Summit Challenge

Pacific Health Summit
Seattle, WA
June 8-10, 2005

FRED HUTCHINSON CANCER RESEARCH CENTER
NBR THE NATIONAL BUREAU OF ASIAN RESEARCH
Wednesday, June 8

17:00 – 18:30  Opening Session
Bay Auditorium

Welcome and Introductions
Michael BIRT
Director, Center for Health and Aging, The National Bureau of Asian Research (Seattle)

Address by Co-sponsoring Organizations
Lee HARTWELL
President and Director, Fred Hutchinson Cancer Research Center (Seattle)

Richard ELLINGS
President, The National Bureau of Asian Research (Seattle)

Address by Senior Advisory Group Co-chairs
George F. RUSSELL, Jr.
Chairman, The Russell Family Foundation (Gig Harbor)

William H. GATES, Sr.
Co-chair, Bill and Melinda Gates Foundation (Seattle)

Welcome Address
Greg NICKELS
Mayor, City of Seattle

Keynote Address
Bill CASTELL
President and CEO, GE Healthcare (London)

Calligraphy—Summit “Life”
Dakai YIN
President, Chinese Medical Doctors Association (Beijing)

Summit Goals
Lee HARTWELL
Michael BIRT

Reception
Harbor Dining Room
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Reception
Harbor Dining Room
Thursday, June 9

8:00 – 9:00
Continental Breakfast
Reception Lobby Hallway

9:00 – 10:20
Plenary Session #1: “The Promise of Science”
Bay Auditorium

Panel 1: “The Basic Science”
Moderator: Steven BURRILL
CEO, Burrill & Co. (San Francisco)

Introducer: Elias ZERHOUNI
Director, National Institutes of Health (Washington, DC)

Panelists:
Lee HARTWELL
President and Director, Fred Hutchinson Cancer Research Center (Seattle)

David LANE
Executive Director, Institute of Molecular and Cell Biology (Singapore)

Yusuke NAKAMURA
Chief Director, Human Genome Center, University of Tokyo (Tokyo)

Maynard OLSON
Professor, Department of Medicine, Genome Sciences, University of Washing-
ton (Seattle)

Cheng-wen WU
President, National Health Research Institute (Taipei)

Group Discussion

10:20 – 10:40
Break

10:40 – 12:00
Plenary Session #1: “The Promise of Science”
Bay Auditorium (cont.)

Panel 2: “The Enabling Technologies”
Moderator: Steven BURRILL
CEO, Burrill & Co. (San Francisco)

Introducer: Richard KLAUSNER
Executive Director, Global Health, Bill & Melinda Gates Foundation
(Seattle)
Thursday — "Purpose of Science"

- Genome — digital biology 80% of * goes to clinical care in US
- 15% of world's GDP for health — Rs 5% of people
- Many go on medications — is that on drugs
- 50% of people who take drugs don't benefit — and personal

Zuckerberg

NIH - 42B (to/cure/innov/eq.), historical transition point — includes health care

* Revolutionary times — like building bridge of earthquake
- Small solutions aren't working
- 2 revolutions — biology & medicine

- Disease shift — aging population
  - global dispersal, emerging diseases (e.g., AIDS) — valuation of human lives & environment — change disease transmission
  - Antigens progress — knowledge/capita, not $/capita
- Need paradigm shift — will happen — upstream before disease health care relationship — fit, must participate, must understand disease pathogens — general purpose — networks — and
  - Mechanistic understanding of basic level — culture of science needs to change. New science, new technology (pathology lab)
- Non-destructive methodologies, intricate informatics & biology, ‘fda is not structured’ — need to turn —
Complete useless fraction of diseases.

Phenotype & IT lagging behind.

- Revolution of relationship between health & society.
  - Must think globally. A common problem.
  - Don't know enough today to change the paradigm.
  - New Social Compact.

- Human capital vs. capital — Knowledge/People.
  - Resh is drawn with a deadline. (Form definition)

-Lee Hoodwell

- Pretty far along, biology revolution, hard to implement.
- 2 things for health care.
  - Population studies on healthy people - clinical + biology over time.
  - Phenotype technologies - huge medical frequency, need individual application.

