The Forum on Healthcare Innovation

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In collaboration with The Connecticut Health Council
Featured Speaker: Francis Collins
Director, National Institutes of Health

Uncovering Life's Foundation
Exploring the Potential of... 

- Profiling gene activity on the tissue level
  - Gives information on the "average cell"
- Recent initiatives have sped development of rapid, inexpensive single cell analysis
  - Transcriptomes, chromatin maps...
- Early NIH support through the Single Cell Atlas
- Advances are helping drive efforts to: 
  - Create the Human Cell Atlas
    - "a Google Map" of our cells
  - Discover new insights into disease processes and develop potential treatments
Collins’ Commentary

• NIH budget: growing despite other cutbacks
  – House and senate committees pushing increases
  – Continued focus on young investigators

• New technologies
  – CRISPR-Cas9
  – Single cell genomics
  – Microbiome

• All of Us – one million sequences
The View From 30,000 Feet
Consumer Genomics: Here, now!

- Tools for mass precision medicine:
  - Helix: low-cost, consumer-controlled sequencing
  - Genome Medical: scalable counseling, linked to records
  - ActX: screen for medical issues, drug reactions and link to medical records
  - Other applications are multiplying exponentially
Genomic Medicine Is Happening

• Pioneering medical systems are linking sequence data with patient records for prediction and diagnosis:
  – Colorado, Vanderbilt, Geisinger, Innova, Intermountain, Mayo and many others
  – Attacking the problem of interoperability
  – Next challenge: demonstrating the economics of predictive screening
Aging May Be the Key

- Is aging the real disease?
- Cancer, diabetes, cardio: merely symptoms?
- Most medical costs in final years of life
- Single disease focus may drive costs higher
- Experimental methods of increasing life and health span in animal models are now being applied to people
My takeaways

• Collins: The age of precision medicine is here
• The field is moving fast: we must move fast, too.
• Big data is ubiquitous, analytics and tools are key
• Entrepreneurs are building the components of a new medical infrastructure
• Many small successes are as good as one big one
• Prediction will soon equal diagnosis in value