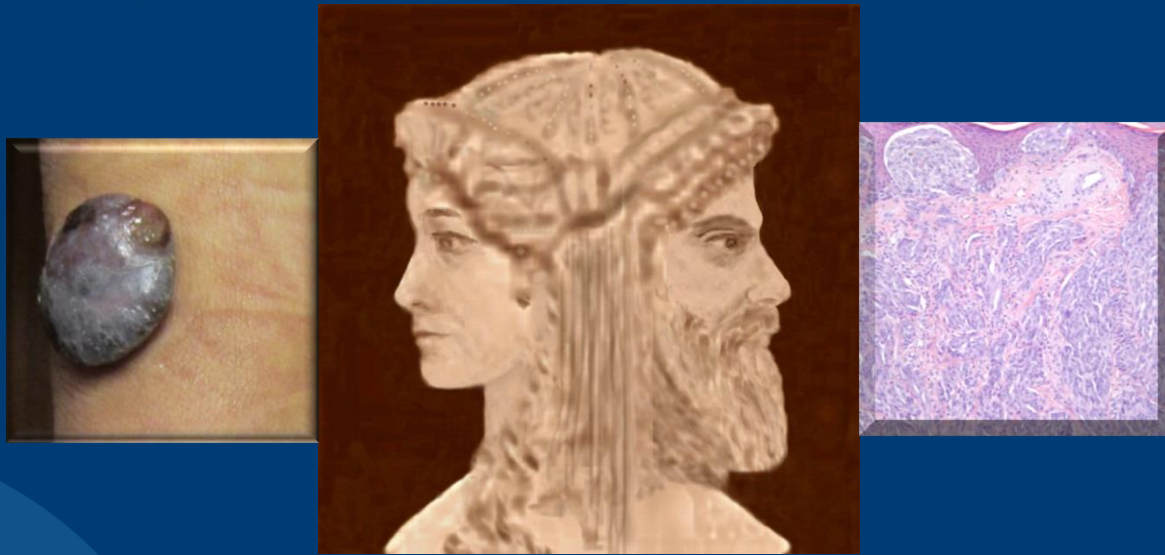


Looking Forward/Looking Back

Understanding the Pediatric Melanoma Journey and Preparing for the Future



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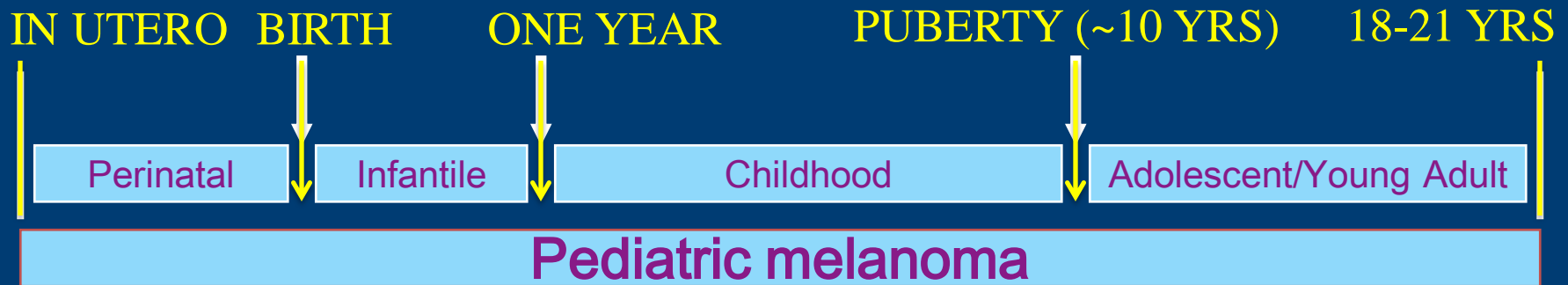
Disclosures

- Dr. Sondak is a compensated consultant for Amgen, BMS, GSK, Merck, Navidea, Novartis and Provectus.
- Dr. Messina has no disclosures.

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The Pediatric Melanoma Journey

It's Not Just One Size Fits All



- Incidence of pediatric melanoma is increasing ~2.9% per year over the last 3 decades (50% from 1988 to 2007)
- ~ 500 cases of melanoma estimated to be diagnosed in patients <21 in the US this year
 - 1-4% of all cases of melanoma
 - 1-3% of all pediatric malignancies

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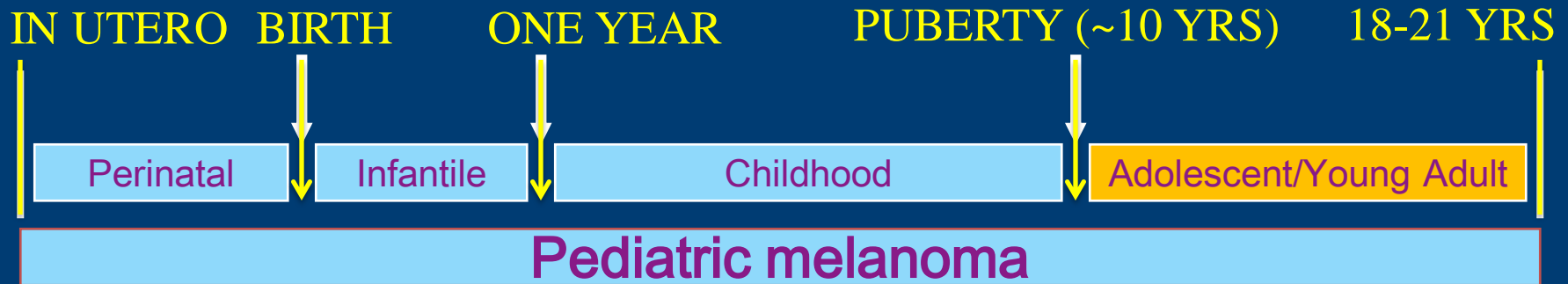
It's Not Just One Size Fits All



