Who was the *Titanic’s* Unknown Child? 
DNA helps solve a mystery.

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A tragic accident and a sobering recovery

On April 15, 1912 the ship *Titanic* sank after hitting an iceberg about 400 miles south of the Grand Banks of Newfoundland. When all was said and done over 1500 people lost their lives in this maritime tragedy. Within a day or two the White Star Line contracted the boat the *Mackay-Bennett* to recover bodies from the icy waters. On April 17\textsuperscript{th} she left Halifax, Nova Scotia, where she normally docked as a cable ship laying cable across the Atlantic. As each body was recovered details were recorded regarding sex, approximate age, height, clothing, any identifying characteristics that might be used in identifying the body and inventory of personal effects. The fourth body collected that day was of a young boy of about age 2. Like the others his characteristics were recorded:

<table>
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<tr>
<th>NO. 4</th>
<th>MALE - ESTIMATED AGE, 2 - HAIR, FAIR</th>
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<tbody>
<tr>
<td></td>
<td>CLOTHING - Grey coat with fur on collar and cuffs; brown serge frock; petticoat; flannel garment; pink woolen singlet - brown shoes and stockings.</td>
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<td></td>
<td>NO MARKS WHATEVER</td>
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<td>PROBABLY THIRD CLASS</td>
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It was reported that the sight of such a young victim struck a chord with the sailors on board. Since there were so many bodies and not enough embalming materials a great deal of the bodies were buried at sea, mostly third class passengers. Perhaps since the child’s body was recovered early in the process (they were numbered sequentially as they were recovered) and since it was a child, body #4 was returned to land to be claimed by relatives or buried. Back in Halifax the toddler’s body went unclaimed, so the sailors used their own money for a funeral service and to have a marker placed on his grave. The headstone remains in Fairview Lawn Cemetery where it reads “Erected to the memory of an unknown child whose remains were recovered after the disaster to the Titanic April 15, 1912”. Although it marked the grave of one child, it was often thought to represent all the children lost on
Mystery of the “unknown child”

The generally accepted belief for many decades was that the “unknown child” was actually Gösta Pålsson. There were eyewitness accounts of the Pålsson child going overboard and the tickets for all four Pålsson children were found in the mother Alma’s pocket. He was the right age and had light colored hair like the recovered body. Even the coroner’s notes for body #4 read “Baby Pålsson?” however all this was circumstantial evidence that could not be proven or disproven. Without some definitive scientific evidence like DNA there may be no way to solve this mystery and the mystery of the other 43 unidentified bodies in the cemetery. (“Titanic’s Ghosts”, Sun 2004)

In the summer of 1998, an application was filed for the exhumation of three unidentified Titanic victim’s graves at Fairview Lawn cemetery. Dr. Ryan Parr, vice-president at the time of research and development at Genesis Genomics Inc., and Alan Ruffman, president of Geomarine Associates Ltd. requested the exhumations. The request was done on the behalf of people who thought they might be the relatives of Titanic victims in these graves. The hope was that there would be enough tissue remaining in the graves to acquire DNA samples, which could be compared to living relatives. The body in grave #281 was hoped to be Catherine J. Wallis, who had been a Matron
to the third class passengers on the Titanic. (Oost 2001) Wallis’ granddaughter, Joan Allison, initially approached the researchers to ask them for help in trying to determine which grave, if any, in Lakeview Cemetery, held her grandmother so that she may finally have some closure on her death. Parr and Ruffman thought that if they were going to exhume one body, it might be in their best interest to exhume any other bodies that they may be able to identify at the same time. They knew that digging up the graves would be controversial and that the media would surely want to be involved. The second grave to be selected was number 240 which held the body of a young man whose age and personal effects pointed toward Charles J. Shorney, a third class passenger en route to New York City. They set out to find relatives of Shorney and Pålsson to get permission to exhume their graves. Ruffman was looking for living relatives that were in the maternal line of the victims. In cases where there would be little DNA discovered it is not practical or even possible to use nuclear DNA. Instead mitochondrial DNA (mtDNA) is used, which is passed on only from the mother to child. (Oost 2001, Sun 2004) They were unsuccessful in finding maternal relatives of Pålsson, but did find Ola Lindfeldt and Lars Inge who were relatives living in Sweden. These relatives helped find distant maternal cousins of Gösta Pålsson living in Sweden and who were agreeable to providing a mtDNA sample. The researchers were also unable to find a maternal relative of Charles Shorney however the relatives they did find agreed to let researchers exhume the grave of Charles’ father to get a nuclear DNA sample for comparison. (“Titanic’s Ghosts” 2004)

image credit: University of California Museum of Paleontology's Understanding Evolution (http://evolution.berkeley.edu)
Exhumation of the bodies

