MDS Research

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Washington University School of Medicine in St. Louis

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



MDS is caused by DNA mutations



The human genome is 3 billion letters long

A T G C

Rolf Viervant April 2015

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Riccardo Sabatini TED2016



The human genome

3 billion letters would fill 172 books

History of Sequencing AML Genomes at WU





How do you **DNA** sequence a MDS cell genome?

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





- Goal = Cure MDS
- <u>Treatment</u> = Target mutations present in <u>every</u> MDS cell

Clinical Whole Genome Sequencing for MDS - ChromoSeq



<u>MDS</u>:

Dr. Jacoby, Dr. DeJesus NCT05434598 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



<u>C</u>lonal Cytopenias of <u>Undetermined Significance</u> (CCUS)

Questions?