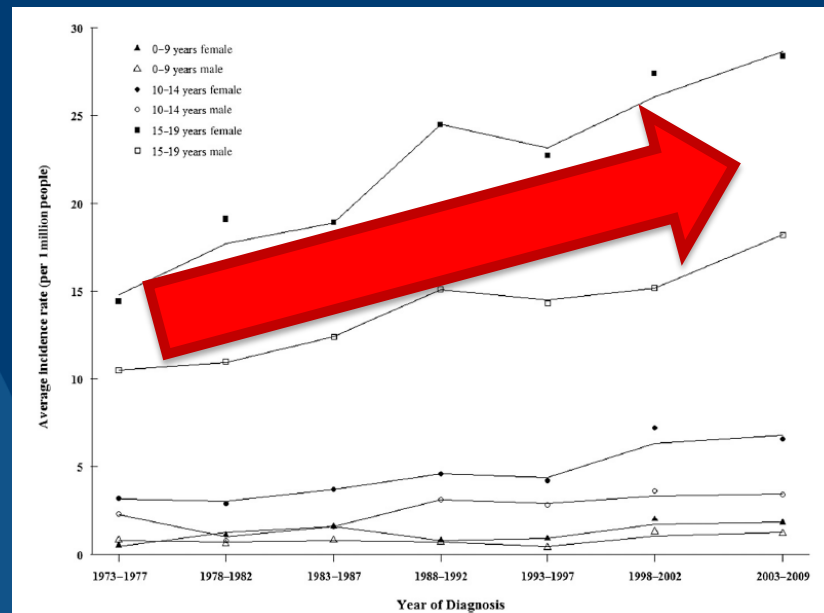
- 11% of pediatric melanomas
- Clinical and pathologically distinct from adolescent melanoma, relationship to UV exposure less clear
- Conflicting data on survival outcomes compared to adolescent melanoma but generally considered more favorable

The Pediatric Melanoma Journey

It's Not Just One Size Fits All



- Pediatric melanoma category rising most rapidly in incidence



Austin et al. *J Ped Surg* 2013;48:2207-13

The Pediatric Melanoma Journey

*"A journey of a
thousand miles
begins with a
single step"*

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Starting With A Single Step

- Someone had to notice an odd bump, changing mole or some other skin lesion
- Someone had to go to the doctor
- Some doctor had to look at that skin lesion and decide that a biopsy should be performed

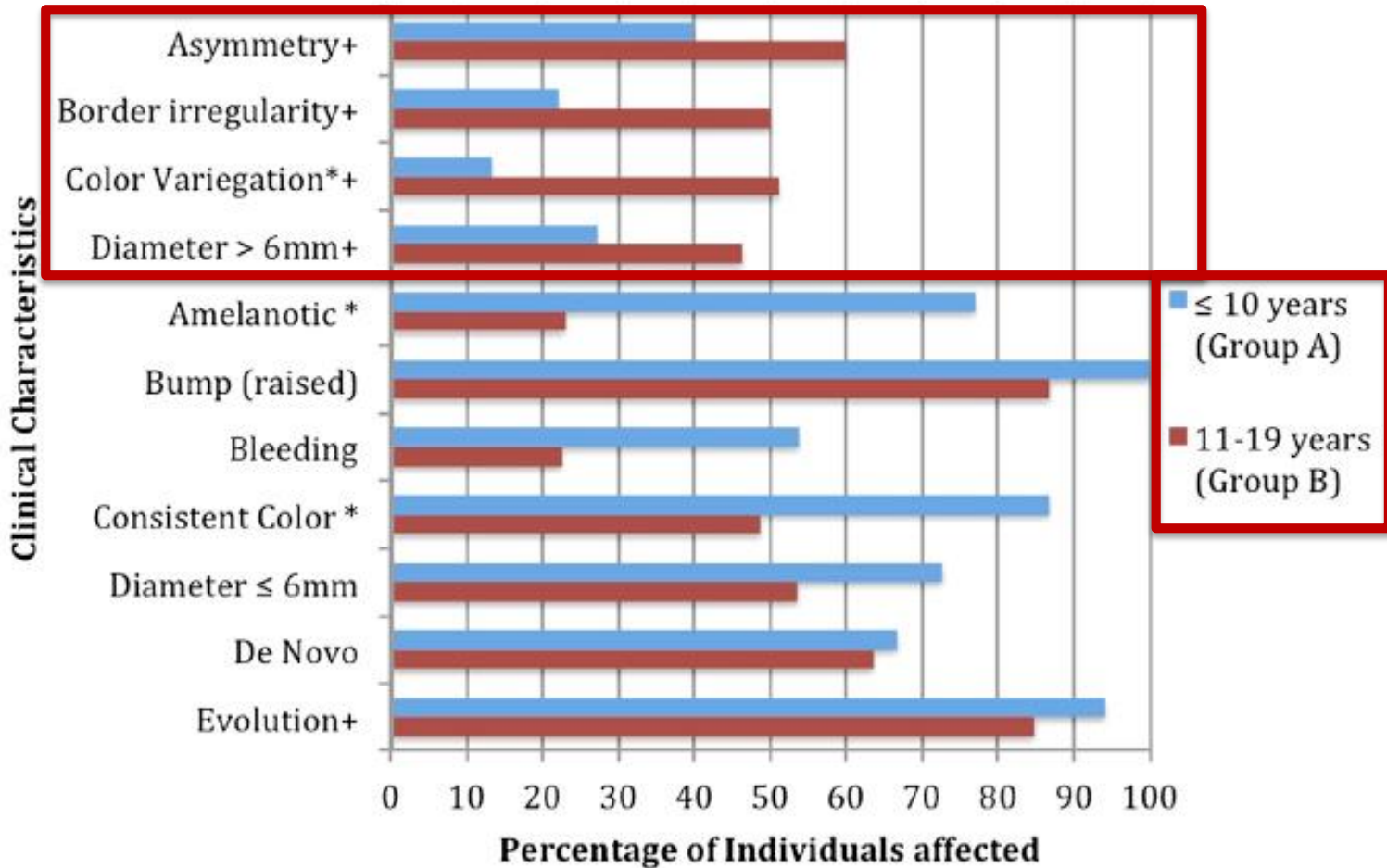
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Starting With A Single Step

