

Goal of this Autosomal DNA Triangulation Study

(This is a recent snapshot of an active study. Saving the link would be more appropriate than saving a copy. 10Nov2019)

The Gedmatch.com Autosomal DNA triangulations on several chromosomes involving **Tony, Dale, Ron, Rubie, William, Marian,** and **Scott**, have been observed. DNA triangulation can be used in a method similar to geometric triangulation to identify a point of intersection, or with DNA, a set of ancestors, in-common grandparents, if any, that exist between a group of individuals. The goal of this study is to augment the existing historical data with Autosomal DNA triangulations, to find and prove the most recent pair of grandparents that the group of seven individuals mentioned above share in common. To avoid privacy issues with this study, only first names were used.

Group Ancestry Derived From Historical Records and Family Information

Tony and **Dale** are full brothers. Their proved great-grandfather was **Joseph E. Cox**, born about 1836 in Indiana. Tony and Dale descend from the son of Joseph E. Cox and are **4 generations** removed from the father and mother of Joseph E. Cox. Tony has taken the Y-DNA test which indicated he likely descended from the family of Thomas Cox, b. 1641 in England. Tony's Y-DNA test kit is 82155. For details about the Y-DNA test, see:

<https://www.familytreedna.com/public/Cox%20DNA%20Study?iframe=ycolored>

Ron is the proved 3-great grandson of **Joseph E. Cox**, born about 1836 in Indiana. Ron descends from the son of Joseph E. Cox and is the 1st cousin-twice removed of Tony and Dale Cox and is **6 generations** removed from the father and mother of Joseph E. Cox.

Rubie is the proved 2-great-granddaughter of **Joseph E. Cox**, born about 1836 in Indiana. Rubie descends from Joseph E. Cox's daughter, is the 2nd cousin-once removed of Tony and Dale Cox, and is **5 generations** removed from the father and mother of Joseph E. Cox.

William is the proved 2-great-grandson of **Joseph E. Cox**, born about 1836 in Indiana. William descends from Joseph Cox's daughter, is the first cousin of Rubie, and is **5 generations** removed from the father and mother of Joseph E. Cox.

Marian is the proved 2-great-granddaughter of **Thomas B. Cox**, Marian descends from a son of Thomas B. Cox and is **5 generations** removed from the father and mother of Thomas B. Cox.

Scott is the proved 3-great-grandson of **Thomas B. Cox**. Scott descends from a daughter of Thomas B. Cox and is **6 generations** removed from the father and mother of Thomas B. Cox.

Hypothesis

The scant historical data lead us to hypothesize that Thomas B. Cox, born about 1826 in Ohio and Joseph E. Cox, born about 1836 in Indiana were brothers. Their common parents will be four generations removed from Tony and Dale and 5 generations removed from Marian.

The webpage [Genetic Genealogy Using Gedmatch](#) is suggested reading for those who are unfamiliar with the techniques and terms used in Genetic Genealogy. This study uses Autosomal DNA data and Genetic Analysis tools to augment existing family and historical data and bridge the gaps in the Study Group ancestral family tree.

The Gedmatch.com One to One Autosomal DNA Comparison tool is used to confirm that the Study Group members share in common one or more ancestors and are eligible for Autosomal DNA Triangulation Analysis.

