

Genes and Genealogy

Is surname a good predictor of ethnic origin in Scotland?

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The Myth of Scotland's origins

Contained in a letter written to Pope John XXII in 1320 and sealed by 50 nobles and barons

"Most Holy Father and Lord, we know and from the chronicles and books of the ancients we find that among other famous nations our own, the Scots, has been graced with widespread renown. They journeyed from Greater Scythia by way of the Tyrrhenian Sea and the Pillars of Hercules, and dwell for a long course of time in Spain among the most savage tribes, but nowhere could they be subdued by any race, however barbarous. Thence they came, twelve hundred years after the people of Israel crossed the Red Sea, to their home in the west where they still live today. The Britons they first drove out, the Picts they utterly destroyed, and, even though very often assailed by the Norwegians, the Danes and the English, they took possession of that home with many victories and untold efforts; and, as the historians of old time bear witness, they have held it free of all bondage ever since. In their kingdom there have reigned one hundred and thirteen kings of their own royal stock, the line unbroken a single foreigner."

Nonsense, but with a few grains of truth...

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Settled Scotland ("Alba") by 900

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Is there evidence today of these origins?

The evidence is:

- archaeological
- documentary
- place-names
- **SURNAMES**
- linguistic

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The Scottish DNA project

- Individuals have Y-DNA tests with FamilyTreeDNA (<http://www.familytreedna.com>)
- They can join over 6,000 Projects:
 - Surname Projects (Campbell, Sinclair...)
 - Haplogroup Projects (R1b, I2a...)
 - Geographic Projects (Ireland, Scotland, African...)
 - Ethnic and religious groups (Jewish, Quakers...)
 - a combination of these
- The **Scottish DNA Project** Database has
 - 10,937 participants with Y-chromosome marker tests
 - 1,794 with a confirmed haplogroup
 - 2,813 with a haplogroup prediction
 - of these, over 3,000 have a verified Scottish origin
 - 1,365 were chosen for this analysis

• MOST PARTICIPANTS HAVE NO IDEA OF THEIR ANCESTORS' ORIGINAL LOCATION

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Y-DNA tests

Ancestral Markers

The Y-DNA contains two main types of ancestral markers:

STRs (short tandem repeats).
STRs change by the number of repeats and change at a much faster rate than SNPs.

SNPs (single nucleotide polymorphisms)
SNPs are a change in a single nucleotide in the DNA and occur infrequently; once they occur they are stable and typically define a whole chromosome and become its signature.

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DNA - time frames for genetic genealogy

Time frames: Anthropological, Archaeological & Genealogical

Time frame	Type of test
• 'deep' ancestryB.C to c.1400 Before adoption of surnames	= Y-DNA (SNP) and mtDNA
• Genealogical c. 1400 to present Documentary evidence & oral tradition	= Y-DNA (STR) and mtDNA (full sequence)
• Close ancestry - 4 th or 5 th cousins 200-300 years ago to present day (modern era)	= Autosomal DNA (Family Finder & Relative Finder)

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Genetic genealogy (also known as molecular genealogy)

Traditional genealogy when combined with DNA can lead us deeper into our ancestry than the written records can take us on their own. It is not a replacement for traditional genealogy. So why use it?

1. To get around "brick walls"
2. To find genetic cousins by matching haplotypes
3. To determine deeper ethnic/genetic ancestry by assigning to a haplogroup
4. (Possibly) to indicate geographic origin

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What DNA testing cannot do

1. pinpoint the "exact" date and identify the specific ancestor shared by two individuals who have a close match
2. provide a complete answer to your recent ancestry even if two participants have a good paper trail
3. shed much light unless compared with the test results of other individuals
4. replace "documentary" genealogy

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Y-DNA Haplogroups


1. The most common haplogroup in the British Isles is R1b
2. But new SNP discoveries have created dozens of smaller branches called sub-clades (genetic clans)
3. These can be identified with specific migration and people groups
4. Haplogroup R1d is predominantly Scandinavian in origin
5. Haplogroup I1d = Angles, but 1000+ years ago to Scotland
6. I2a2a M223 – in Eastern Scotland more than 3,000 years
7. Sub-clades are typically known by their SNP identifier i.e. M284
8. Letters before a SNP number designates the laboratory where they were first discovered
9. S145 - the classic Scottish indigenous marker
10. M222 – spread from North of Ireland to Scotland
11. S21 Frisian > Anglo Saxon / West Germanic
12. L165/S68 Norse Viking – West and Northern Highlands

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What does Pict DNA look like?

