Twitter Thread by Shäron Moalem MD, PhD

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Turns out that getting chemo is like sending cancer to a relaxing spa getaway for the weekend, so that it comes back refreshed and ready to kill.

That's disturbing.

What else have we misunderstood?

Biological sex and cancer.

A short thread.

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> Out now! #Cancer cells can enter a quiescent state in response to #chemotherapy and subsequently emerge rejuvenated https://t.co/sw9UTbgDPX @UHN @UHN_Research pic.twitter.com/xAIcxAcQJM
>
> — Cell (@CellCellPress) January 7, 2021

Almost every type of cancer affects men more than women. And overall, more women survive a cancer diagnosis. Men also develop about 150,000 extra cancers per year in the US, compared to women.

Why is that?

Because biology.

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We used to think that the reason for female cancer 'resistance' was behaviorally based because: women see their doctor more often and drink less alcohol etc.

But that's not the whole story.

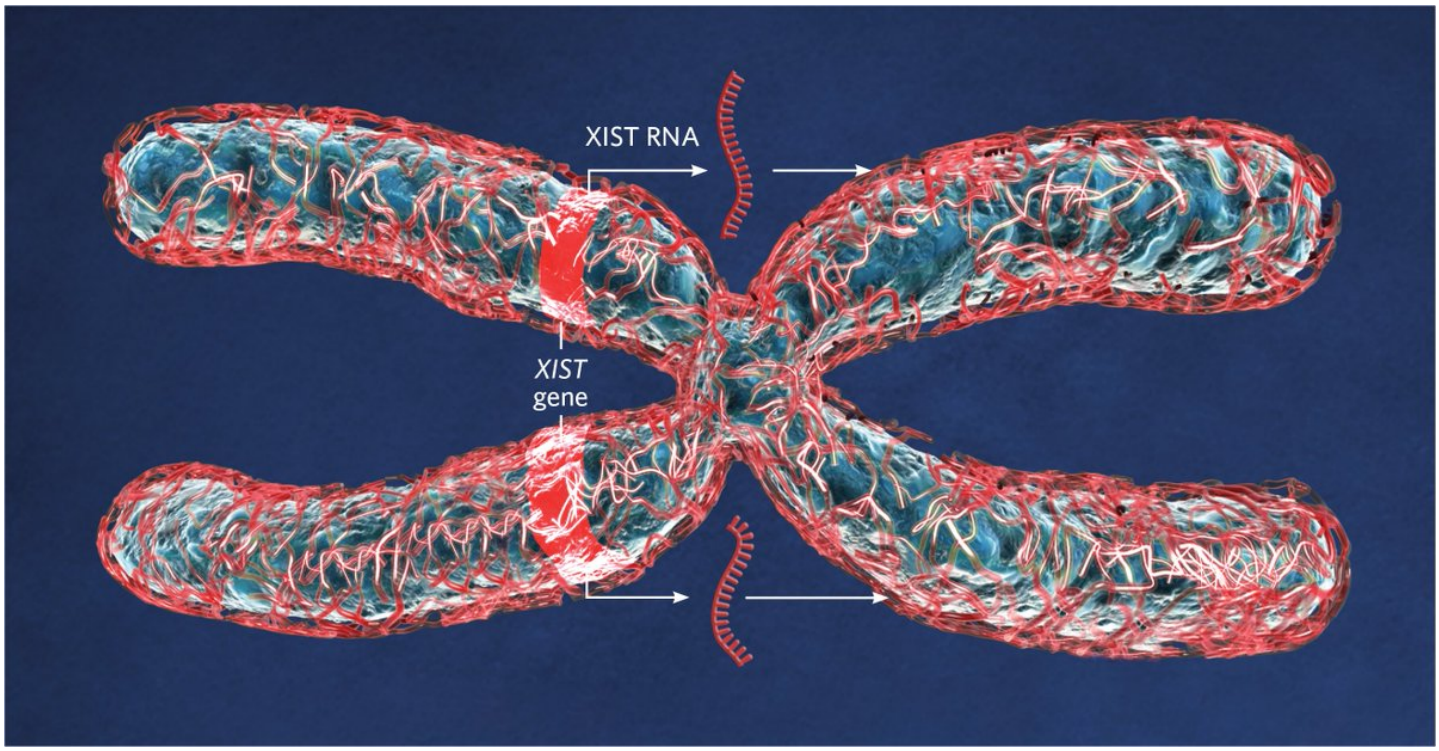
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Women have two X chromosomes while men have only one. We used to think that women's 2nd X was 'silenced' and not able to work for them.

But this is also wrong.

And the so called 'silenced' X isn't silent at all. Women actually have the use of both X chromosomes.