- Someone had to notice an odd bump, changing mole or some other skin lesion
- Someone had to go to the doctor
- Some doctor had to look at that skin lesion and decide that a biopsy should be performed
- **What signals a skin lesion to worry about in a child, adolescent or young adult?**

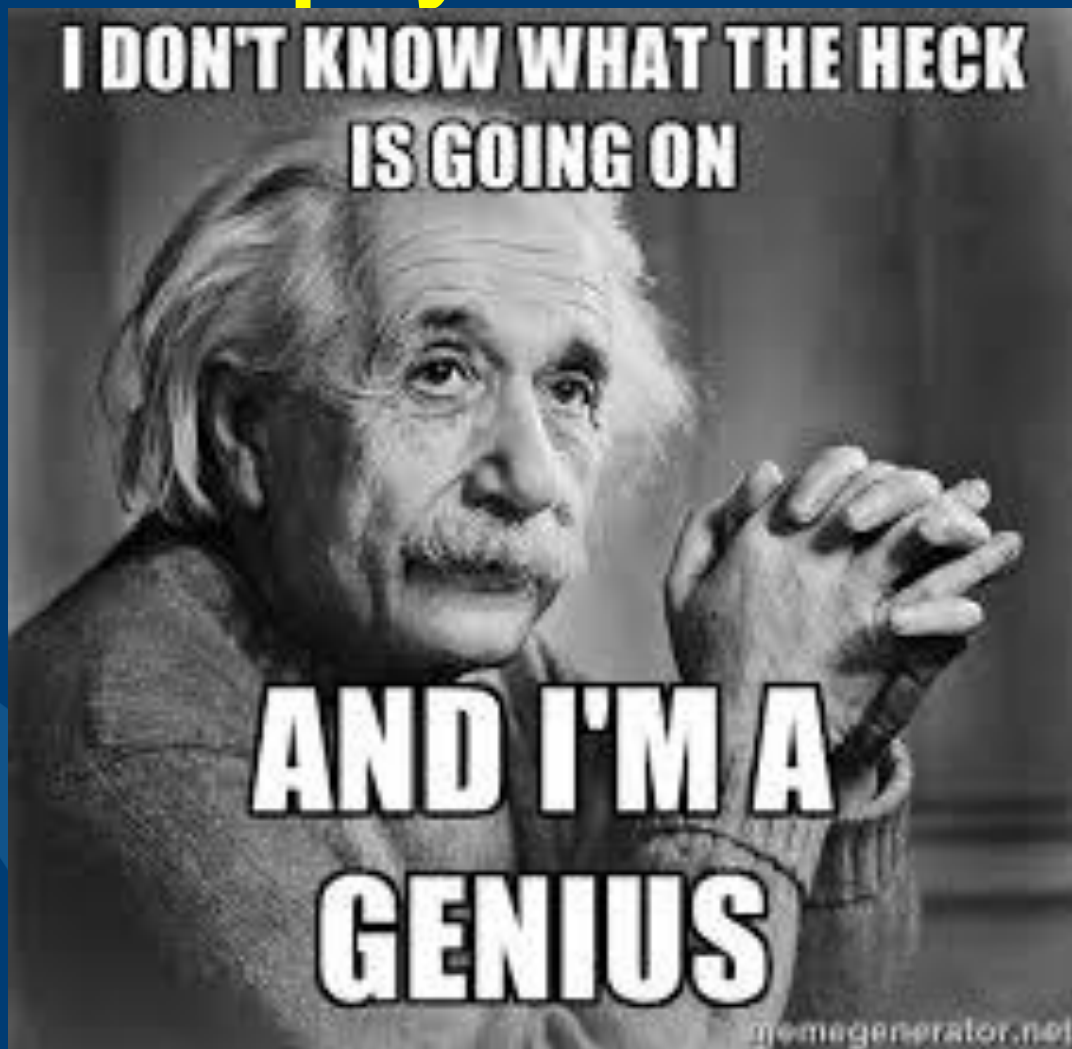
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Should Kids Learn Their ABCDs?



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After the Biopsy – More Questions!



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What the Heck is That?

