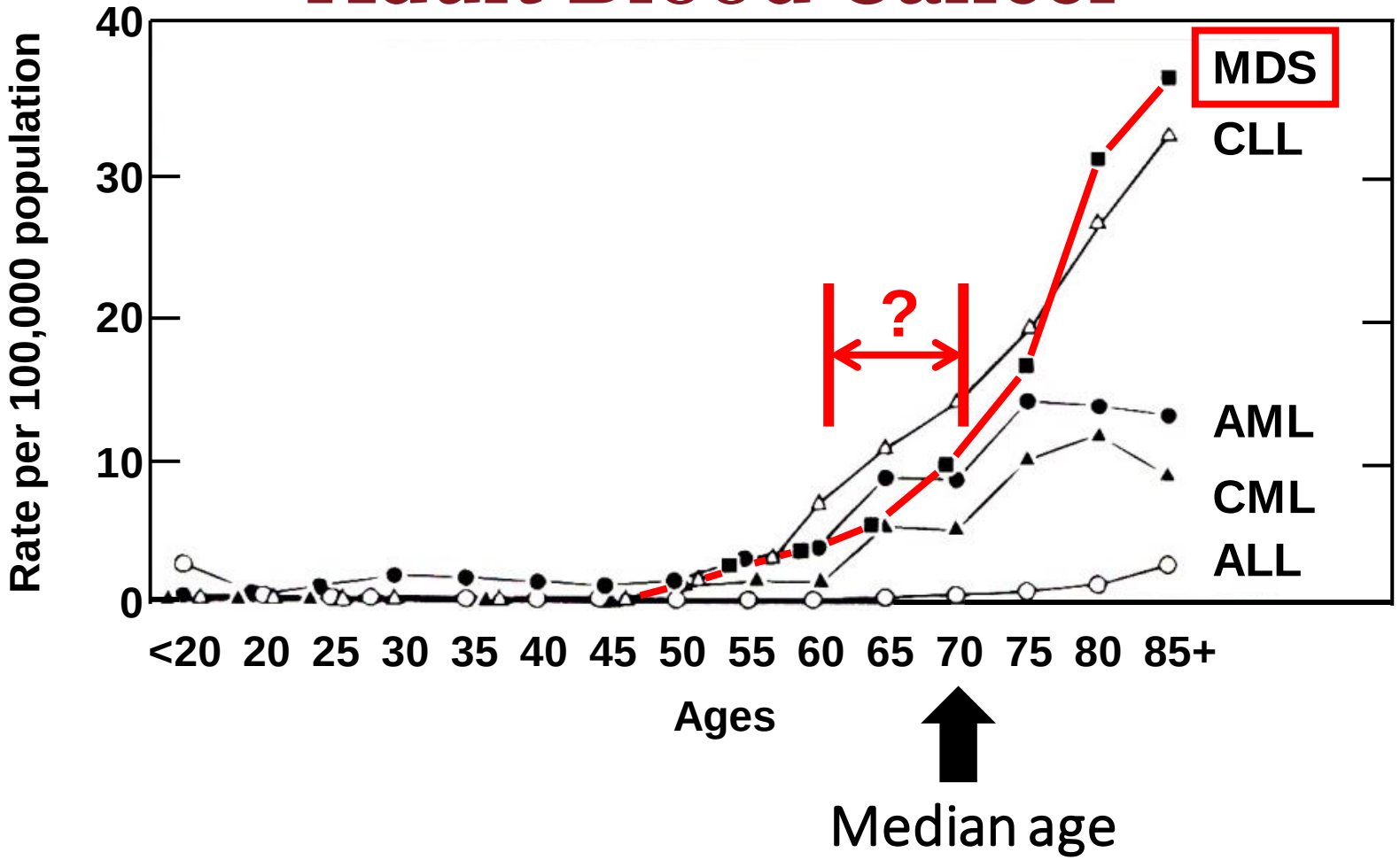
MDS Research

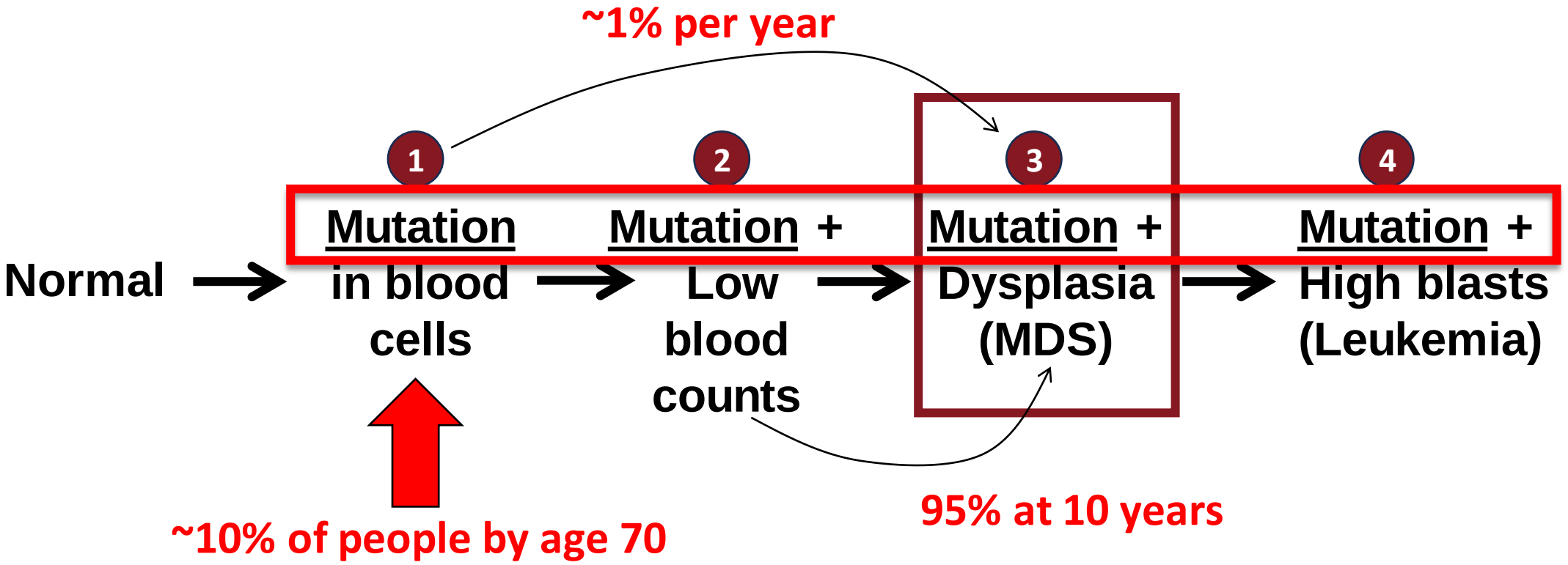
Matt Walter, MD
Washington University School of Medicine
MDS Foundation Patient Forum
May 12, 2024

