

Alive and Well in Canada – The Mitochondrial DNA of Richard III

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In spite of Richard III's defeat and death at the battle of Bosworth, and the subsequent eclipse of the royal house of York, the mitochondrial DNA of Richard and his siblings did not disappear in the fifteenth century. It is still to be found today. The present writer has identified a living individual who carries this DNA. She is a direct descendant in an all-female line of Anne of York, Duchess of Exeter, the eldest of Richard III's sisters. This living descendant has kindly allowed her mtDNA – the mtDNA of Richard III and his siblings – to be analysed. The family tree establishing the donor's descent from the house of York is published here.¹

Mitochondrial DNA

Recent well-publicised cases in which mitochondrial DNA (mtDNA) have been used to establish the identity of historical persons have assured such procedures wide publicity. There is general awareness that DNA samples supplied by HRH the Duke of Edinburgh and others were used to help to verify the identity of the remains from Ekaterinburg, tentatively ascribed to those members of the Russian Imperial family, killed at the Ipatiev House on 16 July 1918.² The Duke of Edinburgh's DNA samples have also proved that the late Mrs John Manahan (probably better known under the pseudonym 'Anna Anderson') could not have been HIH Grand Duchess Anastasia Nicolaievna of Russia. DNA research has also established that the pretender Naundorf was not the child-king Louis XVII of France, and that the latter did indeed die at the Temple Prison in Paris in June 1795.³ Professor Jean-Jacques Cassiman of the University of Louvain in Belgium, and Professor Ernst Brinkmann of Germany's Münster University conducted tests on the heart removed from the body of the supposed child king in 1795. DNA comparison with samples of hair belonging to Louis XVII's mother, Queen Marie-Antoinette, proved the identity of the heart, which was finally buried in the royal vault at the Basilica

¹ The mtDNA analysis was carried out by *Oxford Ancestors* (PO Box 288, Kiddlington, OX5 1WG, information@oxfordancestors.com). I am grateful to Dr David Ashworth, formerly of *Oxford Ancestors*, for technical help and advice.

² B. Sykes, *The Seven Daughters of Eve*, London 2001, pp. 63-78.

³ SAR Marie-Thérèse of France, Princess Royal, Duchesse d'Angoulême, *Private Memoirs*, London 1817, p. 130.

of St Denis on 8 June 2004.⁴ Nevertheless, the precise details of how DNA techniques were employed in these and other cases often remain poorly understood by the layman.

The letters 'DNA' are an abbreviation for 'deoxyribonucleic acid'. All living beings have DNA, which functions rather like an order pad. It lists, in coded form, the materials required to make the components of living bodies, and it specifies the order in which they must be assembled in order to create these components. In 1953 two Cambridge scientists, James D. Watson and Francis Crick, first worked out the structure of DNA, and demonstrated its significance as the basic coding material of life. 'Watson and Crick had discovered that each molecule of DNA is made up of two very long coils, like two intertwined spiral staircases – a 'double helix'. When the time comes for copies to be made, the two spiral staircases of the double helix disengage'.⁵ DNA has a very complicated molecular structure, but four principal components are the heterocyclic bases which are known by their initial letters: A for adenine, C for cytosine, G for guanine and T for thymine. Thirty five years later, in 1988, an Oxford University team discovered that it was sometimes possible to extract, replicate and analyse DNA from ancient bones.⁶

While the focus in the present paper is on human DNA, the same basic rules apply to all animals and plants, for all living things have DNA. Our cells contain two kinds of DNA: nuclear DNA, which resides in the cell nucleus, and mitochondrial DNA (mtDNA). Self-evidently, the latter is the DNA of the mitochondria, a mitochondrion being 'a subcellular organelle ... [which] generates metabolic energy for the physiological processes of life'.⁷ In effect, it helps the cell to use oxygen in order to produce energy.

Mitochondria are tiny structures that exist within every cell. They are not in the cell nucleus, the tiny bag in the middle of the cell which contains the chromosomes, but outside it in what is called the cytoplasm. ... It is thought that mitochondria were once free-living bacteria that, hundreds of millions of years ago, invaded more advanced cells and took up residence there. ... You could call their relationship with the cells symbiotic.⁸

Nuclear DNA is a mixture, fifty per cent of which is inherited from each parent. Mitochondrial DNA is inherited uniquely from the mother, and is normally transmitted unchanged to the child. Mitochondrial DNA mutates at

⁴ www.answers.com/louis-xvii-of-France.