- Once biopsied, the pathologist had to look at the specimen under the microscope and try to figure out what it was
- That's not as easy as it sounds, and two pathologists might easily disagree about what they think the diagnosis is
- **Why can't they agree? How does the pathologist figure out what something is? How do they communicate it to other doctors?**

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Beware the “Ivory Tower”



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Beware the “Ivory Tower”

- Some degree of diagnostic uncertainty is inevitable in many pediatric cases, but it can and should be minimized by good communication between clinician and pathologist
- Diagnostic uncertainty in and of itself contributes to a disproportionate amount of anxiety among patients and family
- **An integrated approach requires clear communication among the medical team and with the patient and family, and commitment to manage the “worst case scenario”**

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Enter the Detective



The Running Man

Innocent Bystander or Master Criminal?



The Running Man

Innocent Bystander or Master Criminal?



Sondak et al. *Crit Rev Oncogenesis* 2015; in press

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Enter the Detective

- Like a detective, the pathologist searches for clues and looks for more evidence at the scene of the crime
- This can include the modern equivalent of fingerprints – DNA testing (CGH, FISH)
- **Sometimes guilt or innocence can't be determined just from the biopsy, but wider removal and checking the sentinel node can provide critical information – but unlike the detective we can say something is “guilty until proven innocent”**

The Running Man

Innocent Bystander or Master Criminal?



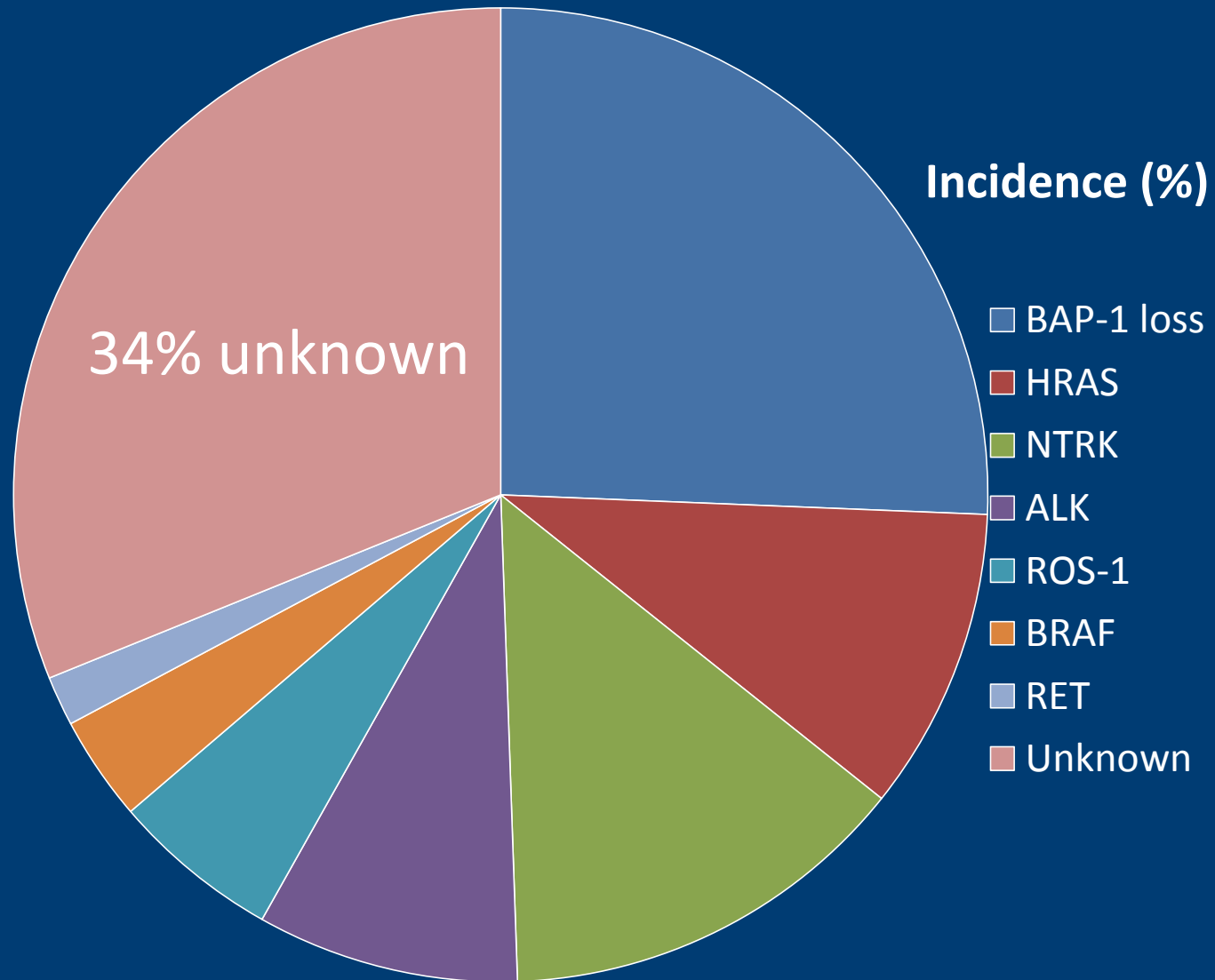
Sondak et al. *Crit Rev Oncogenesis* 2015; in press

What Are They?