MDS is the Most Common Adult Blood Cancer

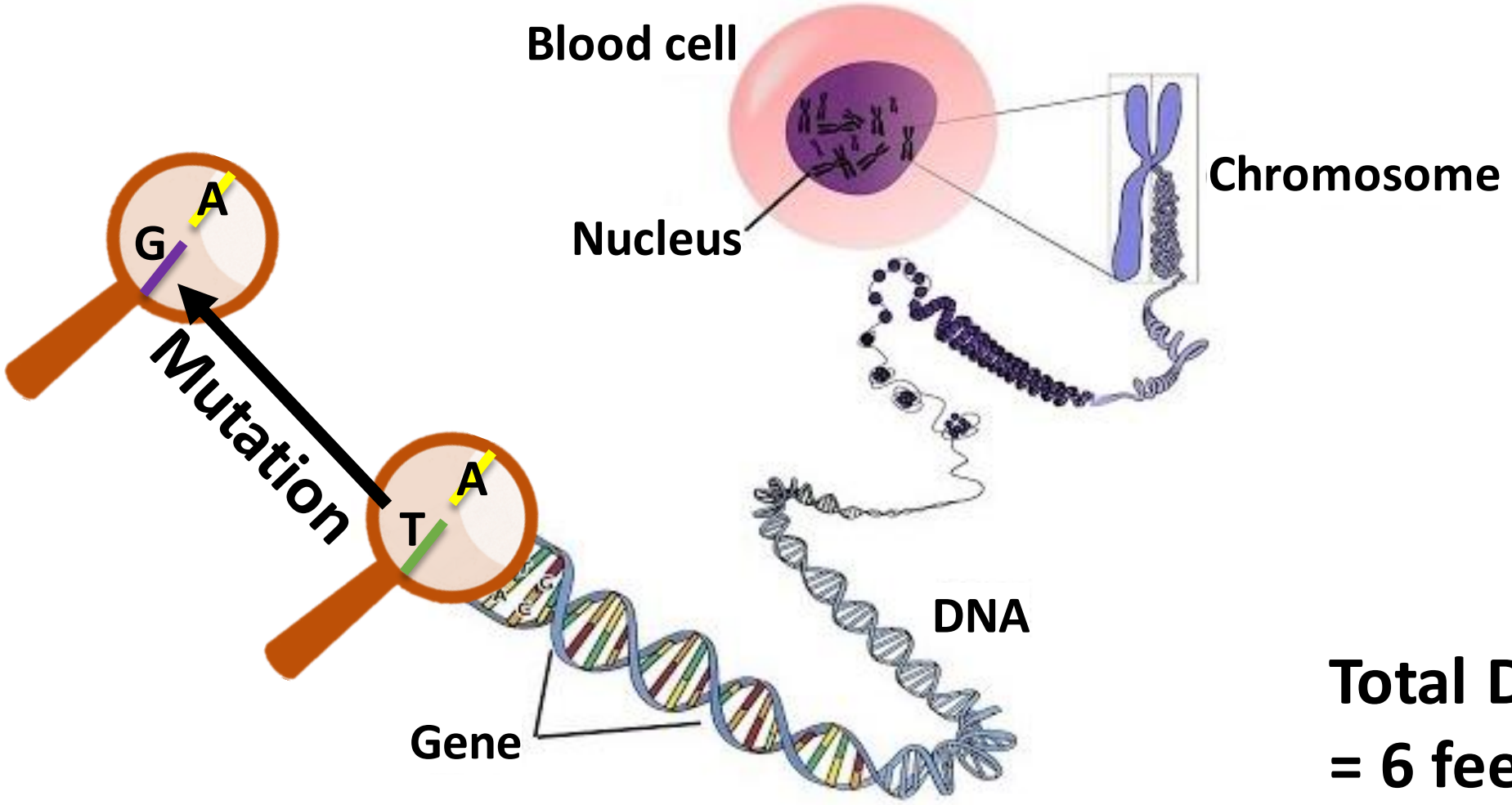


*modified from Greenberg, Hematology, 3rd Ed., 2000

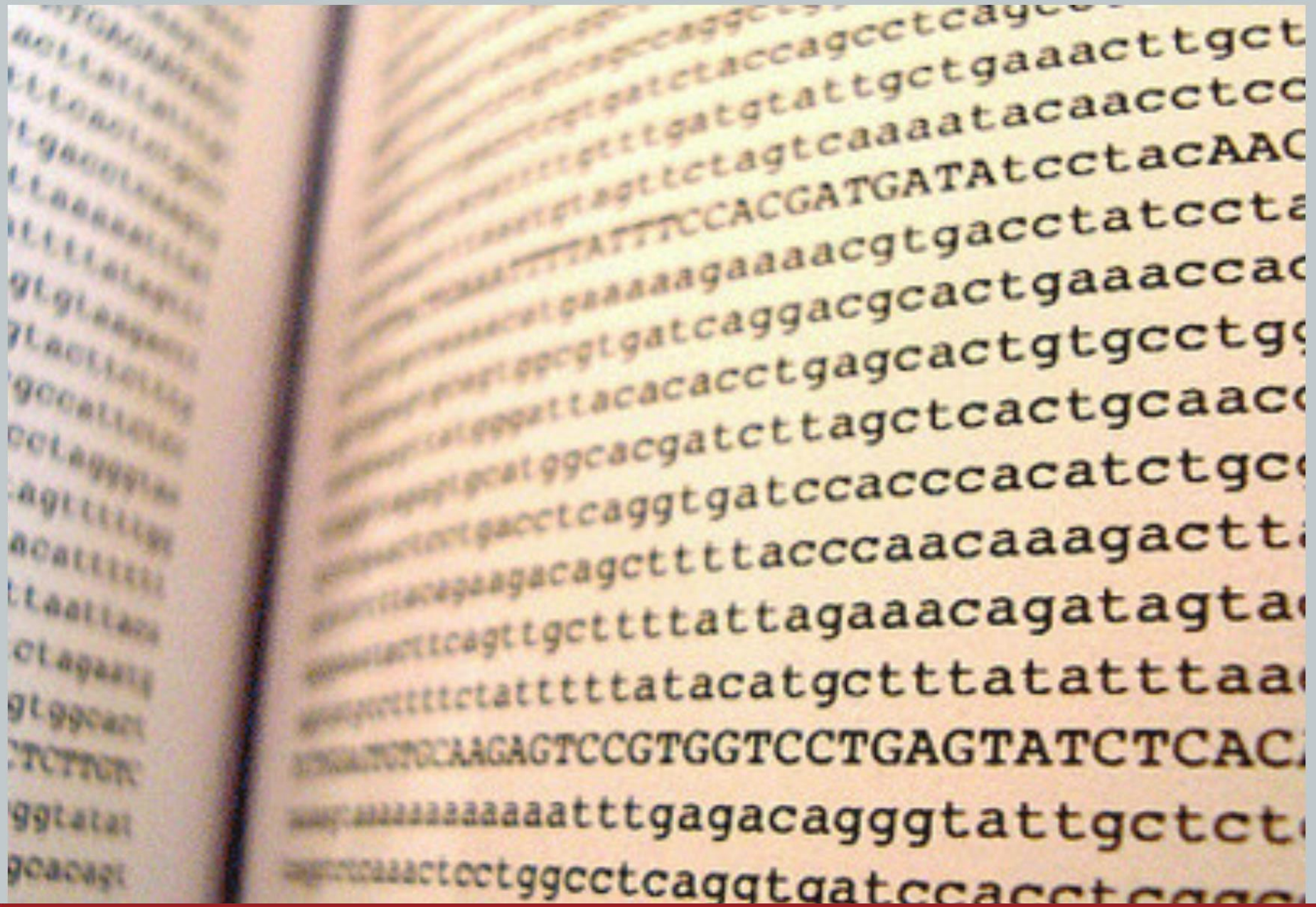
How long have I had MDS? Why did I get MDS?



