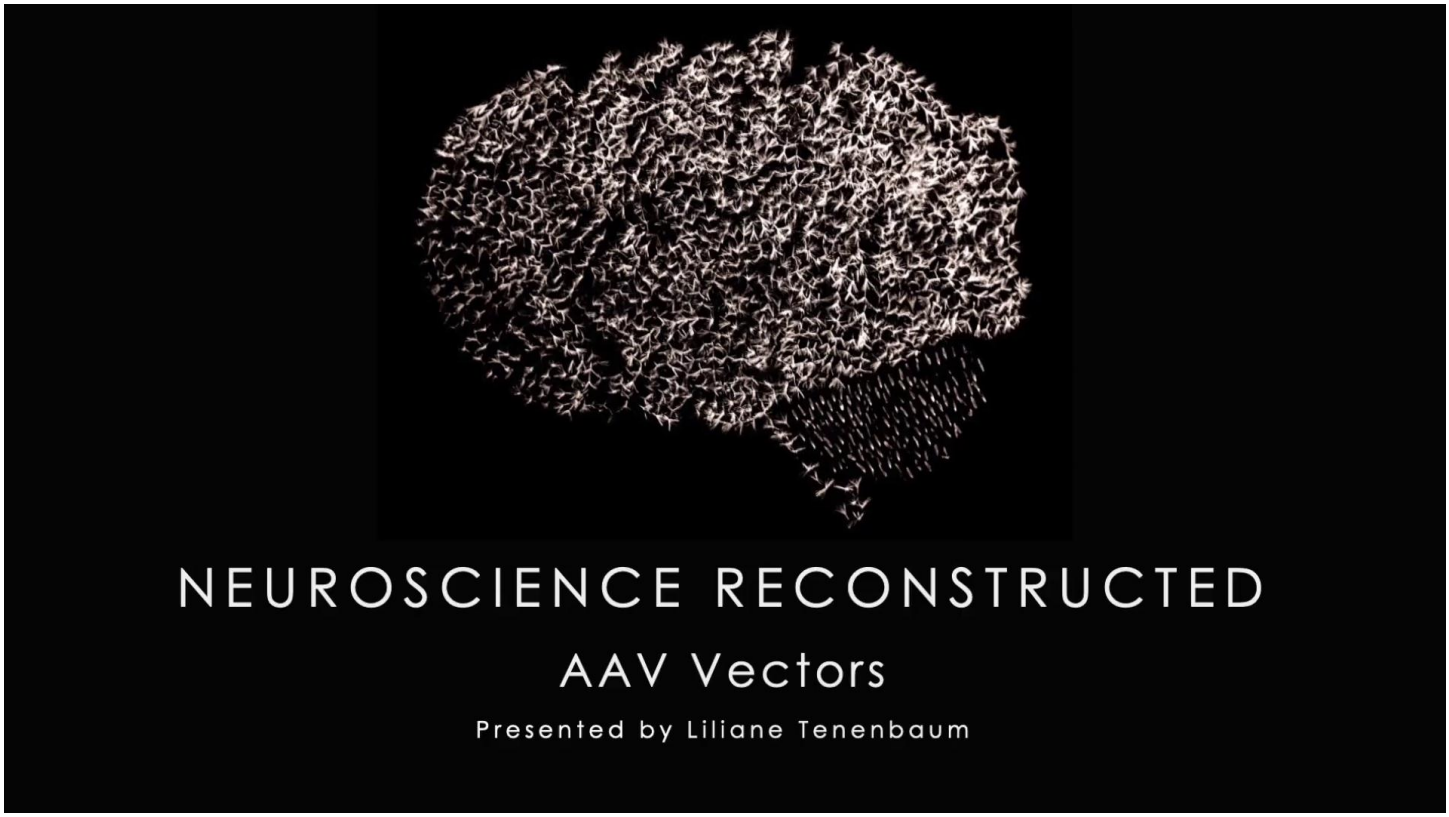

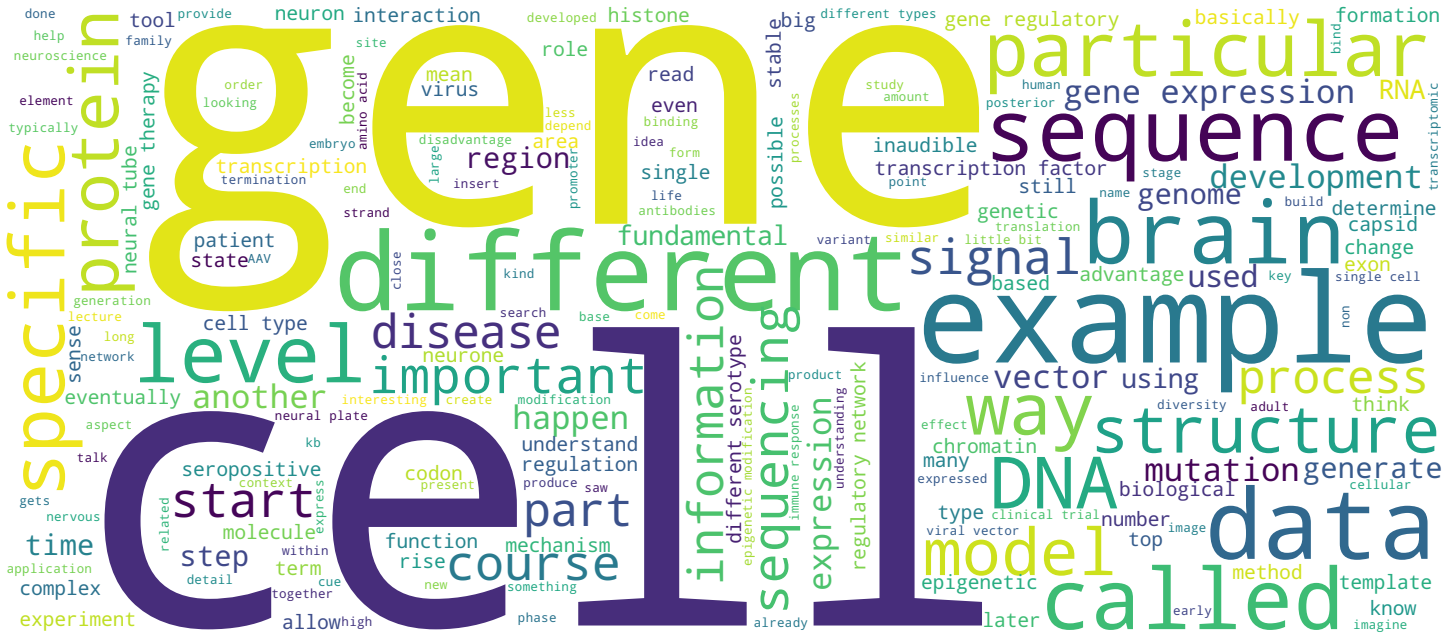

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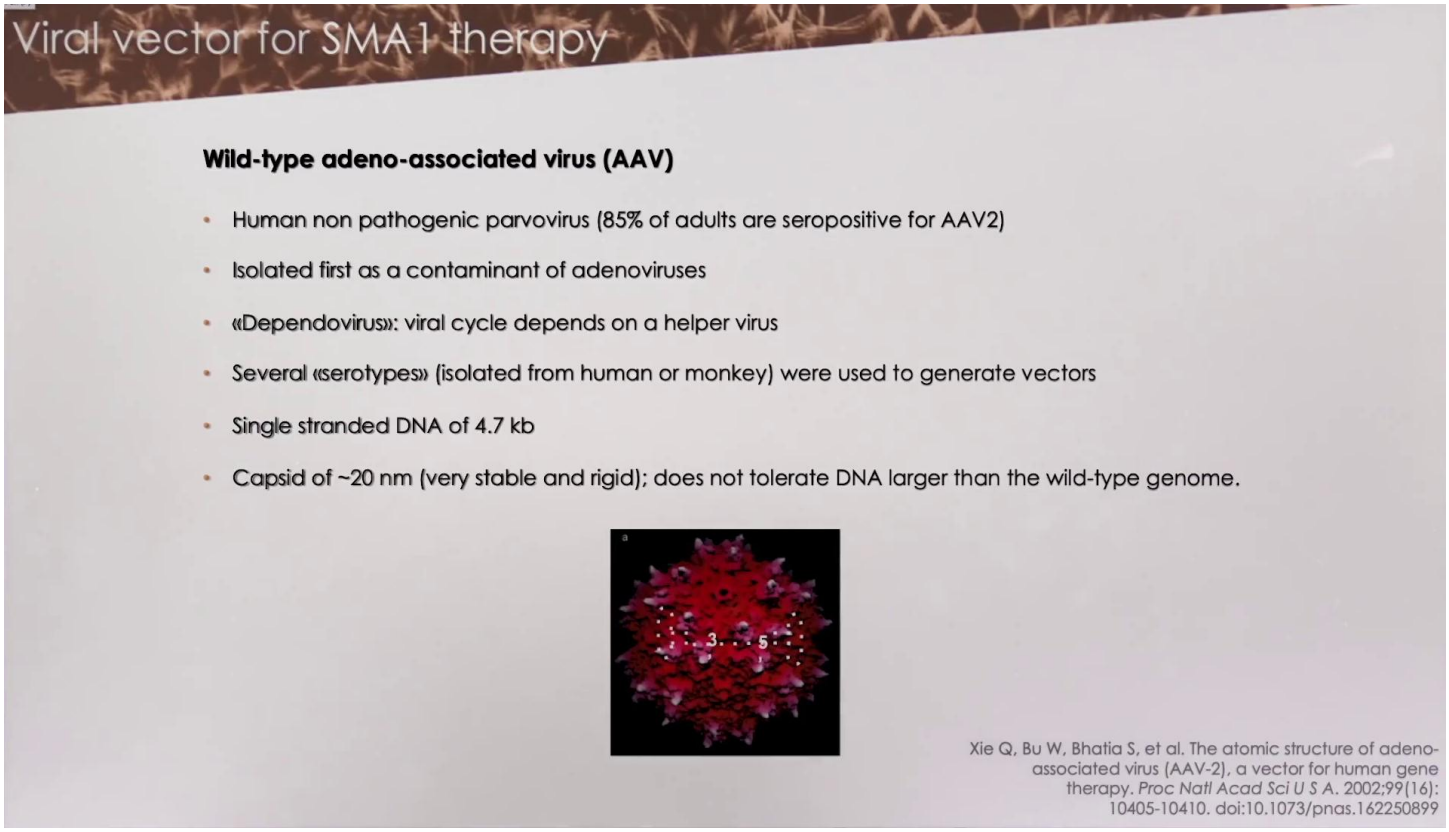

The first AV stereotype that was developed into a vector was AAV2 and unfortunately, you see that 85% of adults are seropositive. These have antibodies and a portion of them have neutralising antibodies for AV2, so they can block the infection by AV2. Fortunately, we have no other stereotypes and the seropositive is sometimes lower, but still there are many adults who are seropositive. This is much less a problem with small children because this seropositivity is acquired during life and it's actually quite low in babies. I have already said that it's parvovirus of the subcategory of depondovirus because it depends on helper virus. The