 pages limit (approximately 5000 words), including preliminary data and references. The Proposal Main Body must be attached as PDF file.
Please describe in detail the proposed research, intended to have a duration of three years, according to the following guidelines:

- Please provide the background and rationale of the proposed research, along with relevant literature references; avoid lengthy, paper-like, introductions.
- Please describe the experimental design and the description of methodologies that will be employed. If the methodology is new or unusual, describe it in sufficient details for evaluation. Description of cumbersome experimental details and protocols, however, is not encouraged and generally detracts from the quality of the proposal.
  Research descriptions are to be subdivided in *tasks*. Given existing difficulties in splitting clinical and epidemiological proposals into tasks, the task subdivision is mandatory only for proposals in laboratory research areas only. Proponents of clinical and epidemiological studies should use subdivision in *phases* whenever possible, since this facilitates the work of reviewers and, in general, results in a better appreciation of the real value of the proposal. When the description of the research can be subdivided in tasks/phases, each numbered item must describe a precise part of the project with its own experimental design and methodological approach.
  The objective (milestone) of each task/phase and the experimental design (including methods and timing) should be clearly identifiable. Reasonability of milestones achievement will be used by the reviewers as a criterion to evaluate the feasibility of the project. The proponents should use milestones achievement when writing the final report at the end of the support period.
- **Make sure to include a section on potential pitfalls and caveats, discussing the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the objectives.**
- Please describe the feasibility of the project, by providing the following:

    - the preliminary data. Pay particular attention to this point, as reviewers always evaluate whether enough preliminary data are provided to support the working hypotheses. Include figures (not just written descriptions) of relevant preliminary data;
    - the PI's expertise, qualification, past experience and accomplishments which are directly relevant to the projected success of the proposal;
    - the facilities and equipment available for the purpose of the research;
    - the collaborations that will be essential for the grants (formal letters of collaboration from external collaborators must also be attached as Addendum B, see later).

Personnel Involved in the Research

This form must be filled out for all persons directly involved in the project, including the PI. Do not list secretaries and/or administrative staff.
For every unit of personnel listed there should be a description of the work that she/he will perform in the "Description of the Work for each Unit of Personnel" section. Units of personnel devoting less than 20% of their time to the project should not be added in this section, but they should be listed in the "Description of the work for each unit of personnel".

Please pay particular attention to the allocation of manpower. The reasonability of the estimate will be evaluated during the review process.

Begin by completing the information relative to the PI: click on the "Edit" icon and fill in the indicated fields.

To insert other personnel, click on "Add" and provide the requested information.

Name: if a personnel unit has not been identified yet, enter TBD (To Be Defined) and put in an invented birth date. TBD identification can only be used for potential fellows. Use the TBD identification sparingly, since a high percentage of fellows TBD might compromise the timely start of the work and/or negatively influence the reviewers.

Role on project: please choose one from the available entries: fellow; technician; internal collaborator, to be used for any personnel working in the same laboratory, Department or Institution as the PI, and working/collaborating with the PI on the proposed research plan; external collaborator, to be used for scientists collaborating with the PI and working in a different Institution. For external collaborators, a formal letter of collaboration is required and must be attached as Addendum B. Please note that the term "Collaboration" means a scientific collaboration, not a kind of labor contract. Transfer of grant money to other laboratories either in Italy or abroad is not allowed.

Clinician: for each personnel, including the PI, choose yes only if directly involved in patients' care. In general, fellowship support should not be awarded to fellows working in clinical-epidemiological areas, since, almost by definition, no clinical fellow can be listed as 100% on a specific project. Exceptions will be possible if substantially justified in the "Fellowships costs justifications" section.

Fellowship: indicate the salary that is requested for the fellow. Support will be provided only for fellows at 100% of time on the project. Salary support can be required, however, only for those fellows who do not have any other fellowship or equivalent source of income. Proponents should ascertain that their own Institution can take on fellows under this provision. The general policy of AIRC is to not provide fellowships for candidates over 35 years old.

Effort on project: please indicate the percentage of time that will be devoted to the actual performance of the work. Fellows for which a salary is requested must be at 100% of their time. AIRC discourages the habit of listing many units of personnel at marginal fractions of their time: therefore, make sure to have a sizable number of units of personnel devoting at least 75% of their time to the project. PhD students (or equivalent) can be listed as 100%, overlooking the time commitments to courses.
In general, **requests for fellowships should not exceed 50% of the total man/year effort**. Example: for a research unit where all personnel adds up to a total of 4 man/year effort, no more than two fellowships for two fellows at 100% of their time (= 2 man/year effort) can be requested.
A short CV **(max one page, in English)** must be added for personnel working at more than 75% of their time, with the exclusion of technical staff. Upload the CV as PDF file by clicking on the paperclip icon. **The following format must be used for all CVs**:

• personal data (name, date and place of birth, citizenship, work address, phone number and e-mail address)
• education (list all degrees obtained, in reverse chronological order, starting from the most recent)
• research experience (list all positions held, in reverse chronological order, starting from the most recent, describing very briefly – two sentences max – the main focus of the research activity)
• technical skills and competences
• awards
• publications (please provide only a selection of the most relevant, with a maximum of five).

For TBD fellows listed at more than 75% of their time, please upload one page containing a brief description of the qualifications/skills that are necessary for the project and that the prospective fellow should have.

Description of the Work for each Unit of Personnel

Please do not exceed the 2 pages limit (1000 words) for the entire staff.
Describe in a concise, but complete manner, the work that each unit of personnel, listed in the previous form, will perform. Please indicate the position held by all personnel listed (e.g. investigator, post-doc, staff scientist, technician, etc.). Do not list undergraduate students, secretaries and/or administrative staff. The Description of the Work for every Unit of Personnel must be attached as PDF file.

Budget Form

In the three columns, one for each of the first three years of support, insert the amount needed for each of the categories allowed.
Calculate the total budget necessary - over the course of the three years - to carry out the entire research project, then divide it into three parts, one for each year of support, so that the funds requested for each year are the same. A justification must be provided if the money allocation is substantially different (more than 25% of the total budget) from year to year. Please note that funds cannot be transferred to other laboratories either in Italy or abroad.

Budget categories allowed:
Direct research costs (excluding personnel): The standard way of budget calculation, based on an itemized list of actual costs, must be employed. Enter the amount of money needed for research costs, divided into the following subcategories:
• consumables and supplies (examples: plasticware, reagents, chemicals, animals if applicable etc.);
• small bench instrumentation (examples: electrophoresis power supplies, microcentrifuges etc.);
• services (examples: microarray services, histology services, etc.);
• maintenance contracts (examples: service contracts for large instruments; animal facilities contracts if outside the research institution);
• publication costs;
• meetings and travel costs.