⁵ Sykes, *The Seven Daughters of Eve*, p. 27.

⁶ E. Hagelberg, B. Sykes and R.E.M. Hedges 'Ancient bone DNA amplified', *Nature*, vol. 342 (1989), p. 485.

⁷ J. Marks, *What it means to be 98% Chimpanzee*, Berkeley 2002, p. 33.

⁸ Sykes, *The Seven Daughters of Eve*, pp. 52-53.

a much higher rate than nuclear DNA. ... Two organisms will therefore be far more similar in their nuclear DNA than in their mtDNA'.⁹ For both of these reasons mtDNA is more useful than nuclear DNA in tracing genetic relationships.

The reason why mitochondrial DNA is inherited only from the mother is simple. In the sexual contact of ancient, single-celled organisms (where mtDNA was present in both parent cells) sex resulted in a battle between competing sets of incompatible mitochondria. The ensuing carnage was only resolved when the mitochondria of one parent had been completely eliminated. Such 'cytoplasmic wars' still take place in single-celled algae when they have sexual contact. Even the victorious mitochondria are liable to sustain damage in the process. To avoid the resulting wasteful destruction, higher organisms have evolved a system of sexual reproduction such that 'one sex produces eggs, full of cytoplasm, and the other produces sperm, or pollen in plants, with a nucleus and not much else'.¹⁰ As a result, eggs are large and bear both nuclear and mitochondrial DNA. Sperm are tiny. Like eggs, they have a nucleus which carries nuclear DNA. However, sperm lack the extensive cushion of cytoplasm which surrounds the nucleus of eggs. Hence they bear few mitochondria. Moreover, at fertilization, a human egg retains the maternal cellular mitochondria, and sloughs off the sperm's mitochondria. This DNA is thus inherited directly through the mother's lineage and is not subject to the vagaries of Mendelian assortment and recombination. A child is a mitochondrial clone of its mother and unrelated to its father'.¹¹

With one exception, nuclear DNA is at present useless for genealogical research over a wide time-gap, because there is currently no way of determining which components of the nuclear DNA are derived from which ancestor. In fact many ancestors may be represented by no nuclear DNA components in their living descendants. The one certain exception is where the analysis focuses exclusively on the Y-chromosome, inherited by all male offspring from their father. Recent studies based upon the Y-chromosome have shown that in some cases, at least, individuals who share a common surname apparently share a remote common progenitor in the male line.¹² It has also been possible to discern, in the modern population of the United Kingdom, certain Y-chromosomes representing the pre-Roman 'Celtic' peoples of these islands, and other Y-chromosomes representing subsequent strands of population influx. The present writer's Y-chromosome, for example, is said to indicate a pre-Roman, 'Celtic' male ancestry.

⁹ Marks, *98% Chimpanzee*, p. 34.

¹⁰ B. Sykes, *Adam's Curse*, London 2003, p. 119.

¹¹ Marks, *98% Chimpanzee*, p. 83.

¹² Sykes, *Adam's Curse*, pp. 5-19.

It would probably be possible to identify and analyse Richard III's Y-chromosome, which was presumably identical with the Y-chromosome of the entire Plantagenet male line. In England this is traceable back to King Henry II, and in France its history stretches back to Count Fulk IV of Anjou (1043-1109) and his father, Geoffrey, Count of Gâtinais.¹³ Richard III was the last English reigning monarch to carry this Y-chromosome. Nevertheless, notionally, there is no secret as to its whereabouts today. A DNA sample provided by any male member of the family of His Grace the Duke of Beaufort should furnish the required genetic material, since, on paper, at least, the house of Somerset is descended in an unbroken male line from John of Gaunt (albeit with the slight technical disadvantage of a double illegitimacy in its ancestry). Unfortunately, paternity can always be questioned. This comment is not intended to impugn the honour of the house of Somerset. It is probable that the Plantagenet male-line descent of this dynasty is intact, though this fact is not absolutely certain.¹⁴ On the other hand there can rarely, if ever, be any doubt as to the identity of a child's mother. The female-line thus represents a very secure line of descent, in which documentary and genetic evidence are almost certain to tell the same story. For these reasons the focus of this paper is exclusively on mtDNA and the female line of descent. We shall see that the family tree which results from tracing a female line is very different from the paternal-line pedigrees which our society has generally been wont to record, and may produce surprising and intriguing ramifications.