different serotypes that have been isolated, there are many of them, many serotypes and also variants because the researcher has developed new variants with metagenesis methods. The interesting point is that the different serotypes in fact, differentially, the different organs and different types of cells. Virtually you can in the collection of AAV stereotype choose the one that is the best for your application. It has a single stranded DNA of 4.7 kb and very small capsid of 20 nanometer that is very stable and rigid.

Notes

Summary

0m 07s

Viral vector for SMA1 therapy

Wild-type adeno-associated virus (AAV)

- Human non pathogenic parvovirus (85% of adults are seropositive for AAV2)
- Isolated first as a contaminant of adenoviruses
- «Dependovirus»: viral cycle depends on a helper virus
- Several «serotypes» (isolated from human or monkey) were used to generate vectors
- Single stranded DNA of 4.7 kb
- Capsid of ~20 nm (very stable and rigid); does not tolerate DNA larger than the wild-type genome.

Xie Q, Bu W, Bhatia S, et al. The atomic structure of adeno-associated virus (AAV-2), a vector for human gene therapy. *Proc Natl Acad Sci U S A*. 2002;99(16): 10405-10410. doi:10.1073/pnas.162250899

The disadvantage is that you can absolutely not insert more than 4.7 kb in total in this capsid. But the advantage is that since it's very stable, the production and purification of the recombinant viruses is relatively easy because it resists to acidic treatment, to detergent, to high temperature up to 56 degrees, etc. This is very good, very important properties when you think of application.

Notes

Summary

2m 09s