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# Genomics, Graduate Medical Education, and the ACGME *(in 10 minutes or less!)*

*Thomas J Nasca MD MACP  
Chief Executive Officer  
Accreditation Council for Graduate Medical Education  
ACGME International*



# Declaration

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- No conflicts of interest to report

# \$1,000 Genome Sequencing and the Advent of Personalized Genomic Medicine

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## Cost of Gene Sequencing Falls, Raising Hopes for Medical Advances



Ramin Rahmani for The New York Times

Bill Banyai used his digital expertise in designing a factory that lowered the cost of mapping the human genome.

By JOHN MARKOFF  
Published: March 7, 2012 | 76 Comments

MOUNTAIN VIEW, Calif. — In Silicon Valley, the line between computing and biology has begun to blur in a way that could have enormous consequences for human longevity.



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Complete Genomics has produced more than 3,000 sequences at about

Bill Banyai, an optical physicist at Complete Genomics, has helped make that happen. When he began developing a gene sequencing machine, he relied heavily on his background at two computer networking start-up companies. His digital expertise was essential in designing a factory that automated

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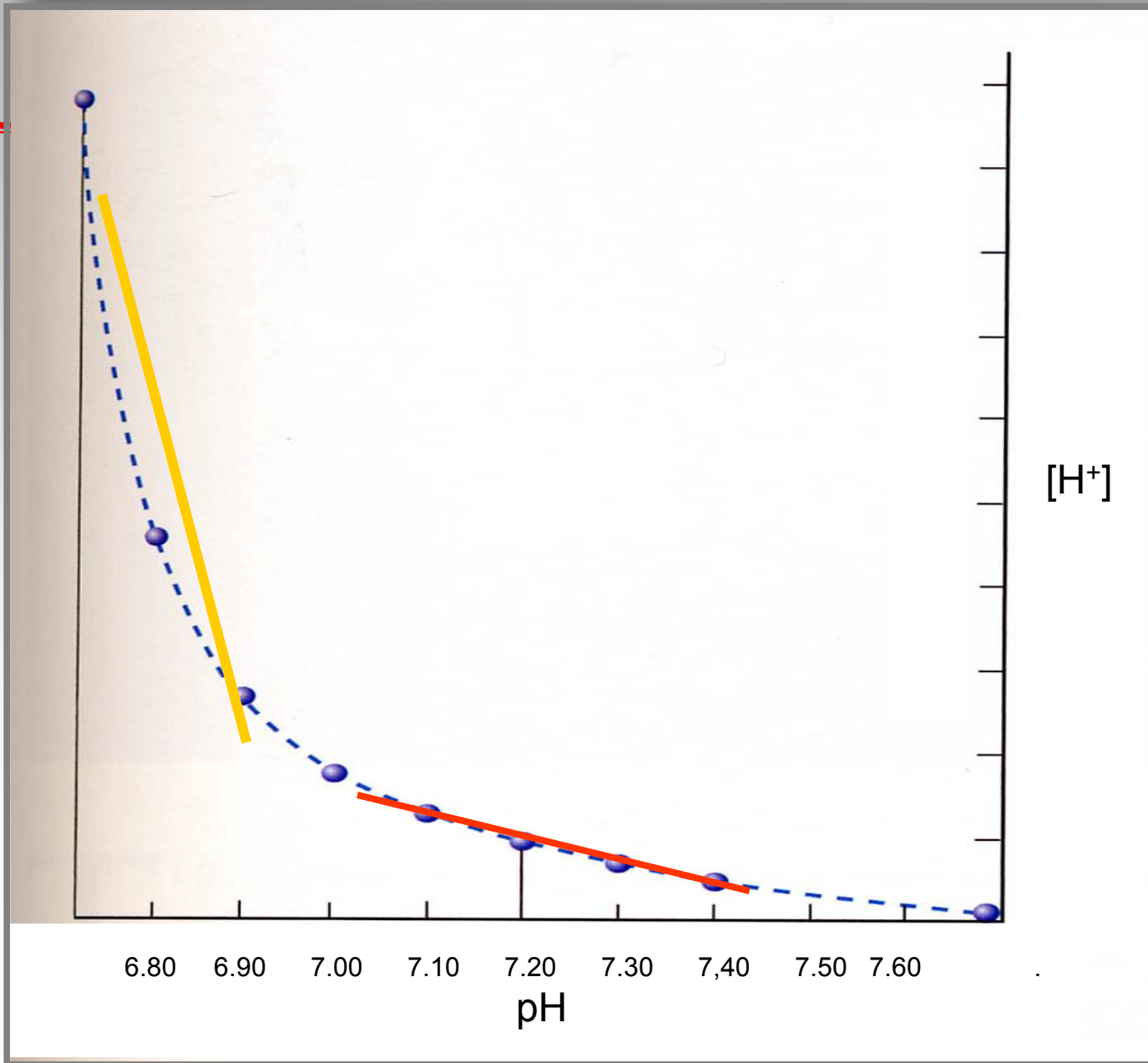
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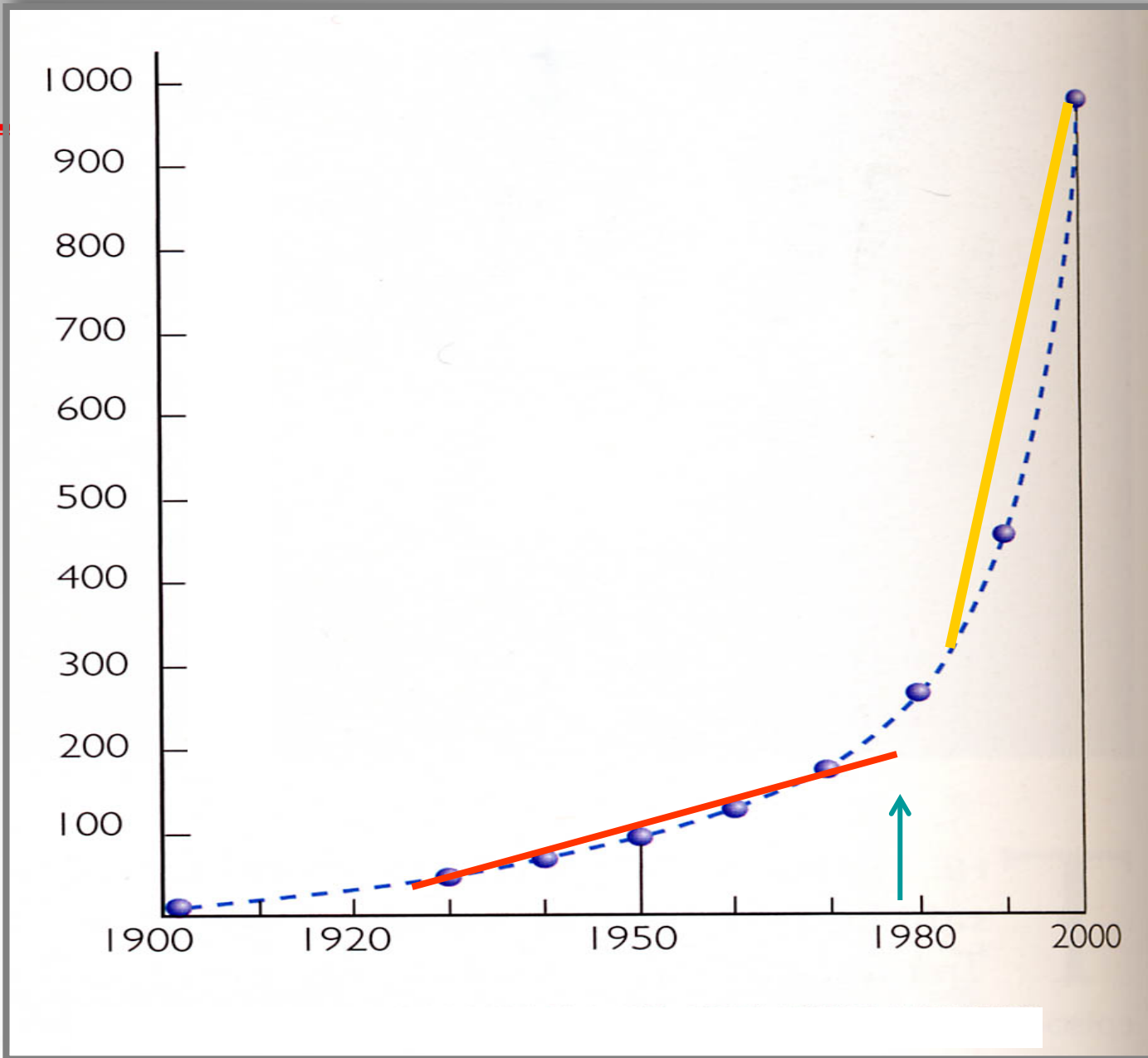
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Hawking, S. The Universe in a Nutshell. 2001, Modified by Nasca, TJ