Mitochondrial DNA is now widely used to establish maternal line relationships. This is possible because occasional spontaneous mutations occur in mtDNA, and these are then passed on to descendants, creating clusters or clans of individuals all with identical mtDNA which, however, differs very slightly from the mtDNA of other clusters.¹⁵ By studying a wide range of human mtDNA, the thesis has been developed that all human beings now living are descended in the female line from a single woman who lived in Africa about 150,000 years ago. She is known as 'mitochondrial Eve'. The

¹³ The line of the Counts of Anjou is traceable back to the beginning of the ninth century, but the direct male line was broken when the inheritance passed to Ermengard, daughter of Count Fulk III, and mother of Fulk IV.

¹⁴ It would nevertheless be highly desirable, in the writer's opinion, to pursue a Y-chromosome analysis from a male donor of the house of Somerset. Such an analysis would provide evidence of the Plantagenet Y-chromosome, for which no data is currently available. This evidence could be of value in relation not only to Richard III but to all male Plantagenets, including the so-called 'Princes in the Tower'.

¹⁵ Inherited mutations are normally found in redundant and nonfunctional DNA (which represents a very high proportion of the total DNA). 'Mutations or changes to functional DNA are more likely to do systemic damage to the organism ... consequently they are most unlikely to be perpetuated'. Marks, *98% Chimpanzee*, p. 32.

further thesis has been developed that most of the historic native population of Europe is descended in the female line from one of only seven women (all descendants of mitochondrial Eve), who lived at various times, which can be estimated, ranging from about 10,000 to about 45,000 years ago, and in locations which can also be approximated. These seven European 'Clan Mothers' relate to seven perceived 'clan' groupings which exist, in terms of mtDNA, in the modern European population. To one of these seven 'clans' most of the historic European population can be assigned.¹⁶

It should, perhaps, be stated clearly at this point that mtDNA analysis by itself cannot prove the identity of an individual. To clarify the identity of dead remains their mtDNA has first to be extracted and sequenced. This is a process which, depending on the state of conservation of the remains, may not always be feasible. When it can be achieved, the resulting mtDNA sequence has then to be compared with a sample from a known or supposed relative, living or dead. This is the procedure undertaken when samples from the bones thought to be those of the Russian Imperial family were compared to the mtDNA of HRH the Duke of Edinburgh. HRH Prince Philip being a descendant in the exclusively female line of the sister of Tsarina Alexandra Feodorovna, the comparison in this instance was between his mtDNA and that extracted from the bones believed to pertain to the Tsarina and her children. DNA from the remains thought to be those of Tsar Nicholas II was not compared with Prince Philip's DNA, since the two men were not related in an exclusively female line. In the case of the supposed bones of the Tsar a different comparison was made, with mtDNA from a living female-line relative of his mother, dowager Empress Marie Feodorovna.

'The notation everyone uses to compare mitochondrial DNA sequences involves quoting differences from a set reference sequence, in fact the very first mitochondrial DNA to be entirely sequenced, by a team from Cambridge in 1981. In this notation a sequence which differs from the reference sequence at the fifteenth and one hundredth positions in the 500 base control region segment is abbreviated to 15, 100. The sequence from the Duke of Edinburgh was 111, 357, using this notation'.¹⁷ mtDNA from the Ekaterinburg bones thought to be those of the Tsarina and her children showed an identical sequence. The mutations present in this mtDNA sequence were rare and thus highly significant as indicators of identity

In all such cases a mismatch proves for certain that the DNA material cannot represent the person sought. This is precisely what occurred in the case of

¹⁶ Sykes, *The Seven Daughters of Eve*, pp. 195-96.

¹⁷ Sykes, *The Seven Daughters of Eve*, p. 67. The standard comparison with the Cambridge Research Sequence now refers to a 400 letter sequence of nucleotide bases (between positions 16001 and 16400) rather than a 500 letter sequence.

'Anna Anderson', whose mtDNA did not match that of the Duke of Edinburgh. On the other hand, a positive match does not prove identity. It merely indicates that the sample derives from a person with appropriate mtDNA, who must therefore be a relative in some degree of the person sought. On the basis of the genetic evidence alone, however, the relationship could be very remote.

Other, possibly non-genetic, factors will then play a part in interpreting the genetic evidence. Thus for example in the case of the bones from Ekaterinburg the location and conditions under which these human remains were discovered all tended to suggest that they were the bones of the Imperial family. Moreover two independent mtDNA matches were achieved: between the remains of the supposed Tsarina and her children, and the Tsarina's relative, the Duke of Edinburgh, and between the supposed Tsar Nicholas and his living female-line relation. The final outcome, however, always remains a balance of probability rather than proof positive.