MDS is caused by DNA mutations



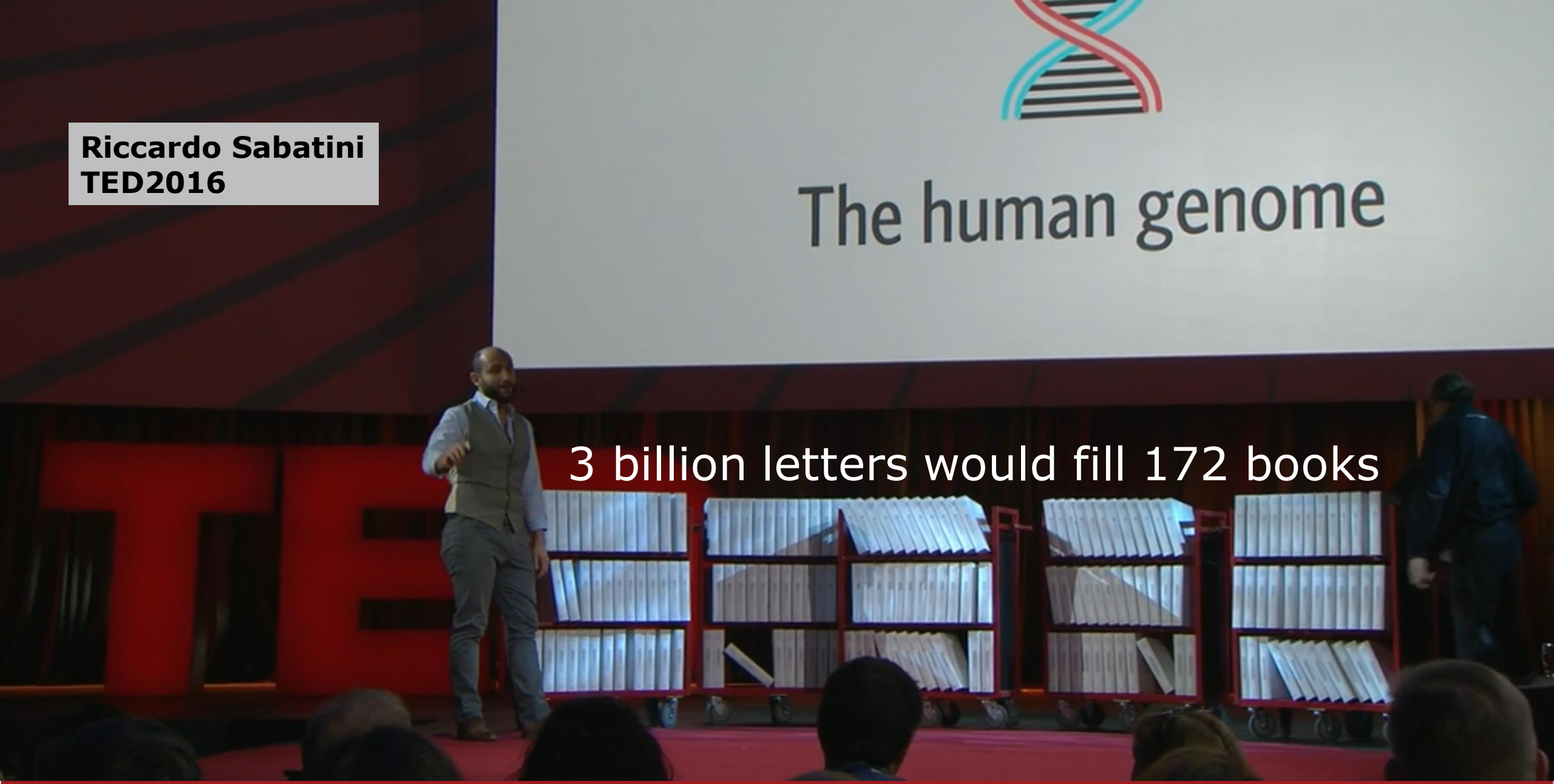
Total DNA in a cell
= 6 feet 6 inches long



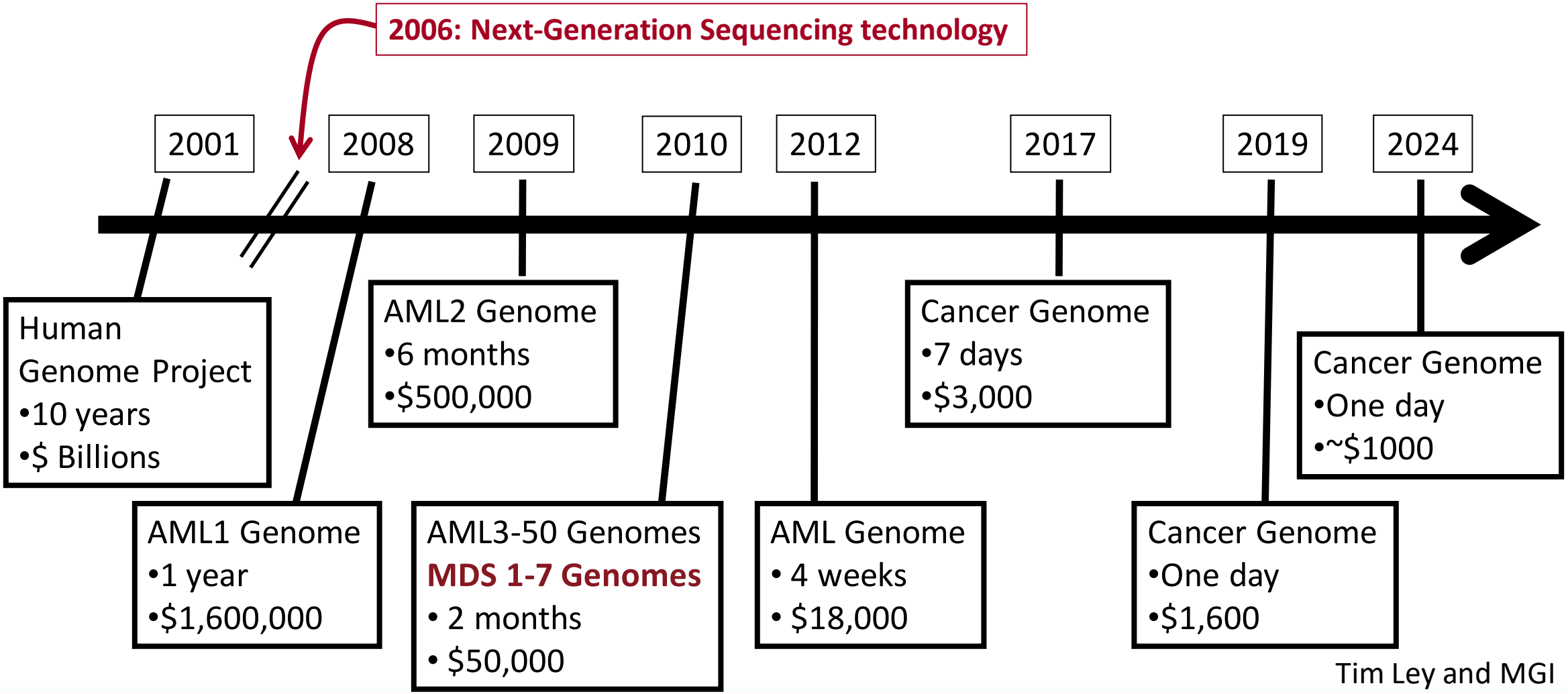
The human genome is 3 billion letters long