One to One Autosomal DNA Comparison @6 cM

Name 1	Name 2	Segments	Largest Segment	Half-Match segments (Percent)	Estimated MRCA	Shared Segments	Number of SNPs used	Percent Full-Identical SNPs
Tony	Dale	All	111.3 cM	2604.6(72.625)	1.2	61	628,846	73.126%
Tony	Ron	1, 4, 6, 11, 12, 13, 15, 17, 22	49.6 cM	302.8 (8.443)	2.8	13	421,274	53.241%
Tony	William	6, 7, 14	33.7 cM	64.8 (1.806)	3.9	3	297, 623	53.414%
Tony	Rubie	1, 2, 3, 13	15.0 cM	41.6 (1.161)	4.3	4	616,278	56.078%
Tony	Marian	5, 6, 13, 15, 18	35.1	137.1 (3.824)	3.4	10	402, 968	52,647%
Tony	Scott	15, 18	18.8 cM	26.4 (0.735)	4.5	2	615,975	55.794%
Dale	Ron	1, 2, 3, 6, 10, 11, 12, 14, 15, 19, 22	50.4 cM	373 (10.426)	2.6	16	420, 547	53.668%
Dale	William	6, 13, 19	11.7	38.1 (1.063)	4.3	4	297,134	53.244%
Dale	Rubie	1, 2, 13	10.8	39.3 (1.095)	4.3	4	613,695	55.884%
Dale	Marian	5, 15	66.1	111.4 (3.107)	3.5	5	402,268	52.599%
Dale	Scott	15	18.8	18.8 (0.523)	4.8	1	618,371	55.647%
Ron	William	1, 21	8.4	14.4 (0.402)	6.6	2	286,146	51.986%
Ron	Rubie	2	7.4	7.4 (0.207)	7.5	1	419,631	52.243%
Ron	Marian	15	35.6	55.6 (1.549)	4.0	2	406,556	52.229%
Ron	Scott	15	20.1	20.1 (0.561)	4.7	1	414,427	52.341%
William	Rubie	1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 15, 19, 20	79.8	448.5 (12.504)	2.5	19	295,062	55.348%
William	Marian	1, 6	10.2	20 (0.556)	4.7	2	290,401	51.749%
William	Scott	--				0	293,521	
Rubie	Marian	2	8.7	8.7 (0.243)	6.6	1	402,729	52.542%
Rubie	Scott	--				0	603,330	
Marian	Scott	15, 18	23.4	40.3 (1.124)	4.2	3	399,265	52.804%

The known family history for the members of the Study Group was outlined earlier. Autosomal DNA results are often expressed in terms of cousin relationships. The table below repeats the known and hypothesized family history information by showing the cousin relationships between the members.

Proved and (Hypothesized) Cousin Relationships in the Group

	Tony	Dale	Ron	Rubie	William	Marian	Scott
Tony		Siblings	1-2R	2-1R	2-1R	(3-1R)	(3-2R)
Dale	Siblings		1-2R	2-1R	2-1R	(3-1R)	(3-2R)
Ron	1-2R	1-2R		3-R1	3-R1	(4-R1)	(5)
Rubie	2-1R	2-1R	3-R1		1	(4)	(4-R1)
William	2-1R	2-1R	3-R1	1		(4)	(4-R1)
Marian	(3-1R)	(3-1R)	(4-R1)	(4)	(4)		3-R1
Scott	{3-2R}	(3-2R)	(5)	(4-R1)	(4-R1)	3-R1	

In addition to the terms of cousin relationships, Autosomal DNA analysis results also present the estimated value of the number of generations between an individual and their Most Recent Common Ancestors or MRCA . These estimates are based on the total strength of the DNA match between the individuals. The table below replicates this idea by deriving an MRCA value from the earlier stated cousin relationship. Generations are in whole numbers with the fractional part representing descendants of cousins.

MRCA Generations Derived from the Cousin Relationships in the Group

	Tony	Dale	Ron	Rubie	William	Marian	Scott
Tony		1.0	2.6	3.3	3.3	(4.3)	(4.6)
Dale	1.0		2.6	3.3	3.3	(4.3)	(4.6)
Ron	2.6	2.6		4.3	5.3	(5.3)	(6.0)
Rubie	3.3	3.3	4.3		2.0	(5.0)	(5.3)
William	3.3	3.3	4.3	2.0		(5.0)	(5.3)
Marian	(4.3)	(4.3)	(5.3)	(5.0)	(5.0)		4.3
Scott	(4.6)	(4.6)	(6.0)	(5.3)	(5.3)	4.3	