- Many cutaneous neoplasms, particularly in children and young adults, have pathologic features reminiscent of but not diagnostic for the benign Spitz nevus
- Some of these are clearly melanoma, termed “Spitzoid melanoma”
- **Lesions lacking unequivocal diagnostic criteria for either a benign Spitz nevus or a Spitzoid melanoma are termed “atypical Spitz tumors”**

Atypical Spitz Tumors

Recently discovered genetic abnormalities



Van-Engen-van Grunsven et al. *Am J Surg Pathol* 2010;34:1436-41

Wiesner et al. *Nat Commun* 2014;5:3116

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“The Worst Case Scenario”



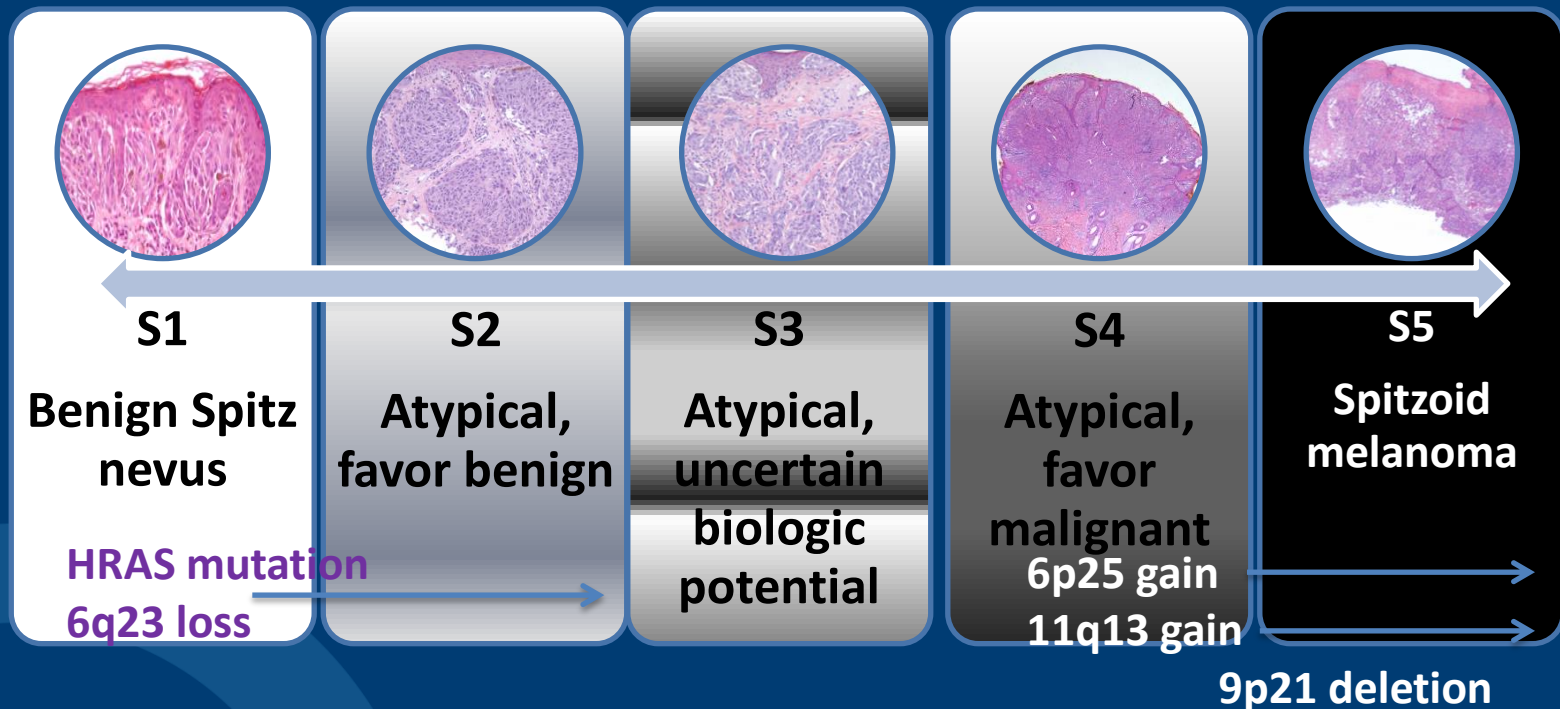
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“The Worst Case Scenario”

- If there is a chance a lesion could be melanoma, we treat it the way we would treat a melanoma
- For kids, even the “worst case” scenario is not always really bad
- **But how does the pathologist communicate the chance the lesion could be melanoma to other doctors?**