-Dtist: Lane - Singapore

- Need individual data on responses to drugs - life of clinical trials.
- Need focus on bears - we will do it. Don't rely on industry.
- States must increase. People NOT patients.
- Biology & engineering - new technology.
- People are interested in health - need information.
Beamon

By people as human beings - not subjects. Individuals.

Factors, etc.

Births - but not births. Annual samples, other measures.

Health vs disease. Bacteria

Genome based medicine

Japanese bacteria project - big population study.

Epidemiology also essential. Environment/behavior

Olson

2. - Can basic science deliver? - Is there a step wrong? Yes.

Is science organized optimally? No!

What has happened?

Biotechnology of biology - unexpected discovery.

Essential for sustaining biological complexity.

7/10 mystery to understanding human genome.

"Biology is now first." The science is there.

Organization of science -

Institutional development

Can't be stopped by biotech delayed.

Top-down vs bottom-up science.

Catastrophic works.

Catastrophes are disaster. Squeezes out creativity.

Survives guilty people.
Need to couple basic science and goals.

Translation is the missing paradigm. Network of

Biotech, etc. Couple them. Focus on discovery & translation

University, education - problems

need new coalition between scientists & non-scientists

Multiple goals. Current approach won't

sustain the changed paradigm

Must make our own weather

- USA - Taiwan

Discussion -

Drought, especially, chronic susceptibility

Must measure quality of health

Not "guesstimate" or "pseudo results"

Public Policy

Small science vs. big science

Need to change academic mindset

Cultural issues

Knowledge capital is key driver of policy - when

that is trouble

Economic drivers - connected to economic system -

constraints policy.
Paul#2 - Enabling Technologies

- wirelessly reconstructed biology - now need to assemble & tune
- key networks function

Lee His - Systems Biology

- Real in the world or highly advise.

- 3 paradigms:
  - 1. long term goals
    - 1000 proteins in blood - numbers
  - 2. Drug target discovery
    - What are the technologies - broadly defined
      - 1. proteomics
      - 2. capture reagents (high affiniti)
      - 3. computational tools
    - Molecular imaging - what do new drugs go & what do they do?

- Re-engineering networks

- New technology - measure interactions of proteins. Digitalization of medicine

    - Medicine will become much cheaper & more accessible.

Berlin - Hotel

- Things happen & overall change - e.g. Internet, genome sequence.
- Digitization of diagnostics - enabling care.
  - closing new types of feedback loops - knowing screening
  - Sensory technologies in people's homes that monitor behavior.
  - Hill of fine biomarkers - behaviors connected to blood measures

- Enabling project success as a result of sharing information & integrating efforts.

- Kovac - IBM, b+ Sciences

Personalized medicine is the future.

- Enormous data generation - personalized medicine
Discussion:

- Computation power has enabled ability to formulate questions.

- People trained in both biology & mathematics.

- Problem with integrating data sets from different places.

- How data is collected is major issue - standardization issue.

- Will always be limited by lack of standardization.

- Commercial will diagnostics become the high value asset as opposed to Therapeutics?

- Convergence of diagnostics & Therapeutics - each will enhance the other. The two will be indistinguishable.

- Comparison diagnostics – “Targeted Therapeutics”

- “A medical solution” – links information.

- Genomic Health Inc – provides info to math.

- Pi for breast care & information.

- 2Gen - similar.

- Medicine will be transformed in next 5 years.
Panelists:

Andrew BERLIN  
Director, Biomedical and Lifesciences, Intel (Santa Clara)

Leroy HOOD  
President, Institute for Systems Biology (Seattle)

Carol KOVAC  
General Manager, IBM Healthcare and Life Sciences (Somers)

Depei LIU  
President, Chinese Academy of Medical Sciences (Beijing)

Thane KREINER  
Senior Vice President, Affymetrix (Santa Clara)

Group Discussion

12:00 – 12:15  
Special Presentation  
Louis BURNS  
Vice President and General Manager, Digital Health Group, Intel (Santa Clara)

Bay Auditorium

12:30 – 13:45  
Working Lunch Buffet  
Moderator: Maria CATTAUI  
Secretary-General, International Chamber of Commerce (Paris)

