Getting Started with DNA Painter

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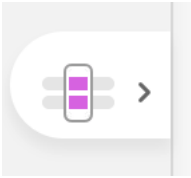
Start by setting up a free account at DNA Painter, which gives you one chromosome map and one ancestral chart. Once you set up your account set up a profile for yourself. It will ask your name and your sex at birth. Males have one X chromosome that they get from their mother, and females have two X chromosomes: one from mother and one from father. DNA Painter adds the correct number of X chromosomes based on that answer. The chromosome map represents your DNA. When you add a match to it, the colored segment shows the DNA that you and the match share. You do not upload your raw DNA to DNA Painter. You are essentially drawing an image of your shared DNA.

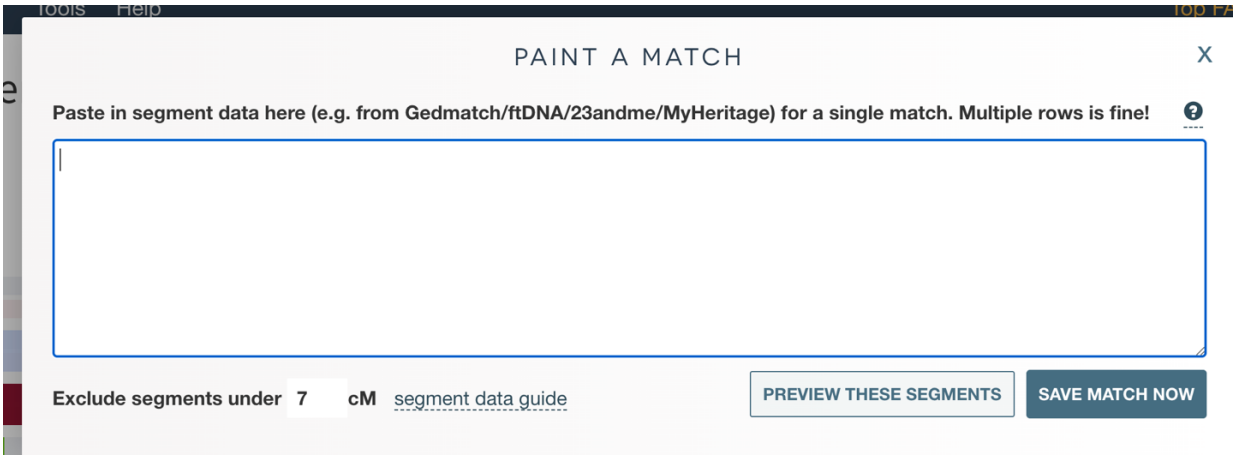
The settings for DNA Painter are on the upper left under the gear icon. Options sets up how the display looks. You can choose to show match names on the segments and add the cM values beside the names, show the centromeres on the chromosomes, and show megabase guides on expanded chromosomes.

Now you are ready to add your matches. For DNA Painter you need segment data from the testing companies. MyHeritage, FamilyTreeDNA (FTDNA), LivingDNA, and GEDmatch give you this data. Ancestry does not. If you have a known cousin who has tested it helps to start with that person. You will know if she's on your mother's side or father's side, which can help you position any shared matches you have with her.

MyHeritage shows your list of matches. Clicking on 'Review DNA Match' brings up the details and shows shared matches. Some matches will show this symbol on the right side that means that you, the match and the shared match all share the same segment of DNA on a particular chromosome. This is segment triangulation. One requirement for segment triangulation is that you, the match and shared match are not closely related. For example, you and your brother or your first cousin would be too closely related. Second cousins, who share great grandparents with you are distant enough for triangulation.



Clicking on the triangulation symbol opens a new tab with the MyHeritage chromosome browser. At the bottom of the page, you can select the segments for your match and copy them. If there is only one segment also copy the header about the chromosome, start, end, etc. Then paste it into DNA Painter's 'Paint a New Match.' DNA Painter will pick out the needed data and ignore anything extra. If you know how the match is related to you, such as a known cousin, you can select 'know how I'm connected to this match,' if not select 'I don't know yet…' Next fill in the match's name. I recommend adding some information about the testing site, such as MyH, FTDNA or whatever helps you if you need to find this match again in the future. A name is needed for this group. If



it's a known cousin, you probably want to name the group for the most recent common ancestor (MRCA). Depending on your preference, that could be the ancestor that gave you the segment or that person's parents. I prefer the parents because they would be the same answer for who gave it to my cousin. If I got the segment from my grandmother and she got it from her grandfather, it doesn't help me see that those are the children of our common great grandparents. But it's a personal choice.

