

WELCOME TO THE
Bicknell
DNA PROJECT



Bicknell Y-DNA Project

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The Goals

- Although there is a well documented genealogy of the Bicknell Family in the United States, it is unknown how the Northern and Southern branches are connected and it is unknown how either of these families are connected to the Bicknell's in the UK.
- The goal of this project was to determine how the various documented branches of the Bicknell family relate to each other.

Background

- In the 1913 Bicknell Genealogy, TW Bicknell published information obtained from Sidney Algernon Bicknell's research tracing the origin of the Bicknell family back to John de Pavilly who lived at Bykenhule and took its name.
- Robin Bush, the late eminent Somerset historian, however determined that this would be impossible since John died without children. He suggested that the Bicknell name was more likely to have been taken by some of the various families in the area around modern day Bickenhale or that the family could have been descended from the L'Estre family.

Why Y DNA?

- With Y-DNA it is possible to test for relationships that go out for thousands of years.
- Autosomal DNA (i.e. Ancestry / 23&Me) can only identify 4th-5th cousins or closer accurately.
- In order to tie the US Branches to the UK branches 10+ generations will be needed.

The Project

- Several Bicknell's / Becknell's from the USA and UK took Y-DNA tests through Family Tree DNA.
- These YDNA tests measured the quantities of various STR (short tandem repeat) markers at 37 different spots on the Y chromosome.
- These STR's change a small amount from generation to generation and the amount of these changes can tell how long it has been since two participants have had a common ancestor.

Results

- The Bicknell Y-DNA study shows that Bicknell's within England are not descended from a singular male who took the name Bicknell. The lack of matching seen suggests that the Bicknell name was taken by multiple families within a geographical area rather than being a singular family.
- Thus far, the project has identified 9 different individual Bicknell branches (Suspect 2 are related to NPE's.)
- Bicknell's within the US mostly descend from Zachary (Northern branch) or William (Southern branch).

How do STR's work?

- In some sections of the Y-DNA, base pairs repeat in the same sequence over and over. These cases are called STRs (short tandem repeats). When the Y-DNA passes from father to son, these repeats can increase or decrease in quantity slightly.
- The differences in the STR results can be used to calculate a Genetic Distance (GD) which indicates how long it has been since two individuals have had a common ancestor.

Determining Genetic Distance (GD)

- STR's are reported as the number of repeating sequences at specific locations on the Y-DNA sample.

- In this case we are comparing the difference between two of the participants: IN111452 & BP37654

- On the table we can see that at location **DYS390**, both participants have 22 repeats. For **DYS456**, the participants do not match. Every instance where the values do not match indicates that the genetic distance is further or the two participants are less related.

- To find the GD, we check the difference between the two samples at each of the 37 different locations being checked.

- If you add up all the differences, the total is 13. So the GD from IN111452 to BP37654 is 13.

Participant	DYS393	DYS390	DYS19	DYS391	DYS385	DYS426	DYS388	DYS439	DYS389i	DYS392	DYS389ii	DYS458	DYS459	DYS455	DYS454	DYS447	DYS437	DYS448	DYS449	DYS464	DYS460	Y-GATA-H4	YCAII	DYS456	DYS607	DYS576	DYS570	CDY	DYS442	DYS438								
IN111452	13	22	14	10	13	14	11	14	11	12	11	28	15	8	9	8	11	22	16	20	26	12	14	14	14	15	11	9	19	21	15	15	16	19	35	36	12	10
BP37654	14	22	14	10	13	14	11	14	11	12	11	28	15	8	9	8	11	22	16	19	28	14	14	14	15	10	10	19	21	14	13	16	18	35	37	12	10	

Difference	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	0	0	0	0	1	1	0	0	1	2	0	1	0	1	0	0
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Y-37 Genetic distances of participants