MRCA Generations Predicted by the One to One DNA Comparison Tool

	Tony	Dale	Ron	Rubie	William	Marian	Scott
Tony		1.2	2.8	4.3	3.9	3.4	4.5
Dale	1.2		2.6	4.3	4.3	3.5	4.8
Ron	2.8	2.6		7.5	6.6	4.0	4.7
Rubie	4.3	4.3	7.5		2.5	6.6	--
William	3.9	4.3	6.6	2.5		4.7	--
Marian	3.4	3.5	4.0	6.6	4.7		4.2
Scott	4.5	4.8	4.7	--	--	4.2	

Gedmatch.com and FamilytreeDNA.com

The DNA analysis tools of Gedmatch.com and FamilytreeDNA.com will be used to find the DNA triangulations between the study group members and to provide estimates of the *Most Recent Common Ancestor* (MRCA). The specific Gedmatch.com tool used is the Tier 1 *Multiple Kit Analysis* (MKA).

Definition of a DNA triangulation: “Simple one-to-one DNA confirmation is sufficient if your match is a third cousin or closer. Confirming relationships using more distant cousin matches requires triangulation. Three or more cousins need to all match each other on a single segment of DNA that is at least 7cM long. Seven cM is a bare minimum and presumes that the cousins' relationship back to their most recent common ancestor(s) is well-documented.”

[From <https://www.wikitree.com/wiki/Help:Triangulation>]

Tony's Autosomal DNA Triangulations with the Group @6.0 cM

	A	B	C	D	E	F	G
1	Chr	Kit0 Name	Kit1 Name	Kit2 Name	B37 Start	B37 End	cM
2	1	Tony	Dale	Ron	14700829	22198190	15.3
3	1	Tony	Dale	Rubie	198745866	205457566	10.5
4	2	Tony	Dale	Rubie	134580522	144026991	7.4
5	5	Tony	Marian	Dale	24592778	31936833	8
6	5	Tony	Marian	Dale	75675319	82248664	9.9
7	6	Tony	Dale	Ron	13349274	22896343	15.3
8	6	Tony	Dale	Ron	61970201	129793971	49.4
9	6	Tony	Marian	William	160583048	164445349	6
10	6	Tony	Dale	William	165883486	170919470	11.7
11	11	Tony	Dale	Ron	114033738	123283922	15.8
12	12	Tony	Dale	Ron	257987	2886299	6.6
13	15	Tony	Marian	Dale	55368124	82573255	35.1
14	15	Tony	Marian	Ron	55550755	82573255	35
15	15	Tony	Dale	Ron	55550755	82573255	35
16	15	Tony	Marian	Dale	83221392	94153501	18.5
17	15	Tony	Marian	Scott	83221392	94215925	18.8
18	15	Tony	Marian	Ron	83221392	94512067	20
19	15	Tony	Dale	Scott	83221392	94215925	18.8
20	15	Tony	Dale	Ron	83221392	95024344	21.8
21	15	Tony	Scott	Ron	83221392	94215925	18.8
22	15	Tony	Marian	Dale	99112003	102120895	8.1
23	18	Tony	Marian	Scott	18618070	24849613	7.1
24	22	Tony	Dale	Ron	17075353	19951804	12.4

Tony has sixteen triangulations with the group, nine involving only descendants of Joseph E. Cox and seven involving Marian, a descendant of Thomas B. Cox. Two of the latter triangulations also involves Scott, another descendant of Thomas B. Cox. Marian's Gedmatch.com triangulation data on Chromosome #5, #6, #15, and #18 is consistent with Tony's and Marian's FamilytreeDNA.com FamilyFinder cousin match data. Both the Gedmatch.com and FamilyFinder data indicate the pair have an additional match, perhaps not a triangulation, on #13.