Documentary Evidence and Genetic Evidence

Until recently, calculations of ancestry were normally based upon documentary evidence. Naturally, this had limitations. Even the best-documented pedigrees rarely extended back more than a thousand years, while for most families the ancestral line vanished into oblivion after only a few centuries. The exclusively female ancestral line is particularly difficult to follow. The present writer can trace some lines of his ancestry back to the fifteenth century. His exclusively female-line ancestry, however, cannot currently be pursued beyond the early eighteenth century, since the requisite documents seem not to survive. In the case of Richard III, as we shall shortly see, his female line ancestry is only traceable through three generations on the basis of documentary evidence.

Mitochondrial DNA evidence completely changes this picture. Using this genetic evidence, female-line ancestry can be traced backwards for thousands of years. It has been postulated that every living human being is a descendant of 'mitochondrial Eve', and that in addition, a more recent 'clan mother' can also be identified. The present writer shares his 'clan mother' with Brigitte Bardot, Queen Victoria, HRH the Duke of Edinburgh, and the (real) Grand Duchess Anastasia.¹⁸ This is the most widespread of the European clan groupings. Being a large clan, however, it contains subgroups. The sequence of Queen Victoria and her female-line descendants, contains, as we have seen, rare mutations not present in the sequence of the present writer.

¹⁸ All of whom belong to clan group 'H'.

The Historical Problem

Like every human being, Richard III inherited his mtDNA from his mother. In Richard's case the mother was Cecily Neville, Duchess of York. The same mtDNA was inherited by all Cecily Neville's children, including Edward IV, Richard III and Margaret of York, Duchess of Burgundy. It has never been possible to identify this mtDNA in the obvious way, by means of a sample taken directly from the remains of Cecily Neville, or from one of her children. There are two reasons for this. First, there is nowadays an understandable reluctance to disturb the burials. Second, most of the York burials have been disrupted in the past. As a result the precise whereabouts and identity of some of the remains are themselves in question.

Of all Cecily's children, only one, Elizabeth, Duchess of Suffolk, lies undisturbed in her original tomb, at Wingfield Church in Suffolk, beneath a well-preserved alabaster effigy. Edward IV still lies at Windsor, but his tomb superstructure has vanished, and his tomb was opened in the eighteenth century, when samples of his dark brown hair¹⁹ were taken. One of these locks of hair is now in the keeping of the Society of Antiquaries, but the hair, which lacks roots, has been pronounced useless for DNA research.

The burial of Cecily Neville herself, together with that of one of her sons, Edmund Earl of Rutland, is at Fotheringhay church, but their original tombs lay in the choir. This part of the church fell into ruins following the Reformation. Cecily's descendant, Elizabeth I, subsequently had all the remains from the York family tombs collected and reburied in just two tombs further to the west, in the surviving portion of the church. Most puzzling of all (and the reason why the search for a living mtDNA descendant of Richard's family was begun) are the whereabouts of the remains of Richard III himself, and of his powerful sister, Margaret, Duchess of Burgundy.

Richard was buried, after the battle of Bosworth, in the church of the Franciscan (Grey) Friars at Leicester.²⁰ Eventually Henry VII paid for a proper tomb, but this vanished when the monasteries were dissolved. A much later myth claims that Richard's body was then exhumed and thrown into the River

¹⁹ It is a myth of the historical novelists that Edward IV was tall and fair while Richard III was short and dark. Edward was indeed tall – 6 feet 2 inches based on his skeletal measurements – but, like Richard, he had dark hair. Richard's height is unknown. On Edward IV's hair, see A.F. Sutton and L. Visser-Fuchs with R.A. Griffiths, *The Royal Funerals of the House of York at Windsor*, London 2005, pp. 117-122.

²⁰ 'Finaliter [ultimately]', as John Rous reports. From his account and that of the Frowyk Chronicle it is possible that Richard's body was initially interred in the church of St Mary-in-the-Newark, and only later moved to the Franciscan Priory Church, perhaps for reburial in the new tomb commissioned by Henry VII. See A.F. Sutton and L. Visser-Fuchs, 'The Making of a Minor London Chronicle', *Ricardian*, vol. 10 (1994-96), pp. 97-98.