	125905	972075	848514	971130	286680	50385	IN110941	IN53298	IN111452	IN110511	IN110212	IN110978	421668	968359	967634	B402936	462458	IN115667	IN115611	BP37654
125905	0	4	4	27	18	23	23	23	13	52	51	14	17	14	18	17	19	50	54	43
972075	4	0	4	25	22	25	25	25	13	52	51	18	21	18	22	21	23	52	50	43
848514	4	4	0	25	20	23	23	23	13	52	51	18	21	18	20	19	23	48	52	43
971130	27	25	25	0	29	26	26	26	14	51	50	31	24	21	25	24	24	55	45	51
286680	18	22	20	29	0	17	15	15	19	58	57	20	19	16	18	17	21	54	56	54
50385	23	25	23	26	17	0	2	2	16	47	48	23	18	17	17	18	20	43	51	43
IN110941	23	25	23	26	15	2	0	0	16	48	49	23	18	17	17	18	20	45	53	45
IN53298	23	25	23	26	15	2	0	0	16	48	49	23	18	17	17	18	20	45	53	45
IN111452	13	13	13	14	19	16	16	16	0	19	20	19	16	16	16	16	16	19	19	13
IN110511	52	52	52	51	58	47	49	49	19	0	1	58	51	52	54	55	53	20	40	18
IN110212	51	51	51	50	57	48	50	50	20	1	0	57	50	51	53	54	52	21	39	19
IN110978	14	18	18	31	20	23	23	23	19	58	57	0	19	16	18	17	21	54	56	50
421668	17	21	21	24	19	18	18	18	16	50	51	19	0	3	5	6	2	49	49	49
968359	14	18	18	21	16	17	17	17	16	51	52	16	3	0	4	3	5	50	50	48
967634	18	22	20	25	18	17	17	17	16	51	54	18	5	4	0	1	5	50	52	48
B402936	17	21	19	24	17	18	18	18	16	52	55	17	6	3	1	0	6	51	53	49
462458	19	23	23	24	21	20	20	20	16	52	53	21	2	5	5	6	0	51	51	51
IN115667	50	52	48	55	54	43	45	45	19	20	21	54	49	50	50	51	51	0	44	18
IN115611	54	50	52	45	56	51	53	53	16	40	39	56	49	50	52	53	51	44	0	40
BP37654	43	43	43	51	54	43	43	43	13	18	19	50	49	48	48	49	51	18	40	0

- Tabulating the GD for all of the participants gives the following table.
- The genetic distance from participant BP37654 to participant IN111452 is 13, as seen on the previous slide. The number is the same regardless of which way you check to see where the two samples intersect.
- In general, numbers should be less than 5 to be considered related. A GD of 13 would be show a common ancestor between 2000-3000 years ago and last names only came into existence about 1000 years ago.
- Each color block is a unique group of Bicknells who are related to each other.

Y-37 Genetic distances of participants

	125905	972075	848514	971130	286680	50385	IN110941	IN53298	IN111452	IN110511	IN110212	IN110978	421668	968359	967634	B402936	462458	IN115667	IN115611	BP37654
125905	0	4	4	27	18	23	23	23	53	52	51	14	17	14	18	17	19	50	54	48
972075	4	0	4	25	22	25	25	25	53	52	51	18	21	18	22	21	23	52	50	48
848514	4	4	0	25	20	23	23	23	53	52	51	18	21	18	20	19	23	48	52	48
971130	27	25	25	0	29	26	26	26	54	51	50	51	24	21	25	24	24	55	45	51
286680	18	22	20	29	0	17	15	15	59	58	57	20	19	16	18	17	21	54	56	54
50385	23	25	23	26	17	0	2	2	46	47	48	23	18	17	17	18	20	43	51	43
IN110941	23	25	23	26	15	2	0	0	48	49	50	23	18	17	17	18	20	45	53	45
IN53298	23	25	23	26	15	2	0	0	48	49	50	23	18	17	17	18	20	45	53	45
IN111452	53	53	53	54	59	46	48	48	0	19	20	55	50	51	51	52	52	19	45	13
IN110511	52	52	52	51	58	47	49	49	19	0	1	58	51	52	54	55	55	20	40	18
IN110212	51	51	51	50	57	48	50	50	20	1	0	57	50	51	53	54	52	21	39	19
IN110978	14	18	18	31	20	23	23	23	55	58	57	0	19	16	18	17	21	54	56	50
421668	17	21	21	24	19	18	18	18	50	51	50	19	0	3	5	6	2	49	49	49
968359	14	18	18	21	16	17	17	17	51	52	51	16	3	0	4	3	5	50	50	48
967634	18	22	20	25	18	17	17	17	51	54	53	18	5	4	0	1	5	50	52	48
B402936	17	21	19	24	17	18	18	18	52	55	54	17	6	3	1	0	6	51	53	49
462458	19	23	23	24	21	20	20	20	52	53	52	21	2	5	5	6	0	51	51	51
IN115667	50	52	48	55	54	43	45	45	19	20	21	54	49	50	50	51	51	0	44	18
IN115611	54	50	52	45	56	51	53	53	45	40	39	56	49	50	52	53	51	44	0	40
BP37654	48	48	48	51	54	43	45	45	13	18	19	50	49	48	48	49	51	18	40	0

