American Association for Cancer Research

The Conquest of Cancer in the New Era of Science and Personalized Medicine

Raymond N. DuBois, M.D., Ph.D.
President, AACR

AACR Progress Report
to the National Cancer Advisory Board
Bethesda, MD
February 3, 2009

Agenda for Today's Presentation

- Provide an overview of the AACR
- Discuss our new 2008 and 2009 programs
- Offer perspectives on today's scientific opportunities and challenges

AACR Current Strategic Goals

- **To foster the highest quality cancer research,** incorporating all relevant scientific disciplines
- **To maintain our standing as the authoritative source** for the latest cancer research findings
- **To help plan for the cancer workforce of the future**
- **To fund both senior and junior scientists** who are conducting cutting-edge cancer research
- **To serve as the authoritative voice for cancer research** and address the concerns of the public about policy
- **To develop synergistic national and international partnerships** with scientists and physicians, patient advocates, and scientific institutions and organizations

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Profile of the AACR Membership

- The first and largest cancer research organization in the world dedicated to the conquest of cancer
- >28,000 members working in nearly 90 countries
- Senior and junior cancer researchers, physician-scientists, other healthcare professionals
- Undergraduate and high school students
- Cancer survivors and patient advocates
- Organizations that support mission
- Over 80,000 non-member scientists who are part of the AACR's worldwide **"Superfamily"**

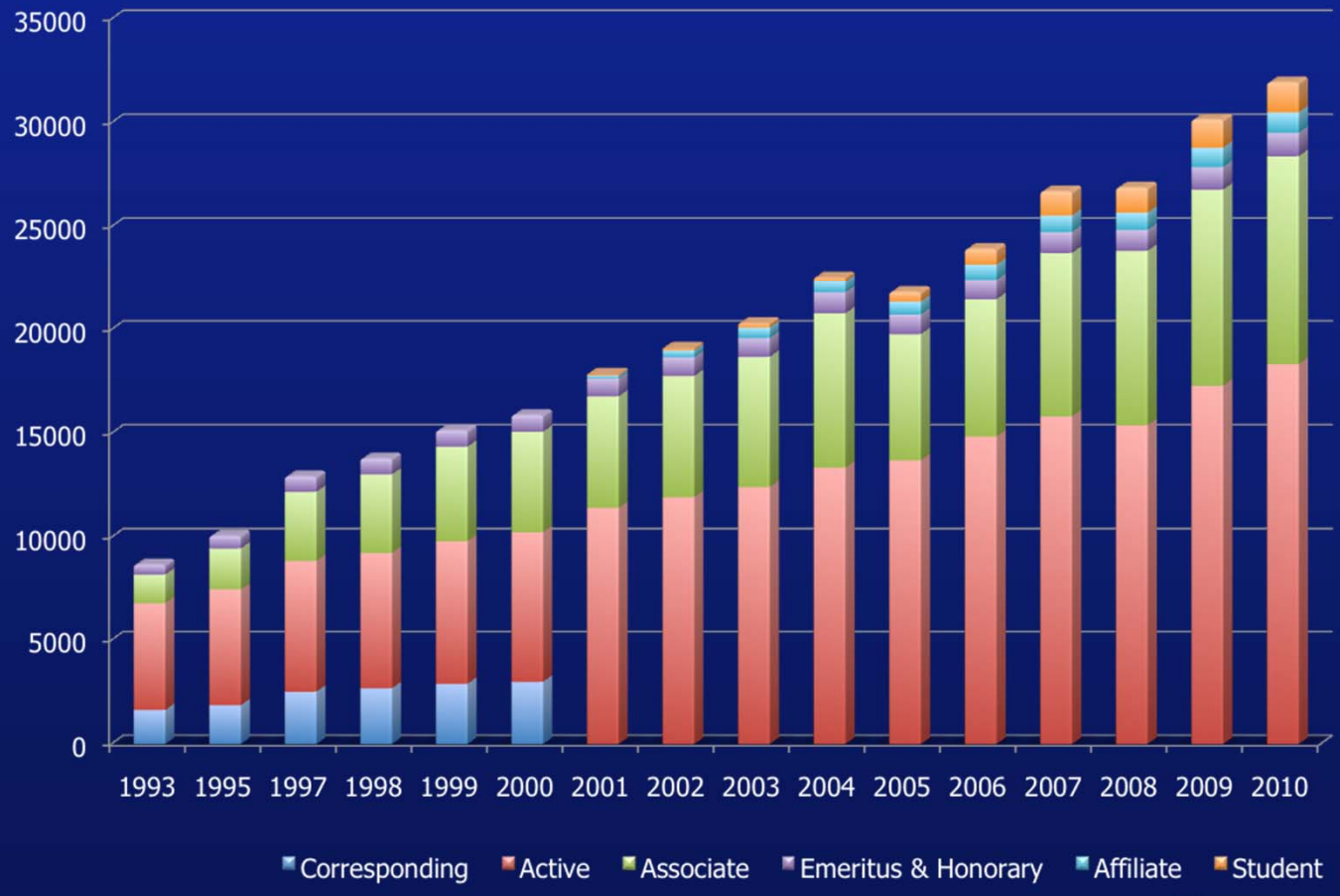
AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