Fellowships: the amount requested for the first year is automatically entered by the system in this field if one or more fellowships have been requested in the "Personnel involved in the Research" section. If fellowships are requested also for the second and third year of support, please fill out the relevant fields.

Indirect costs: indirect costs will be supported for not more than 15% of the direct research costs plus fellowship costs. A justification, i.e. a letter from the host institution, is required (see below) if indirect costs are charged.

Overheads: Overheads will be covered up to 10% of the subtotal (i.e. the sum of direct research costs, fellowships, indirect costs). A justification, i.e. a letter from the host institution, is required (see below), if overheads are charged.

Direct Research Costs Justification

Please provide a financial breakdown, on an item basis, for each category (consumables and supplies, small bench instrumentation, services, maintenance contracts, meetings/travel costs).

Fellowships Costs Justification

Use this section to justify exceptions for fellowships in the clinical-epidemiological areas (see above). Write n/a if not applicable.

Indirect Costs and Overhead Costs Justification

If applicable, indicate the rate of indirect costs and/or overheads charged by the host Institution. If these costs are applied, it is necessary to provide a letter describing the types of indirect costs and/or overheads charged from the Institution, signed by the Legal Representative. Attach this letter as Addendum D. Write n/a if not applicable.

Existing/Pending Support

If the PI is receiving grants from any funding agency, please list them, regardless of whether they overlap with the current proposal or not. For each ongoing and/or pending grant, indicate: the funding agency, project title, duration, level of funding and degree of overlap (in terms of research plan) with the project presented with this IG application.

Existing/Pending Support Justifications

In case already funded research projects overlap or parallel the current proposal, provide a justification for requesting additional support from AIRC and attach it as PDF file.
This section should also be used to provide name and percentage of time committed of all personnel listed in the current application (including the PI) that are also involved in all other awarded grants, even if not overlapping. A single unit of personnel cannot be allocated for more than 100% of the time. This applies to the sum of all grants, including those from agencies other than AIRC.

Education and Training of the PI

Click on "Add" and list (in reverse chronological order, starting from the most recent) degrees and post-doctoral trainings of the PI.

Research and Professional Experience of the PI

Click on "Add" and list (in reverse chronological order, starting from current one) all positions held by the PI.

Research Interruptions and Justifications

This section should be completed in case the applicant's research activity has been interrupted for periods longer than 6 months between 2006 and 2011 due to parental leave, children care, illness or other personal issues. In this way the applicant can report prolonged periods of absence from work that may have affected negatively his/her track records. This report will be taken into account during the review process.

Publications

A list of publications from the last five years must be provided for the PI. Please fill in the requested fields with the PI's surname, first and middle name initials: the system will start a PubMed search and provide a list of publications spanning from 2006 to 2011. Within the list, please check all the publications that belong to the PI and that the PI wants to include in the proposal. **Be aware of homonymous researchers.** Do not include abstracts, conference papers, book chapters and papers published in journals without IF, unless new journals. Then, using the online navigation tools, please mark those publications that are relevant to the proposal, those with acknowledgement to AIRC and identify **those in which the PI is: first author or co-first author (CFA), last author (L), first corresponding author (FCA) or corresponding author (CA)**; to avoid incomplete information, the system requires an obligatory answer as 'yes' or 'no'. For those publications where the PI is co-first author (CFA) or first corresponding author (FCA), a copy of

the page of the paper(s) where it is stated that the PI "equally contributed to this work" or that the PI is the corresponding author, respectively, must be included as Addendum E (do not attach the entire manuscript).

The system will automatically process the publications data to provide the **list of publications** with the IF and a **track record summary** for the PI, which can be visualized in the PDF draft of the application and which will be included in the final PDF document of the application. The PI track record summary is intended as a quick assessment of the productivity in the last five years and of the international standing of the PI, in order to facilitate the work of reviewers.

AIRC realizes that Impact Factor (IF) is not an absolute standard to evaluate scientific production. However, it must be appreciated that internationally it represents an important objective criterion that allows for an estimate of peer-recognition of the work of a given investigator.

Obviously IF is not the only criterion on which a proposal is judged, other criteria such as scientific soundness of proposal, innovation, feasibility and so on being equally or more important. Even in the limited case of assessing scientific productivity, AIRC realizes that several considerations mitigate the relevance of IF. These include, for example, publications on important, recently established journals, which are not impacted yet or that have "artificially low" IFs, due to their young age. In addition, in the wide area of cancer research there are specialized sectors whose limited audience may affect the IF of the related journals. Reviewers are instructed as to give due consideration to various known caveats in the interpretation of IF.

To submit articles that have already been accepted for publication not available in PubMed, upload a PDF file of the letter(s) of acceptance from the journal(s) as Addendum A.

In case additional papers are published or accepted for publication after the submission deadline, the PI may request permission from the AIRC peer review office to add this supplementary information to his/her application. All communications made in this regard by **May 1st 2011** will be forwarded to all reviewers evaluating the proposal; further communications received after May 1st 2011 but **before September 1st 2011** will be made available only to the members of the CTS, during the study section meetings.

Reviewers to be excluded

Applicants may indicate investigators they would like to exclude as potential reviewers (no more than two are allowed). Exceptionally, in case of a revised application and by presentation of a cogent argument in the "Revision" section, it is possible to request not to send the proposal to one of the reviewers who evaluated the original application. To do so, please indicate which reviewer is to be excluded (i.e. first, second or third as listed in the PDF of the evaluation).

Bio-Ethical Requirements

Check boxes as applicable for human and animal experimentation.

Research on humans

Please note that human experimentation is not limited to clinical studies with healthy volunteers and/or patients. It includes use of human biological samples, human genetic material and human data collection (e.g. genetic information, health, etc.).

In all these cases, a clearance from the competent Ethics Committee/Institutional Review Board (IRB) is mandatory and must be attached as Addendum C (see below), together with a copy of the informed consent, if requested by the Ethics Committee.

The approval document issued by the Ethics Committee MUST indicate:

- the date when the IRB meeting was held: approvals obtained more than 3 years ago (i.e. prior to 2008) are NOT acceptable;
- the name of the applicant;
- a clear reference to the studies described in the proposal (e.g. the title of the application).

In any case, if the research deals with human biological samples, genetic materials or data collection the research proposal should include information about:

- how the samples, materials or data are collected;
- whether the samples, materials or data are collected specifically for the proposed research project;
- how the samples, materials or data are dismissed.