A T G C

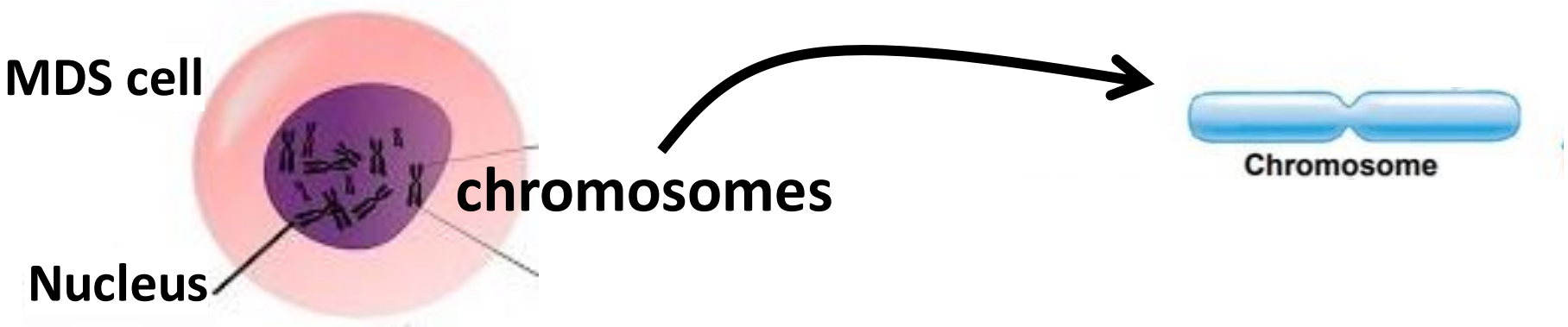
Rolf Viervant April 2015


Riccardo Sabatini
TED2016
The human genome
3 billion letters would fill 172 books