Harbor Dining Room

Task: Identify the barriers to realizing the promise of science (e.g., economic, social, political, and ethical barriers)

14:00 – 15:20  
Plenary Session #2: “The Impact on Public Health”  
Bay Auditorium

Panel 3: “Infectious Diseases”  
Moderator: Christopher ELIAS  
President, PATH (Seattle)

Introducer: Jong-wook LEE  
Director-General, World Health Organization (Geneva)
Panelists:

Ding-Shinn CHEN
Dean and Professor of Medicine, National Taiwan University College of Medicine (Taipei)

Molly COYE
CEO, Health Technology Center (San Francisco)

Porntchai MATANGKASOMBUT
CEO, Thailand Center of Excellence for Life Sciences (Bangkok)

K. SATKU
Director of Medical Services, Ministry of Health, Singapore (Singapore)

Chris Y.H. TAN
Senior Counselor, Asia-Pacific International Molecular Biology Network (Seoul-Vancouver)

Group Discussion

15:20 – 15:40

Break

16:00 – 17:20

Plenary Session #2: “The Impact on Public Health”
Bay Auditorium (cont.)

Panel 4: “Chronic Diseases”
Moderator: John POTTER
Senior Vice President and Director, Public Health Sciences, Fred Hutchinson Cancer Research Center (Seattle)

Introducer: Andrew von ESCHENBACH
Director, National Cancer Institute (Washington, DC)

Panelists:

Victor DZAU
Chancellor, Duke University Medical Center and Health System (Durham)

Stephen FRIEND
Executive Vice President, Oncology and Advanced Technologies, Merck and Co. Inc. (West Point)

Edison LIU
Executive Director, Genome Institute of Singapore (Singapore)

Youlin QIAO
Professor and Chief, Department of Cancer Epidemiology, Cancer Institute, Chinese Academy of Medical Sciences (Beijing)

Group Discussion

17:30

Session Ends
Paul #2 - Enabling Technologies

- DNA constructed biology - now need to assemble & tune network function.

Lee Bird - Systems Biology

Real in the medical marketplace.

3 paradigms:
2. Drug target discovery.
3. What are the technologies - basically obtained.
   1. Transcriptome.
   2. Capture reagents.
   3. Computational tools.

Molecular imaging - where do new drugs go? What do they do? Where do they go?

Re-engineering networks.

New technology - measure interactions of proteins. Digitization of medicine.

Medicine will become much cheaper & more effective.

Berlin - Hotel

Things happen overall change - e.g., Internet, genome sequence.

Digitization of diagnostics - enabling care.

- Embracing new types of feedback loops.
- Knowledge sharing.
- Sensory technologies in people's homes that monitor behavior.
- Bill of fine biomarkers.
- Behaviors connected to blood measures.

Enabling project survival as a result of sharing information & integrating efforts.

Kovac - IBM Bio Sciences

Personalized medicine is the future.

Endless data generation - personalized medicine.
It's happening - Biobanking Projects
Must assemble: omics, planet, phytopony, data - working genotype

- New IT to extract knowledge from data
  - Information - genomic medicine
  - Basic science - need new IT - big data
  - Genomic models that can become predictive
  - Silico models of very complex biological systems
  - Supercomputing is key for them
  - New focus on infectious disease - biosecurity, tracking
    & predicting outbreaks

- Kramer - Affirmation

"Catalytic window" - worldwide
Tension between applying current technologies & inventing new
ones - should apply what there is (his opinion)
- Reproductive medicine, personalized medicine - is striving to
  happen - much of the technology is there
- "Cancer to clinic"

Invention -> development -> procurement

Model of development
- Long-term, expensive. Requires public sector but public & may be essential too.
- Ethics is enabling rather than prohibitive obligation to do it.
Family - Plenary Session #3
The Impact on Healthcare & Personal Health
Interactions among - Pacific Health Summit

- Tech Policy
- 2008 Beijing Olympics - announcement
- TB
- International Karmapa Temple
- Cost-Bust Integrative Medicine
- APEC Life Sciences