- Haplogroup I2a2a1a1a1 - IslesSc
- Defined by SNPs M284+ (L126+)
- Found almost exclusively among the population of Great Britain, suggesting that the sub-clade may have a very long history on that island – estimates suggest approximately 3,150 years!
- Haplotype might look like this:
15 24 15 10 15-16 11 13 11 13 12 29
16 8-9 11 11 26 15 20 30 11-11-14-15


Phenotype might look like this!



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Incidentally... Pict does not mean "Painted"

- The word didn't even exist until used by Eumenius (a Latinised Gaulish Celt) in AD 297.
- He assumed this came from the Latin *pingere* (to paint) and *pictus*, (painted), and the Greek *πικτή*, *pyktis* (picture).
- The word "Pict" is a corruption of *Pritanii*, equivalent to Briton indicating the Late Iron Age and Early Medieval Brythonic inhabitants of (mainly) the east and north-east of Scotland, north of the rivers Forth and Clyde.



Theodor de Bry 1590
Thomas Hariot 1588
A Briefe and True Report of the New Found Land of Virginia

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"Pict" does not mean "painted people"

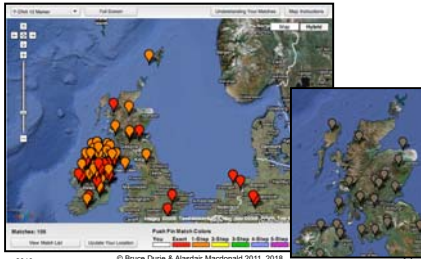
- The origin is found in the Old English name gave the modern Scots form *Pecht* and the Welsh *Fichti* or *Fechti*. In Ireland, the Picts were named *Cruthni* (*Cruthne* in Modern Irish), from *Qritani*, the Goidelic (Q) version of the Brythonic (P) *Pritani*. From this came *Britanni*, the Roman word for those living in Britannia, the Britons.
- The Welsh called Britain *Prydain* and 'Pictland' or Caledonia was *Prydyn*. What the Picts called themselves is unknown.

(I) *Cruthni* = (Q) *Qritani* = (P) *Pritani* = (L) *Britanni*
(ON) *Péttir* = (OE) *Pehtas* = (OS) *Pechtas*

This myth gets repeated wholesale, e.g., in the Book of Ballimote (ca. 1391) "...From the tattooing of their fair skins Were they called Picti..."

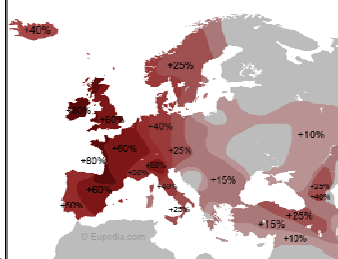
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Haplogroup R-M222 (Niall expansion into Scotland)



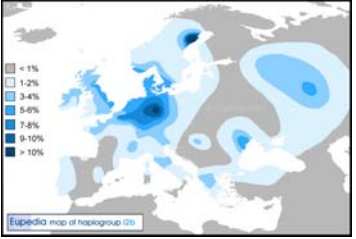
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Y-DNA: Haplogroup R1b



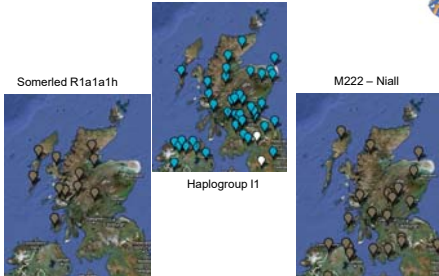
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Y-DNA: Haplogroup I2a2




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Somerled R1a1a1h Haplogroup I1 M222 - Niall



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Does DNA bear out "history"?



ca. 500 AD
Norse ("Viking") ca. 900 AD
Indigenous Celts ("Picts")
Dalriada Scots ca. 500 AD
Brythonic Strathclyders ca. 100 BC
Britanni Angli ca. 150 BC
Scots Kingdom of ALBA
Picts
Britons Angles
Norman influence from ca 1100 AD

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Scottish DNA Project


3,300 participants
Range of marker tests – 11 to 102, + SNPs

Most do not have a documented ancestral location. In any case, this might be misleading because of migration into Scotland or within Scotland

Therefore...
CAN WE LINK SURNAME TO GEOGRAPHIC ORIGIN VIA DNA HAPLOGROUP?