Marian's Autosomal DNA Triangulations with the Group

	A	B	C	D	E	F	G
1	Chr	Kit0 Name	Kit1 Name	Kit2 Name	B37 Start	B37 End	cM
2	5	Marian	Tony	Dale	24592778	31936833	8
3	5	Marian	Tony	Dale	75675319	82248664	9.9
4	6	Marian	Tony	William	160583048	164445349	6
5	15	Marian	Dale	Ron	54629175	82573255	35.6
6	15	Marian	Tony	Dale	55368124	82573255	35.1
7	15	Marian	Tony	Ron	55550755	82573255	35
8	15	Marian	Tony	Dale	83221392	94153501	18.5
9	15	Marian	Dale	Scott	83221392	94153501	18.5
10	15	Marian	Dale	Ron	83221392	94153501	18.5
11	15	Marian	Tony	Scott	83221392	94215925	18.8
12	15	Marian	Tony	Ron	83221392	94512067	20
13	15	Marian	Scott	Ron	83221392	94512067	20
14	15	Marian	Tony	Dale	99112003	102120895	8.1
15	18	Marian	Tony	Scott	18618070	24849613	7.1

The shared triangulations of Tony and Marion on Chromosomes #5, #6, #15, and #18 that involve other members of the group are more than enough to indicate a strong link and at least one Most Recent Common Ancestor (MRCA) between the descendants of Joseph E. Cox and Thomas B. Cox. The Multi-Kit Analysis Tool estimates the centimorgan value of the total DNA matches between the group of seven cousins and uses those values to estimate MRCAs for every combination of the group.

Tony, Dale, and Ron share the largest Autosomal DNA triangulation segment of 49.4 cM on chromosome #6. That triangulation, which does not involve Marian or Scott, was for surname of their grandmother Lillie May Farnsworth and their great-grandfather Jacob Farnsworth. The other triangulation on #6 that doesn't involve Marian is thought to be for the Watkins surname, the maiden name of Lillie May's mother and Jacob's wife. It has a value of 15.3 cM.

The next-largest Autosomal DNA triangulation segment, about 35 cM, involves Marian, Tony, Dale, and Ron and is on chromosome #15 between 54,629,175 and 82,573,255. The four share another triangulation on the same chromosome between 83,221,392 and 94,512,067 for about 19 cM that includes Scott. Finally, Tony, Marian, and Scott share a 7.1 cM triangulation on chromosome #18.

Total Shared Autosomal DNA cM Value Matrix @6 cM

	Tony	Dale	Ron	Rubie	William	Marian	Scott
Tony		2610.1	303.5	42.3	64.8	137.1	26.4
Dale	2610.1		373.9	39.3	38.1	111.4	18.8
Ron	303.5	373.9		7.4	14.4	55.6	20.1
Rubie	42.3	39.3	7.4		451.4	8.7	--
William	64.8	38.1	14.4	451.4		20.0	--
Marian	137.1	111.4	55.6	8.7	20.0		40.3
Scott	26.4	18.8	20.1	--	--	40.3	

Generations to Probable Most Recent Common Ancestor(s) @6 cM

	Tony	Dale	Ron	Rubie	William	Marian	Scott
Tony		1.2	2.8	4.2	3.9	3.4	4.5
Dale	1.2		2.7	4.3	4.3	3.5	4.8
Ron	2.8	2.7		7.5	6.6	4.0	4.7
Rubie	4.2	4.3	7.5		2.5	6.6	--
William	3.9	4.3	6.6	2.5		3.9	--
Marian	3.4	3.5	4.0	6.6	3.9		4.2
Scott	4.5	4.8	4.7	--	--	4.2	