Atypical Spitz Tumors

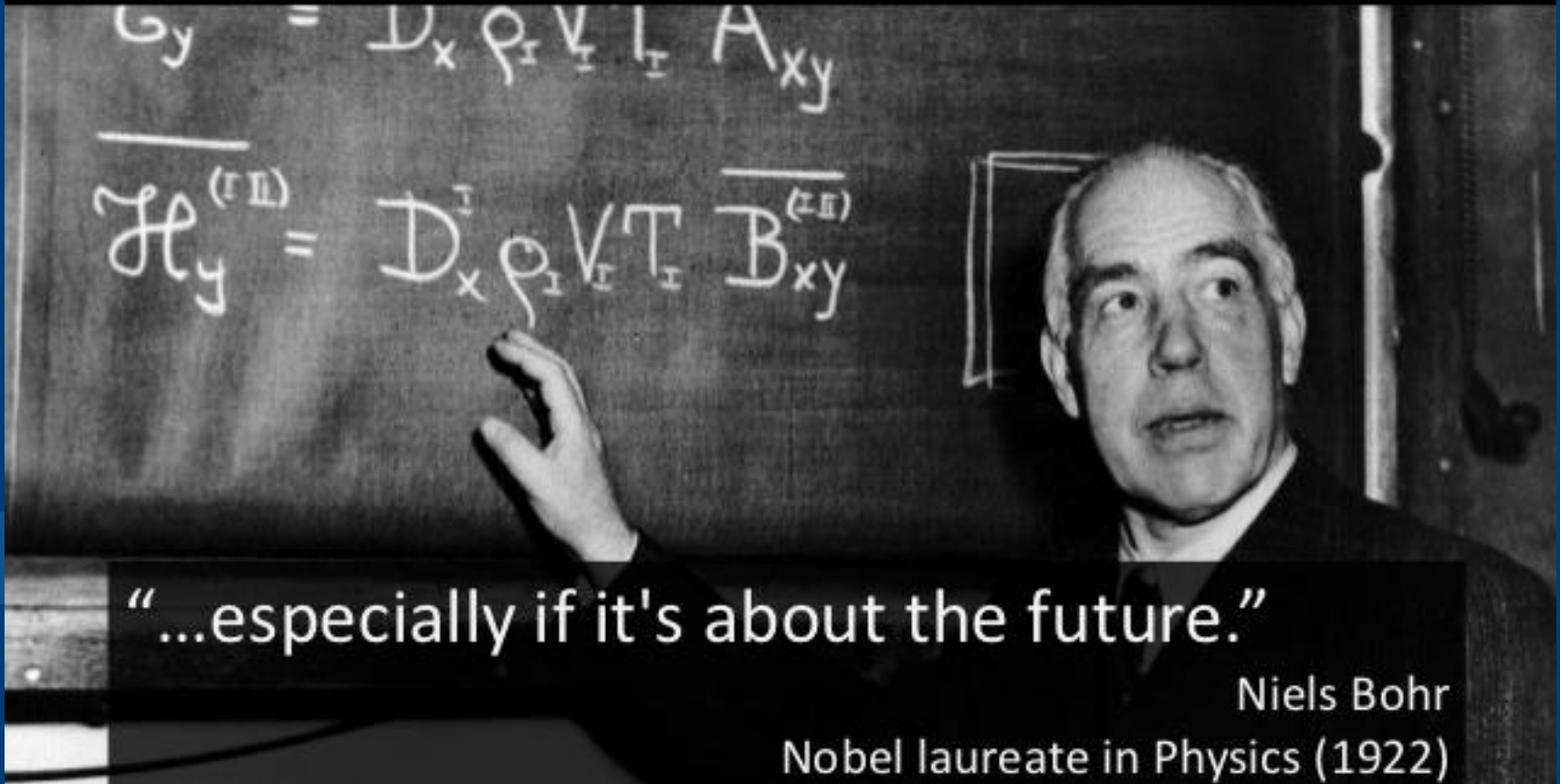
Five Shades of Gray



Combination of morphologic, IHC, genetic, and chromosomal features can convey the best assessment of risk

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“Prediction is very difficult...”



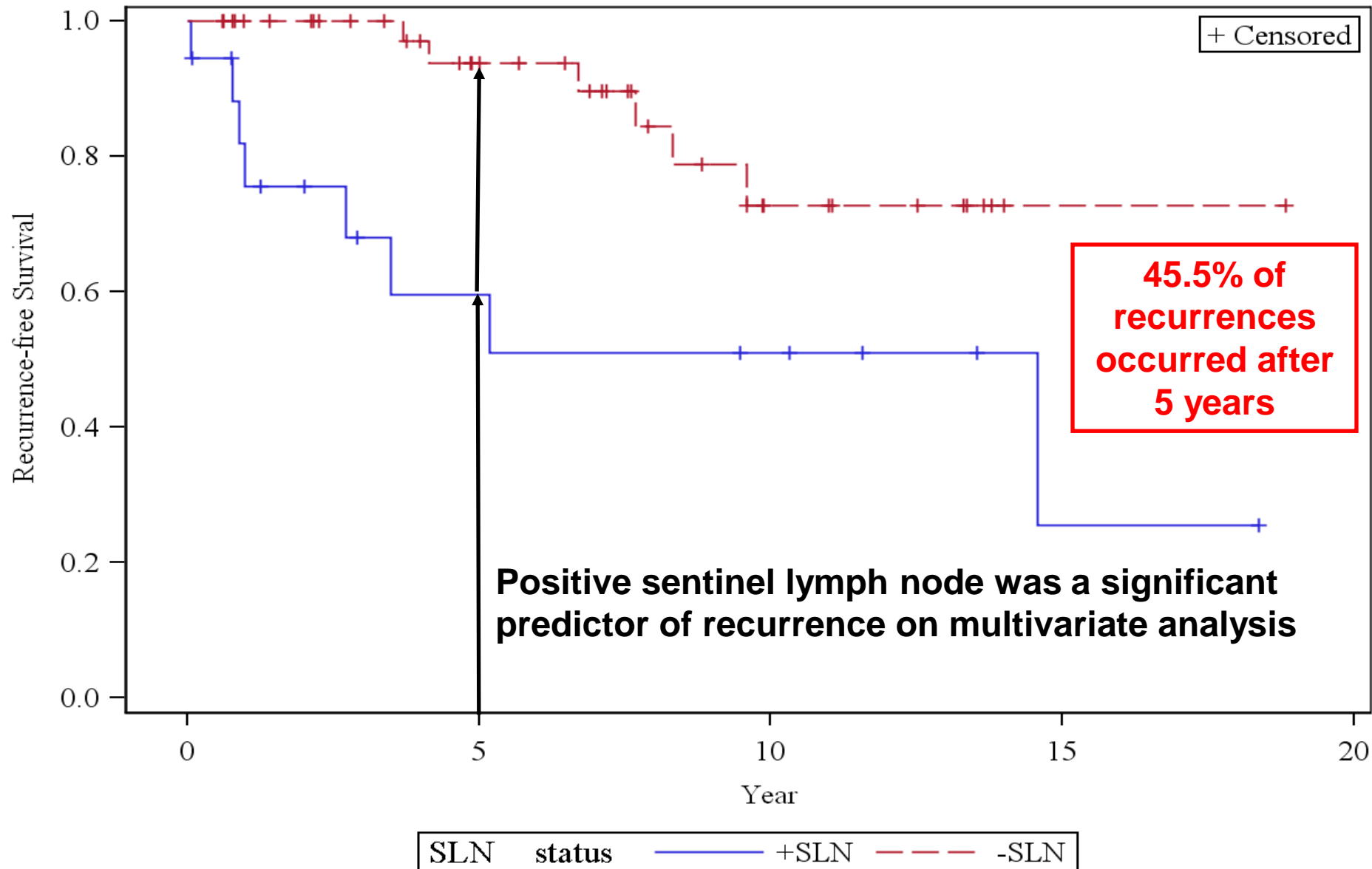
“...especially if it's about the future.”