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Does DNA bear out "history"?




Using over 1,300 tests from our database...

1. We allocated (blind) surnames to "Nations"
2. We assessed whether their Y-Haplotypes were typical of these "Nations" (they were!)
3. We assessed whether each "Nation" had a predominant HG (they did!)

CONCLUSION... Surname is a good predictor of ethnic origin, and fits with the historical story.

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How similar/different are we?



All Scotland	R1b(x)	I1	R1a(x)	I2a2(x)
72.60	9.16	6.08	4.47	
Alba	R1b(x)	I1	R1a(x)	I2a2(x)
78.15	7.84	4.75	3.80	
Moravia	R1b(x)	I1	R1a(x)	J2(x)
72.12	13.46	4.81	1.92	
Glotta	R1b(x)	I1	I2a2(x)	E1b(x)
66.29	14.23	4.12	4.12	
Isla	R1b(x)	R1a(x)	I1	I2a2(x)
74.37	10.92	6.30	5.46	
Laudonia	R1b(x)	R1a(x)	I1	I2a2(x)
68.60	12.21	8.72	2.91	
Angusia/Fifa	R1b(x)	I2a2(x)	I1	I2a(x)
70.55	9.82	6.13	3.68	

After R1b, I1 is the next commonest everywhere except Angus/Fife (I2a2) and the Lothians (R1a), already settled and controlled by native earls.

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Tracking Surname radiation from the 1881 census - examples

<http://gbnames.publiprofiler.org/>

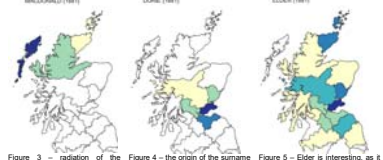


Figure 3 – radiation of the surname MacDonald from the Western Isles, based on incidence in the 1881 census.
Figure 4 – the origin of the surname Durie is documented as being from File ca. 1261, and the surname incidence in the 1881 census confirms this.
Figure 5 – Elder is interesting, as it is represented by 16 subjects in this study, all from Angus and Fife, but with a number of haplotypes: I201 (2), J2 (1), R1b1a2 (11), including one R1b1a2a1a1a.

So, we can be pretty confident about Surname origins

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Limits to DNA testing

- Your genetic cousins have not tested yet
- No suitable candidate to test
- Y-DNA lineage 'daughtering out' = no sons
- Worries about privacy and confidentiality
- The size of the database in which you compare your results
- Cost?
- Yourself – you need to pursue participants

Make sure you test with a company which has a large accessible database

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Surname Project findings

- Halliday surname projects show strong geographical cohesion in Dumfriesshire
- The Clan Donnachiadh project (includes the Robertson, shows multiply origins for the surname)
- The MacDonald's have shown that all their chief's shared a common Norse Viking ancestor and Somerled on the paternal line was not a descendant of 'Conn of the Hundred battles'
- The MacGregor DNA Project has shown that many of the proscribed surnames are 'MacGregors'

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L165/S68 Norse Viking

- Deep Y-line ancestry: subclade of haplogroup R1b – paternal kinship shared by MacNeil's of Barra, the Buies of Jura, some MacDonalds and the core MacLeod lineage
- <http://www.familytreedna.com/public/R-L165Project/default.aspx?section=yresults>
- DNA does not support the MacNeils of Barra being connected in the direct paternal line to Niall of the Nine Hostages.
- Some MacNeils from the Southern Hebrides and the North of Ireland do match the 'Niall' SNP R-M222

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Y-DNA: Ireland

- R-M222 Haplogroup Project – Northwest Ireland/lowland Scotland
- first recognized in late 2004 following manual cluster analysis of STRs
- In late 2005 a research team from Trinity College Dublin published a report that identified this cluster
- In 2006 it was identified with SNP M222



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Analysis - TMRCA

Y-DNA signatures using Dean McGee's Y-Utility 111 markers
<http://www.mymcgee.com/tools/yutility111.html>

ID	111	1050	650	330	990	1050	1050	1230
modal	111	1050	650	330	990	1050	1050	1230
16811	1050	67	270	210	210	300	210	1350
124757	990	270	67	210	150	300	210	1110
44377	930	210	210	37	60	120	210	1500
1225	990	210	150	60	67	120	210	1350
1207	1050	300	300	120	120	37	300	1650
165113	1050	210	210	210	210	300	37	1500
124845	1300	1350	1110	1500	1290	650	1500	67

