

## Virgin Birth in Human Females?

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Parthenogenetic reproduction could occur among human females yet remain unnoticed. Indeed, such a woman could have a husband and be totally unaware of her own condition. She would have only daughters, each of which would carry only her genes, which would almost certainly increase in the gene pool, at least over the short term. Is there any evidence for this? Claims of reproduction without males are not to be expected from nunneries, but neither have any emanated from prisons where women are kept isolated from men. Parthenogenesis in humans may seem far-fetched, but 50 years ago no-one suspected that parthenogenesis could occur in any vertebrate: now all-female species have been documented in fish, amphibians, reptiles and birds (all major orders of vertebrates except mammals).

In the mid-1950's, the British medical journal *Lancet* published an editorial pointing out that it could be difficult to establish suitable criteria for recognition of parthenogenesis in humans. This set into motion a train of events that led to an interesting if too limited scientific examination. The *Sunday Pictorial* newspaper asked mothers who believed that they had produced a child by virgin birth to come forward. Two different mechanisms exist by which a female could reproduce without contact with a male: (1) budding from somatic cells of the mother or incomplete disjunction during meiosis of gametogenic cells, (2) autofertilization. In the first situation, mother and daughter would be perfect clones, genetically identical (like identical twins). In the second process, the mother would have to produce a sperm which would inseminate her own egg. Mother and daughter would not be genetically identical although the daughter would possess a subset of her mother's genes, possibly being homozygous at some loci where her mother was heterozygous.

The newspaper article unfortunately mentioned that such children would have to be daughters (it would have been interesting to see whether or not any sons were claimed, but, if so, they could not possibly be parthenoforms). Ultimately, 19 women presented

themselves along with their daughters as examples of "virgin birth." Eleven of these did not profess that no father existed, but were under the mistaken impression that the search was for a hymen intact after conception (but long since broken in birth). The remaining eight pairs were examined by Balfour-Lynn (1956), who blood typed mothers and daughters and found antigens present in six daughters that were absent in their mothers, clear evidence of genetic differences. In another pair, the mother had blue eyes and the daughter brown eyes, indicating genetic differences. In the single remaining case, "Mrs. Alpha and daughter," there was apparent genetic identity in blood groups and several other genetically determined traits including electrophoretic analysis of serum. The probability of such a close match between a mother and daughter produced by heterosexual reproduction was less than one chance in a hundred ( $P < .01$ ).

As a final check, reciprocal skin grafts were carried out. The transplant from daughter to mother was rejected (shed) in about 4 weeks, while the one from mother to daughter remained healthy for 6 weeks before it was removed. Balfour-Lynn (1956) considered these skin graft results obscure, but Beatty (1967) interpreted them to mean that the daughter possessed antigens not present in the mother, and therefore could not be parthenogenetic. Autoimmune responses are known that result in rejection of grafts of one own's skin. Clearly, the jury is still out on this intriguing question: further studies like this one should be undertaken. By now, "Mrs. Alpha's daughter" may well have daughters of her own that could be tested by modern techniques such as DNA fingerprinting.

## References

Balfour-Lynn, S. 1956. Parthenogenesis in human beings. *Lancet* 1956: 1071-1072.

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