# Examining your DNA matches with DNA Painter

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### As family historians, we want to use our DNA test to:

- Connect and learn about unknown branches of our family tree
- Break through brick walls and solve genealogical puzzles

### What information about our matches is available?

It varies:

- Sometimes we'll have the data showing which segments of DNA we share, along with a well documented family tree
- Other times we might have as little as an assumed name and the amount of DNA shared

### Introducing DNA Painter (https://dnapainter.com)

**Chromosome mapping** is where you take a set of chromosomes - a 'virtual you' – and use your matches to help figure out which segments of DNA you got from specific ancestors in your family tree.

- Why would you do this and what are the benefits?
- What do you need to get started?
- How does it work?

### Walkthrough

- Overlaying a match
- Painting a match, adjusting the confidence level and making notes
- Searching for a match
- Viewing the match detail and seeing overlapping segments.
- Expanding chromosomes
- Dragging and dropping groups within the key to adjust the layer order
- Copying the data for a segment and for a whole match so it can be pasted into another profile.
- Downloading and backing up data
- Filtering groups, matches, match list
- Importing of ethnicity segments and bulk import of matches

## Interpretation

- Crossovers and inheritance.
- If two segments overlap, what does that mean?
- Thresholds, lengths of significant overlap
- "Pileups"
- Small segments and confirmation bias
- Coverage

## Advanced techniques

- Inferred matches
- Reverse chromosome mapping: painting descendants of an ancestor

## Challenges

- Endogamous ancestry, multiple relationships
- Any assignment is an assumption

## Shared cM tool & What are the odds (WATO)

- These tools use statistical calculations and require only shared centimorgan amounts; no segment data is needed
- How each tool is used
- Future developments

## Tools and resources

https://dnapainter.com

https://dnapainter.com/tools/sharedcmv4

https://dnapainter.com/tools/probability

How-to articles

https://dna-explained.com/2018/03/28/dna-painter-chromosome-sudoku-for-genetic-genealogy-addicts/

http://ultimatefamilyhistorians.blogspot.com/2018/01/using-dna-painter-to-reconstruct.html

http://www.jmhartley.com/HBlog/2018/04/11/playing-with-dnapainter/

https://medium.com/@dnapainter/painting-your-dna-with-inferred-matches-28718a3da44c

Video tutorials

https://www.youtube.com/watch?time_continue=1&v=wyjcJxywTZI

https://vimeo.com/283126987