Soar, but this tale is unknown before the mid seventeenth century and there is no evidence to support it. Early seventeenth-century visitors to Leicester knew nothing of this story,²¹ while the family who owned the house which stood on the Greyfriars site preserved a spot in their garden, marked by an inscribed column, as Richard's burial place.²² Nevertheless, bones and skulls discovered at various times in the River Soar have been put forward as Richard's remains.²³

Margaret of York, like her brother, Richard, was buried in a Franciscan church – at her dower town of Mechelen (Malines). Her once fine tomb was destroyed during the subsequent religious wars in the Low Countries. Twentieth-century reconstruction of the former friary church as a cultural centre led to a search for Margaret's body. As a result several sets of remains were found.²⁴ These now lie in cardboard boxes in the Mechelen archives, awaiting some means of identification. It was in the hope of providing some means of elucidating the problem of the supposed remains of Margaret and of Richard III that the present writer embarked on the search for a living carrier of their mtDNA.

The Source of the Mitochondrial DNA

Richard, Margaret and their siblings inherited their mtDNA from Cecily Neville, who in turn derived it from her mother, Joan Beaufort, Countess of Westmorland. Joan's mtDNA was inherited from her mother, a lady who is usually (but misleadingly) referred to as Catherine Swynford. Catherine only acquired the surname Swynford as a result of her first marriage, and it would be preferable not to refer to her in this way. Her maiden surname was de Roët, and Joan Beaufort was one of the children of Catherine's second union, with John of Gaunt, Duke of Lancaster.

It is known that Catherine's father was a knight from Hainault. He is usually named as Sir Payne (Paon) de Roët (Roelt), and is often said to have come to England from Hainault with Edward III's wife, Queen Philippa. In fact his real first name seems to have been Giles. 'Paon' ('Peacock?') was apparently a nickname. Perhaps his contemporaries found him vain. There is

²¹ See, for example, O. Gilchrist, ed., R. Corbet, *Iter Boreale*, London 1807, pp. 178-79, cited in the present writer's 'The location of the 1485 battle and the fate of Richard III's body', *Ricardian Bulletin*, Autumn 2004, p. 34.

²² D. Baldwin, 'King Richard's grave in Leicester', *Transactions of the Leicestershire Archaeological and Historical Society*, vol. 60, 1986, p. 22.

²³ A. Wakelin, 'Is there a king under this bridge?', *Leicester Mercury*, Tuesday 8 October 2002, p. 10.

²⁴ P. de Win, ' "Danse macabre" around the tomb and bones of Margaret of York', *Ricardian*, vol. 15 (2005), pp. 53-69

no surviving evidence that he ever served in England, although he was employed by Queen Philippa's sister, the Holy Roman Empress, in Germany, and he also served Edward III as a herald and as Guienne King of Arms in the Aquitaine. Ultimately he died in England, and was buried in St. Paul's Cathedral.²⁵ His unknown wife, the source of his daughters' (and thus of Richard III's) mitochondrial DNA might have been French, German, Belgian or Dutch, but was probably not English. On the basis of documentary evidence alone, it is impossible to trace Richard III's female blood-line further back. Despite much research, the identity of Catherine de Roët's mother remains a mystery, though it seems most probable that she came from somewhere in what is now southern Belgium.

Several interesting points emerge from this rehearsal of Richard III's mtDNA ancestry. First, Richard shared the same mtDNA as his family's ancestral rivals, the first generation Beauforts. In fact identical mtDNA to that of Richard III would have been found, in all four of Catherine de Roët's sons: Sir Thomas Swynford, John Beaufort, first Earl of Somerset, Henry, Cardinal Beaufort, Bishop of Winchester, and Thomas Beaufort, Duke of Exeter.²⁶ Second, Richard also shared his mtDNA with the children of the poet, Geoffrey Chaucer, since Chaucer's wife, Philippa, was Catherine de Roët's sister.²⁷ This relationship with the Chaucers has sometimes been questioned. However, it was explicitly acknowledged by Cardinal Beaufort, who, in a letter, referred to the poet's son, Thomas Chaucer, as his cousin.²⁸

In the following generation the same mtDNA would have been found in all of the numerous Neville and Ferrars children of Joan Beaufort. Cecily Neville had a number of sisters, and uterine half-sisters, all of whom shared her mtDNA, and transmitted it to their offspring. It is likely that some of Cecily's sisters have living female-line descendants, but it has not, as yet, proved possible to trace them.

²⁵ D. Brewer, *Chaucer and his World*, London 1978, p. 89.

