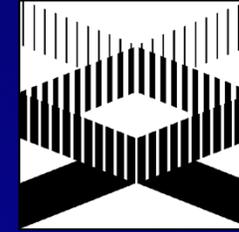


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NCAB Status Update

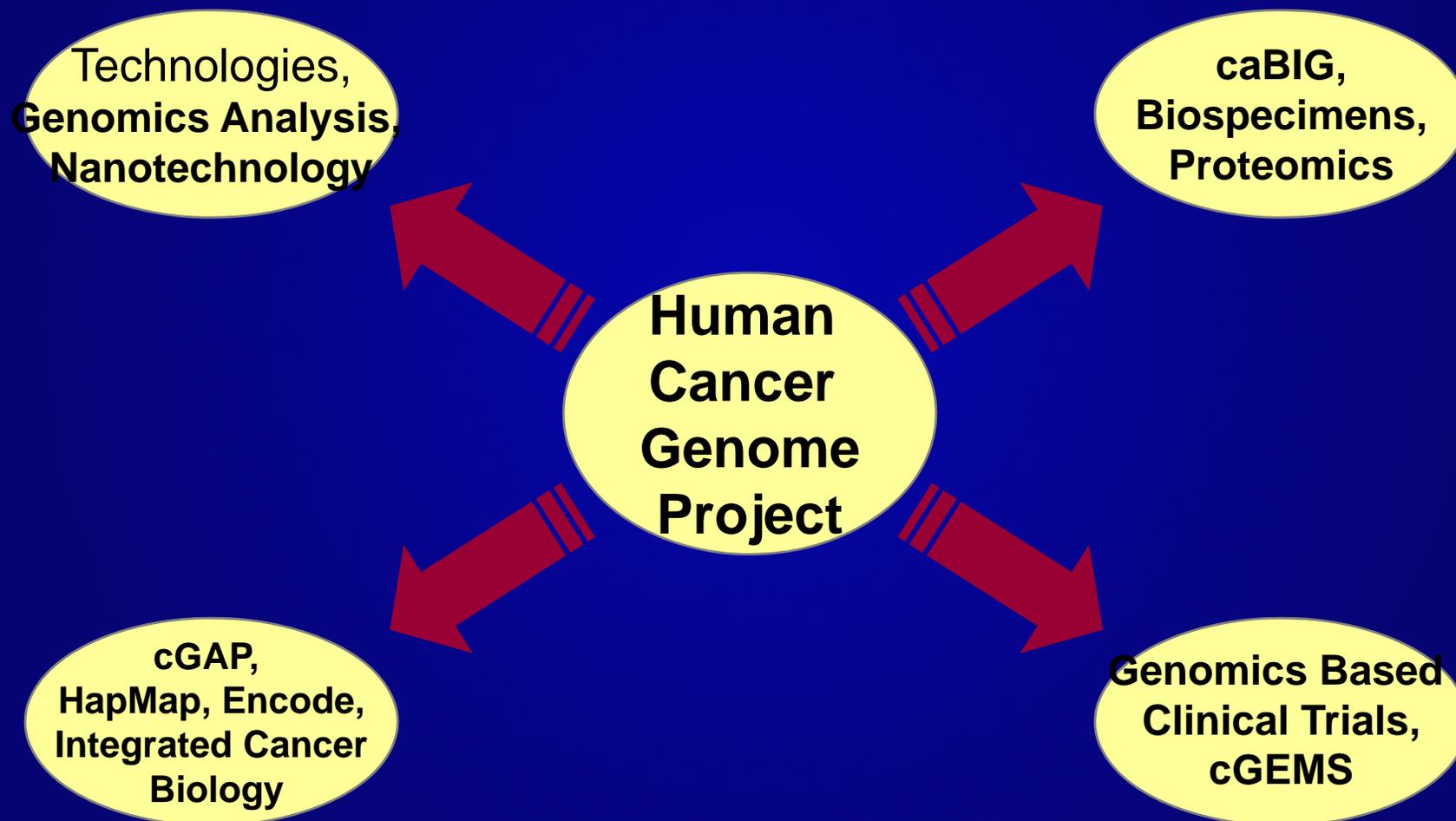
Pilot Program: The NCI-NHGRI Human Cancer Genome Project

Goal: A three year pilot to address key questions to determine the feasibility of a full-scale project that will ultimately facilitate the development of a complete “catalogue” of all genetic alterations in cancer