- US Southern Line / Becknells
- Iowa Line (Likely NPE)
- Non-Bicknell Relative
(Added in to show perspective)
- Taunton Line
- Warwickshire Line #1
- Surrey Line
- Surrey Line (Likely NPE)
- US Northern Line
- New Zealand
- Participant of Unknown Origin #2
- Warwickshire Line #2

Genetic Distance vs Years to Most Recent Common Ancestor

TMRCA Estimate vs. STR Genetic Distance

GD	Y12 TMRCA	Y25 TMRCA	Y37 TMRCA	Y67 TMRCA	Y111 TMRCA
0	440 (1,223-53) ybp	291 (715-56) ybp	200 (448-52) ybp	182 (381-55) ybp	150 (293-55) ybp
1	851 (2,368-103) ybp	442 (1,086-85) ybp	268 (599-69) ybp	229 (480-70) ybp	176 (344-64) ybp
2	1,476 (4,109-180) ybp	659 (1,619-127) ybp	357 (798-92) ybp	288 (605-88) ybp	206 (403-75) ybp
3	2,170 (6,038-264) ybp	933 (2,293-180) ybp	471 (1,051-122) ybp	361 (759-110) ybp	242 (473-88) ybp
4	2,908 (8,093-354) ybp	1,235 (3,034-239) ybp	607 (1,355-157) ybp	450 (945-137) ybp	283 (553-103) ybp
5	3,798 (10,569-462) ybp	1,544 (3,794-298) ybp	758 (1,693-196) ybp	553 (1,161-169) ybp	330 (645-120) ybp
6	4,922 (13,698-598) ybp	1,873 (4,603-362) ybp	917 (2,047-237) ybp	668 (1,404-204) ybp	383 (749-139) ybp
7	6,488 (18,058-789) ybp	2,241 (5,507-433) ybp	1,077 (2,405-278) ybp	792 (1,664-242) ybp	443 (866-161) ybp
8	8,772 (24,415-1,067) ybp	2,638 (6,481-510) ybp	1,240 (2,770-321) ybp	920 (1,932-281) ybp	508 (993-185) ybp
9	11,871 (33,040-1,443) ybp	3,028 (7,439-585) ybp	1,415 (3,159-366) ybp	1,046 (2,197-319) ybp	579 (1,131-210) ybp
10	15,923 (44,316-1,936) ybp	3,395 (8,342-656) ybp	1,610 (3,596-416) ybp	1,170 (2,456-357) ybp	653 (1,275-237) ybp

* Mean (95% Confidence Interval) of years before present is shown.

- This chart shows a fairly good indication of how many years back you would have to go to find a common ancestor between two participants.