The Gedmatch.com analysis tool estimates a MRCA for Tony and Marian of 3.4 generations and 3.5 for Dale and Marian. That is consistent with the FamilytreeDNA.com estimated 2-3 and 2-4 cousin match respectively between Marian and Tony and Marion and Dale. It is also consistent with the earlier result using the Gedmatch.com One to One Autosomal DNA Comparison Tool. The estimated value of 3.4 and 3.5 generations from the analysis tools is in slight variance, but close enough to the value of 4.3 generations called for by the hypothesized family connection between Joseph E. Cox and Thomas B. Cox. Marian is Tony's 3rd cousin, once removed and they share at least one fourth generation unknown ancestor. **Joseph E. Cox and Thomas B. Cox share at least one parent and were brothers.**

Surnames for the MRCA of Joseph E. Cox and Thomas B. Cox

The family trees of both Tony and Marian provide a complete and well-documented list of ancestors through the third generation or great-grandparents. Our goal is to populate the combined family tree of the four generation grandparents and beyond. Cox appears to be the only known surname shared by Tony and Marian in the documented third generation. Cox is the first fourth generation surname we will consider.

An earlier study involving **Tony**, **Dale**, and **Ron** proposed parents for Joseph E. Cox that were based on FamilytreeDNA.com FamilyFinder 3-5 cousin matches with **Pamela** on Chromosome #1 and Chromosomes #6. According to Pamela's incomplete family tree on FamilytreeDNA.com, she was the 2-great-granddaughter of Mary Elizabeth Cox, b. 1839, Whitley, KY who was the daughter of Stephen A. Cox, b. 1809, Knox, KY. Using **Tony's** Ancestry.com DNA kit, two other cousin matches were found that, according to their family trees, also descend from Stephen A. Cox: **Theresa**, who was another 2-great-granddaughter of Mary Elizabeth Cox, b. 1839, Whitley, KY, and **Jennie**, who was a great-granddaughter of William Randolph Cox, b. 1847. William was Mary Elizabeth's brother and the son of Stephen A. Cox, born 1809 in Knox, KY and died 1850 in Wayne, MO. Stephen's spouse was Rebecca Mahan, born 1813 in Whitley, KY and died after 1860 in Wayne, MO. Jennie has a familytree complete to four generations.

Stephen A. Cox was a junior. His father was Stephen Cox, b. 1779, VA-1850, Whitley, KY and his mother was Mary M. Robertson, 1781, VA-1850, Whitley, KY. The family is well documented by Les Sutton and others. Stephen Cox, Sr. was the son of Solomon Cox, Sr., born 1738, PA and Naomi Hussey, born 1742, PA. Like **Tony**, Stephen Cox, Sr. descends from Thomas Cox, b. 1641, England. [From: <https://lessutton.tribalpages.com/tribe/browse?userid=lessutton&view=0&pid=445&ver=7698>]

There was one other important prerequisite for **Pamela**, **Jennie**, and **Theresa**, one that would enable them to participate in the group study. They had their Autosomal DNA kit uploaded and available on Gedmatch.com, the site of the multi-kit analysis tools.

Pamela and **Theresa** are the 2nd-great-granddaughters of Mary Elizabeth Cox, b. 1839, Whitley, KY-1870, Wayne, MO, 3rd-great-granddaughters of Stephen A. Cox, b. 1809, Knox, KY and 4th-great-granddaughters of Stephen Cox, Sr., b. 1779, VA-1850, Whitley, KY and Mary M. Robertson, 1781, VA-1850, Whitley, KY. They are **6 generations** removed from Stephen Cox, Sr. and Mary M. Robertson.

Jennie is the great-granddaughter of William Randolph Cox, the 2nd-great-granddaughter of Stephen A. Cox, b. 1809, Knox, KY and 3rd-great-granddaughter of Stephen Cox, b. 1779, Orange, NC-1850, Whitley, KY and Mary M. Robertson, 1772, VA-1850, McCreay, KY. Jennie is **5 generations** removed from Stephen Cox, b. 1779, VA and Mary M. Robertson, born 1781, VA.