If the approval from the Ethics Committee is not available by the submission deadline, the PI must obtain it and send it to the AIRC Peer Review Office by **November 15th 2011,** both by e-mail and in paper, by regular mail. The research proposal will not be funded if the Ethics Committee approval for research in humans is not presented by this deadline.

Research on animals

If the research plan involves animal experimentation, the applicant must select one of the available options in the online form:

• I have obtained the clearance from the competent animal research ethics committee to carry out the described animal experimentation, and I am attaching it to the application as an Addendum;

• I have not obtained the clearance from the competent animal research ethics committee yet, but I have requested it and will send it to the AIRC Peer Review Office by November 15th 2011;

• there is not active Ethical Committee for animal research at my Institute, but the procedures related to animal use have been communicated to the Italian Ministry of Health and a copy of this communication is attached as Addendum to the current application;

• there is not an active animal research ethics committee in my Institute; I have yet to communicate the procedures related to animal use to the Italian Ministry of Health but I will do so and I will send a copy of this communication to the AIRC Peer Review Office by November 15th 2011.

In any case, by signing the Bio-Ethical requirements page the applicant declares that the research studies are accurately described in the proposal and conform to all regulations protecting animals used for research purposes, including those of the DL 116/92. The experiments described in the proposal will be performed following the guidelines described in: Workman P. et al.: “Guidelines for the welfare and use of animals in cancer research”. Br. J. Cancer (2010) 102: 1555-1577.

The research proposal will not be funded if the required documentation for animal experimentation is not presented by **November 15th 2011**. No paper copy of this documentation is required.

Addenda

Please, complete the application with the following documents, to be uploaded as PDF files:

• *Addendum A***:**

To be used for papers in press. Upload the letter(s) of acceptance from the journal(s).

• *Addendum B*:

Upload the formal letters of collaboration, required for all external collaborators added in the "Personnel involved in the research" section. Failure to include letters of collaboration might lead to grant rejection.

• *Addendum C*:

Upload the clearance from the competent ethical committee for human and animal experimentation, if applicable, as described in the Bio-Ethical Requirements section.

• *Addendum D*:

Upload the letter(s) from the Institution stating indirect costs and overhead (if applicable).

• *Addendum E*:

To be used for those publications where the PI is co-first author (CFA) or first corresponding author (FCA), if applicable: upload a copy of the page of the paper(s) where it is stated that the PI "equally contributed to this work" or that the PI is the corresponding author, respectively. Do not attach the entire manuscript.

Proposal PDF Draft

At any time during the application process a PDF draft file of the complete proposal can be generated and checked by clicking on "Create PDF draft". It is strongly suggested that the PDF Draft and its content are carefully controlled and verified after all forms have been correctly filled out prior to proceeding with the final submission.

Final full Proposal submission (online and by regular mail)

Online submission

All mandatory sections of the application form, marked by an asterisk, must be completed and must have the "green flag" before finalizing the submission. It is possible to submit the full proposal if non-mandatory sections have not been filled out and have a "red flag". Only after having ascertained that all data are correctly reported in the PDF Draft of the proposal, please proceed to proposal submission, by clicking on "submit". The final PDF file of the proposal must be saved for future reference; click on the "Print proposal's PDF" icon to download the submitted application.

Paper submission

For paper submission, please print only these pages:

- the Title Page
- the Abstract
- the Budget form
- the Bio-Ethical Requirements page
- only if research in humans is planned: the Addendum C, i.e. the Clearance from the Ethics Committee/IRB and, if applicable, a copy of the informed consent.

Sign in the appropriate spaces: the signatures of the PI and of the Legal Representative are both required in the Title Page: **by signing the Title page, the PI and the Legal Representative acknowledge and agree to all terms and conditions of this Call.** The applicant's signature is required in the Budget form and the Bio-ethical requirements page as well. Paper documentation marked with "draft" on the side is not valid. Please print the requested pages only after completion of the submission online.

Please send all paper documentation required to the following address:

AIRC, Direzione Scientifica, via Corridoni 7, 20122 Milano.

If these documents are not sent by the indicated deadline, or if AIRC does not receive them, applications will not be reviewed.

KEYWORDS IN ALPHABETICAL ORDER

Adenovirus
Adhesion dynamics
Adjuvant therapy
Aging
AIDS/HIV/Kaposi
ALL
AML
Androgen and/or receptors
Aneuploidy
Angiogenesis and/or vasculogenesis
Animal models
Anti-angiogenic therapy
Antibody/mAb therapy
Apoptosis
Aromatase and/or inhibitors
ATM pathway
ATR pathway
Autoimmunity/Autoantibodies
Autophagy
B cells
bcl2 family
BCR-Abl/Abl
Beta-catenin/Wnt pathway
Biochemistry
Bioinformatics
Biomarkers
Biomolecular modelling
Biophysics
Bladder tumor
Body mass index (BMI) and/or obesity
Bone morphogenetic protein (BMP)
BRAF/RAF kinases
Brain and/or nervous system tumors
BRCA
Breast ca.
Burkitt lymphoma
C.elegans
Cachexia
Cadherins
Cancer stem cells
Carcinogenesis
Caspases
Caveolin
CD133/Stem cell markers
Cell adhesion and/or cell adhesion molecules
Cell cycle
Cell cycle checkpoint G1/S
Cell cycle checkpoint G2/M
Cell differentiation and/or differentiation therapy
Cell migration, motility and/or invasion
Cell polarity
Cell signaling
Centrosome
Cervix ca.
Chemistry
Chemokines
Chemotherapy and/or chemotherapic drugs
Chromatin remodeling
Circulating tumor cells
Clinical practice guidelines
Clinical trials
CLL
CML
Colorectal and/or Intestinal ca.
Combination therapy
Comparative genomics hybridization (CGH)
Computational biology
Computer Tomography (CT Scan)
Costimulatory molecules
COX2
Crosstalk
Crystallography
CTL
Cyclic AMP
Cyclins and/or inhibitors
Cytogenetics and/or chromosome alterations
Cytokines/Interleukins
Cytoskeleton