²⁶ Richard also shared his male-line ancestry, and thus his Y-chromosome with the male Beauforts.

²⁷ Catherine was probably the youngest daughter. Philippa was older. The eldest daughter of the family seems to have been Isabelle de Roët, born in 1343, who became an Augustinian canoness at the Convent of St Waudru in Mons.

²⁸ G.C. Coulton, *Chaucer and his England*, London 1908, p. 31. Chaucer's sons were apparently proud of their de Roët heritage. At all events it has been claimed that they abandoned their father's coat of arms, preferring to use the de Roët arms which came to them from their mother. G.K. Chesterton, *Chaucer*, London [n.d.] p. 80.

The Female Line of Descent

Of Cecily Neville's own daughters, two produced children: Anne, Duchess of Exeter, and Elizabeth, Duchess of Suffolk. Initially, Elizabeth seemed to offer the best hope of living descendants, as she had many children, including several daughters. Ironically, however, her line peters out almost at once. She had only one grandchild, and no great grandchildren.²⁹

By comparison with Elizabeth, Anne of Exeter looked, at first sight, rather a long shot, because she had only a single child – though fortunately it was a daughter: Anne St Leger. Amazingly, however, through this one child, Anne of Exeter has numerous living descendants.³⁰ In most cases their line of descent passes through a male at some point. Since a male breaks the chain of transmission of mtDNA, such descendants will not have inherited Anne of Exeter's mtDNA. The prospect remained, however, of the existence of at least one exclusively female line of descent from Anne of Exeter to the present day. Slowly, and with invaluable help from various people to whom I owe a great debt of gratitude,³¹ Anne of Exeter's female lines of descent have been followed towards the present. While not all of them made it into the twenty-first century, there were some interesting people along the way. We may, in passing, pause to consider three.

Barbara Spooner (1777-1847) was described by contemporaries as having a dark, gypsy-like beauty, with large, dark eyes. She was, however, prone to anxiety and subject to bouts of nervous depression. A devout girl, in 1797 she married William Wilberforce, the MP and slave-trade abolitionist, all of whose descendants are thus related to Richard III and Margaret of York. Barbara and William had two daughters, Barbara and Lizzie. Lizzie in turn had a daughter, Barbara Wilberforce James. Sadly, this particular female line of descent apparently ends with her, and the Wilberforces have no living female-line descendants.³²

One of Barbara Wilberforce's great nieces in the female line was Alma Strettell. She was the daughter of an evangelical clergyman who, rather adven-

²⁹ There is some dispute on this point, but these are the probable facts. Speculation regarding possible French descendants of one of Elizabeth's sons is based on no secure foundation. Moreover, even if they existed, such descendants would not carry Elizabeth's mtDNA.

³⁰ Including some members of the Richard III Society.

³¹ I would like to take this opportunity of thanking Peter Hammond, who helped to get me started, Dave Perry, who gave me massive help in searching both dusty records and on the internet, and finally my vital contacts in Canada: Tracy Bryce, Megan Lillies and Catherine Shale, without whom I would not have found Joy Ibsen.

³² J. Ashdown-Hill, 'A Granddaughter of William Wilberforce', *Genealogists' Magazine*, vol. 28, no. 3, September 2004, pp. 110-11. Also R. Stockdill, 'Barbara Wilberforce James', *Genealogists' Magazine*, vol. 28, no. 5, March 2005, pp. 210-16.

turously, took a post in Italy, where, as a result, Alma was born. A highly intelligent and extremely cultivated lady, Alma was an accomplished linguist and published translations of Provençal and Romanian poetry. One of her friends was Elisabeth von Wied, Queen of Romania.³³ Alma married a minor artist, Lawrence Alexander ('Peter') Harrison. The Harrisons enjoyed the friendship of the Edwardian portrait painter John Singer Sargent, who painted both Alma and her husband on several occasions. A Sargent portrait also exists of Alma's younger daughter, Sylvia Harrison.³⁴ Sylvia never married. She died in Italy in the 1960s.

Alma Strettell had an elder sister, Alice, also brought up in Italy. Described as a small lady, slim and slightly built, Alice married the Edwardian theatre producer, Joseph Comyns Carr, and became closely linked with theatre production herself. She was a friend of the actress Ellen Terry.³⁵ Alice designed costumes for Ellen, including one very famous dress, sewn with iridescent beetles' wing cases, to be worn in the role of Lady Macbeth.³⁶ Alice had two sons and one daughter, Dorothy ('Dolly').³⁷ Unfortunately Dolly never married, and Alice has no living female-line descendants.

