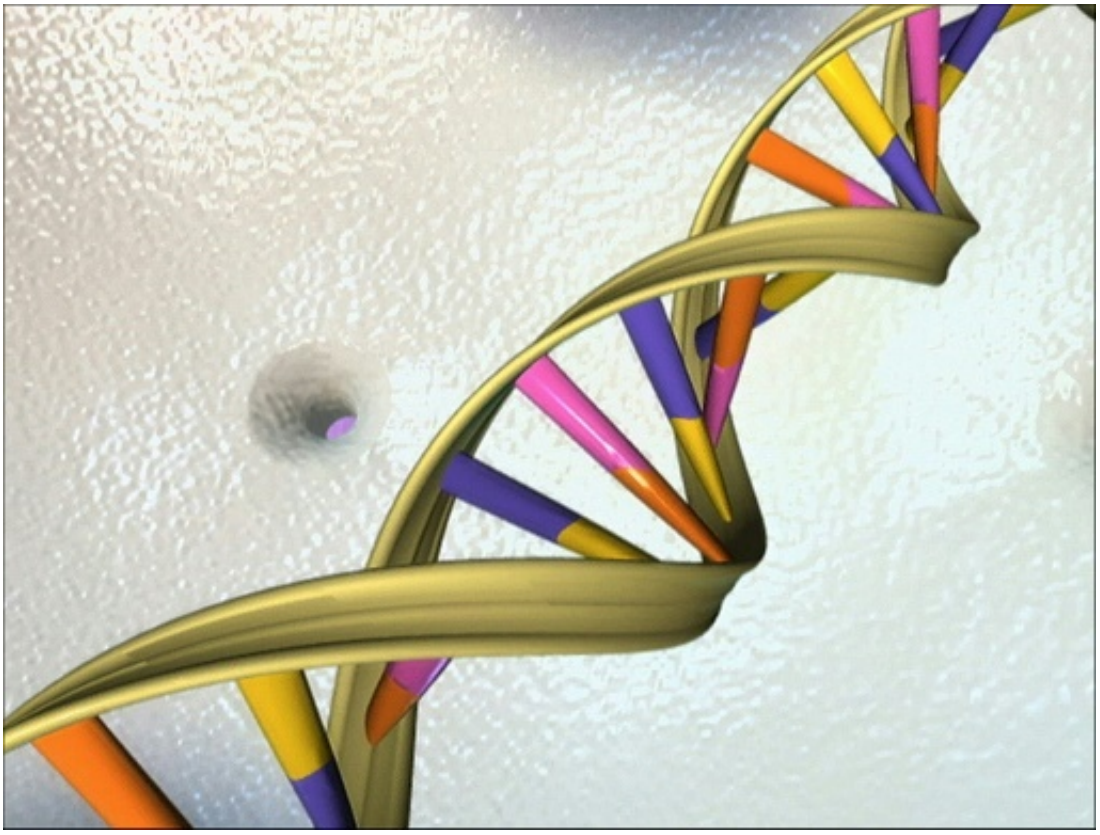
Fight over revolutionary genetic advance goes to court in US

December 7 2016, by Sebastien Blanc



The DNA double helix

A fierce legal battle over the patent for a revolutionary gene-editing technique played out Tuesday in a US court, with billions of dollars at stake.

The tool called CRISPR-Cas9—hailed as faster, cheaper and more accurate than current gene-snipping methods—holds fabulous promise for applications in medicine and agriculture.

It is to genetics what word processors meant as progress compared to typewriters.

In one corner of the fight are two women regularly considered possible candidates for a Nobel prize: French microbiologist Emmanuelle Charpentier of the Max Planck Institute in Berlin and biochemist Jennifer Doudna of the University of California, Berkeley.

Opposing them is Feng Zhang, a leading light at the Broad Institute, a research facility affiliated with Harvard University and the Massachusetts Institute of Technology.

Both sides claim to have developed CRISPR-Cas9. It allows scientists to edit, with pinpoint accuracy, stretches of the genome by removing, adding or changing pieces of the DNA sequence.

Major medical labs and biotechnology companies see the technique as having stunning potential.

But critics worry over ethical concerns, such as changing DNA within reproductive cells, because these tweaks will be passed on from generation to generation.

The three scientists were represented by lawyers at the court in Alexandria, Virginia for a hearing that lasted less than 50 minutes.

There is broad agreement that Charpentier and Doudna—winners of many prizes in the past four years—discovered this gene-editing technique that has raised so many hopes.

French microbiologist Emmanuelle Charpentier attends a ceremony for the Doctors Honoris Causa honorary degrees, at the KU Leuven university in Belgium, in February 2016

Their work was published in the journal *Science* in June 2012. But they described using CRISPR with simple organisms such as bacteria. They filed for a patent in May 2012.

The Broad Institute, with Zhang, filed a patent request in December 2012 for a successful test of CRISPR with eukaryotes—more advanced organisms whose cells contain a nucleus with a membrane.

This step forward opened up vast possibilities for extending gene-editing to human cells.

The question before the three-judge panel Tuesday was whether Zhang benefited from the discovery of the other two scientists or was actually responsible for moving CRISPR forward as a technology.

"Dr Zhang had already started to work on it prior to" the publication of his rivals' work, said Steven Trybus, lawyer for the Broad Institute.

Quoting an interview that she gave, Trybus said Doudna "experienced many frustrations trying to get it in human cells."

A lawyer for the other side sought to dismiss any suggestion that his clients had failed.

Todd Walters, a lawyer for the University of California, said Doudna has granted hundreds of interviews and "there is no statement in the record that she believed that it wouldn't work in eukaryotic cells."

What will the judges do to attribute paternity for the discovery of the century in biotechnology?

They can decide that one side wins it all, or split things up by assigning some patents to both sides.

No decision is expected for weeks. But either way, CRISPR-Cas9 is destined to keep the world of genetics abuzz for a long time.

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