KEYWORDS IN ALPHABETICAL ORDER

Dendritic cells
Diagnosis
Diet
DNA damage
DNA double strand break repair (DSBR)
DNA methylation
DNA recombination
DNA repair
DNA single strand break repair (SSBR)
Docking
Drosophila
Drug delivery
Drug discovery and/or development
Drug response and/or resistance
Drug screening
Drug toxicity
EGF and/or receptors
Embryonic development
Endocrinology
Endocytosis
Endoplasmic reticulum (ER)
Endothelial cells
Epidemiology
Epigenetics
Epithelial mesenchyme transition (EMT)
Epstein-Barr Virus (EBV)
Estrogens and/or receptors
Extracellular Matrix (ECM)/Stroma
Fas and/or FasL
FGF and/or receptor
Flow cytometry
Fluorescence in situ hybridization (FISH)
Fluorescence resonance energy transfer (FRET)
Focal Adhesion/FAK
Folate and/or receptor
Functional genomics
Functional validation of target genes
Fusion genes
Gastric ca.
Gene alteration/gain or loss
Gene expression and/or profile
Gene regulation
Gene therapy
Genetics
Genome wide screening/GWAS
Genomic imprinting
Genomic/Genetic instability
Genomics
Genotoxicity
Glioma and/or glioblastoma
Glucocorticoids and/or receptors
Glucose metabolism and/or Warburg effect
Glycoproteins and/or glycosylation
Golgi
G-protein and/or GPCR
Granulocytes
Growth factors and/or receptors
Growth induction and/or growth arrest
GVHD
Gynecological tumors
Head and neck ca.
Heat shock proteins (HSP)
Hedgehog pathway
Hematologic malignancies
Hematopoiesis
Hematopoietic stem cells
Hepatitis B virus (HBV)
Hepatitis C virus (HCV)
Hepatocellular carcinoma (HCC)
HER1-2-3-4
Hereditary DNA repair disorders
Hereditary tumors
Herpes virus
High Mobility Group Proteins (HMG)
Histone modifications
HLA/Major Histocompatibility Complex (MHC)
Hodgkin's lymphoma
Homologous recombination

KEYWORDS IN ALPHABETICAL ORDER

Hormones
Human Papilloma virus (HPV)
Hypoxia/Hypoxia-inducibile Factors (HIF-1)
Immune escape
Immunization
Immuno-editing
Immunohistochemistry
Immunosuppression and/or suppressor cells
Immunotherapy
In vitro imaging and/or live cell imaging
In vivo imaging
Infection
Inflammation and/or inflammatory cytokines
Inhibitor of apoptosis proteins (IAPs)
Innate immunity
Insulin
Insulin-like growth factor (IGF) and/or receptors
Integrins and/or Integrin-linked kinase (ILK)
Interferons
Ion channels
Jak/Stat pathway
Kidney ca.
Kinase/Kinome
Lentivirus
Leukaemia
Liver development and/or regeneration
Loss of heterozygosity (LOH)
Lung ca.
Lymphatics and/or lymphangiogenesis
Lymphocyte differentation
Lymphomas
Macrophages and/or monocytes
Magnetic resonance imaging (MRI)
MAP Kinases
Mass spectrometry
Mathematical modeling
Matrix metalloproteases (MMP) and/or inhibitors
MDM2
Medulloblastoma
Melanoma
Membrane biology
Mesothelium
MET/HGF
Metabolism/Metabolomics
Metastasis
Microarrays
Microenvironment
microRNA
Microscopy
Minimal Residual Disease (MRD)
Mitochondria
Mitosis
Monoclonal antibodies (mAbs) and/or immunoconjugates
Mouse models
mRNA processing
Multidrug resistance (MDR)
Mutation (somatic and/or germline)
Myc
Myeloma
Nanotechnology/Nanoparticles
Netrin receptors
Neuroblastoma
Next generation sequencing
NF-kB family
Nitric oxide
NK and/or NKT cells
NMR spectroscopy
Non apoptotic cell death
Non melanoma skin tumors
Normal stem cells
Notch pathway
Nuclear medicine
Nuclear receptor
Nuclear structures
Oncogenes
Oncogenic virus/Viral oncology
Organic compounds
Osteopontin

KEYWORDS IN ALPHABETICAL ORDER

Osteosarcoma
Ovarian ca.
Oxydative stress and/or Reactive Oxygen Species (ROS)
p21 - activated kinases (PAK)
p53, p63, p73
Palliative care
Pancreas ca.
PDGF and/or receptors
Pediatric tumors
Peptides as drugs
PET and/or PET-CT
Phage display
Pharmacogenetics/Pharmacogenomics
Pharmacokinetics
Pharmacology
Phosphatases
Phospholipids
Phosphorylation
PI3K/Akt/PTEN/mTOR pathway
Poly-ADP-ribose polymerase (PARP)
Polymorphisms/SNPs
Post-translational modification
Precancerous lesions
Preclinical studies
Prevention and/or chemoprevention
Prognosis
Prostaglandins
Prostate ca.
Proteasome
Proteomics
Radionuclide therapy
Radiosensitivity and/or resistance
Radiotherapy
Radiotoxicity
RAS/RAS inhibitors
Rb/Rb family
Response and/or resistance to therapy
RET
Retinoic acid and/or receptors
Retrospective studies
Rho GTPases family
Risk factors
RNA binding proteins
RNA splicing
Sarcoma
Screening
Senescence
Signal transduction inhibitors
siRNA and/or non coding RNA
Small molecule inhibitors
Smoking
Soft tissue tumors
Solid tumors
SPECT
Spheroids/3D cultures
Src family
Staging
Statistics
Stress response
SUMO and/or sumoylation
Surgery
Survival analysis
Synthetic lethality
Systems biology
T cells/TCR
T helpers
Target therapy
Telomere and/or telomerase
Testis ca.
TGF and/or receptors
Thyroid ca.
Thyroid hormone
Tissue microarrays (TMA)
TNF and/or receptors
Tolerance
Toll-like receptors (TLR)
Topoisomerase
TRAIL

KEYWORDS IN ALPHABETICAL ORDER

Transcription
Transcription factors
Transformation assays
Transgenic mice
Translesion synthesis
Translocation
Transplantation
Treg cells
Triple negative breast ca.
Tumor antigen
Tumor dormancy
Tumor suppressor genes
Tumor-stroma interaction
Tyrosine kinase receptors (TKR) and/or inhibitors
Ubiquitin and/or ubiquitination
Urokinase-Plasminogen System (uPA, uPAR, PAI)
Vaccine
VEGF and/or receptor
Virology
Von Hippel-Lindau (VHL)
Wilms' Tumor Gene WT1
Xenopus
Yeast
Zebrafish

KEYWORDS BY TOPIC

Adhesion and stroma

Adhesion dynamics

Cadherins

Caveolin

Cell adhesion and/or cell adhesion molecules

Cell migration, motility and/or invasion

Cell polarity

Cytoskeleton

Extracellular Matrix (ECM)/Stroma

Focal Adhesion/FAK

Integrins and/or Integrin-linked kinase (ILK)