Niels Bohr

Nobel laureate in Physics (1922)

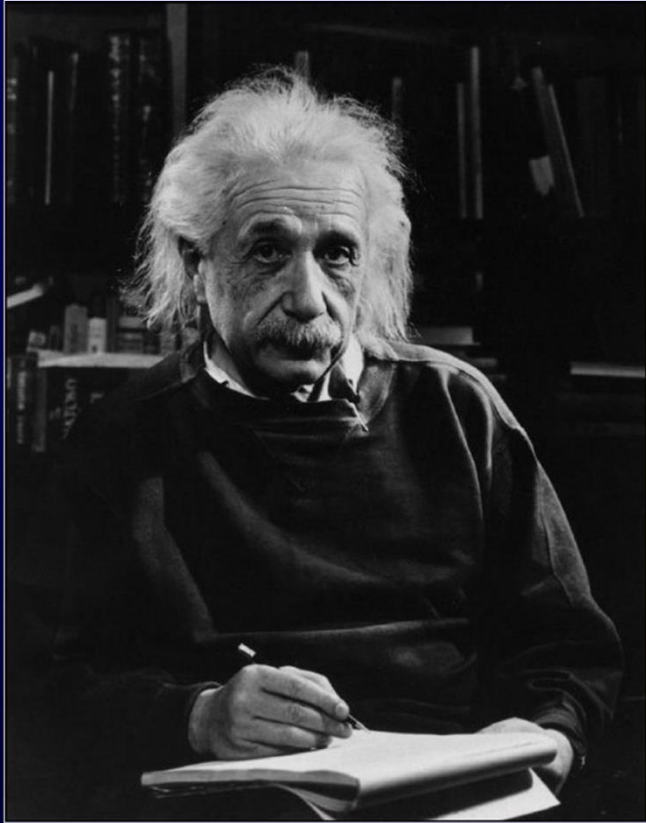


Recurrence-Free Survival Stratified by Sentinel Lymph Node Status



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“Collins’ Law!”



“Only two things are infinite, the universe and human stupidity, and I'm not sure about the former. “