Hawking, S. The Universe in a Nutshell. 2001

# Are We Getting Ready for Watson?

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IBM Watson x IBM hopes its Watson will become doctor'... x +

www-03.ibm.com/innovation/us/watson/getting\_ready\_for\_watson.shtml



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## Getting Ready for Watson

Start laying the groundwork now with fast ROI smarter analytics and big data capabilities that can accelerate the time to value of a future Watson solution.



Watson

Watson at work

Science behind Watson

Getting ready for Watson

News/events

Overview

Use cases

Progression path

### Ready for Watson

Watson is currently in pilots with leading healthcare and financial services organizations and will be expanding to production-level deployments in new use cases and industries going forward. Getting ready to deploy a Watson solution takes thoughtful planning and selection of where and how to apply its power. Laying the groundwork often involves building strong big data and analytics capabilities which are complementary to Watson itself. Doing so on project-by-project basis ensures that each step is justifiable on its own from a financial and business value perspective and also brings you closer to readiness to apply the transformative power of Watson to your business.

Big Data

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# The Challenge

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- “Chicken or Egg”
- Can you teach specialty based genomics if it is not practiced in the teaching setting?
- The Chicken needs to come first, or at least shortly before the Egg



# The Incremental Faculty Development Imperative

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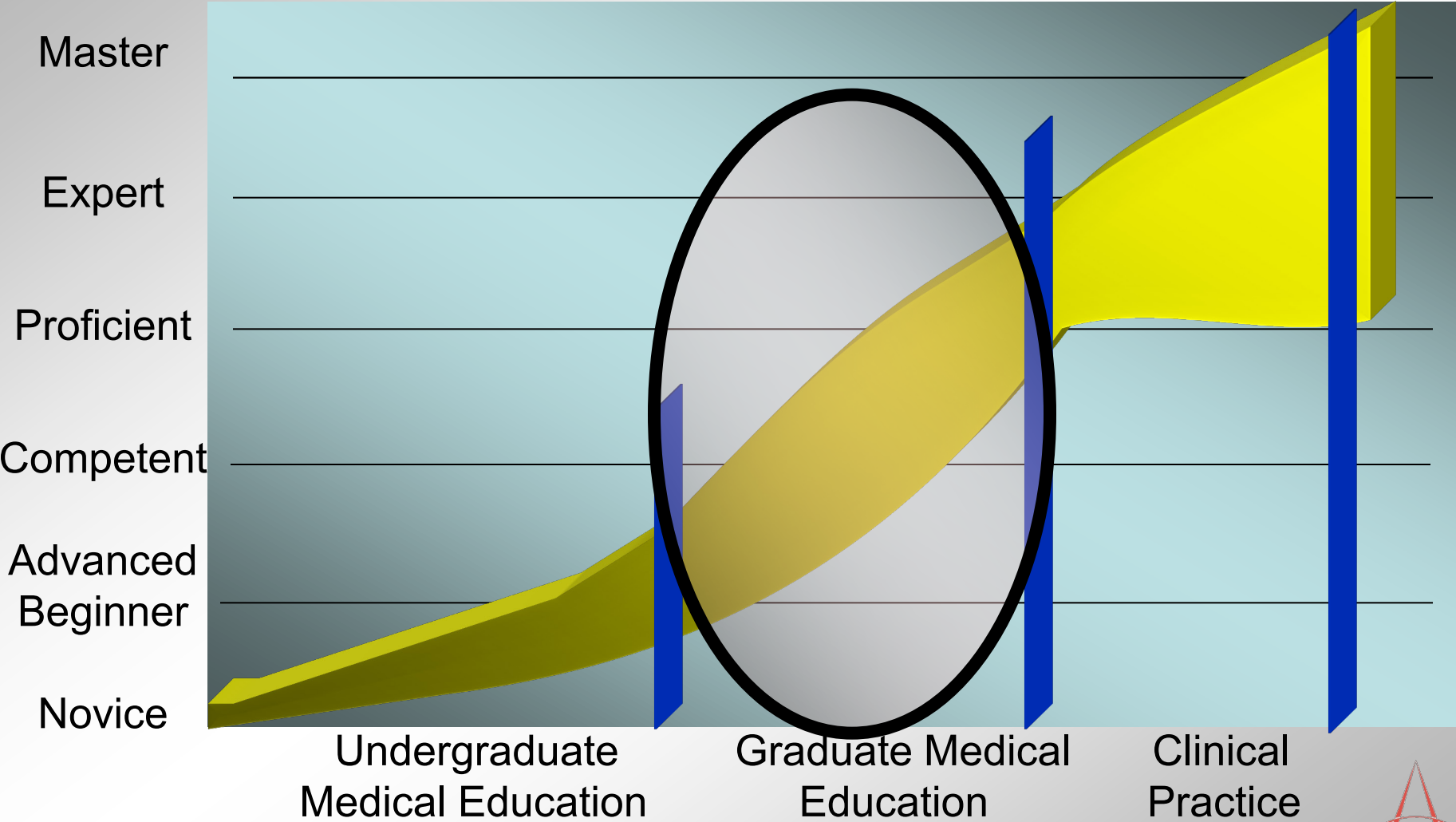
- The Quality and Safety Imperative
- Informatics
- Genomics
- Patient Centered Care
- Refinement of Teamwork in Microsystems of Care
- The Education/Evaluation Imperative

# The Simultaneous Multipronged Intervention

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- College and Specialty Society multipronged educational effort aimed at the practitioner, and the related Residency/Fellowship Program Director Society
- ACCME Encouragement of Genomics Education
- ACGME Specialty Based Standards approach to “heightening interest” in faculty development efforts in teaching institutions
  - Nominating Organizations’ emphasis on genomics in nominees

# Define the Milestones in the Development of Clinical Proficiency in Genomic Medicine *in Each Specialty*



# The Simultaneous Multipronged Intervention

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- ABMS Certifying Board incorporation of Genomic principles in Initial Certification and Maintenance of Certification Processes
- FSMB incorporation of Genomic principles in Maintenance of Licensure Processes

# Uncertainty

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“The Future ain’t  
what it used to be!”



Yogi Berra

New York Yankees Catcher, Philosopher

# Optimism

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“What lies behind us  
and what lies before us  
are tiny matters compared to  
what lies within us.”

Oliver Wendell Holmes

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Thank You