The POZ 100-Cure All Glossary

A glossary of need-to-know cure terminology

November 13, 2012

Berlin Patient

His name is Timothy Brown, and he is the first person to be cured of HIV. After being diagnosed with leukemia, he received chemotherapy and radiation to wipe out his immune system, which was reseeded with stem cells from a donor whose CD4 cells lacked the CCR5 receptor HIV needs to infect them (the donor inherited the genetic trait from both parents). Years later, no HIV capable of reproducing has been found in Brown's body, and he remains off ARVs. Duplicating these results, using adult (and umbilical cord blood) donations and genetically modified stem cells—and without needing the lethal chemo and radiation—is a cure research priority.

CCR5

To infect a CD4 cell, HIV must attach to two of its three receptors. HIV always uses the main CD4 receptor, which we all have. HIV also needs either the CCR5 or CXCR4 receptor. The most common form of HIV targets CCR5, particularly in the early years of infection. HIV med Selzentry (maraviroc) blocks this receptor. Finding ways to knock out CCR5, which serves no important purpose in the body, is a major goal of cure scientists.

HDACs

Using drugs to turn on inactive HIV-infected CD4 cells (see HIV Reservoir below) can actually make people very ill. Instead, researchers are looking at the cellular proteins that keep HIV tucked away in these cells: histone deacetylases, or HDACs, being one group in particular. The cancer drug Zolinza (vorinostat) and the alcohol dependency drug Antabuse (disulfiram) are two very different drugs with one thing in common—they inhibit HDACs.

HIV Reservoir

Current antiretroviral therapy is good at preventing CD4 cells from becoming infected and at blocking "active" infected cells from producing new HIV. However it's not good against inactive, or latent, CD4 cells that harbor the virus; if they're not active—and many lie dormant for decades—ARV meds can't get at the virus. Cure researchers are determined to find ways to purge HIV from this reservoir.

Interleukin-7

Also know as IL-7, it is a synthetic version of a naturally occurring messenger hormone. It's being

studied for its ability to prompt CD4 cell reservoirs to give up their HIV cargo without activating the immune system and making it go haywire.

RNAi

“RNA interference” began when researchers found they could insert genetic fragments to “silence” the genes in petunias responsible for giving them their purple color. This technique is now being studied in a variety of diseases, including HIV, as a way to block the genes that stand in the way of a cure.

Zinc Finger Nucleases

Also know as ZFNs, they are molecular scissors that can slice genes, rendering them useless. Sangamo BioSciences is experimenting with ZFNs as a way to clip genes that produce CCR5 receptors on CD4 cells. It’s also looking at using ZFNs to render the gene dysfunctional in bone marrow cells, which can be used to regrow immune systems that contain CCR5-free CD4s.

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