<http://www.familytreedna.com/public/R-L165Project/default.aspx?section=yresults>

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McGee's utility can show:

Modal haplotype for the group

← genetic distance

TMRCa (next slide)

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Dean McGee's Y-Utility results showing clusters

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DNA tools

1. FTDNA – TIP Tool
2. SMGF - <http://www.smgf.org/>
3. Ysearch - <http://www.ysearch.org/>
4. Mitosearch - <http://www.mitosearch.org/>
5. Genebase - <http://www.genebase.com/>
6. Dean McGee's Y-Utility - <http://www.mymcgee.com/tools/yutility111.html>
7. Jim Cullen's World Haplogroup Predictor - <http://members.bex.net/tculen515/haplotest.htm>

Example: <http://www.familytreedna.com/public/R-L165Project/default.aspx?section=results>

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Test – join a clan/surname, geographical, haplogroup or subclade project

Join the Scottish DNA Project – ask me!

Scottish DNA Project - www.scottishdna.net

Alasdair Macdonald
alsadair@familytreedna.com or
scottishdna@strath.ac.uk

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Some interesting sidelights...

1. DURIE DNA – not as simple as it seems
2. Siol Alpin – pure nonsense!

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Lines considered

The "Baronial" line

Robert Durie of that ilk 1492-1554

Henry Kemp 1521-1562 = Jonet Durie 1532-1576

David Durie of that ilk

Capt. Robert Durie of that ilk (Sold Durie in 1614)

Bruce Durie b. 1954

I2a2a1a1 L126/S165, L369 >> I-Y4751

The Chieftain line

Abbot George Durie 1496-1577 Escaped to France 1560

Henry Durie of Craighuscar 1543-1591 = Peter Durie of Rosend 1523-1614 = John Durie (Jesuit) 1544-1588 = George Durie (Jesuit)

Went to France

Fought in Flanders (and his brothers)

Dr. Andrew Dewar 1830-1895

Andrew Durie Chief b. 1939

R-L21 R1b1a1a2a1a2c1

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Andrew Durie of Durie (Dewar)

M269 R1b1a1a2
 P311 R1b1a1a2a1
 P310 R1b1a1a2a1a
 P312 R1b1a1a2a1a2
 L21 R1b1a1a2a1a2c1

- 10 April 2018 – I signed up Chief Andrew to www.familytreedna.com/public/R-DF49
- DF49 is the biggest subclade of L21
- Lots of close matches (GD=3,4,5) to CALDWELLS!
- There is a "Caldwell/McMichael" twig with a terminal SNP of FGC65724 under ZP-179.

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Bruce Durie – "Pict"

I2a2a (formerly I2b1) amounts to over 90% of I2a2

I2a2a1 (I-M284+) occurs almost exclusively in Britain, where it seemingly developed about 3,000 years ago (ybp)

Very rare in Continental Europe, where the highest frequency is found in Portugal (more recent, so flow FROM Britain)

Comparatively rare in Ireland except in the north-east (probably from incoming Scots)

I2a2a1a1 (L126/S165, L369 - formerly I2b1a1) most common in Scotland and those of Scots ancestry

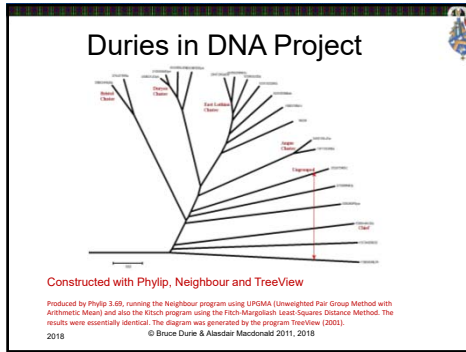
I-Y4751 (FGC20065/Y4751) formed 1850 ybp. TMRCa 1550 ybp

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Dean McGee's Y-Utility results showing clusters