Cox Cousins Added to One to One Autosomal DNA Comparison @6 cM

Name 1	Name 2	Segments	Largest Segment	Half-Match segments (Percent)/	Estimated MRCA	Shared Segments	Number of SNPs used	Percent Full-Identical SNPs
Tony	Pamela	1, 6	12.2	23.3 (0.650)	4.6	2	634,387	55.634%
Tony	Jennie	1,6	12.9	33.1 (0.922)	4.4	3	615,759	55.918%
Tony	Theresa	1	22.6	38.5 (1.074)	4.3	2	398,046	52.494%
Dale	Pamela	1	8.3	8.3 (0.231)	7.1	1	633,128	55.632%
Dale	Jennie	1	23.7	35.6 (0.992)	4.3	2	613,175	55.924%
Dale	Theresa	1	13.7	13.7 (0.383)	5.0	1	397,404	52.527%
Ron	Pamela	1	14.5	14.5 (0.404)	5.0	1	425,944	52.405%
Ron	Jennie	16	25.9	32.0 (0.893)	4.4	2	419,368	52.575%
Ron	Theresa	1	24.4	40.3 (1.123)	4.2	2	401,983	52.132%
William	Pamela	1, 6	24.7	35.4 (0.987)	4.3	2	301,236	53.242%
William	Jennie	6, 14	29.4	40.3 (1.124)	4.2	2	294,879	53.468%
William	Theresa	1	10.7	10.7 (0.298)	5.2	1	286,608	52.077%
Rubie	Pamela	--				0	621,513	
Rubie	Jennie	6	12.0	12.0 (0.335)		1	623,165	55.833%
Rubie	Theresa	--				0	397,924	
Marian	Pamela	1, 6, 7	13.7	33.1 (0.923)	4.4	3	407,414	52.408%
Marian	Jennie	6, 11	11.5	22.1	4.7	2	402,472	52.293%
Marian	Theresa	1	9.1	9.1 (0.253)	6.2	1	430,502	52.426%
Scott	Pamela	3	8.7	8.7 (0.242)	6.7	1	625,546	55.618%
Scott	Jennie	12	15.9	15.9 (0.444)	4.9	1	602,864	56.000%
Scott	Theresa	--				0	391, 525	
Pamela	Jennie	1, 3, 6, 11, 12	29.2	80.6 (2.248)	3.7	6	621,027	55.324%
Pamela	Theresa	1, 5, 7, 11, 17, 21	34.4	198.9 (5.546)	3.1	13	402,186	52.891%
Jennie	Theresa	11, 17	36.6	62.2 (1.734)	3.9	3	397,671	52.569

The Gedmatch.com One to One Autosomal DNA Comparison tool indicated that while Pamela, Theresa, and Jennie had matches with the Study Group on chromosome #1 and #6, they had none on chromosomes #5, #15, and #18 where the original group had significant matches. This argued that the matches on #5, #15, and #18 for the Joseph E. Cox and Thomas B. Cox descendants might involve a non-Cox MRCA, possibility the ancestors of a spouse for their unknown Cox ancestor. **We deferred that argument for study later and concentrated our effort toward resolving the Cox heritage.**