AACR's Long-Standing Leadership in Cancer Research

- Collective brain trust in all aspects of basic, translational, and clinical research
- Consistent focus on cutting-edge science in cancer etiology, diagnosis, treatment, and prevention
- Strong emphasis on translational research and innovation leading to improvements in patient care and prevention
- World-renowned scientific and educational programs and publications
- Catalyst for international cross-disciplinary interactions, innovation, and integrative cancer research

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Exponential Growth in Membership 1993-2010



2009 and 2010 projected.

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

AACR Board of Directors 2008-2009

- **Raymond N. DuBois, M.D., Ph.D.,** *President*
- **Tyler Jacks, Ph.D.,** *President-Elect*
- Bayard D. Clarkson, M.D., *Treasurer*
- William N. Hait, M.D., Ph.D., *Past President*
- Margaret Foti, Ph.D., M.D. (h.c.) *Chief Executive Officer*
- James L. Abbruzzese, M.D.
- Lucile L. Adams-Campbell, Ph.D.
- Elizabeth H. Blackburn, Ph.D.
- Lisa M. Coussens, Ph.D.
- Judy E. Garber, M.D., M.P.H.
- Joe W. Gray, Ph.D.
- Daniel A. Haber, M.D., Ph.D.
- V. Craig Jordan, OBE, Ph.D., D.Sc.
- Kenneth W. Kinzler, M.D.
- David R. Parkinson, M.D.
- Helen M. Piwnica-Worms, Ph.D.
- Bruce A.J. Ponder, Ph.D.
- Eddie Reed, M.D.
- Margaret A. Shipp, M.D.
- Eileen P. White, Ph.D.

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Slate for the Presidency and the 2009-2010 Board of Directors

President-Elect

- Elizabeth H. Blackburn, Ph.D.
- Michael B. Kastan, M.D., Ph.D.

Board of Directors

- Margaret R. Spitz, M.D., M.P.H.
- José Baselga, M.D.
- John D. Carpten, Ph.D.
- William R. Sellers, M.D.
- Joan Massagué, Ph.D.
- Craig B. Thompson, M.D.
- Lewis C. Cantley, Ph.D.
- Jennifer A. Pietenpol, Ph.D.

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Scope of Today's Cancer Research

Diverse scientific areas create a ripe environment for cross-disciplinary interactions and translational cancer research!!

- Angiogenesis
- Animal models
- Behavioral science
- Bioinformatics
- Biomarkers
- Carcinogenesis
- Cell death and senescence
- Chemistry/chemical biology
- Clinical trials
- Computational biology
- Drug design
- Early detection
- Engineering
- Epigenetics and epigenomics
- Genetics
- Genomics
- Imaging
- Immunology
- Infection
- Inflammation
- Mathematical modeling
- Metabolism
- Metastasis and the tumor microenvironment
- microRNAs
- Molecular diagnostics
- Molecular and genetic epidemiology
- Nanoscience
- Nutritional science
- Pathology
- Pharmacology
- Pharmacogenetics
- Pharmacogenomics
- Pharmacoepidemiology
- Physical science
- Prevention research
- Proteomics
- RNAi therapies
- Signal transduction
- Stem cells
- Systems biology
- Vaccines
- Virology
- And many more. . .

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

2008 – An Extraordinary Year for the AACR

army of women
LOVE/AVON Going Beyond a Cure

2008

AACR-FDA-NCI
Cancer Biomarkers Collaborative

STAND UP TO CANCER

AACR CENTENNIAL 1907 - 2007
American Association for Cancer Research

AACR Scientific Journals

Cancer Prevention Research

- New journal encompassing all aspects of cancer prevention research – from preclinical research to clinical trials
- Monthly publication began in April 2008
- 230 submissions in 2008; 85 articles published
- Awarded indexing in November 2009 by the National Library of Medicine; indexed in *Science Citation Index*
- Editor-in-Chief: Scott M. Lippman, M.D.

