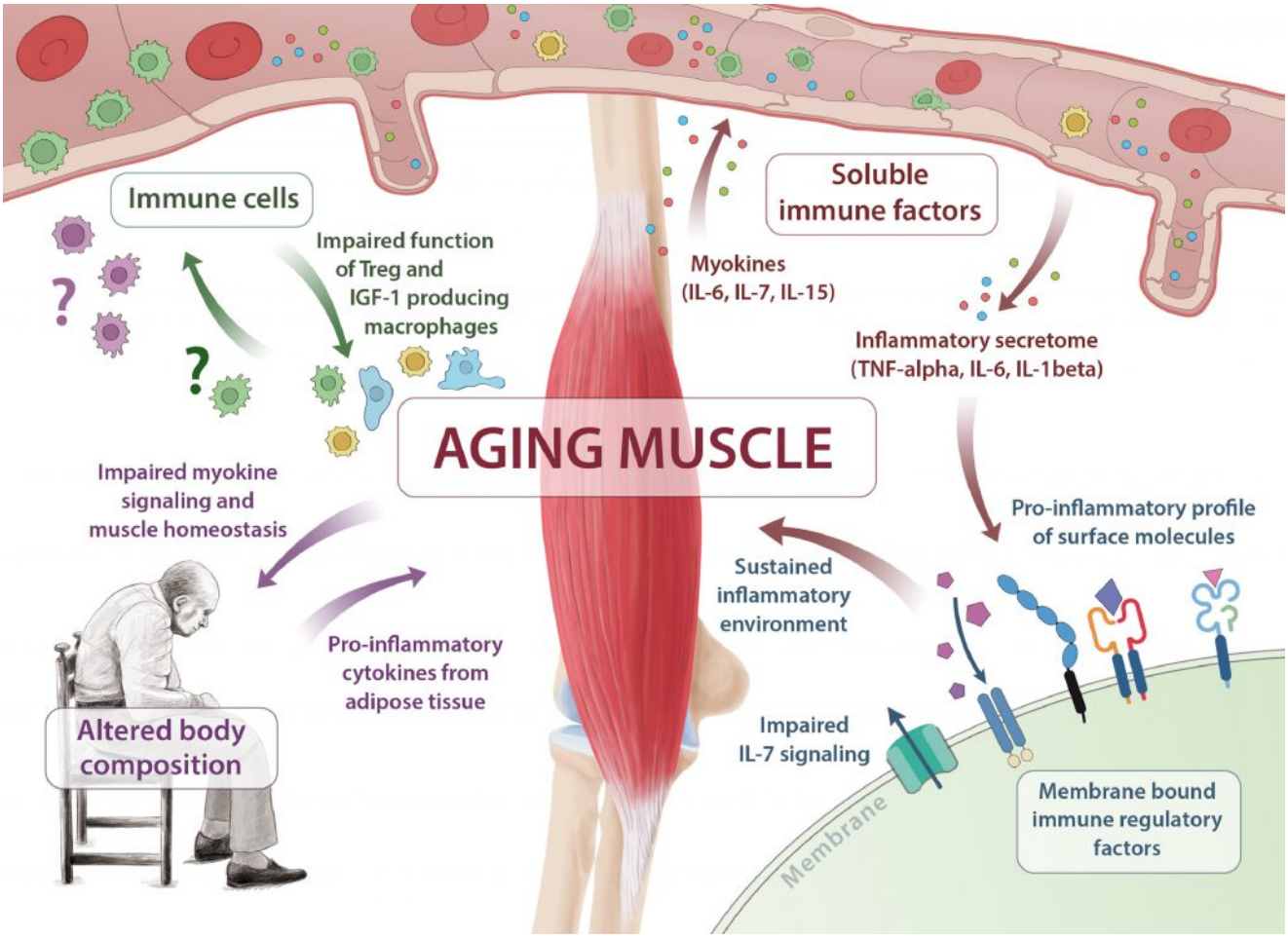
HEALTHY NEWS

Long Term Infection & Inflammation Found to Impair the Immunity as We Age

By bestfolkmedicine · 24/11/2021 · 2 min read



People are born with tens of thousands of HSC cells that enable a long-term production of blood and immune cells which keep us safe from infections.

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They can duplicate to make more stem cells or differentiate to produce different lineages of immune cells. This helps the body acquire the necessary balance of cells to fight off pathogens while keeping sufficient HSCs to ensure optimal blood production.

As humans age, the HSCs mutate which causes genetically different sub-populations or a phenomenon known as loss of function mutations (hematopoiesis). This phenomenon is associated with a higher risk of blood cancer, strokes, and heart disease.

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Inflammation & Infection Contribute to HSC

The study's lead author Dr. Katherine King, associate professor at Baylor College of Medicine and Texas Children's Hospital notes that this is the first time that long-term inflammation and infection were found to contribute to CHS. The study is published in the *Cell Stem Cell* journal.

This study offers important insights into the mechanisms through which the inflammation causes CHS and shows the pivotal role of DNMT3a in the regulation of HSC's response to infections.

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According to King, they've shown previously that infection impairs the ability of HSCs to remain in a calm stem cell state. Longer exposure to a systemic bacterial infection prolonged the differentiation of HSCs.

Although this helped produce enough cells to fight against the infection, it also lowered the bone marrow HSCs by 90 percent. On the other hand, the HSCS in lab mice without the Dnmt3a gene didn't differentiate a lot. They actually self-renewed in order to make more HSCs.

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They conducted the study so that they can check out their predictions that differentiation and higher Dnmt3a increase duplication and this opens up space to overtake the normal HSCs in the fight against chronic infections.

Different viral or bacterial infections and chronic inflammatory conditions like hepatitis, tuberculosis, and IBS trigger the IFNy release by the immunity and this results in various protective immune responses.

The authors of the study are content with the findings of the study which opened up the way for new research. They've shown how chronic inflammation caused by infections and autoimmune conditions can weaken immunity as humans age.

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It also emphasizes the pivotal role of DNMT3a in the modulation of the immune responses during infections and stress.

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