Tony's Autosomal DNA Triangulations with the Cox Surname Extended Group @7.0 cM

Chr	Kit0 Name	Kit1 Name	Kit2 Name	B37 Start	B37 End	cM
1	Tony	Pamela	Theresa	3055876	7784902	11.1
1	Tony	Pamela	Ron	3107386	7784902	10.9
1	Tony	Ron	Theresa	3107386	13176463	21.5
1	Tony	Ron	Theresa	13782197	20884833	15.8
1	Tony	Dale	Ron	14700829	22198190	15.3
1	Tony	Dale	Theresa	14703298	20884833	13.7
1	Tony	Dale	Jennie	33921878	42182008	11.9
1	Tony	Dale	Jennie	173376879	182939544	8.3
1	Tony	Dale	Rubie	198745866	205457566	10.5
2	Tony	Dale	Rubie	134580522	144026991	7.4
5	Tony	Dale	Marian	24592778	31936833	8
5	Tony	Dale	Marian	75675319	82248664	9.9
6	Tony	Dale	Ron	13349274	22896343	15.3
6	Tony	Dale	Ron	61970201	129793971	49.4
6	Tony	William	Jennie	160038263	167074367	12.7
6	Tony	Pamela	Jennie	160453561	167074367	12.1
6	Tony	Pamela	William	160453561	167107415	12.2
6	Tony	Dale	William	165883486	170919470	11.7
11	Tony	Dale	Ron	114033738	123283922	15.8
15	Tony	Dale	Marian	55368124	82573255	35.1
15	Tony	Dale	Ron	55550755	82573255	35
15	Tony	Marian	Ron	55550755	82573255	35
15	Tony	Dale	Marian	83221392	94153501	18.5
15	Tony	Dale	Scott	83221392	94215925	18.8
15	Tony	Marian	Scott	83221392	94215925	18.8
15	Tony	Ron	Scott	83221392	94215925	18.8
15	Tony	Marian	Ron	83221392	94512067	20
15	Tony	Dale	Ron	83221392	95024344	21.8
15	Tony	Dale	Marian	99112003	102120895	8.1
18	Tony	Marian	Scott	18618070	24849613	7.1
22	Tony	Dale	Ron	17075353	19951804	12.4

Tony has ten triangulations with Stephen A. Cox descendants, six involving Theresa, four involving Pamela, and 4 involving Jennie. Note there are no triangulations on chromosomes #5, #15, or #18 that involve Stephen A. Cox descendants. Note also that chromosome #6 triangulation with Marian is missing. That triangulation is only 6.0 centiMorgans and failed to make the 7.0 cM cutoff for this analysis.

Jennie's Autosomal DNA Triangulations with the Cox Surname Extended Group @7.0 cM

Chr	Kit0 Name	Kit1 Name	Kit2 Name	B37 Start	B37 End	cM
1	Jennie	Tony	Dale	33921878	42182008	11.9
1	Jennie	Dale	Pamela	162813583	167499599	8.2
1	Jennie	Tony	Dale	173376879	182939544	8.3
6	Jennie	William	Rubie	149838953	156475282	11.1
6	Jennie	William	Pamela	153143932	167352104	23.5
6	Jennie	Marian	Pamela	157445999	164382899	10.2
6	Jennie	Marian	William	157768581	164612818	10.2
6	Jennie	Tony	William	160038263	167074367	12.7
6	Jennie	Tony	Pamela	160453561	167074367	12.1
11	Jennie	Theresa	Pamela	40100568	50551954	7.1
11	Jennie	Theresa	Pamela	55171677	73006609	14.7

Jennie has nine triangulations with the descendants of Joseph E. Cox and Thomas B. Cox, four involving Tony, three involving Dale, 4 involving William and two involving Marian.

Pamela's Autosomal DNA Triangulations with the Cox Surname Extended Group @7.0 cM

Chr	Kit0 Name	Kit1 Name	Kit2 Name	B37 Start	B37 End	cM
1	Pamela	Marian	Theresa	768448	3592436	9.1
1	Pamela	Marian	William	838555	3592436	9.1
1	Pamela	William	Theresa	838555	4111741	10.7
1	Pamela	Ron	Theresa	2199057	7801288	13.9
1	Pamela	Tony	Theresa	3055876	7784902	11.1
1	Pamela	Tony	Ron	3107386	7784902	10.9
1	Pamela	Dale	Jennie	162813583	167499599	8.2
6	Pamela	William	Jennie	153143932	167352104	23.5
6	Pamela	Marian	Jennie	157445999	164382899	10.2
6	Pamela	Marian	William	157768581	164382899	9.9
6	Pamela	Tony	Jennie	160453561	167074367	12.1
6	Pamela	Tony	William	160453561	167107415	12.2
11	Pamela	Theresa	Jennie	40100568	50551954	7.1
11	Pamela	Theresa	Jennie	55171677	73006609	14.7