The Mitochondrial DNA Sequence

The female line from Anne of Exeter which has now been successfully traced to living descendants is that of Barbara Wilberforce's niece, Charlotte Vansittart Neale (Frere). In this line of descent Joy Brown (Ibsen)³⁸ is Charlotte's great granddaughter. In terms of the Cambridge Reference Sequence (above), the mtDNA sequence which Joy shares with Richard III and Margaret of York is classified by the numerical notation 69, 126,³⁹ which represents the standard, unmutated mtDNA sequence for their clan grouping. This fact is significant. Since Joy's mtDNA is identical to that of her clan

³³ A. Strettell, *Spanish and Italian Folk Songs*, London 1887; A. Strettell and C. Sylva, *Legends from River and Mountain*, London 1896; A. Strettell and C. Sylva, *The Bard of Dimbovitza*, London 1914. 'Carmen Sylva' was the *nom de plume* of Queen Elisabeth of Romania (1843-1916), consort of King Carol I.

³⁴ E. Adam, ed., *Mrs J. Comyns Carr's Reminiscences*, London [n.d.] facing pp. 127, 177, 189, 245, 301.

³⁵ Alice refers to 'our dear friend, Ellen Terry'. A. Comyns Carr, *J. Comyns Carr – Stray Memories*, London 1920, p. 83.

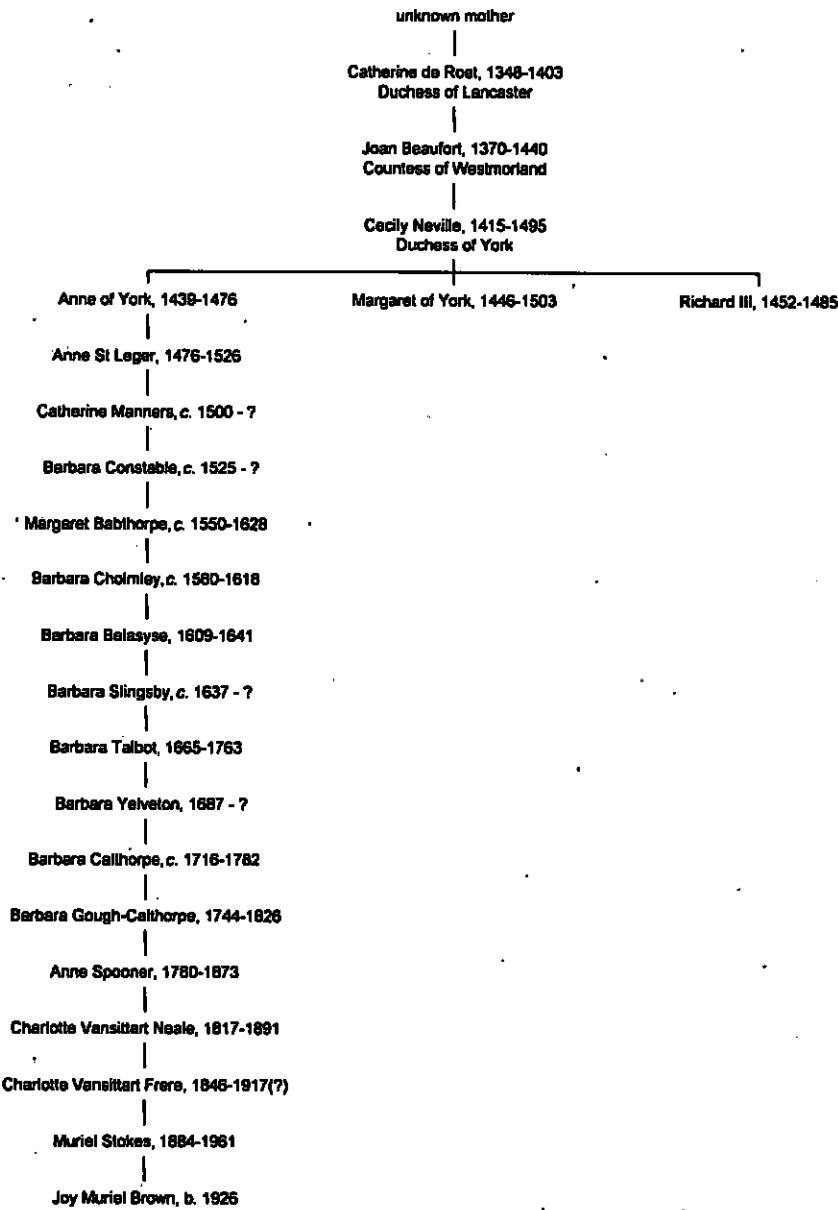
³⁶ Adam, *Reminiscences*, facing p. 299.