Matrix metalloproteases (MMP) and/or inhibitors

Microenvironment

Osteopontin

Tumor-stroma interaction

Urokinase-Plasminogen System (uPA, uPAR, PAI)

Angiogenesis

Angiogenesis and/or vasculogenesis

Endothelial cells

Hypoxia/Hypoxia-inducibile Factors (HIF-1)

Lymphatics and/or lymphangiogenesis

VEGF and/or receptor

Von Hippel-Lindau (VHL)

KEYWORDS BY TOPIC

Cell death and apoptosis

Apoptosis

Autophagy

bcl2 family

Caspases

Fas and/or FasL

Inhibitor of apoptosis proteins (IAPs)

Mitochondria

Non apoptotic cell death

p53, p63, p73

Senescence

TRAIL

Clinical topics

Cachexia

Computer Tomography (CT Scan)

Diagnosis

Drug toxicity

Endocrinology

GVHD

Magnetic resonance imaging (MRI)

Metastasis

Minimal Residual Disease (MRD)

Nuclear medicine

Palliative care

PET and/or PET-CT

Prognosis

Retrospective studies

SPECT

Staging

Survival analysis

Transplantation

KEYWORDS BY TOPIC

Genes, proteins and miscellanea

ATM pathway
ATR pathway
BCR-Abl/Abl
Bone morphogenetic protein (BMP)
BRAF/RAF kinases
BRCA
Embryonic development
Endocytosis
Endoplasmic reticulum (ER)
Epigenetics
Epithelial mesenchyme transition (EMT)
FGF and/or receptor
Glucocorticoids and/or receptors
Glucose metabolism and/or Warburg effect
Glycoproteins and/or glycosylation
Golgi
Heat shock proteins (HSP)
High Mobility Group Proteins (HMG)
Ion channels
Liver development and/or regeneration
MDM2
Membrane biology
Myc
Netrin receptors
Nitric oxide
Oncogenes
p21 - activated kinases (PAK)
Phosphatases
Phospholipids
Poly-ADP-ribose polymerase (PARP)
Proteasome
RNA binding proteins
Stress response
SUMO and/or sumoylation
Telomere and/or telomerase
Topoisomerase
Ubiquitin and/or ubiquitination
Wilms' Tumor Gene WT1

KEYWORDS BY TOPIC

Genetics

Aneuploidy
Centrosome
Chromatin remodeling
Cytogenetics and/or chromosome alterations
DNA damage
DNA double strand break repair (DSBR)
DNA methylation
DNA recombination
DNA repair
DNA single strand break repair (SSBR)
Functional genomics
Fusion genes
Gene alteration/gain or loss
Gene expression and/or profile
Gene regulation
Genetics
Genome wide screening/GWAS
Genomic imprinting
Genomic/Genetic instability
Genomics
Hereditary DNA repair disorders
Histone modifications
Homologous recombination
Loss of heterozygosity (LOH)
microRNA
Mitosis
mRNA processing
Mutation (somatic and/or germline)
Nuclear structures
Pharmacogenetics/Pharmacogenomics
Polymorphisms/SNPs
Post-translational modification
RNA splicing
siRNA and/or non coding RNA
Synthetic lethality
Transcription
Transcription factors
Transformation assays
Translesion synthesis
Translocation
Tumor suppressor genes

KEYWORDS BY TOPIC

Immunology

Autoimmunity/Autoantibodies
B cells
Chemokines
Costimulatory molecules
COX2
CTL
Cytokines/Interleukins
Dendritic cells
Granulocytes
Hematopoiesis
HLA/Major Histocompatibility Complex (MHC)
Immune escape
Immunization
Immuno-editing
Immunosuppression and/or suppressor cells
Immunotherapy
Infection
Inflammation and/or inflammatory cytokines
Innate immunity
Interferons
Lymphocyte differentation
Macrophages and/or monocytes
Monoclonal antibodies (mAbs) and/or immunoconjugates
NF-kB family
NK and/or NKT cells
Prostaglandins
T cells/TCR
T helpers
TNF and/or receptors
Tolerance
Toll-like receptors (TLR)
Treg cells
Tumor antigen
Tumor dormancy
Vaccine

KEYWORDS BY TOPIC

Methods

Animal models
Biochemistry
Bioinformatics
Biomolecular modelling
Biophysics
C.elegans
Chemistry
Comparative genomics hybridization (CGH)
Computational biology
Crystallography
Docking
Drosophila
Epidemiology
Flow cytometry
Fluorescence in situ hybridization (FISH)
Fluorescence resonance energy transfer (FRET)
Functional validation of target genes
Immunohistochemistry
In vitro imaging and/or live cell imaging
In vivo imaging
Mass spectrometry
Mathematical modeling
Microarrays
Microscopy
Mouse models
Nanotechnology/Nanoparticles
Next generation sequencing
NMR spectroscopy
Phage display
Proteomics
Spheroids/3D cultures
Statistics
Systems biology
Tissue microarrays (TMA)
Transgenic mice
Xenopus
Yeast
Zebrafish

Risk factors

Aging
Biomarkers
Body mass index (BMI) and/or obesity
Carcinogenesis
Diet
Genotoxicity
Metabolism/Metabolomics
Organic compounds
Oxydative stress and/or Reactive Oxygen Species (ROS)
Precancerous lesions
Prevention and/or chemoprevention
Risk factors
Screening
Smoking

KEYWORDS BY TOPIC

Signaling and cell cycle

Androgen and/or receptors
Beta-catenin/Wnt pathway
Cell cycle
Cell cycle checkpoint G1/S
Cell cycle checkpoint G2/M
Cell differentiation and/or differentiation therapy
Cell signaling
Crosstalk
Cyclic AMP
Cyclins and/or inhibitors
EGF and/or receptors
Estrogens and/or receptors
Folate and/or receptor
G-protein and/or GPCR
Growth factors and/or receptors
Growth induction and/or growth arrest
Hedgehog pathway
HER1-2-3-4
Hormones
Insulin
Insulin-like growth factor (IGF) and/or receptors
Jak/Stat pathway
Kinase/Kinome
MAP Kinases
MET/HGF
Notch pathway
Nuclear receptor
PDGF and/or receptors
Phosphorylation
PI3K/Akt/PTEN/mTOR pathway
RAS/RAS inhibitors
Rb/Rb family
RET
Retinoic acid and/or receptors
Rho GTPases family
Src family
TGF and/or receptors
Thyroid hormone
Tyrosine kinase receptors (TKR) and/or inhibitors