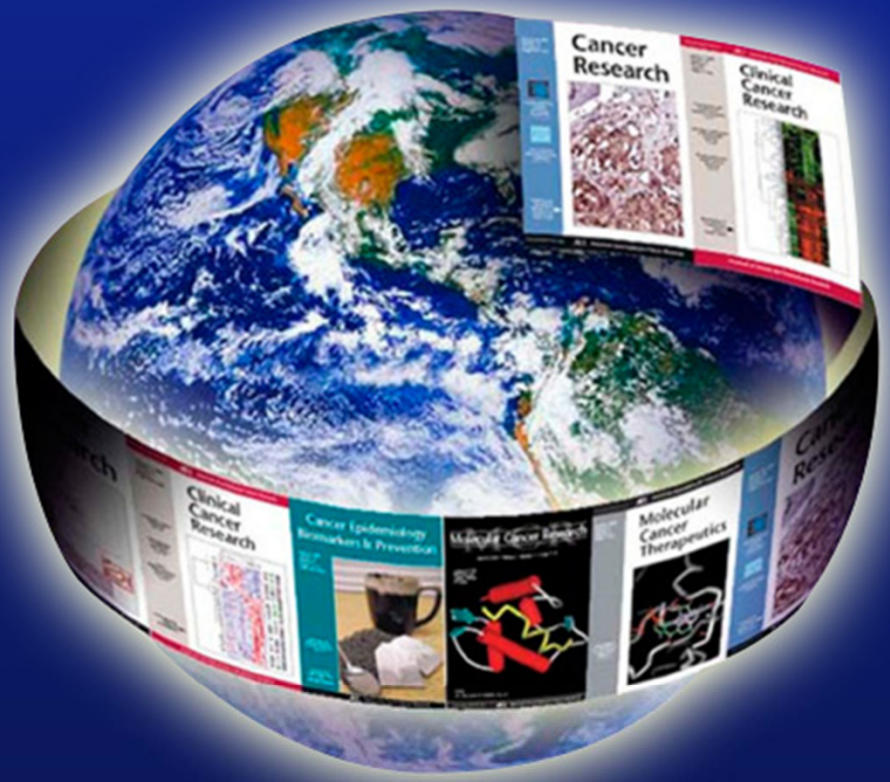
AACR CENTENNIAL 1907 - 2007
American Association for Cancer Research

Electronic Access of AACR Journals 2002 - 2008

Worldwide Manuscript Submissions
Up 172% from 2002 to 2008

2008 Pages Published–28,731

Online articles downloaded worldwide:
2002: 4M
2003: 8M
2004: 14M
2005: 18M
2006: 19M
2007: 25M
2008: 36.8M
2009: 45M (projected)



AACR CENTENNIAL 1907 - 2007
American Association for Cancer Research

AACR-NCI Think Tank: Charting the Future of Cancer Prevention

- Held in November 2008, National Harbor, MD
- Raymond N. DuBois, M.D., Ph.D. and John E. Niederhuber, M.D., Co-Chairpersons
- Goal: To bring together the best minds in basic, translational, and clinical prevention research to consider the current state of cancer prevention and chart a course for accelerating advances in cancer prevention research
- Report is in progress delineating top priorities and action plans in molecular prevention

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

AACR-FDA-NCI Cancer Biomarkers Collaborative (2006 – Present)

- William N. Hait, M.D., Ph.D., Samir Khleif, M.D., and James Doroshow, M.D., Chairpersons
- Goal: To help accelerate the translation of biologically based cancer therapeutics into the clinic by shaping the development and effective use of validated predictive biomarkers in clinical trials
- 121 scientists are addressing critical areas for biomarker development: biospecimen science, standardization and harmonization, assay validation, bioinformatics, collaboration and data sharing, stakeholder education and communication, regulatory challenges, and science policy
- 27 recommendations have already been made along with detailed action plans that are important to the FDA's Critical Path Initiative
- Initial findings were presented to the FDA on October 30, 2008
- In 2009, AACR received an award for its leadership of this project