Genetic Distance vs. Relatedness

		Genetic Distance													
		0	1	2	3	4	5	6	7	8	9	10	11	12	13
# of Markers	12	Related	Possibly Related	Probably Not Related	Not Related										
	25	Related		Probably Related	Probably Not Related	Not Related									
	37	Very Tightly Related	Tightly Related	Related		Probably Related	Possibly Related	Not Related							
	67	Very Tightly Related	Tightly Related		Related			Probably Related	Possibly Related		Not Related				
	111	Very Tightly Related		Tightly Related		Related					Probably Related	Possibly Related		Not Related	

- This chart can help as a reference, but is not absolute.
 - The Northern USA branch is more likely to match non-related individuals at Y-12 & Y-25 due to a convergence between multiple haplogroups called the Western Atlantic Modal Haplogroup.
 - Participants B402936 & 421668 have a GD of 6 at Y-37 which would make it seem they are unrelated, but both show a GD of only 3 from participant 968359. This shows that all three are related. Further testing at Y-111 showed a GD of 8 between B402936 & 421668.

	421668	968359	B402936
421668	0	3	6
968359	3	0	3
B402936	6	3	0

SNP testing

- In addition to the STR testing, some individuals had SNP (single nucleotide polymorphism) testing completed.
- SNP's tend to be random mutations in the Y-DNA code.
- SNP testing shows how each group descends along the male line all the way from "Adam". The man from whom all modern humans descend
- Testing showed a wide variety of SNP's, which are fairly similar to the distribution of SNP's within England.

SNP testing

- To give an idea of scale, “Adam” is believed to have been 270 thousand years ago and “Out of Africa” is about 70 thousand years ago.
- The split seen between the two major branches here “K” vs “IJ” took place about 47 thousand years ago.
- Even the bottom most recent results shown here are often about 4 thousand years ago, long before written history.

Adam	A				
	AT				
	BT				
Out of Africa	CT				
	CF				
	FT				
	GHJK				
	HIJK				
	IJK				
	K				IJ
	K2				I
	K2b				I-M253
	P				I-M438
	R-M207			I-DF29	I-L460
	R-M173			I-263 (Jutes)	I-258
	R-M343			I-BY151	I-259
	R-L278			I-BY351	I-260
	R-L754			I-BY3407	I-2140
	R-L389			I-FT10599	I-2140
	R-P297				I-Y3549
	R-M269				I-274
	R-L23				I-CTS2208
	R-L51				Finnish
	R-P310				
	R-L151				
	R-P312	R-U106			
	R-Z290	R-Z46516	R-Z381		
R-L211(Atlantic Celts)		R-Z211	R-Z301		
R-S552		R-DF27	R-L48		
R-DF13	R-BY24778	R-ZZ12_1	R-Z9		
R-Z39589	R-BY42778	R-FTT1	R-Z30		
R-DF49	R-Z251	R-BY42748	R-FGC78763	R-Z2	
R-ZP20	R-S11556		R-ZZ19_1	R-Z7	
R-FGC11175	R-S9294		R-Z31644	R-Z8	
	R-BY3229		R-BY2285	R-Z1	
	R-BY3231		R-BY25634	R-Z346	
	R-BY43237		R-BY66187	R-Z343	
	R-FGC11986		R-BY20907	R-CTS5601	
	R-BY9004			R-S20321	
				R-S3331	
				R-CTS7080	
				R-BY124	
				R-BY122	
				R-FT33580	

Legend	
	North US
	South US
	Iowa
	Taunton
	Surrey 1
	Surrey 2
	Warwickshire 1
	Warwickshire 2
	New Zealand
	Unknown 2
	Non- Bicknell Relative

SNP testing

- Compared to existing populations in England and SW England, we have found more descendants who are in the I haplogroups, but this is likely just due to sample size.

