Genetic Lifehacks

Learn. Experiment. Optimize.

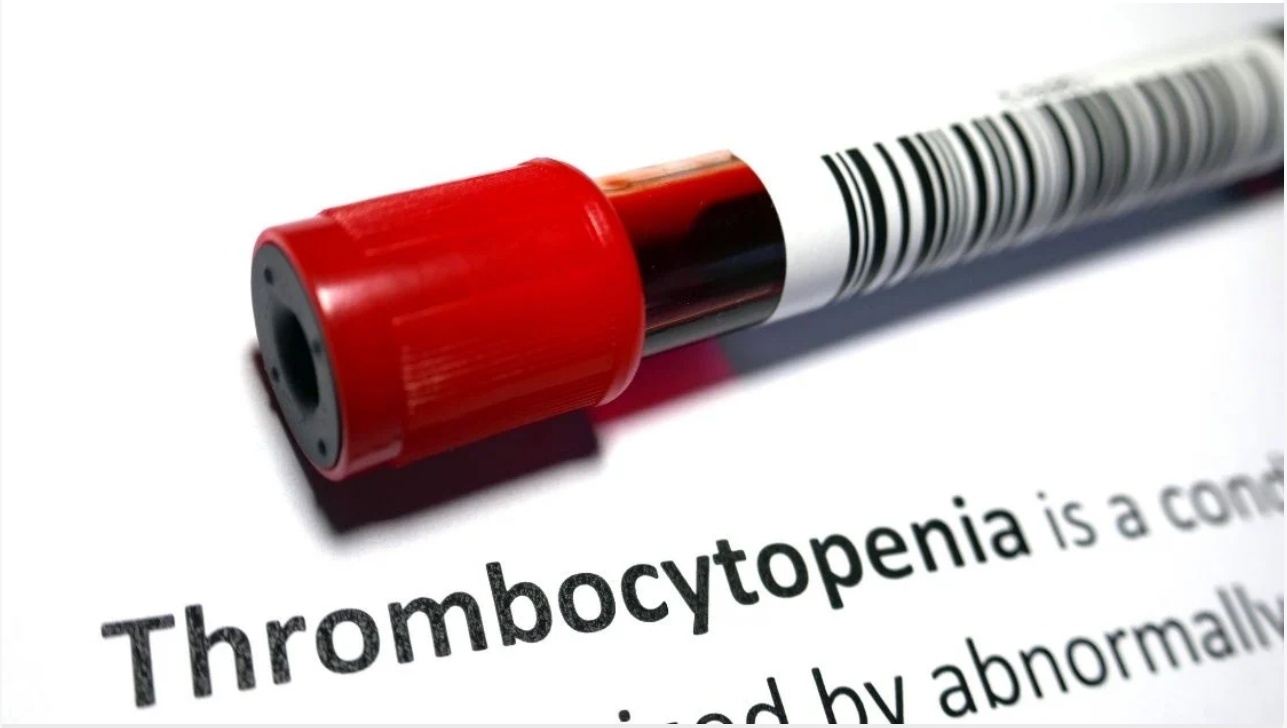
Hi everyone,

The recent pause of administering the Johnson & Johnson and AstraZeneca vaccines in several countries prompted this week's article on how adenoviruses (and other viruses) are linked to blood clots and low platelets. The article below is simply a review of research studies over the past couple of decades on how adenoviruses interact with platelets. This may - *or may not* - be the reason for the current issue of rare blood clots occurring after the adenovirus-based vaccines. So please don't take the article as an indication of whether you should choose a particular vaccine. Instead, I simply thought the background science here was interesting and wanted to share it -- along with information on clotting and platelet-related genes.

It may seem like I've been pushing everyone to check for blood clot related genetic variants several times over the past year. And.... that would be true. I've known (tangentially) two people this year who passed away suddenly from blood clots, unrelated to COVID or vaccines. So the topic has been on my mind, and I hope you'll take a couple of minutes to check the genetic risk factors for blood clots.