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

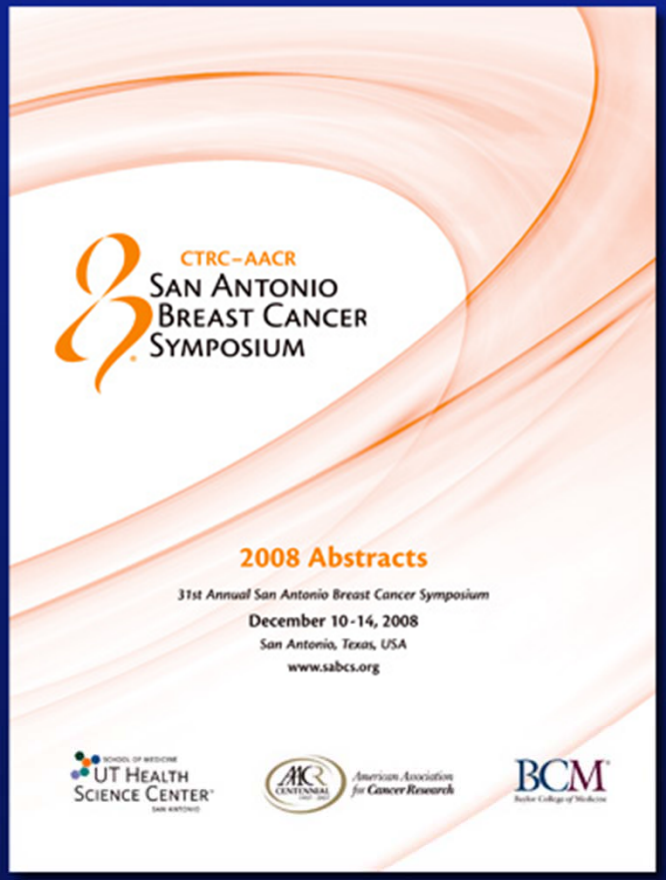
Launch of Translational Cancer Medicine Meeting Series

- Monterey, CA, July 20-23, 2008
  - William N. Hait, M.D., Ph.D., Chairperson
  - Focused on clinical trials and personalized medicine
  - Attendance: 432
- Jerusalem, November 3-6, 2008
  - Michael B. Kastan, M.D., Ph.D., Joseph D. Rosenblatt, M.D., Moshe Oren, Ph.D., Gideon Rechavi, M.D., Ph.D., Chairpersons
  - Focused on bridging the lab and the clinic in cancer medicine
  - Attendance: 355

American Association for Cancer Research

New Partnership: CTRC–AACR San Antonio Breast Cancer Symposium

- December 11-14, 2008 and beyond
- Creates the largest and most comprehensive meeting of its kind by blending basic, translational, clinical, epidemiological, and prevention research related to breast cancer
- Over 9,200 attendees
- Over 1,400 abstracts submitted
- Two new award lectures sponsored by the AACR
- Over 100 young scientists received travel awards for participation



AACR Centennial 1907 - 2007 American Association for Cancer Research

AACR International Conferences

- Dead Sea, Jordan on March 16-19, 2008
  - Samir N. Kaleif, M.D., Chairperson
  - Focus on advances in cancer research
  - 357 attendees from 28 countries in the Middle East and elsewhere in the world
- Hong Kong SAR, China on December 5-7, 2008
  - Anthony T.C. Chan, M.D. and Waun Ki Hong, M.D., Chairpersons
  - Focus on infection and cancer
  - 408 attendees

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

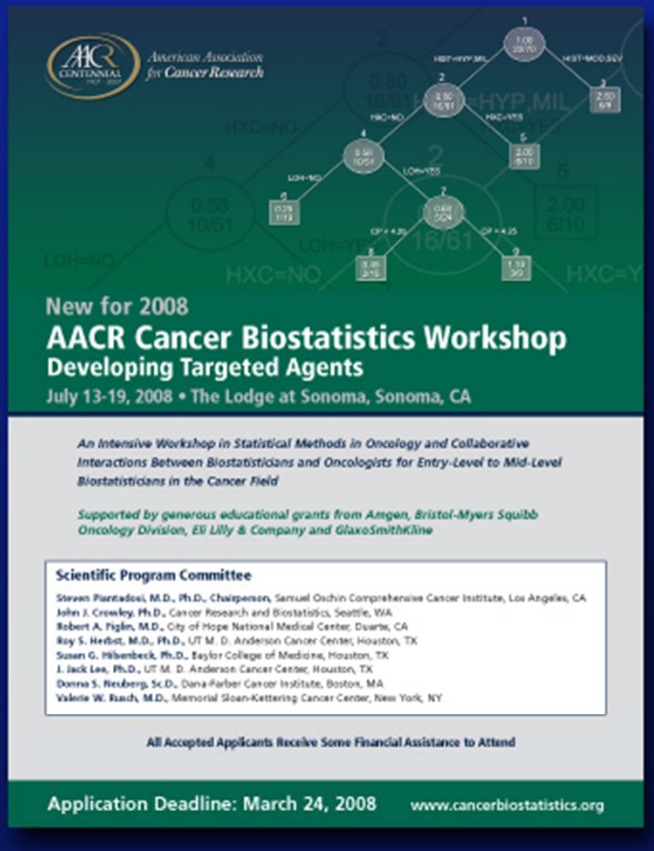
New AACR Task Force on Cancer Biostatistics