- Snyderman

- Capabilities of science & tech -> healthcare
- Medicine x 500 yrs but only last 100 yrs is disease causative
  base - science holds potential
  Early 1900s was beginning of science-based medicine - transformation
  But - initially / cause = Likewise = (are magic bullet)
  And - most diseases don't fit that model - real networks, complexity
  - Technology/Science for health: complex systems -
    - can't define process before disease
    - ... gives information, metabolic imaging
    - How do we know that to shift healthcare
    - Need:
      1) Assessment tools
      2) Personalized tools for evaluation
      3) Hybrid healthcare system (including education)
      4) Minimwine system
      5) Acceptance by patients
need to commit to doing it & can be about it.
Duke Prospective Care
- Align needs & healthcare systems
- Bureaucracy - getting people to do it (even fun)
- Start a handful of specific projects - clinic based
Kaplan
- We have now a "new system" - a "professional" except - narcissism, autonomy
- on MD mindset, changing role - new levels of best practice - Information systems
- Other people's assistance
- Need to focus on the patient, human concept
- Rostow

- Problem - getting consumer acceptance
  e.g. mental illness
- Need buy-in people involved from the beginning as colleagues
- Wong - Singapore
  - re-evaluate education process - 1 theme rather than specialty
  - dual diagnostic to F.H. 3. how to implement (e.g.
  behavioral scientists model) - align incentives as how you do it.
- Alignment & coverage
- The cost of new technologies/tools that enable risk assessment, reduce the need for healthcare IT as population ages.
- Why R&D is spent by developed countries. Also except for US the government is the payer.
- How finance R&D

Chen

Consumer focuses
Enabling technologies

[\[Economist April 1980\]
IT Unleash in healthcare]

- Individual pilot projects that show "proof of concept"
  - Patient-centred, personalised
  - Reusable
  - Appropriate partners to make big enough
  - Mandated
- Maybe Singapore is a pilot project
  - 2% GDP on healthcare
  - Technology is there
  - Bridge management models outside of healthcare
  - Start with very complex system - start with disease focus (e.g. asthma)
  - How means prevention for conserving delivery
Disease care system
Health not defined except absence of disease
Panel 7: “Health and Productivity”
Moderator: Moises NAIM
Editor and Publisher, Foreign Policy Magazine (Washington, DC)

Introducer: Ulver REINHARDT
James Madison Professor of Political Economy, Princeton University (Princeton)

Panelists:
Peter ANDREWS
Queensland Chief Scientist (Brisbane)

Kiyoshi KUROKAWA
President, Science Council of Japan (Tokyo)

David LAWRENCE
Former Chairman and CEO, Kaiser Permanente (San Francisco)

Kyeong-bo LEE
President, Korea Health Industry Development Institute (Seoul)

Dezhi YU
Deputy Director General, Department of Planning and Finance, Ministry of Health, China (Beijing)

Group Discussion

15:20 – 15:40

Break

16:00 – 17:20

Plenary Session #4: “Science, Health, and Economic Growth”
Bay Auditorium (cont.)

Panel 8: “What Is the Ideal Healthcare System?”
Moderator: Moises NAIM
Editor and Publisher, Foreign Policy Magazine (Washington, DC)

Introducer: Koji OMI
Former Science and Technology Minister and Member of House of Representatitives, Japan (Tokyo)
Panelists:

May Tsung-Mei CHENG
Host, International Forum, International Center, Princeton University
(Princeton)

Mark PAULY
Bendheim Professor, The Wharton School, University of Pennsylvania
(Philadelphia)

Sangita REDDY
Managing Director, Apollo Health Street (Hyderabad)

Peter SINGER
Sun Life Financial Chair and Director, University of Toronto Joint Centre
for Bioethics, and Program Director, Canadian Program on Genomics and
Global Health (Toronto)

Linda SONNTAG
Founder, Equity Investment Partners, LP (San Francisco)

Group Discussion

17:30

Conference Conclusion

Michael BIRT
Director, Center for Health and Aging, The National Bureau of Asian
Research (Seattle)

Lee HARTWELL
President and Director, Fred Hutchinson Cancer Research Center (Seattle)