Stem cells

Cancer stem cells
CD133/Stem cell markers
Circulating tumor cells
Hematopoietic stem cells
Normal stem cells

KEYWORDS BY TOPIC

Types of tumors

ALL
AML
Bladder tumor
Brain and/or nervous system tumors
Breast ca.
Burkitt lymphoma
Cervix ca.
CLL
CML
Colorectal and/or Intestinal ca.
Gastric ca.
Glioma and/or glioblastoma
Gynecological tumors
Head and neck ca.
Hematologic malignancies
Hepatocellular carcinoma (HCC)
Hereditary tumors
Hodgkin's lymphoma
Kidney ca.
Leukaemia
Lung ca.
Lymphomas
Medulloblastoma
Melanoma
Mesothelium
Myeloma
Neuroblastoma
Non melanoma skin tumors
Osteosarcoma
Ovarian ca.
Pancreas ca.
Pediatric tumors
Prostate ca.
Sarcoma
Soft tissue tumors
Solid tumors
Testis ca.
Thyroid ca.
Triple negative breast ca.

Therapies

Adjuvant therapy
Anti-angiogenic therapy
Antibody/mAb therapy
Aromatase and/or inhibitors
Chemotherapy and/or chemotherapic drugs
Clinical practice guidelines
Clinical trials
Combination therapy
Drug delivery
Drug discovery and/or development
Drug response and/or resistance
Drug screening
Gene therapy
Multidrug resistance (MDR)
Peptides as drugs
Pharmacokinetics
Pharmacology
Preclinical studies
Radionuclide therapy
Radiosensitivity and/or resistance
Radiotherapy
Radiotoxicity
Response and/or resistance to therapy
Signal transduction inhibitors
Small molecule inhibitors
Surgery
Target therapy

KEYWORDS BY TOPIC

Viruses

Adenovirus

AIDS/HIV/Kaposi

Epstein-Barr Virus (EBV)

Hepatitis B virus (HBV)

Hepatitis C virus (HCV)

Herpes virus

Human Papilloma virus (HPV)

Lentivirus

Oncogenic virus/Viral oncology

Virology

KEYWORDS IN ALPHABETICAL ORDER

Adenovirus
Adhesion dynamics
Adjuvant therapy
Aging
AIDS/HIV/Kaposi
ALL
AML
Androgen and/or receptors
Aneuploidy
Angiogenesis and/or vasculogenesis
Animal models
Anti-angiogenic therapy
Antibody/mAb therapy
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ATR pathway
Autoimmunity/Autoantibodies
Autophagy
B cells
bcl2 family
BCR-Abl/Abl
Beta-catenin/Wnt pathway
Biochemistry
Bioinformatics
Biomarkers
Biomolecular modelling
Biophysics
Bladder tumor
Body mass index (BMI) and/or obesity
Bone morphogenetic protein (BMP)
BRAF/RAF kinases
Brain and/or nervous system tumors
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Breast ca.
Burkitt lymphoma
C.elegans
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Cadherins
Cancer stem cells
Carcinogenesis
Caspases
Caveolin
CD133/Stem cell markers
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Cell cycle checkpoint G1/S
Cell cycle checkpoint G2/M
Cell differentiation and/or differentiation therapy
Cell migration, motility and/or invasion
Cell polarity
Cell signaling
Centrosome
Cervix ca.
Chemistry
Chemokines
Chemotherapy and/or chemotherapic drugs
Chromatin remodeling
Circulating tumor cells
Clinical practice guidelines
Clinical trials
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CML
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Costimulatory molecules
COX2
Crosstalk
Crystallography
CTL
Cyclic AMP
Cyclins and/or inhibitors
Cytogenetics and/or chromosome alterations
Cytokines/Interleukins
Cytoskeleton

KEYWORDS IN ALPHABETICAL ORDER

Dendritic cells
Diagnosis
Diet
DNA damage
DNA double strand break repair (DSBR)
DNA methylation
DNA recombination
DNA repair
DNA single strand break repair (SSBR)
Docking
Drosophila
Drug delivery
Drug discovery and/or development
Drug response and/or resistance
Drug screening
Drug toxicity
EGF and/or receptors
Embryonic development
Endocrinology
Endocytosis
Endoplasmic reticulum (ER)
Endothelial cells
Epidemiology
Epigenetics
Epithelial mesenchyme transition (EMT)
Epstein-Barr Virus (EBV)
Estrogens and/or receptors
Extracellular Matrix (ECM)/Stroma
Fas and/or FasL
FGF and/or receptor
Flow cytometry
Fluorescence in situ hybridization (FISH)
Fluorescence resonance energy transfer (FRET)
Focal Adhesion/FAK
Folate and/or receptor
Functional genomics
Functional validation of target genes
Fusion genes
Gastric ca.
Gene alteration/gain or loss
Gene expression and/or profile
Gene regulation
Gene therapy
Genetics
Genome wide screening/GWAS
Genomic imprinting
Genomic/Genetic instability
Genomics
Genotoxicity
Glioma and/or glioblastoma
Glucocorticoids and/or receptors
Glucose metabolism and/or Warburg effect
Glycoproteins and/or glycosylation
Golgi
G-protein and/or GPCR
Granulocytes
Growth factors and/or receptors
Growth induction and/or growth arrest
GVHD
Gynecological tumors
Head and neck ca.
Heat shock proteins (HSP)
Hedgehog pathway
Hematologic malignancies
Hematopoiesis
Hematopoietic stem cells
Hepatitis B virus (HBV)
Hepatitis C virus (HCV)
Hepatocellular carcinoma (HCC)
HER1-2-3-4
Hereditary DNA repair disorders
Hereditary tumors
Herpes virus
High Mobility Group Proteins (HMG)
Histone modifications
HLA/Major Histocompatibility Complex (MHC)
Hodgkin's lymphoma
Homologous recombination