- Steven Piantadosi, M.D., Ph.D., Chairperson
- Provide an update of cancer biology and related fields to cancer biostatisticians
- Increase the number of expert biostatisticians in translational clinical trials and other rapidly developing areas in clinical research
- Increase collaborations between cancer biostatisticians and clinical and translational researchers
- Launch a new Educational Workshop for training cancer biostatisticians

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

AACR Cancer Biostatistics Workshop: Developing Targeted Agents

- Launched in July 2008; Sonoma, CA
- Steven Piantadosi, M.D., Ph.D., Chairperson
- 42 early- and mid-career biostatistician participants
- Faculty: 14 top biostatisticians and 7 clinical oncologists
- Intensive week-long introduction to cancer biology, clinical trial design, and collaboration
- Use of problem-based learning and cancer case studies
- 2009 Workshop is in the planning stage



AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

AACR-ASH Workshop: PI3 Kinase, a Common Pathway for Hematologic Malignancies and Solid Tumors

- Kenneth C. Anderson, M.D., Chairperson; Lewis C. Cantley, Ph.D. and William R. Sellers, M.D., Co-Chairpersons
- Goals: To build a common base of knowledge about the PI3 kinase pathway for the field of basic science and translational medicine, review the lessons learned, and discuss opportunities for progress
- Participants: 63 researchers and clinicians representing academia, industry, and government
- Recommendations will be submitted to *Clinical Cancer Research* and *Blood* for simultaneous publication

AACR-Industry Roundtable

- Launched a decade ago by Daniel D. Von Hoff, M.D., Past President of the AACR, to make advances in the following:
  - Acceleration of advances in detection, prevention, and the development of new therapeutics
  - Explore methods by which AACR and industry can partner to accomplish goals of mutual concern
  - Identify an “Action Agenda” of worthy projects
- The AACR-Industry Roundtable, now a stand-alone meeting, advises on programmatic priorities for consideration by the AACR Board of Directors

AACR Clinical Trials Awareness Campaign

- Emanated from the AACR-Industry Roundtable
- Goal: To utilize the opportunity to kick-start public education efforts about clinical trials in conjunction with the timing of Stand Up To Cancer (SU2C)
- Industry partners rallied to support a pilot project, titled "Clinical Trials PR Campaign"
  - Outreach around patient stories in clinical trials in home towns and consumer media
  - National Satellite/Radio Media Tour featuring AACR scientists and patients delivering positive clinical trial messages in local TV and radio stories
- Next Goal: To launch a major initiative in 2009 to increase public education and increase enrollment into clinical trials

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Love-Avon Army of Women

- AACR named the Scientific Partner
- National Breast Cancer Coalition is the Advocacy Partner; affiliates are being added
- Goal: To link scientists with women across the country to discover the causes of breast cancer and aid in its prevention
- Provide researchers who have peer reviewed grants access to the Army of Women
- Over 260,000 women are already enrolled
- Three studies are underway
- Recruitment goal: 1 million participants

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Stand Up To Cancer

- AACR chosen as the Scientific Partner
- Raised $104 million net from the time of the launch in LA on May 28, 2008, to the historic commercial-free telecast by three major networks on September 5, 2008
- Funds raised will go directly to support highly meritorious translational cancer research projects that will have the highest potential for bringing effective new treatments to patients in the shortest time possible

American Association for Cancer Research

Stand Up to Cancer Founding Principles

- Basic science and cutting-edge technologies are ready to be translated to the clinic
- Goals:
  - To accelerate advances in cancer research by raising substantial philanthropic dollars
  - To foster collaborations and team science in cancer research rather than competition
  - To achieve a paradigm shift by shortening the time from discovery to patient benefit
  - To require transparency, deliverables, and communication across the teams funded
  - To fund innovative research projects by young investigators that have potential for translation

Stand Up to Cancer: Progress to Date

- Scientific Advisory Committee (SAC) received 237 concepts for consideration
- Each submission was initially ranked, and the top 25 were then narrowed to 16
- Ultimately, in October 2008, 8 projects were selected for further review
- Members of the SAC met with prospective team leaders, and comprehensive proposals describing research plans are currently under review
- Final “Dream Teams” will be recommended for funding in the Spring of 2009