Pamela has 12 triangulations with the descendants of Joseph E. Cox and Thomas B. Cox, four involving Tony, one involving Dale, two involving Ron, five involving William, and four involving Marian,

Generations to Probable Most Recent Common Ancestor(s) @6 cM

	Tony	Dale	Ron	Rubie	William	Marian	Scott	Pamela	Jennie	Theresa
Tony		1.2	2.8	4.3	3.9	3.4	4.5	4.6	4.4	4.3
Dale	1.2		2.6	4.3	4.3	3.5	4.8	7.1	4.3	5.0
Ron	2.8	2.6		7.5	6.6	4.0	4.7	5.0	4.4	4.2
Rubie	4.3	4.3	7.5		2.5	6.6	--	--	--	--
William	3.9	4.3	6.6	2.5		4.7	--	4.3	4.2	5.2
Marian	3.4	3.5	4.0	6.6	4.7		4.2	4.4	4.7	6.2
Scott	4.5	4.8	4.7	--	--	4.2		6.7	4.9	--
Pamela	4.6	7.1	5.0	--	4.3	4.4	6.7		3.7	3.1
Jennie	4.4	4.3	4.4	--	4.2	4.7	4.9	3.7		3.9
Theresa	4.3	5.0	4.2	--	5.2	6.2	--	3.1	3.9	

We noted the MRCA result for Pamela and Theresa comparison is 3.1 while their comparison with Jennie is 3.7 and 3.9. This consistent with the pair sharing 2-great grandparents then sharing 3-great grandparents with Jennie. Likewise, Tony's MRCA values of 4.6, 4.4, and 4.3 for his comparisons with Pamela, Jennie and Theresa, reflect an even earlier generation or 4-great-grandparents. Marian's MRCA values with Jennie's are consistent with Tony's, slightly higher at 4.7 possibly because of a generation difference between Tony and Marian.

Investigation of the combined family tree for Pamela and Theresa indicate that their Most Recent Common set of grandparents are Mary E. Cox, b. abt.1939, KY and Fielding H. Ivey, b. abt. 1814, TN. Jennie's, Pamela's, and Theresa's Most Recent Common set of grandparents are Stephen A. Cox, b. abt. 1809, KY and Rebecca Mahan, b. abt. 1813. Using the combined results from the One-toOne DNA Comparison to extrapolate this known Cox family tree, we can effectively argue that the Most Recent Common set of Cox grandparents for the cousins: Jennie, Pamela, Theresa, Marian and Tony are the parents of Stephen A. Cox who are known to be Stephen Cox, b. 1779, VA and Mary M. Robertson, born 1781, VA. **Stephen A. Cox, b. abt. 1809 and the unknown father of Joseph E. Cox, b. abt. 1836 and Thomas B. Cox, b. abt. 1826 were brothers.**

According to the [Brandywine Cox Family](#) website, Stephen Cox, Sr. left a will dated circa 1850 that names his eight sons: 'eldest son John Cox...Christopher Cox... Solomon Cox... Nathaniel Cox... Steven Cox... Luke Cox... Jesse Cox... youngest son Joseph. For various reasons: too young, died early, known families, all but the two oldest sons, John and Jesse, can be rejected as the father of Joseph E. Cox and Thomas B. Cox. We favor John as the unknown father for two reasons. On the US Censuses, Joseph E. Cox consistently lists the nativity of his father as Virginia. John Cox was likely the only son of Stephen Cox, Sr. that was born in Virginia. The second reason is a consistent 1840 US Census listing exists for a John Cox in Fulton County, IL in the same neighborhood where Joseph E. Cox is found living in a non-Cox household in 1850.