On May 17th 2001 the order of exhumation was carried out on the three graves. Word of the exhumation had been leaked to the press and there was a great deal of worldwide media attention focused on this little Canadian city. The team involved with the exhumation did not want the exhumations to be filmed out of respect for the victims and their possible families. The Wallis, Pålsson and Shorney relatives also wanted at the time to keep their anonymity so as not to be harassed by the press and the general public. People were very protective of the graves of the Titanic victims and especially of the “Unknown Child”. On the day of the exhumations a local man chained himself to the gravestone to try and stop the team from disturbing the grave. After the purpose of the exhumation was explained to him he unchained himself and left without further incident. (Oost 2001, Sun 2004) Graves #240 and #281 were exhumed first since they were near each other in the lower section of the cemetery. When the graves were opened there was great disappointment. Unfortunately because of their position at the bottom of a slope and the presence of a high water table, the two coffins had been completely saturated with water. The combination of groundwater and acids in the soil had completely dissolved the bodies leaving no remains at all with which to extract any DNA. There was no way now to use DNA for identification. (Oost 2001, Sun 2004) Not much hope was left for being able to find any remains for DNA testing from the “unknown child’s” grave. Luckily however this grave was located at the top of a slope and did not sustain as much water damage as the other two graves. When they opened the coffin there was only a 6 cm piece of an arm bone and three teeth, two of which were molars. They also found the corroded remnants of the medallion that read “Our Babe” which had been placed in the coffin by the sailors that recovered his tiny body. All the rest of the body had completely decayed away. (Parry, 2011, Sun 2004, Titley, et.al. 2004) With such little biological material would identification even be possible?

Another Chance?

The relatives of Charles Shorney held out hope for another way for the body to be identified. Photos of all the corpses had been taken when the bodies where brought to Halifax awaiting family identification and subsequent burial. There was also a known photograph of Charles Shorney. FBI forensic investigator Gerry Richards was brought in to use a technique that compares the patterns in ears for identification. Ear patterns are unique from one person to another and have been used to determine identification before. Another famous historical example utilizing this technique involved Princess Anastasia Romanov and the woman who claimed to be her, Anna Anderson. By tracing the unique patterns of the ears, producing an overlay and then comparing the earlobes of the two men,
Richards was able to determine that they were not the same man. The mystery of the identity of body #240 continues to this day. (“Titanic’s Ghosts” 2004)

**DNA testing**

Because of the fragility of the specimens and the high profile of the cases, the DNA comparisons between the unknown child and the Pålsson relative took almost a year. The medallion found on the child’s chest actually was both a blessing and a curse. Its presence helped preserve the tiny bone fragment but the metal of the medallion had also contaminated the bone. (Sun 2004) By the spring of 2002 Ruffman and Parr had made some progress on the identification of body #4. They had ruled out Gösta Pålsson based on mtDNA comparison from the bone fragment and the Pålsson relative. The aforementioned contamination had left no more mtDNA from the bone to test so investigators turned now to the three tiny teeth. The teeth were definitely from a very young child, probably under a year old and so investigators determined whom the two youngest male children were that had died and never been identified. (Titley, et. al. 2004) There were a total of six young boys that had perished and the mtDNA had already eliminated Pålsson, so Parr and Ruffman looked to contact maternal relatives of Gilbert Danbom (five months old from Sweden) and Alfred Peacock (seven months old from England). These relatives agreed to cooperate and each contributed a few drops of blood for analysis. A few months later they knew that these two young boys were not the unknown child, so they now looked for the relatives of the remaining three boys: Eino Viljami Panula (13 months old from Finland), Sydney Leslie Goodwin (19 months from England), and Eugene Rice (2 years old from Ireland). While searching for maternal relatives, the teeth were sent to specialists at the University of Toronto for further analysis. (Titley et. al. 2004)