History of Sequencing AML Genomes at WU



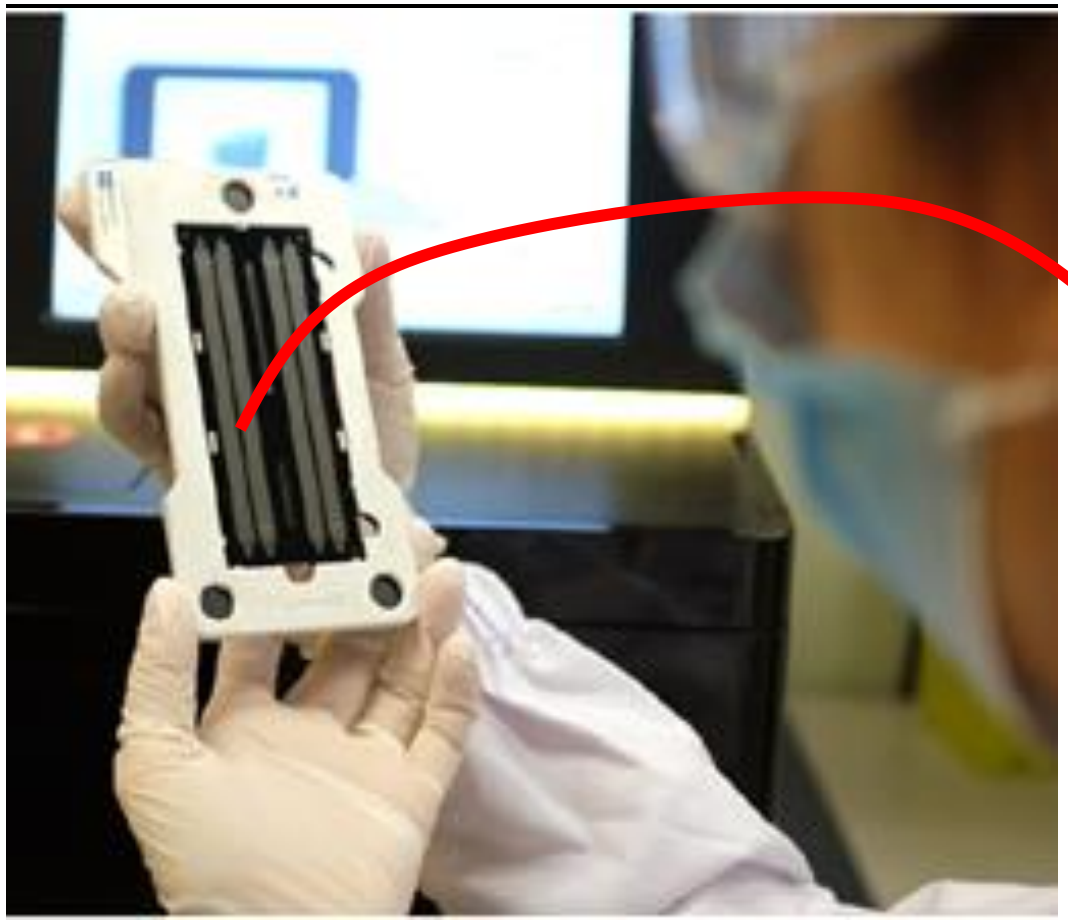
Tim Ley and MGI

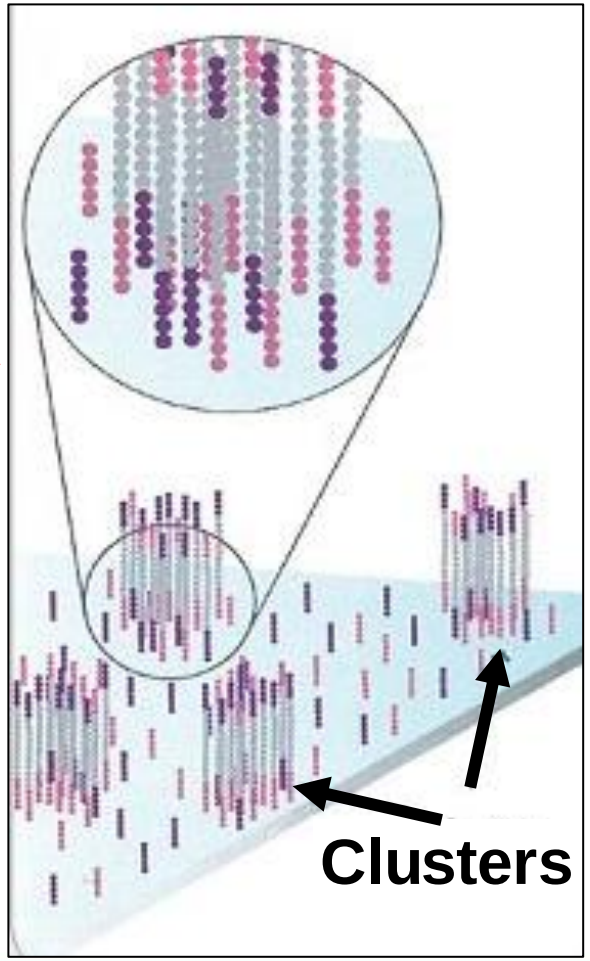