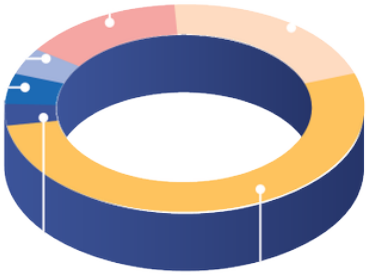
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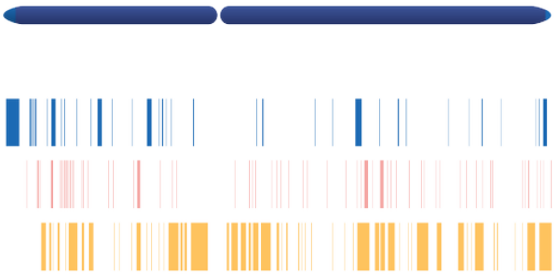
Some of the genes involved in cancer suppression are on the X chromosome. And a 2nd copy of these genes is only available to women because they have two X chromosomes.

When it comes to preventing cancer women have more genetic horsepower in each of their cells.

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GENE EXPRESSION PATTERNS ON THE "INACTIVE" X CHROMOSOME

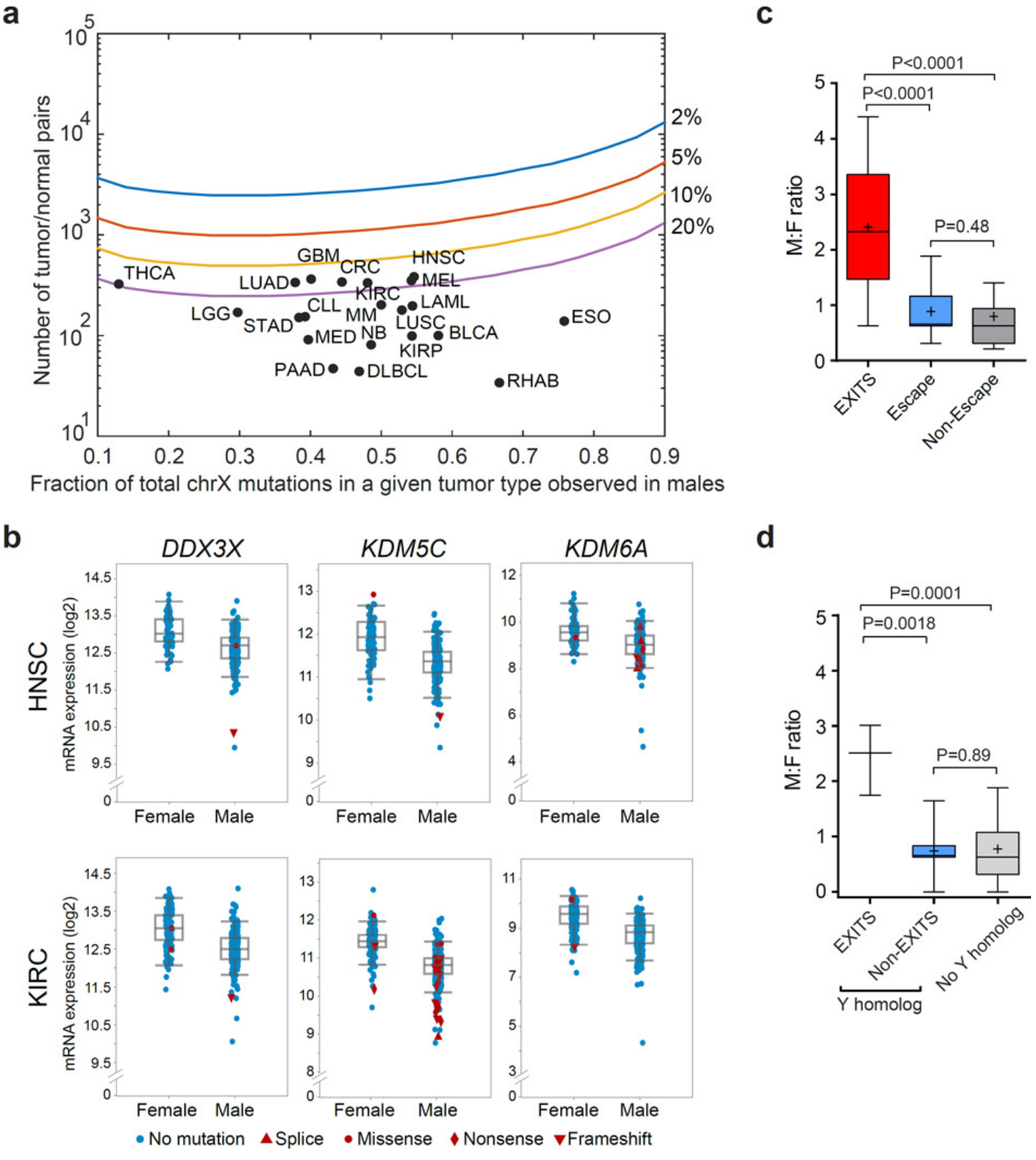


DISTRIBUTION OF ESCAPEES ON THE "INACTIVE" X CHROMOSOME

The tumor suppressor genes that only women have a copy of are called 'Escape from X-Inactivation Tumor Suppressor', or EXITS for short.

When it comes to fighting cancer, women have EXITS and sadly, men don't.

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Even when both women and men are diagnosed with the same type of cancer, women respond better to treatments.

We've underappreciated the genetic strength of women and their capacity to fight cancer using both of their X chromosomes.

#TheBetterHalf

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