AACR Science Policy and Government Affairs

AACR members educate legislators about the value of cancer research to public health and the need for increased funding

- Advocate for increased appropriations to sustain scientific momentum at this juncture when discovery and innovation have greater potential to lead to new therapies
- Strengthen public awareness about the economic cost of cancer
- Emphasize concerns about U.S. scientific competitiveness
- Collaborate with other organizations to maximize effectiveness in messaging
- Activities of AACR Washington, DC office under the leadership of William Dalton, M.D., Ph.D., Chairperson

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

The 21st Century Cancer ALERT Act (authored by Senators Kennedy and Hutchison)

- AACR, along with Susan G. Komen for the Cure, convened a working group of researchers and advocates to coordinate the community's recommendations to Senate staff on elements of the bill
- Raymond N. DuBois, M.D., Ph.D. and Edward J. Benz Jr., M.D., Working Group Chairpersons
- A bill draft was circulated in late December, 2008 and is currently under consideration by the cancer community
- Bill addresses coordination of the National Cancer Program, a national biorepository network, biomarker development, data access for investigators, and reimbursement and care issues

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

2009

Innovative Research Grants

STAND UP TO CANCER™

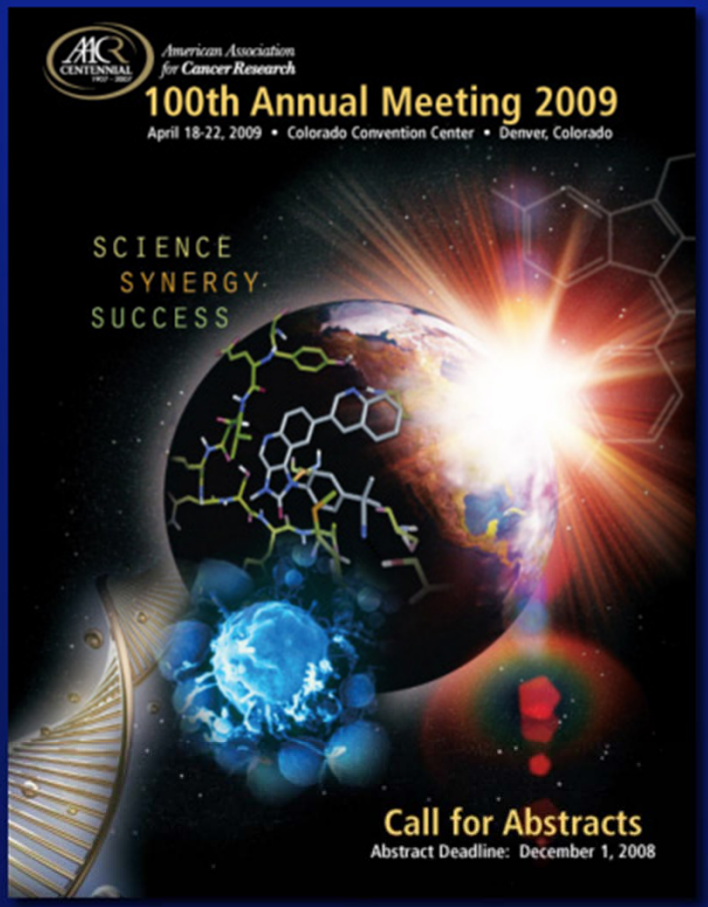
AACR CENTENNIAL 1907 - 2007

American Association for Cancer Research

AACR 100th Annual Meeting 2009

Michael A. Caligiuri, M.D., Chairperson

- April 18-22, 2009, Denver, CO
- Projected Attendance: >17,000
- 5837 proffered papers received for presentation
- The theme “Science, Synergy, Success” will highlight the best cancer science and medicine from all over the world
- Underscores today’s potential for effective translational research for patient benefit



American Association for Cancer Research

New Frontiers in Basic Cancer Research Meeting

- October 8-11, 2009, Boston, MA
- Arnold J. Levine, Ph.D.,
  Elizabeth H. Blackburn, Ph.D.,
  Joan S. Brugge, Ph.D., and
  Robert A. Weinberg, Ph.D., Chairpersons
- First conference in a new series on the latest advances in basic cancer research
- Focus on the best in basic cancer research and creating opportunities for early-career investigators to interact with leaders in the field
- Presentations on high-priority topics such as epigenetics, systems biology, metastasis, and more. . .