How do you sequence a MDS cell genome?

DNA Sequencing

DNA Sequencing



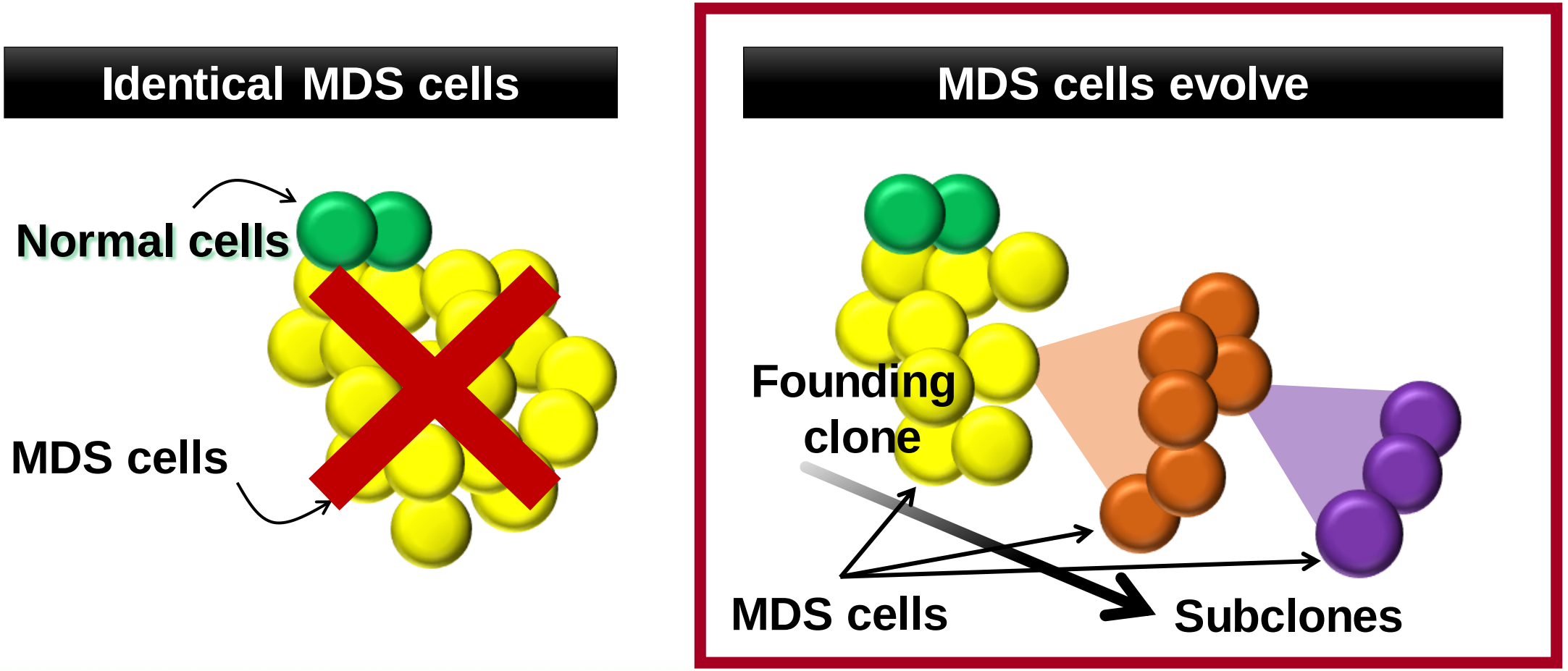


1) MDS cell results.