The forensic dentists determined the approximate age of the child by examining the teeth under a microscope and determined the age to be between nine and fifteen months of age. They also determined that one of the teeth contained dentin, which meant that an mtDNA sample could possibly be extracted. In fact Dr. Scott Woodward at Brigham Young University’s ancient DNA laboratory was able to extract an mtDNA sample. Luckily a new non-contaminated mtDNA sample could also be extracted from the bone fragment. The samples from the tooth and bone were compared to each other, which confirmed that the mtDNA they were using was all from the same person. When the maternal relatives of the young male victims had been found, their mtDNA sequences were compared to the tooth and bone mtDNA. This test eliminated Eugene Rice as a match. The mtDNA from Eino and Syndney however were both matches to the mtDNA from the “unknown child”. (Titley et. al. 2004) How could that be? When mtDNA is tested to determine if people are related they generally only look at one area of the mitochondrial genome called HV1 which
stands for hypervariable region 1. The mtDNA from Eino and Sydney both had the same mutations in the same spots in the HV1 region as the mtDNA from the “unknown child”, which suggests that all three had a maternal relative in common somewhere in the last 2,000 years. (Just et. al. 2010).

Based on the age of the child determined from the teeth (between nine and fifteen months) and the mtDNA match, the researchers determined the identity of the child as 13-month-old Eino Panula. A press release in 2002 and the publication of a journal article about the mtDNA testing about the identification of the “unknown child” was published in 2004. A name could now be inscribed on the tombstone of the unknown child (Just et. al. 2010, Titley et. al. 2004).

Thirteen month old Eino Panula was a third class passenger traveling with his mother, Emilia, and four brothers to the United States to join up with his father in Coal Center, PA. His parents had actually lived in Coal Center at the turn of the 20th century but had returned to Finland in 1904 after
a coal strike. Eino and another sibling were born on the family farm in Finland. The family decided to move back to Coal Center and the father had decided to go on ahead while Emilia stayed behind with some of the children to sell the family farm. None of the Panula family survived the Titanic disaster. (“Titanic’s Ghosts” 2004)

Re-examination of old evidence and introduction of new evidence

The researchers were not completely satisfied with this identification however. It bothered them that the mtDNA evidence was a match to both the young boys. Parr, Ruffman and their team decided to try and find more definitive evidence to support the identification of the “unknown child”. The maternal relative mtDNA of all six boys were examined again. This time the HV1 region and the hypervariable region two (HV2) were also sequenced and analyzed. Using the second hypervariable region of the mtDNA proved to be the key to the identification of the “unknown child”. The four other boys were again eliminated. There was however a two sequence difference between Eino and the “unknown child” while the Sidney Goodwin sample matched completely. (Just et. al. 2010). Scientists felt much more confident in their identification this time.

The researchers also had a piece of non-scientific evidence to back up their identification. In 2002 a man named Earle Northover wrote a letter to the Maritime Museum in Halifax where many Titanic artifacts are displayed. In the letter he explained that his grandfather, Clarence, had been a police sergeant in charge of protecting the bodies and personal belongings of the Titanic victims. When he saw a pair of tiny brown shoes he was so moved that he could not burn them with the other clothing. At the time it was decided to burn the clothing of victims to prevent souvenir hunters from stealing their effects. He kept the tiny shoes in a desk drawer at work for decades and then after his death they stayed in the family. In 2002 Earle decided that they belonged in a museum and so he wrote the letter and subsequently donated the shoes. (Parry 2011) The story of the shoes belonging to a Titanic victim appeared to be plausible. When researchers saw the shoes they felt that they were too big for 13-month-old Eino to wear but were the correct size for 19-month-old Sidney Goodwin. The shoe evidence paired with the new mtDNA data convinced the researchers that they had properly identified the “unknown child” as Sidney Goodwin. A press release announced the results in 2007 and a scientific paper detailing the DNA work was released in August 2011. (Just et. al. 2010, Parry 2011)

Sidney Goodwin was just a toddler when he boarded the Titanic in England to travel with his parents and five siblings to Niagara Falls, NY. All the Goodwin family members perished that night. Nearly one hundred years later Carol Goodwin from Wisconsin found out that the unknown child was her relative, Sidney Goodwin. She knew she was related to a young child that had died on the Titanic with his family, since her grandmother was Sidney’s Aunt, his father’s sister. She had heard stories
about the death of the family but never dreamed that the “unknown child” would turn out to be a
relative. In August of 2008 the Goodwin family held a memorial service at the “unknown child’s”
gravestone in Halifax, Nova Scotia. The family decided not to put Sidney’s name on the gravestone
as they felt it represented all of the children who perished on the Titanic. At the memorial service
one of the Goodwin relatives read out loud and rang a bell for all the names of the children who died
that horrible night. It was there way to say good bye to their relative and to honor the memory of
all the other children who perished.
Works Cited