KEYWORDS IN ALPHABETICAL ORDER

Hormones
Human Papilloma virus (HPV)
Hypoxia/Hypoxia-inducibile Factors (HIF-1)
Immune escape
Immunization
Immuno-editing
Immunohistochemistry
Immunosuppression and/or suppressor cells
Immunotherapy
In vitro imaging and/or live cell imaging
In vivo imaging
Infection
Inflammation and/or inflammatory cytokines
Inhibitor of apoptosis proteins (IAPs)
Innate immunity
Insulin
Insulin-like growth factor (IGF) and/or receptors
Integrins and/or Integrin-linked kinase (ILK)
Interferons
Ion channels
Jak/Stat pathway
Kidney ca.
Kinase/Kinome
Lentivirus
Leukaemia
Liver development and/or regeneration
Loss of heterozygosity (LOH)
Lung ca.
Lymphatics and/or lymphangiogenesis
Lymphocyte differentation
Lymphomas
Macrophages and/or monocytes
Magnetic resonance imaging (MRI)
MAP Kinases
Mass spectrometry
Mathematical modeling
Matrix metalloproteases (MMP) and/or inhibitors
MDM2
Medulloblastoma
Melanoma
Membrane biology
Mesothelium
MET/HGF
Metabolism/Metabolomics
Metastasis
Microarrays
Microenvironment
microRNA
Microscopy
Minimal Residual Disease (MRD)
Mitochondria
Mitosis
Monoclonal antibodies (mAbs) and/or immunoconjugates
Mouse models
mRNA processing
mRNA translation
Multidrug resistance (MDR)
Mutation (somatic and/or germline)
Myc
Myeloma
Nanotechnology/Nanoparticles
Netrin receptors
Neuroblastoma
Next generation sequencing
NF-kB family
Nitric oxide
NK and/or NKT cells
NMR spectroscopy
Non apoptotic cell death
Non melanoma skin tumors
Normal stem cells
Notch pathway
Nuclear medicine
Nuclear receptor
Nuclear structures
Oncogenes
Oncogenic virus/Viral oncology
Organic compounds

KEYWORDS IN ALPHABETICAL ORDER

Osteopontin
Osteosarcoma
Ovarian ca.
Oxydative stress and/or Reactive Oxygen Species (ROS)
p21 - activated kinases (PAK)
p53, p63, p73
Palliative care
Pancreas ca.
PDGF and/or receptors
Pediatric tumors
Peptides as drugs
PET and/or PET-CT
Phage display
Pharmacogenetics/Pharmacogenomics
Pharmacokinetics
Pharmacology
Phosphatases
Phospholipids
Phosphorylation
PI3K/Akt/PTEN/mTOR pathway
Poly-ADP-ribose polymerase (PARP)
Polymorphisms/SNPs
Post-translational modification
Precancerous lesions
Preclinical studies
Prevention and/or chemoprevention
Prognosis
Prostaglandins
Prostate ca.
Proteasome
Proteomics
Radionuclide therapy
Radiosensitivity and/or resistance
Radiotherapy
Radiotoxicity
RAS/RAS inhibitors
Rb/Rb family
Response and/or resistance to therapy
RET
Retinoic acid and/or receptors
Retrospective studies
Rho GTPases family
Risk factors
RNA binding proteins
RNA splicing
Sarcoma
Screening
Senescence
Signal transduction inhibitors
siRNA and/or non coding RNA
Small molecule inhibitors
Smoking
Soft tissue tumors
Solid tumors
SPECT
Spheroids/3D cultures
Src family
Staging
Statistics
Stress response
SUMO and/or sumoylation
Surgery
Survival analysis
Synthetic lethality
Systems biology
T cells/TCR
T helpers
Target therapy
Telomere and/or telomerase
Testis ca.
TGF and/or receptors
Thyroid ca.
Thyroid hormone
Tissue microarrays (TMA)
TNF and/or receptors
Tolerance
Toll-like receptors (TLR)
Topoisomerase

KEYWORDS IN ALPHABETICAL ORDER

TRAIL
Transcription
Transcription factors
Transformation assays
Transgenic mice
Translesion synthesis
Translocation
Transplantation
Treg cells
Triple negative breast ca.
Tumor antigen
Tumor dormancy
Tumor suppressor genes
Tumor-stroma interaction
Tyrosine kinase receptors (TKR) and/or inhibitors
Ubiquitin and/or ubiquitination
Urokinase-Plasminogen System (uPA, uPAR, PAI)
Vaccine
VEGF and/or receptor
Virology
Von Hippel-Lindau (VHL)
Wilms' Tumor Gene WT1
Xenopus
Yeast
Zebrafish

KEYWORDS BY TOPIC

Adhesion and stroma

Adhesion dynamics

Cadherins

Caveolin

Cell adhesion and/or cell adhesion molecules

Cell migration, motility and/or invasion

Cell polarity

Cytoskeleton

Extracellular Matrix (ECM)/Stroma

Focal Adhesion/FAK

Integrins and/or Integrin-linked kinase (ILK)

Matrix metalloproteases (MMP) and/or inhibitors

Microenvironment

Osteopontin

Tumor-stroma interaction

Urokinase-Plasminogen System (uPA, uPAR, PAI)

Angiogenesis

Angiogenesis and/or vasculogenesis

Endothelial cells

Hypoxia/Hypoxia-inducibile Factors (HIF-1)

Lymphatics and/or lymphangiogenesis

VEGF and/or receptor

Von Hippel-Lindau (VHL)

KEYWORDS BY TOPIC

Cell death and apoptosis

Apoptosis

Autophagy

bcl2 family

Caspases

Fas and/or FasL

Inhibitor of apoptosis proteins (IAPs)

Mitochondria

Non apoptotic cell death

p53, p63, p73

Senescence

TRAIL

Clinical topics

Cachexia

Computer Tomography (CT Scan)

Diagnosis

Drug toxicity

Endocrinology

GVHD

Magnetic resonance imaging (MRI)

Metastasis

Minimal Residual Disease (MRD)

Nuclear medicine

Palliative care

PET and/or PET-CT

Prognosis

Retrospective studies

SPECT

Staging

Survival analysis

Transplantation

KEYWORDS BY TOPIC

Genes, proteins and miscellanea

ATM pathway
ATR pathway
BCR-Abl/Abl
Bone morphogenetic protein (BMP)
BRAF/RAF kinases
BRCA
Embryonic development
Endocytosis
Endoplasmic reticulum (ER)
Epigenetics
Epithelial mesenchyme transition (EMT)
FGF and/or receptor
Glucocorticoids and/or receptors
Glucose metabolism and/or Warburg effect
Glycoproteins and/or glycosylation
Golgi
Heat shock proteins (HSP)
High Mobility Group Proteins (HMG)
Ion channels
Liver development and/or regeneration
MDM2
Membrane biology
Myc
Netrin receptors
Nitric oxide
Oncogenes
p21 - activated kinases (PAK)
Phosphatases
Phospholipids
Poly-ADP-ribose polymerase (PARP)
Proteasome
RNA binding proteins
Stress response
SUMO and/or sumoylation
Telomere and/or telomerase
Topoisomerase
Ubiquitin and/or ubiquitination
Wilms' Tumor Gene WT1