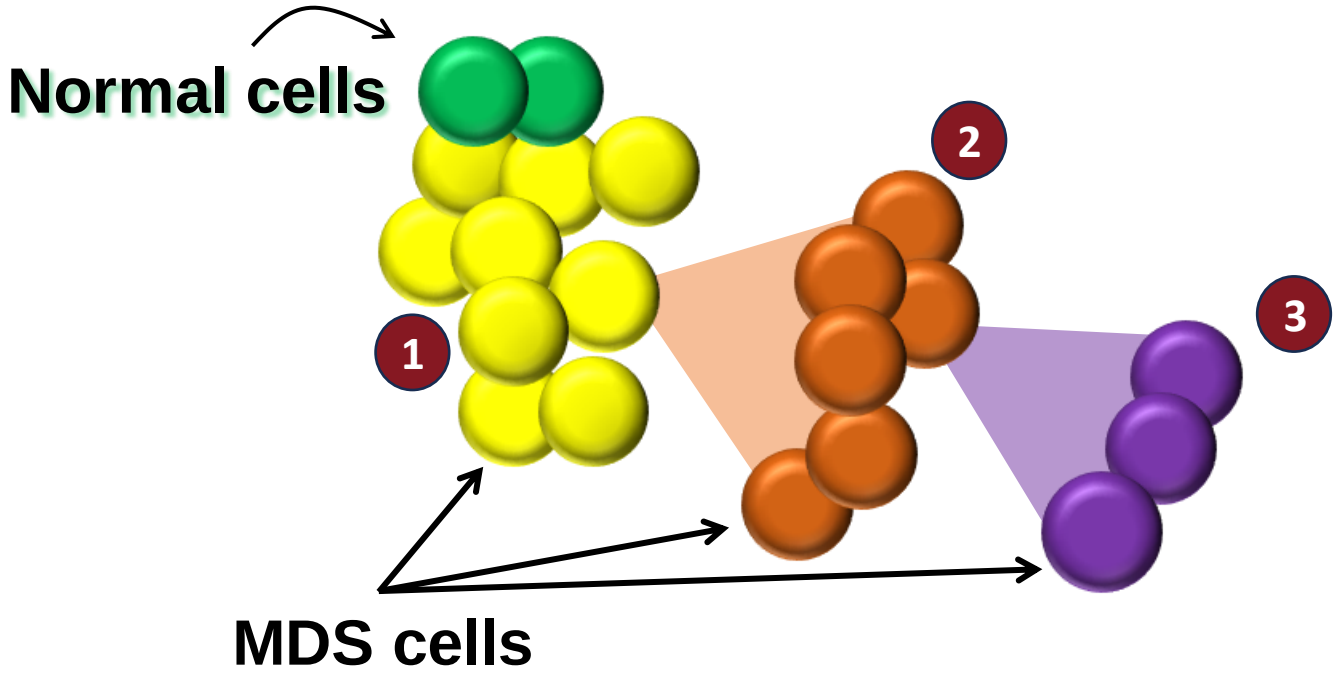
2) Compare to normal cells.

3) Get a list of mutations that are only in the MDS cells.

MDS Cells Start Out the Same, but Then Evolve

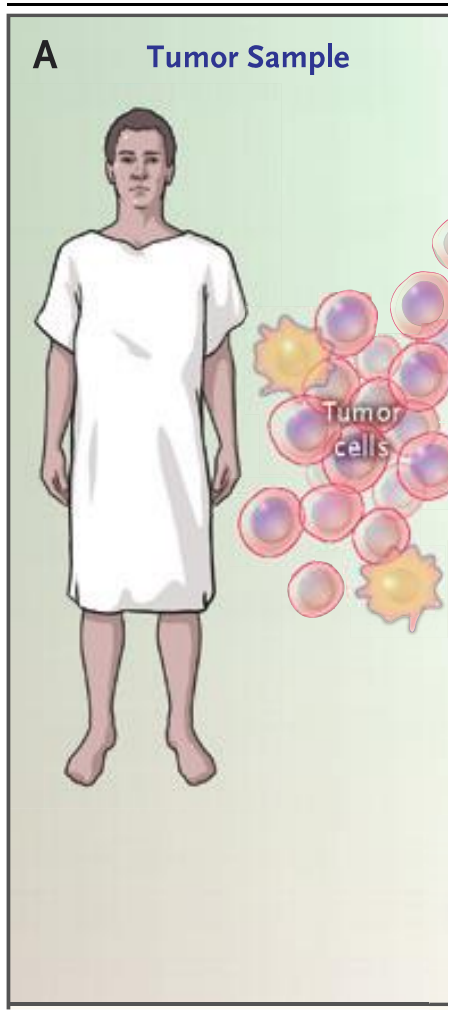


Implications for MDS Treatment



- Goal = Cure MDS
- Treatment = Target mutations present in **every** MDS cell [1]