I hope all of you are doing well,

Debbie



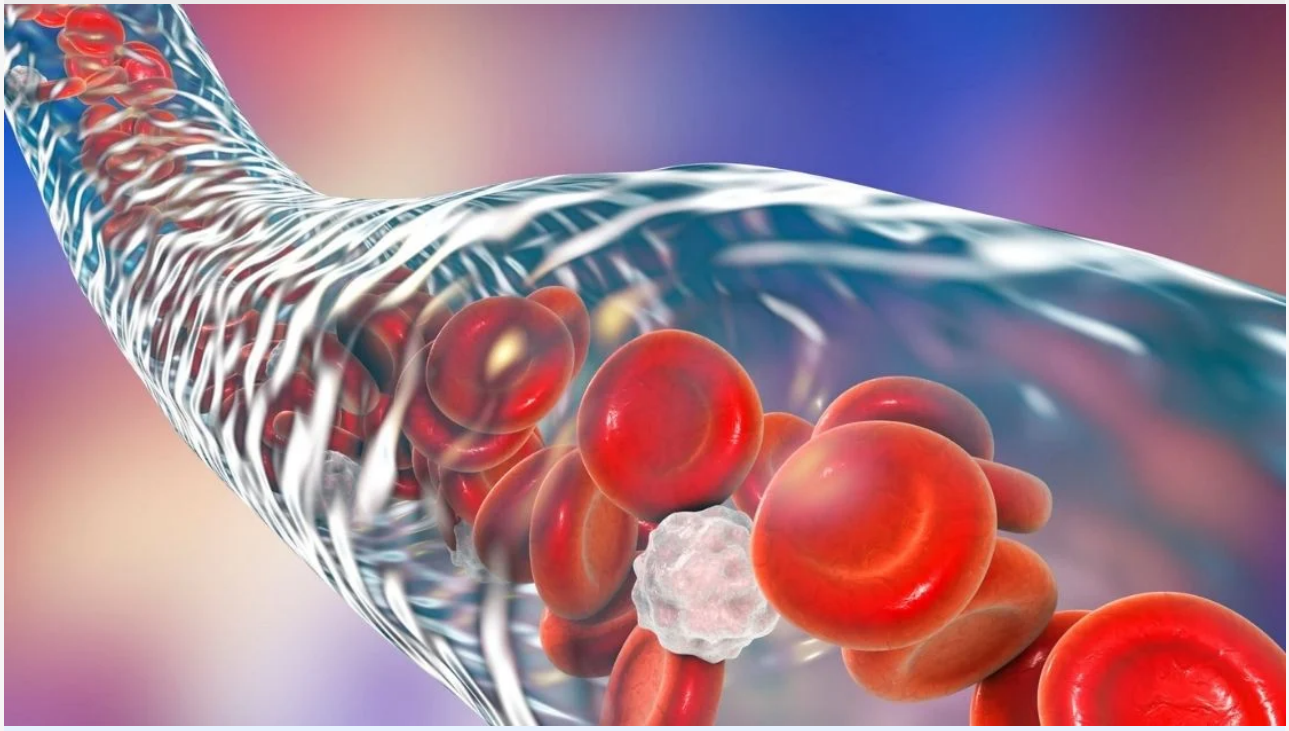
Blood clots, platelets, and adenoviruses

Most people think of platelets as forming a clot when you've cut yourself, and this is one vital role of platelets. But platelets also do a lot to protect us from getting sick from bacteria and viruses.

In this article, I'll explain how platelets interact with the immune system – and how a low platelet count (thrombocytopenia) relates to blood clots (thrombosis) in some instances. Then I'll explain prior research on adenovirus-vector therapy, thrombocytopenia, and platelet reactions.

Recently, governments around the world have paused adenovirus-vector COVID-19 vaccines due to a really rare occurrence of blood clots. **Let me be clear up front:** The current stoppage of injecting adenovirus-based vaccinations is due to an *undetermined cause* of blood clots. The information presented in this article is for background and educational information purposes.

Read the article...