Sample	I1	I2a1	I2a2	R1a	R1b	G	J2	J1	E1b	T	Q	Sample Size
England	14	2.5	4.5	4.5	67	1.5	3.5	0	2	0.5	0.5	>5000
SW England	15	1.5	4	5	72	2	3	0.5	3	0.5	0.5	357
Bicknell Groups	44	11	0	0	55	0	0	0	0	0	0	9
Bicknell Participants	26	5.3	0	0	68	0	0	0	0	0	0	19

Results

- The Bicknell of Jamaica descend from the Taunton Bicknell line.
- Becknell's within the US are descended from William Bicknell of the Southern US line.
- The descent from John (son of Zachary of the US Northern line) to all three of his sons (John, Zachariah & Thomas) have been confirmed by DNA.

Future Goals

- Additional Y-37 checks for Bicknell groups in the UK
 - Identify additional Bicknell groups
- Y-700 for any unique Bicknell lines
 - Identify haplogroups of Bicknell groups
- Autosomal DNA checks / lineage for suspected NPE's
 - Investigate source of NPE
- Y-700 check for 1 additional descendant of William / Zachary
 - Determine exact haplogroup of William / John (son of Zachary)
- Y-37 checks for unique branches of William / Zachary
 - DNA verify existing trees

Future Goals

- Y-700 for any unique Bicknell lines

#	Family	Haplogroup	Comment
1	Southern US	R-BY42748	Complete
2	Northern US	R-FGC11175	Complete
3	Iowa	R-L23	Should be refined, but likely NPE.
4	Taunton	R-BY20907	Complete
5	Surrey 1	I-FT239181	Complete
6	Surrey 2	R-FT33580	Complete
7	Warwickshire 1	I-Z58	Y-700 in Progress
8	Warwickshire 2	I-M253	New, Need to review
9	New Zealand	I-P37	New, Need to review
10	Unknown 2	I-M253	New, Need to review

Future Goals

- Autosomal DNA checks / lineage for suspected NPE's

#	Family	Comment
3	Iowa	Suspect NPE at Emery Bicknell, need to contact Fred Bicknell to see what he already knows about line. There is a connection to "Shearer" about 7 gens back.
6	Surrey 2	Should look into autosomal DNA or get YDNA from cousins to determine where NPE occurred. Relation about 5 gens ago for "Maynard".
7	Warwickshire 1	Have not reviewed to see where this line comes from.
8	Warwickshire 2	Have not reviewed to see where this line comes from.
9	New Zealand	Have not reviewed to see where this line comes from.
10	Unknown 2	Have not reviewed to see where this line comes from. Large number of matches from Finland.

Future Goals

- Y-700 check for 1 additional descendant of William / Zachary
 - Determine exact haplogroup of William / John (son of Zachary)

#	Family	Comment
1	Southern US	Suggest upgrading one of the Becknells
2	Northern US	Suggest upgrading any of the Y-111's. Likely Conan.

- Note: This would have to be a Big Y and not Haplogroup sampling. Haplogroup sampling will only check for existing haplogroups, while they will create new haplogroups if two people take the Big Y.

Future Goals

- Y-37 checks for unique branches of the Northern US line
 - Currently have confirmed all of Zachary's grandsons
 - Have confirmed three of Zachary's ten great grandchildren

Zachary b. 1590									
John b. 1624									
John b. 1654					Zachariah b. 1668				Thomas b. 1670
John b. 1688	Zachariah b. 1691	Benjamin b. 1694	Joseph b. 1698	Ebenezer b. 1701	Zachariah b. 1695	Joshua b. 1696	James b. 1702	Peter b. 1706	Japhet b. 1711

Future Goals

- Y-37 checks for unique branches of William
 - Have confirmed connection between Samuel and Dabney
 - Would like to find descendants from William's other sons

William b. 1706												
Samuel b. 1752				Thomas b. 1752	William b. 1752	Micajah b. 1755					John b. 1765	
Benjamin b. 180	Randolph b. 1803	Larkin b. 1804	Lewis b. 1810	Dabney b. 1780		William b. 1787	Samuel b. 1788	Daniel b. 1793	Nelson b. 1795	James b. 1801	Young b. 1802	