³⁷ Adam, *Reminiscences*, facing pp. 61, 113.

³⁸ Joy's birth was registered under the name Muriel Joyce Brown. Her present surname is of course her married name.

³⁹ Or more fully, 16069, 16126, since the sequence analysed represents 'the section of mtDNA between positions 16001 and 16400 base pairs on the mitochondrial chromosome'. *Oxford Ancestors* website.

mtDNA Family Tree of Margaret of York, Richard III and Joy Brown (Ibsen) - simplified



mother who lived thousands of years ago, this suggests that Joy's more recent ancestress, Cecily Neville (through whom Joy inherits this mtDNA) cannot have displayed mutations which Joy does not have. In other words, Joy's mtDNA must be identical to that of Cecily Neville and all the latter's children.

One point which emerges from this mtDNA sequence is that it belongs to what is, numerically, the smallest of the seven European clan groupings: the one known as 'clan J'.⁴⁰ Fewer than seventeen per cent of modern Europeans belong to this clan.⁴¹ It is suggested that the clan mother of this group lived in what is now Syria, on the banks of the River Euphrates, about 10,000 years ago. She is the most recent of the European clan mothers, and her descendants were comparatively late arrivals in Europe, where they seem to have been responsible for the introduction of agriculture. It is thought that the farming techniques they brought with them from the near east gradually replaced an earlier European hunter-gatherer lifestyle.⁴² It was once imagined that the newcomers from this near-eastern clan ousted and replaced the earlier European populations wholesale. The mtDNA evidence demonstrates that this was not so. However, the new clan grouping, while numerically accounting for only a small proportion of the European population, apparently enjoyed a disproportionate influence on the development of Europe.

The revelation of the mtDNA sequence of Richard III and his siblings now allows us to project their female-line ancestry far beyond what is traceable in the surviving documentary evidence. For traditional genealogists, Richard III's female-line ancestry was the first of his ancestral lines to vanish in anonymity. Now, on the contrary, it has proved to be the line of Richard's ancestry which can be traced back genetically much further than any other.

Details of the mtDNA sequence which Joy Ibsen has revealed for us, and which she shares with Richard III and Margaret of York have been forwarded to Professor Jean-Jacques Cassiman at the University of Louvain in Belgium.⁴³ Professor Cassiman is seeking to extract DNA from the various sets of putative remains of Margaret of York found in Mechelen, and will attempt to find a match between these results and Joy Ibsen's mtDNA.⁴⁴ In the future, it may

⁴⁰ Sykes calls the clan mother of this group 'Jasmine'.

⁴¹ Sykes, *The Seven Daughters of Eve*, p. 269.

⁴² Sykes, *The Seven Daughters of Eve*, pp. 260-70.

⁴³ Professor Cassiman was responsible for the DNA testing which established the identity of Louis XVII's remains. See above, pp. 1-2.

⁴⁴ A preliminary inspection of the Mechelen bones has already taken place. While mtDNA cannot prove identity, a mismatch between any of the Mechelen sets of bones and the control sequence would exclude those remains from consideration. If only one set of bones were left whose mtDNA matched that of the sample, that fact, taken in association with the known provenance of the remains, would indicate a strong probability of identity.

also be possible, by comparison with Joy's mtDNA sequence, to clarify the fate of Richard III's remains. Any bones found on the Greyfriars' site should certainly be compared to Joy's sequence. As for the dubious remains from the River Soar in Leicester which some have claimed as those of Richard III, if they can be located an attempt should also be made to test them, though unfortunately 'an environment with running water is particularly inimical to the preservation of ancient DNA'.⁴⁵ There may be other potential future applications for Joy's DNA sequence. For example, should remains of 'Perkin Warbeck' ever be unearthed from the site of the Austin Friars in London, it would now be possible, by reference to Joy's mtDNA sequence, to test the story which claimed that 'Perkin' was really an illegitimate son of Margaret of York.



Joy Ibsen

⁴⁵ Personal communication from W. White, Curator, Centre for Human Bioarchaeology, Museum of London.