Enabling Factors:

- Significant knowledge base resulting from the NCI’s investments in understanding molecular biology and genetics of many cancers
- Rate of progress of genomics analysis technologies - \$1,000 genome sequencing looking possible
- NHGRI’s complimentary high throughput projects

The Synergies Derived from NCI-NHGRI Programs



Major Milestones to Date

- NCI-NHGRI exploratory workshop in 2004
- NCAB Subcommittee report – 2005
- NCI-NHGRI Announce commitment to the Pilot Program – 2005
- NCI-NHGRI project management team initiates project planning
- NCI-NHGRI project input workshop – July, 2005

NCI-NHGRI Multi-Sector Workshop: National Cancer Genome Project

**“Toward a Comprehensive Genomic Analysis of
Cancer - *July 20-22, 2005*”**

- **A broad community discussion of the issues**
- **Identified critical issues for consideration in the design and implementation of a pilot project to ultimately identify all of the genetic alterations in cancer**
- **150 leaders from public, academic, private and survivor sectors**

Workshop Challenge to Participants

- **Biospecimen collection, quality and annotation**
- **Tumor heterogeneity**
- **DNA quantity and quality**
- **Current sequencing technology limitations**
- **Detecting broad genetic changes (epigenetics)**
- **Data collection and analysis**
- **Lack of standard definitions of cancer subtypes**
- **Informed consent, data release, intellectual property**

Emerging Issue: Samples, Samples, Samples

- Emerged as major issue
- Possible best case:
 - source - clinical trial (simple vs. complex)
 - fresh frozen
 - matched normal and blood
 - sufficient quantity
 - single histopathologic type
 - single grade and single stage
 - low contamination

Emerging Issue: How Many and Which Tumors

- In-depth genomic analysis of more than 1 tumor (2-3 seemed reasonable)
- Potential exploration of several others – likely cost dependent
- Several practical and scientific considerations in choices
- Tumor quality needs to be high – available to all participants
- Peer review for qualification and selection

Emerging Issue: Data Management and Access

Pre-publication - pre-competitive databases

- Rapid data release that maximizes the amount of information provided pre-publication - enable access to all data for research purposes (existing data release models (*e.g.*, HGP, HapMap, ENCODE))
- Release as much unrestricted data as possible – selected patient associated data to be obtained only under certain conditions of confidential release (*e.g.*, Only for IRB-approved research projects)
- caBIG driven and/or compatible
- Multiple portals for access

Emerging Issue: Leveraging Complimentary Cancer Genome Analysis Capabilities

- Leveraging NCI's investments in cancer genomics
- Potential centers with intermediate throughput that perform other cancer genome analysis technologies
- Centers may vary in contributions – single or multiple platforms – technology development/improvement
- Selection of candidate genes for sequencing

Emerging Issue: Optimize Current Genome Sequencing Capabilities for Rapid Progress

- Address issues of whole genome amplification
- Define ideal samples needs
- Reduce signal/noise
- Start with known cancer-associated genes
- Use current sequencing capacity while driving new technology development

Emerging Issue: Informed Consent and Genome Sequence Data

- Pilot project creates new issues for consent – possibility of identifying individuals from genome sequence data means **a very, very direct consent**
- Need for re-consent for many existing biorepositories
- Need for a tiered-consent for future research
- Use existing best practices – e.g., HapMap
- Establish an encrypted database that is “hacker proof” for selected patient-associated data

Emerging Issue: Drive Technology Development

- Attract RO1 investigators to innovate – genome analysis technologies
- Use available NCI and NHGRI programs to drive technology development
- Include in all NCI-NHGRI centers
- Incorporate advances as they become available
- Increase efficiency, accuracy and reduce costs

Comments on the proposed Human Genome Project, c. 1988

- “Sequencing the genome would be about as useful as translating the complete works of Shakespeare into cuneiform, but not quite as feasible or as easy to interpret.”
- “It makes no sense..[geneticists] would be wading through a sea of drivel to merge dry-shod on a few tiny islands of information.”
- “I shiver at the thought.”

F. Collins – July Workshop

Timeline for Human Cancer Genome Project

July, 2005	Meeting for broad Input
August 2005	NCI/NHGRI plan pilot
Sept./Nov 2005	Review with NCI's BSA and NCAB
Q4 2005	Issue RFAs, RFPs
2006	Review applications and make awards