DNA Painter will exclude segment that are less than 7 cM when the data is saved. Segments less than 7 have a high probability of being false matches. At about 3 cM we'd all match each other! Some people prefer to not go as low as 7 cM, and that can be adjusted in the 'Paint a Match' dialog box.

When you add a shared match for you and known cousin you can add it to a new group, which is what I do or to the MRCA group you already made. Since this match usually has less cM than my known cousin, he would be more distant, and although on this family line not a descendant of this MRCA couple. I name the group as 'Triangulates with cousin-name.' Since the profile is private to you, you can name matches and groups however makes the most sense to you and the way you do your family tree. There aren't any rules on this.

When I know how the match is related to me, I click on the 'Save Match Now.' For a shared match that triangulates with a known cousin, and I'm setting up a new group, I use 'Preview These Segments' to see how the new match shares the segment with my known cousin. When saving the match, you can use the suggested color from DNA Painter, or you can choose whatever color you want for the match. Some people like to pick a color for a family line and then use various shades of that color for different people in it. For example, grandparents might be a darker shade, and the color goes lighter for more distant generations.

FamilyTreeDNA (FTDNA) gives a list of your matches. On the right of the list are three symbols. The one that looks like people lets you select 'in common with' or 'not in common with.' When the tree is solid, it indicates

that there is a family tree for this match. If it's just an outline, there is no family tree. The note is where you can add notes to the match. After you add one it becomes solid. If you select a match and then 'in common with' the list changes to show the shared matches. You can select up to seven of them to put in the chromosome browser. You can also select chromosome browser from the drop-down menu for Autosomal DNA.

In the FTDNA chromosome browser selecting 'download segments' changes the display to a list of the segment data. This list includes the name of the match and their segments. When painting the segments into DNA Painter you need to select the segments for one match at a time and paste them into 'Paint a new Match.' DNA Painter will take all the segments pasted and treat them as if they came from one person, which is why you want to do each match separately.

To find matches on **GEDmatch** run your kit with the free tool 1-to-Many to get a list of matches. Clicking on the A to the left of the match's name will bring up the 1-to-1 screen with your kit number and that match's kit number already filled in. You can run the comparison with just the position of the segments, or with position and graphic representation. The entire list of chromosomes along with graphics and positions can be pasted into DNA Painter. You can then select 'save match' or 'preview match' as you prefer. When naming the match, I copy the kit number and the name that the match has.

In the example for my cousin, Fred, shared match, Mike, has 2 segments. One is on chromosome 12 and the other on chromosome 20. Fred has a large segment he shares with me on chromosome 20. Mike's segment on chromosome 20 triangulates with Fred and me. Fred does not share a segment with me on chromosome 12, but my cousin Trish does. Running 1-to-1 on GEDmatch between Mike and Trish shows that they match each other on that same segment of chromosome 12. Mike, Trish and I triangulate on chromosome 12. Mike's family immigrated from Ireland, as did Fred and my Barry family, and both Byrnes and Fenton families that Trish and I share. Mike told me that his grandmother was a Byrnes, so the segment he shares with Trish and me on chromosome 12 is on our common Byrnes side.

Using DNA Painter's 'mass edit mode' I can move that segment on chromosome 12 from being in the 'Triangulates with Fred' group and put it into the 'Triangulates with Trish' group. When a match has more than one segment, it's a good first approximation that all the segments belong in the group where one of them triangulates with you and a known match. This is the case in most of the time. Only when something shows up that questions that, does it need to be explored.

On **LivingDNA** none of my known cousins have tested. However, Joe, who matches Trish and was on FTDNA, has tested there. Joe lives in Ireland. His family came from County Limerick, and his segment triangulates with Trish and me on chromosome 7. I

know that Joe and my second great grandmother, Joanna O'Brien, are related on her O'Brien line, even if I can't make the exact connection due to lack or surviving records. So, I can use Joe as a 'known' in my comparison. The shared match, Henry, that Joe and I have, is also in the same location on chromosome 7. Even though Henry and Trish are not on the same testing site, I only have one paternal chromosome and Joe, Henry, Trish and I all share that segment on chromosome 7. This is one of the features I find very useful on DNA Painter. Because I can add segments from all the testing companies I can 'compare' matches that are on different sites. You can only prove segment triangulation when the matches are on the same testing sites where the companies have the raw DNA they are comparing. But I think DNA Painter gives me the next best thing when I can see that the segment images are in the same locations on the chromosomes.

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