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

AACR-NCI-EORTC Molecular Targets and Cancer Therapeutics

- The premier annual international drug development meeting featuring novel targets and cancer therapeutics
- November 15-19, 2009 Boston, MA
- Over 100 invited speakers
- >900 abstracts (projected)
- Projected Attendance: >3,600

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

The Science of Cancer Health Disparities Meeting Series

- February 3-6, 2009, Carefree, AZ
- Cheryl L. Willman, M.D., Maria Elena Martinez, M.P.H., Ph.D., and John D. Carpten, Ph.D., Chairpersons
- Second meeting of its type through a generous grant from the NCI and Susan G. Komen for the Cure
- Goals: To bring together scientists from diverse disciplines to discuss the latest findings, foster interdisciplinary interactions, and stimulate the development of new research in this area

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Translational Cancer Research for Basic Scientists Workshop

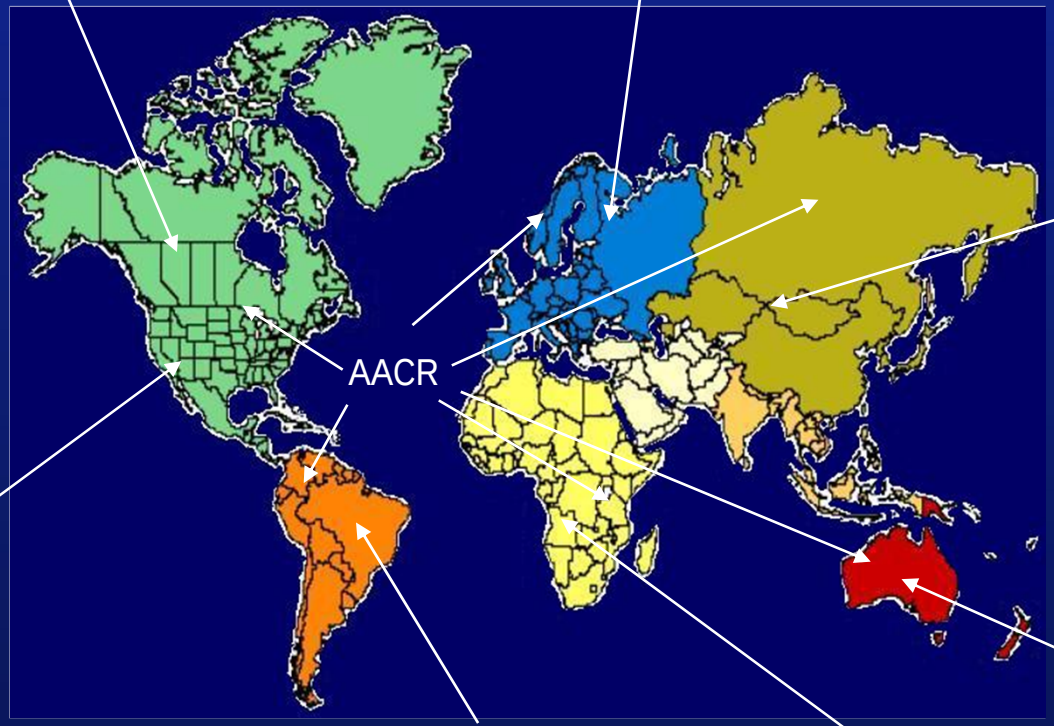
- To be held in Boston, MA, in the Fall of 2010
- Tom Curran, Ph.D. and George Demetri, M.D., Co-Chairpersons
- Goals: To provide basic scientists with an understanding of the roadblocks facing the translation of laboratory breakthroughs to clinical therapeutics, to give them the unique opportunity to visit clinical settings, and to teach them to consider how their own research protocols may have the potential for later application
- Stress the importance of team science and collaborations in translational cancer research
- Audience: Late stage Ph.D. students, post-doctoral fellows, and junior faculty

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

AACR International Goals

- International Affairs Committee – Tom Curran, Ph.D., and Axel Ullrich, Ph.D., Chairpersons
- Partner in the promotion of research, reduction of cancer incidence and mortality, and prevention across international borders
- Meet the needs of young investigators abroad
- Promote a global dialogue on important international and regional matters pertaining to cancer (science and public policy)
- Extend worldwide access to AACR programs, experts, and other resources
- Increase public understanding of cancer research worldwide

AACR's National and International Scientific Collaborations



NCI of Canada

Italian Cancer Society, BACR, EACR, Fredrich Miescher Institute, ECCO, EORTC, ESMO, IARC, ICA, ISREC, UICC

National Health Research Institute of Taiwan, JCA, JSMO, CACA, KCA, GIS of Singapore