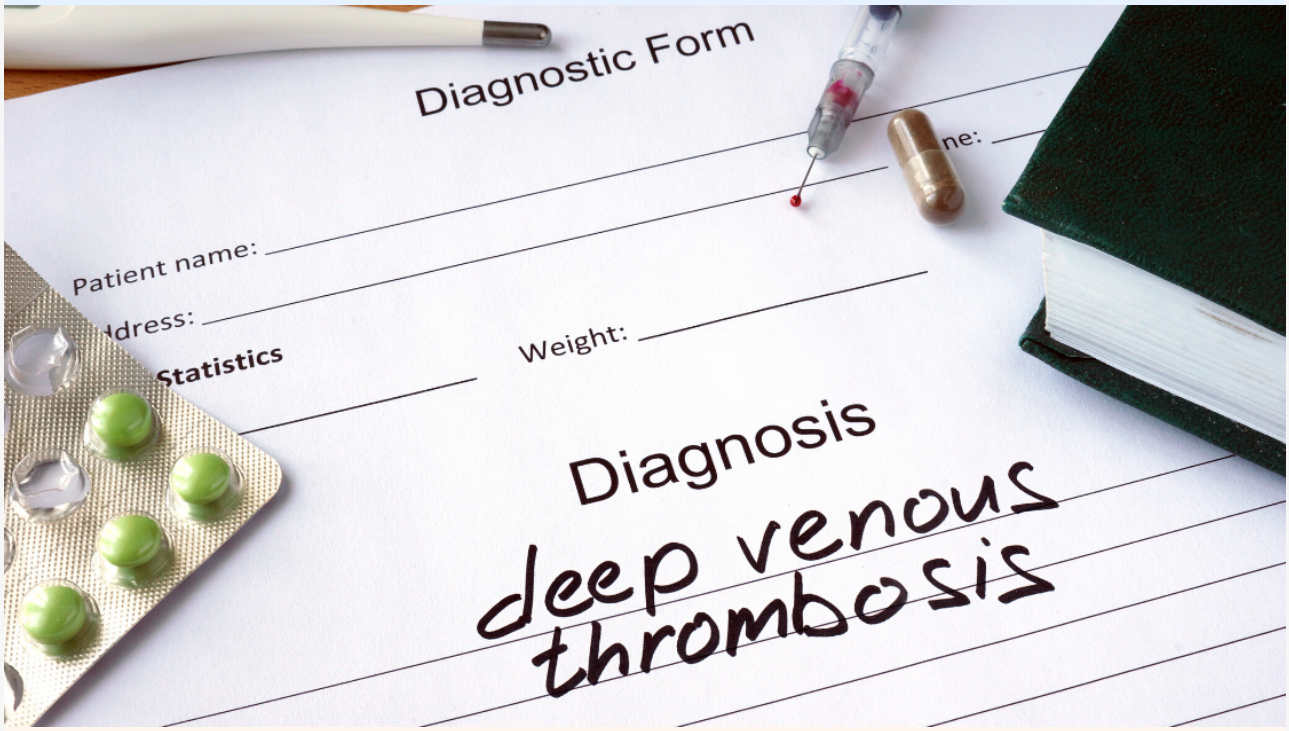
ADAMTS13 and VWF Genetic Variants: blood clots and thrombocytopenia

When you get a cut, it activates a cascade of events to form a clot. Platelets rush in to join together with the lining of the blood vessel, plugging up the leak. Fibrinogen is activated to shore up the clot, and then continual breaking down, remodeling, and reforming of the clot happens as the wound heals.

This process of forming a clot and activating platelets involves a number of proteins that your body makes. Genetic variants, of course, cause some people to have different clotting factors, which can increase the risk for small blood clots.

This article digs into just two of the genes involved in creating a blood clot. I'll explain how a low platelet count can be caused by increased platelet activation due to increased von Willebrand factor or decreased ADAMTS13.

Check your genes.



7 genetic variants that increase your risk of blood clots

It is easy to take for granted the body's everyday miracles, like blood clotting. It turns out that just a simple little cut causes a hugely complex series of reactions to take place – a cascade of events that quickly seal up a cut in a blood vessel. (Can you imagine the alternative? Literally – death from paper cuts.)

Some people, though, are unique in their ability to form clots more easily. This may have been a superpower in ages past — the whole, not bleeding to death from a sword wound thing. But superpowers have their downsides, and a

greater risk of dying from a heart attack, stroke, or pulmonary embolism definitely qualifies as a 'downside'.

This article covers six different genes and the seven genetic variants that increase the risk of blood clots.

Check your genes.

What I've been reading:

1) Potential reversal of epigenetic age using a diet and lifestyle intervention: a pilot randomized clinical trial

A randomized controlled trial in older males (age 50-72) found that diet and lifestyle changes were able to change their biological age scores. The changes included increased methylation cycle nutrients, stress management, exercise, and sleep optimization. Additionally, trial participants received a phytonutrient supplement containing curcumin, epigallocatechin gallate (EGCG), rosmarinic acid, quercetin, and luteolin as well as a probiotic (*lactobacillus Plantarum*, 40 billion CFU). Exercise included 30 minutes per day of moderate activity. All of this resulted in a >3 year decrease in epigenetic age after 8-weeks.

2) Researchers generate human-monkey chimeric embryos

From the article: "Investigators in China and the United States have injected human stem cells into primate embryos and were able to grow chimeric embryos for a significant period of time--up to 20 days. The research, despite its ethical concerns, has the potential to provide new insights into developmental biology and evolution."

Do you ever feel like researchers should watch more sci-fi and maybe take some notes on what could happen?

3) Neandertal DNA from cave mud shows two waves of migration across Eurasia

Researchers are able to extract Neanderthal DNA from the layers of dirt in caves that were inhabited up to 100,000+ years ago. The DNA reveals that there were two separate waves of Neanderthal populations that inhabited the cave.