

# Scientists develop 'sexy\_markers,' a bioinformatics tool that reveals white shark gender

December 6 2023

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Great white shark at Isla Guadalupe, Mexico, August 2006. Credit: Terry Goss/Wikipedia

A new study led by CSIRO, Australia's national science agency, has revealed white shark gender is determined by X and Y sex chromosomes.

The researchers developed a robust method to find sex chromosomes in a shark's genome and a new PCR test that can be used in labs to sex white sharks from tissue biopsies.

Dr. Floriaan Devloo-Delva, postdoctoral research fellow at CSIRO's Australian National Fish Collection, said the team developed a bioinformatics tool named "sexy\_markers" that uses a statistical method to search DNA data for sex chromosomes.

The team then used sexy\_markers to search for sex chromosomes in a large sample of white sharks (*Carcharodon carcharias*). The work is [published](#) in the journal *Conservation Genetics Resources*.

"We discovered that [sex determination](#) in the [white shark](#) is driven by genetics, not by temperature like in [crocodiles](#) or turtles," Dr. Devloo-Delva said.

"Our study showed that the white shark has X and Y sex chromosomes. Males are XY and females are XX."

Sex determination varies widely across the [animal kingdom](#) and can involve genes on sex chromosomes, egg incubation temperature or even the proportion of males and females in a population.

Some shark species are known to have sex chromosomes but the [molecular mechanism](#) behind sex determination in sharks is largely unknown. To date, [sex chromosomes](#) have been examined in only 94 shark and ray species (

Citation: Scientists develop 'sexy\_markers,' a bioinformatics tool that reveals white shark gender (2023, December 6) retrieved 28 April 2024 from <https://phys.org/news/2023-12-scientists-sexymarkers-bioinformatics-tool-reveals.html>

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