KEYWORDS BY TOPIC

Genetics

Aneuploidy
Centrosome
Chromatin remodeling
Cytogenetics and/or chromosome alterations
DNA damage
DNA double strand break repair (DSBR)
DNA methylation
DNA recombination
DNA repair
DNA single strand break repair (SSBR)
Functional genomics
Fusion genes
Gene alteration/gain or loss
Gene expression and/or profile
Gene regulation
Genetics
Genome wide screening/GWAS
Genomic imprinting
Genomic/Genetic instability
Genomics
Hereditary DNA repair disorders
Histone modifications
Homologous recombination
Loss of heterozygosity (LOH)
microRNA
Mitosis
mRNA processing
mRNA translation
Mutation (somatic and/or germline)
Nuclear structures
Pharmacogenetics/Pharmacogenomics
Polymorphisms/SNPs
Post-translational modification
RNA splicing
siRNA and/or non coding RNA
Synthetic lethality
Transcription
Transcription factors
Transformation assays
Translesion synthesis
Translocation
Tumor suppressor genes

KEYWORDS BY TOPIC

Immunology

Autoimmunity/Autoantibodies
B cells
Chemokines
Costimulatory molecules
COX2
CTL
Cytokines/Interleukins
Dendritic cells
Granulocytes
Hematopoiesis
HLA/Major Histocompatibility Complex (MHC)
Immune escape
Immunization
Immuno-editing
Immunosuppression and/or suppressor cells
Immunotherapy
Infection
Inflammation and/or inflammatory cytokines
Innate immunity
Interferons
Lymphocyte differentation
Macrophages and/or monocytes
Monoclonal antibodies (mAbs) and/or immunoconjugates
NF-kB family
NK and/or NKT cells
Prostaglandins
T cells/TCR
T helpers
TNF and/or receptors
Tolerance
Toll-like receptors (TLR)
Treg cells
Tumor antigen
Tumor dormancy
Vaccine

KEYWORDS BY TOPIC

Methods

Animal models
Biochemistry
Bioinformatics
Biomolecular modelling
Biophysics
C.elegans
Chemistry
Comparative genomics hybridization (CGH)
Computational biology
Crystallography
Docking
Drosophila
Epidemiology
Flow cytometry
Fluorescence in situ hybridization (FISH)
Fluorescence resonance energy transfer (FRET)
Functional validation of target genes
Immunohistochemistry
In vitro imaging and/or live cell imaging
In vivo imaging
Mass spectrometry
Mathematical modeling
Microarrays
Microscopy
Mouse models
Nanotechnology/Nanoparticles
Next generation sequencing
NMR spectroscopy
Phage display
Proteomics
Spheroids/3D cultures
Statistics
Systems biology
Tissue microarrays (TMA)
Transgenic mice
Xenopus
Yeast
Zebrafish

Risk factors

Aging
Biomarkers
Body mass index (BMI) and/or obesity
Carcinogenesis
Diet
Genotoxicity
Metabolism/Metabolomics
Organic compounds
Oxydative stress and/or Reactive Oxygen Species (ROS)
Precancerous lesions
Prevention and/or chemoprevention
Risk factors
Screening
Smoking

KEYWORDS BY TOPIC

Signaling and cell cycle

Androgen and/or receptors
Beta-catenin/Wnt pathway
Cell cycle
Cell cycle checkpoint G1/S
Cell cycle checkpoint G2/M
Cell differentiation and/or differentiation therapy
Cell signaling
Crosstalk
Cyclic AMP
Cyclins and/or inhibitors
EGF and/or receptors
Estrogens and/or receptors
Folate and/or receptor
G-protein and/or GPCR
Growth factors and/or receptors
Growth induction and/or growth arrest
Hedgehog pathway
HER1-2-3-4
Hormones
Insulin
Insulin-like growth factor (IGF) and/or receptors
Jak/Stat pathway
Kinase/Kinome
MAP Kinases
MET/HGF
Notch pathway
Nuclear receptor
PDGF and/or receptors
Phosphorylation
PI3K/Akt/PTEN/mTOR pathway
RAS/RAS inhibitors
Rb/Rb family
RET
Retinoic acid and/or receptors
Rho GTPases family
Src family
TGF and/or receptors
Thyroid hormone
Tyrosine kinase receptors (TKR) and/or inhibitors

Stem cells

Cancer stem cells
CD133/Stem cell markers
Circulating tumor cells
Hematopoietic stem cells
Normal stem cells

KEYWORDS BY TOPIC

Types of tumors

ALL
AML
Bladder tumor
Brain and/or nervous system tumors
Breast ca.
Burkitt lymphoma
Cervix ca.
CLL
CML
Colorectal and/or Intestinal ca.
Gastric ca.
Glioma and/or glioblastoma
Gynecological tumors
Head and neck ca.
Hematologic malignancies
Hepatocellular carcinoma (HCC)
Hereditary tumors
Hodgkin's lymphoma
Kidney ca.
Leukaemia
Lung ca.
Lymphomas
Medulloblastoma
Melanoma
Mesothelium
Myeloma
Neuroblastoma
Non melanoma skin tumors
Osteosarcoma
Ovarian ca.
Pancreas ca.
Pediatric tumors
Prostate ca.
Sarcoma
Soft tissue tumors
Solid tumors
Testis ca.
Thyroid ca.
Triple negative breast ca.

Therapies

Adjuvant therapy
Anti-angiogenic therapy
Antibody/mAb therapy
Aromatase and/or inhibitors
Chemotherapy and/or chemotherapic drugs
Clinical practice guidelines
Clinical trials
Combination therapy
Drug delivery
Drug discovery and/or development
Drug response and/or resistance
Drug screening
Gene therapy
Multidrug resistance (MDR)
Peptides as drugs
Pharmacokinetics
Pharmacology
Preclinical studies
Radionuclide therapy
Radiosensitivity and/or resistance
Radiotherapy
Radiotoxicity
Response and/or resistance to therapy
Signal transduction inhibitors
Small molecule inhibitors
Surgery
Target therapy

KEYWORDS BY TOPIC

Viruses

Adenovirus

AIDS/HIV/Kaposi

Epstein-Barr Virus (EBV)

Hepatitis B virus (HBV)

Hepatitis C virus (HCV)

Herpes virus

Human Papilloma virus (HPV)

Lentivirus

Oncogenic virus/Viral oncology

Virology