The Yale Embryo

In 1934 a fourteen-day-old embryo was discovered during a postmortem examination and became famous for being the youngest known human embryo specimen at the time. The embryo was coined "the Yale Embryo," named after the location where it was discovered, Yale University in New Haven, Connecticut. During the early twentieth century, the rush to collect embryos as well as to find younger and younger embryos was at an all time high, and the Yale Embryo is representative of the this enthusiasm. The young embryo had a significant impact on human embryo collection and developmental studies as well as on the career of its discoverer.

Physician Elizabeth Maplesden Ramsey, fresh out of Yale medical school, discovered the embryo during a routine autopsy in 1934. A colleague of Ramsey's who was also present was unaware of the specimen's origin and thought it was some kind of tiny insect–such a young human embryo had just not been seen before. After more careful examination, Ramsey concluded that it was indeed an embryo, and it was donated to the Carnegie Institution of Washington (CIW) Department of Embryology in Baltimore.

The Department of Embryology, housed at that time at Johns Hopkins University, was founded by Franklin Paine Mall through funding by the Carnegie Institution. Mall's main project as director of the department was that of collecting and describing human embryos. Mall encouraged physicians, surgeons, and pathologists to collect any embryos that would otherwise be discarded and donate them to the department. This led to a mass collection of human embryos, hundreds by 1916, a practice that continued after Mall's death in 1917, by which time over 500 donors had contributed to the largest human embryo collection in existence. As a physician, Ramsey must have been aware of the common donation practice, although it is not known how she found out.

The Yale Embryo became Carnegie number 6734 and a significant part of the human embryo collection, often referred to as the Carnegie collection. Embryo collection was a novel mechanism, advocated by Mall, for the study of human anatomy and developmental biology. If embryos of various ages could be examined, then changes in morphology during development could be observed. Since the Yale Embryo was the youngest in the collection, it became a central piece to the developmental model of embryos. Out of the collection came the "Carnegie stages," twenty-three distinct stages of embryonic development based on differentiated structures.

The career of Elizabeth Ramsey was positively impacted by her discovery of the embryo. Ramsey herself admitted that the finding of the embryo guaranteed her admission to the Carnegie Institution, where she was a distinguished member for thirty-six years. Her relationship with CIW began after the embryo donation, when she commuted from the District of Columbia to Baltimore to study the embryo with leading embryologists George W. Corner, Carl Hartman, Chester H. Heuser, and George Streeter. The group also studied over 600 other embryos, making slides for morphological observation. After World War II, Ramsey became a full-time staff member of the Carnegie Department of Embryology and later became curator of the embryo collection. Ramsey went on to make significant discoveries while studying placental circulation in monkeys and humans.

Whether the Yale Embryo was actually the youngest embryo collected up to that time was arguable. In a presentation before the Department of Embryology of the CIW in 1938, Ramsey herself acknowledged the work of other embryo collectors and the "Peters and Miller Embryo," which may have been a day or so younger than the Yale Embryo. Arthur Hertig and John Rock accumulated embryos younger than Ramsey's shortly after her discovery with the help of CIW funding. But the Yale Embryo remains the most well known of its time, and it was carefully studied by the Carnegie team.

Sources

1. Buettner, Kimberly A. ”Franklin Paine Mall”, Embryo Project Encyclopedia (2007) ISSN: 1940-5030. http://hdl.handle.net/2286/embryo:124433 (Accessed December 5, 2009).
2. Longo, Lawrence D., and Giacomo Meschia. “Elizabeth M. Ramsey and the Evolution of Ideas of Uteroplacental Blood Flow and Placental Gas Exchange.” European Journal of Obstetrics & Gynecology and Reproductive Biology 90 (2000): 129–33.
3. Maher, Brendan. “The ‘Yale Embryo’ circa 1934.” The Scientist, February 2007.
4. Maienschein, Jane, Marie Glitz, and Garland E. Allen, eds. Centennial History of the Carnegie Institution of Washington. Vol. 5, The Department of Embryology. Cambridge: Cambridge University Press, 2004.
5. Morgan, Lynn M. Icons of Life: A Cultural History of Human Embryos. Berkeley: University of California Press, 2009.
6. Wynn, Ralph M. “Elizabeth M. Ramsey: (1906–1993).” Placenta 15 (1994): x–xi.