<http://www.mymcgee.com/tools/yutility111.html>



Durie DNA Project clusters

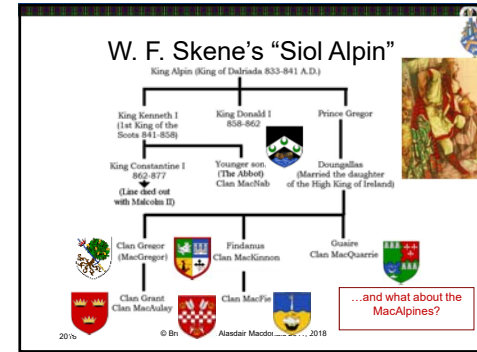
Kit Number	Name	Country	Hq	Subgroup
24563	Alasdair John Lindsay Durie	England	R-M269	Anglo Cluster
27543	Tristan Beauchamp Russell	Scotland	R-121	British Cluster
35824	Robert Durie	Scotland	R-M269	British Cluster
15884	Andrew Durie	Unknown Origin	R-121	Chief Line
44205	Laird Duryee	France	R-M269	Duryee Cluster
21356	Mark Kent Duryee	France	R-12	Duryee Cluster
45021	James Kevin Duryee	France	R-M269	Duryee Cluster
30385	Bruce Duryee	Unknown Origin	R-M269	Duryee Cluster
20792	Dr. Robert Wesley Durie	Scotland	R-M269	East Lothian Cluster
17083	John Durlop Durie	Scotland	R-M269	East Lothian Cluster
15879	Roger Alan Holmes (Adopted)	United Kingdom	R-514	East Lothian Cluster
29479	Gene Durie	Canada	R-M269	East Lothian Cluster
51905	James Bernard Adams	United States	R-M269	Unrelated
27388	Michael Dury	Ireland	R-M269	Unrelated
33308	Philip Richardson Duryea	France	R-M269	Unrelated
78478	Robert James Durie	Ireland	R-M269	Unrelated
17740	Sir David Robert Campbell Durie	Scotland	R-M269	Unrelated
23207	Roy Smith Campbell Jr.	Scotland	R-M269	Unrelated
26820	Dr. Thomas Franklin Duryea	Scotland	1A253	11
13495	Dr. Bruce Durie	Scotland	14938B	12

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Chief unrelated

Not all Duryea/Duryee related to each other

Anglo-Saxon /Scandic (unrelated) Pict (unrelated)

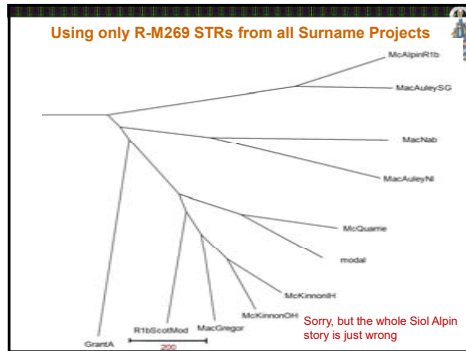


Using only R-M269 STRs from all Surname Projects

Time to Most Recent Common Ancestor (Years)

ID	R	M	G	M	M	M	M	M	M	M	M	M
	1	a	r	a	a	c	c	c	c	c	a	i
	S	G	n	A	A	i	i	u	N	a	a	a
	o	t	u	t	l	i	o	n	n	r	r	a
	M	o	r	N	S	H	H	o	n	i	e	R
	d			G	H	H						b
R1bScotMod	37	600	1500	1380	1650	900	900	1260	1500	1380		
MacGregor	600	67	1650	1410	1920	570	570	990	1920	1650		
GrantA	1500	1650	67	1740	1920	1410	1410	1140	1830	1830		
MacAuleyNI	1380	1410	1740	67	1740	1560	1650	1140	930	1410		
MacAuleySG	1650	1920	1920	1740	67	1740	1740	1410	1830	510		
McKinnonCH	900	570	1410	1650	1740	67	360	990	1650	1650		
McKinnonIH	900	570	1410	1650	1740	360	67	930	1650	1650		
McQuarrie	1260	990	1140	1140	1410	990	930	67	1560	1230		
MacNab	1500	1920	1830	930	1830	1650	1650	1560	67	1470		
McAlpinR1b	1380	1650	1830	1410	510	1650	1560	1230	1470	67		
0-270 Years		300-570 Years		600-870 Years		900-1170 Years						

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Relevant books by Bruce Durie

- Scottish Genealogy The History Press 4th Edn 2017
- Documents for Genealogy & Local History The History Press
- Your Scottish-American Ancestry Bruce Durie 2018
- Retours of Services of Heirs (3 vols)

www.bruceurie.co.uk/books

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DNA testing is Disruptive Technology!

It forces us to re-think our National Story

But... Y-DNA and Surname are a good indication of geographical origin within Scotland

Thank you for your kind attention

Dr Bruce Durie

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web: <http://www.bruceurie.co.uk/>

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