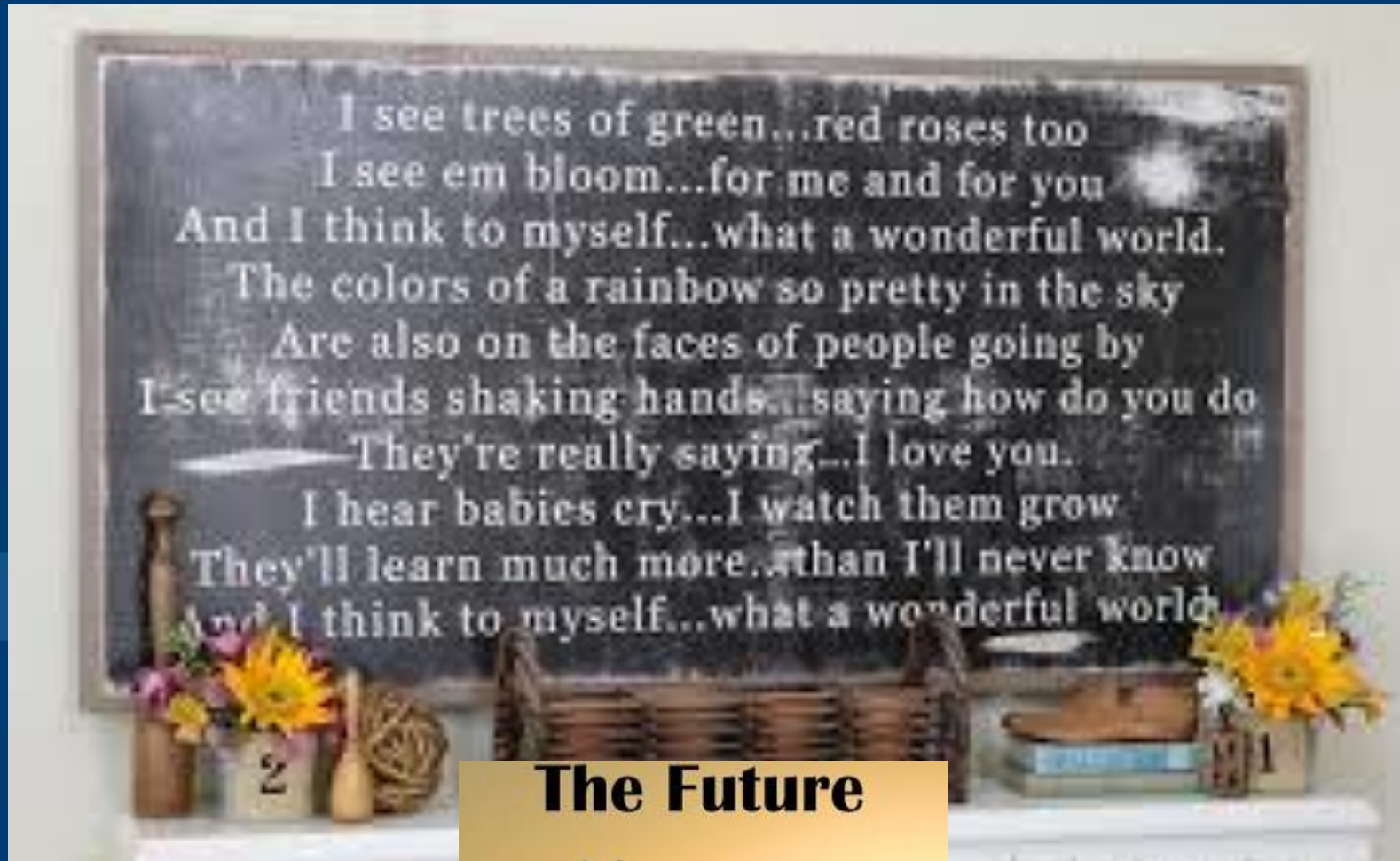
Albert Einstein 1879-1955

**186,000 miles per
second. It's not
just a good idea...**

It's the law!

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Welcome to The Future



The Future

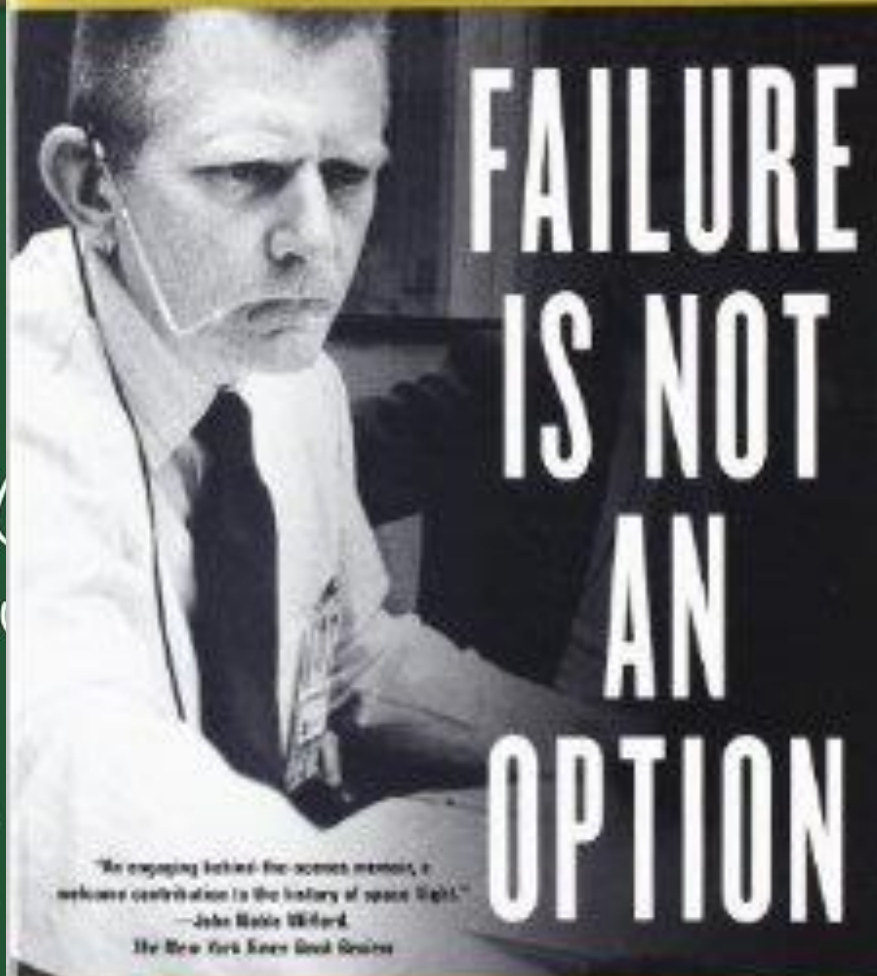


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Welcome to The Future



THE NEW YORK TIMES BESTSELLER



FAILURE IS NOT AN OPTION

"An engaging behind-the-scenes memoir, a welcome contribution to the history of space flight."

—John Malle Wiford,
The New York Times Book Review



MISSION CONTROL FROM MERCURY
TO APOLLO 13 AND BEYOND

GENE KRANZ

FORMER FLIGHT DIRECTOR, NASA