NCI, NCCR, OVAC, NDC, FOCR, PCF, NFCR, ASH, ASCO, EMS, ONS, ACS, ICC, LAF, PAF, SU2C, EIF, PanCan, The Wellness Community, Susan G. Komen for the Cure

Brazilian Association of Philanthropic Institutions to Combat Cancer

AORTIC, CANFOG

Australian Cancer Society, MOGA

AACR CENTENNIAL 1907 - 2007

American Association for Cancer Research

New AACR-Asia Office Planned in Singapore (2010-2011)

- First satellite office outside the U.S.
- Facilitate new opportunities for:
  - Advances in science and technology
  - Research collaborations
  - Education and training
  - Communications
  - Cooperation and shared resources
  - Address the cancer burden in Asia

All eyes are on Asia because of investments in science and technology!!

Leadership in Scientific Publishing for Experts in Cancer Research

- AACR is addressing the needs of the scientific community in critical research areas
- New scientific journals under consideration
- Plans for new electronic products tailored for targeted audiences
- Educational media to meet the needs of AACR members and nonmembers, national and international

Education of the Public

- Goals: To enhance public understanding about cancer and to meet their increasing expectations for faster cures
- Strengthen public relations efforts on behalf of cancer research
- Develop new outreach materials and website for lay audiences
- Utilize traditional and new media
- Forge new partnerships with key cancer and biomedical organizations

The Need for Increased Funding for Cancer Research

- Flat government funding for NIH/NCI is causing promising young and experienced senior researchers to pursue alternative careers
- Researchers are spending valuable time seeking limited grant monies
- Economic downturn causing budget cuts at academic institutions
- Corporate, foundation, and individual donations are now at low levels

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

In Memoriam

Jacques Littlefield
(1949-2009)

- Philanthropic supporter of metastatic colon cancer research
- Established the Jeannik M. Littlefield – AACR Grants to support innovative cancer research projects

AACR CENTENNIAL 1907 - 2007
American Association for Cancer Research

Vision 2012: AACR Strategic Plan

- March 2-3, 2009 Strategic Planning Meeting
- Participants to include:
  - AACR Board of Directors
  - AACR Council of Scientific Advisors
  - Trustees of the AACR Foundation
  - Chairpersons of key standing committees
- Goal: To identify scientific priorities for implementation and recommend AACR programs and activities to enhance progress against cancer

Extraordinary Time in the Historical Development of Cancer Research

- Basic research—systematic approach to link specific signaling pathways to biologic endpoint
- New technologies—high throughput screens, array analysis, proteomics and deep sequencing advances
- Translational cancer research—attempts to personalize treatment to each individual tumor
- Cancer prevention research—looking for safer ways to prevent cancer and more effective early detection methods

The Third Revolution

- The two prior revolutions were the discovery of DNA and the sequencing of the human genome
- The third revolution is the integration of emerging technologies, engineering, and the physical sciences with cancer biology, which are expected to lead to further major breakthroughs in cancer research

Phillip A. Sharp, Ph.D.

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

Today's Scientific Challenges

- Our progress will depend on our ability to analyze large data sets quickly and correctly
- Our ability to integrate chemical biology into projects early could help accelerate the development of new treatments
- We need better bioinformatics support and/or easier-to- use tools for basic and translational scientists
- Well-annotated biorepositories with high-quality tissues are not readily available
- Training the next generation of scientists must be a high priority

The Vital Role of AACR in the Conquest of Cancer

- Foster innovation in science and technology
- Facilitate the introduction of new disciplines into the field
- Provide educational opportunities
- Enhance cross-disciplinary collaborations
- Build consensus in the field
- Help make important changes at the policy level
- Encourage international collaborations
- Stimulate funding for groundbreaking research

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research

In Conclusion: Profound Appreciation to the NCI for Collaborations and Financial Assistance

- Annual Molecular Targets and Cancer Therapeutics Conferences
- Frontiers in Cancer Prevention Research Conference Series
- Educational Workshops:
  - Methods in Clinical Cancer Research (Vail and Flims)
  - Molecular Biology in Clinical Oncology
  - Pathobiology of Cancer
  - Cancer Imaging Camp
- AACR-FDA-NCI Cancer Biomarkers Collaborative
- AACR-NCI programs for minorities and medically underserved
  - Comprehensive Minority Biomedical Branch Program
  - Center to Reduce Cancer Health Disparities
  - The Science of Cancer Health Disparities Meeting
- Dedicated service by NCI staff on AACR Committees, Task Forces, Think Tanks, and Editorial Boards

AACR CENTENNIAL 1907 - 2007 American Association for Cancer Research