Clinical Whole Genome Sequencing for MDS - ChromoSeq



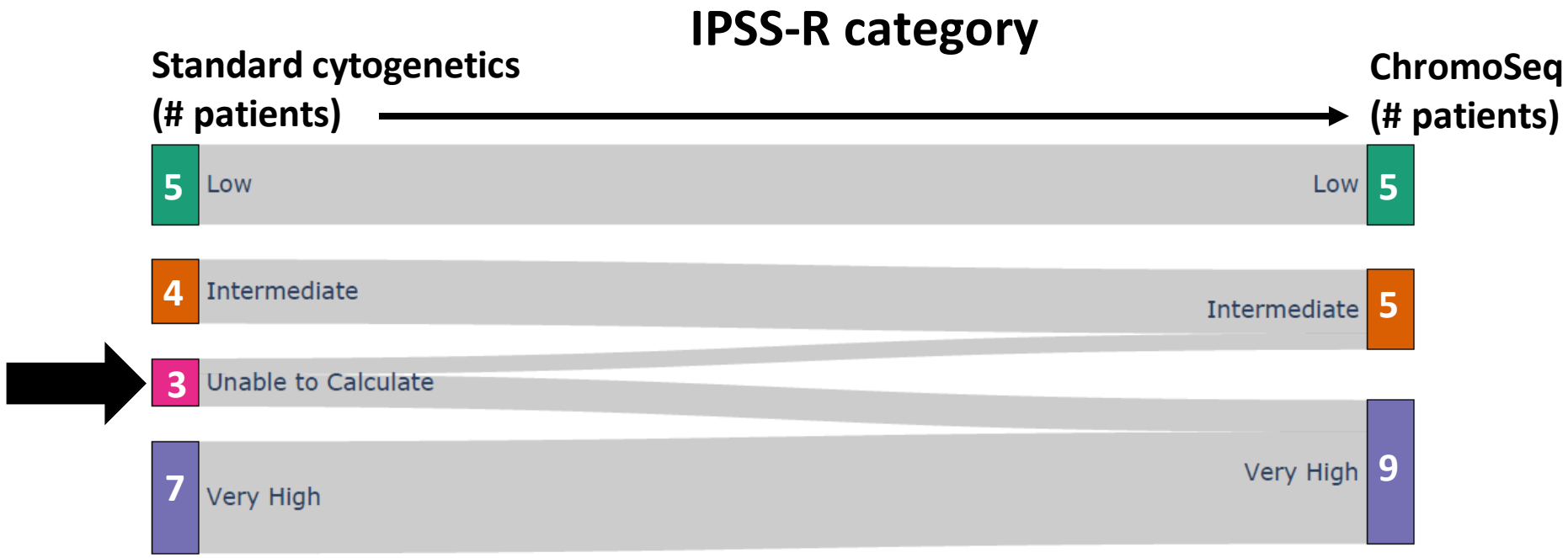
MDS:
Dr. Jacoby, Dr. DeJesus
NCT0543459**8**

Duncavage, Schroeder…
Spencer, *NEJM*, 2021
NCT04986657

ChromoSeq for 'Suspected' MDS

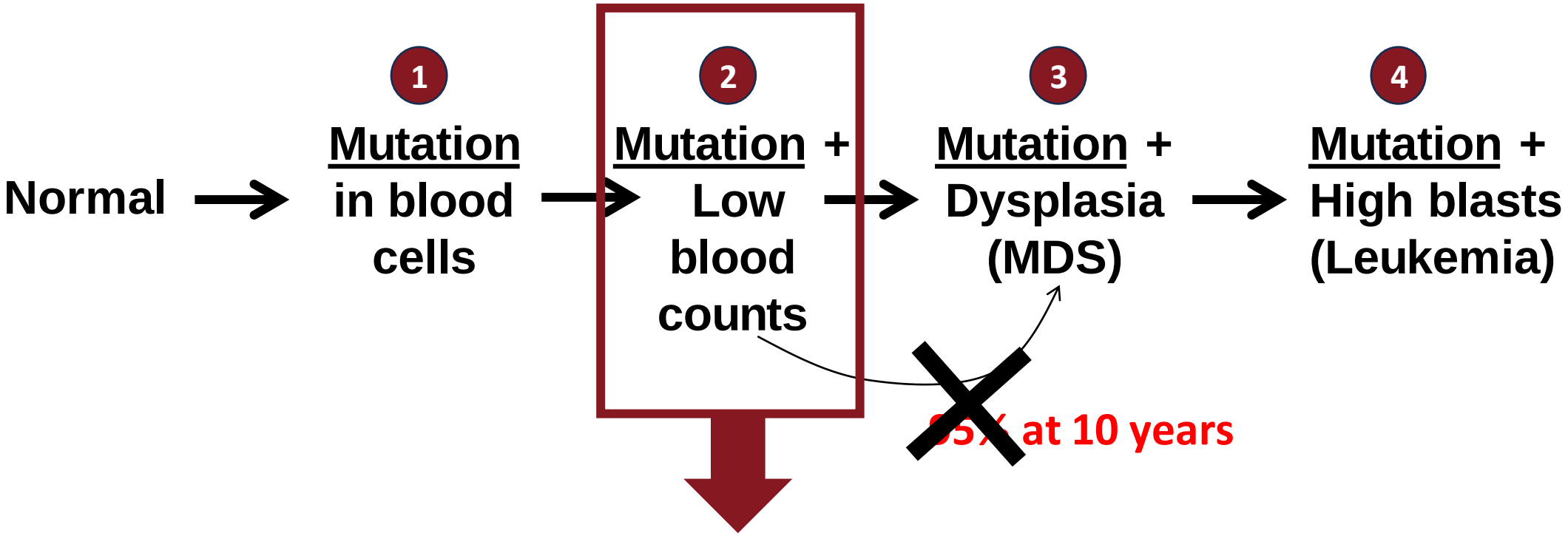
35 prospective patients

- **19 MDS (54%)**
- **16 other (46%)**



Edward P. Evans Foundation
Larry and Sharon Goldberg MDS Fund
American Society of Hematology

Moving Genome Sequencing to pre-MDS



Clonal Cytopenias of Undetermined Significance (CCUS)

Questions?