Vaccine Ingredients – Fetal Tissues

Varicella (chickenpox), rubella (the "R" in the MMR vaccine), hepatitis A, one version of the shingles vaccine, and one preparation of rabies vaccine are all made by growing the viruses in fetal embryo fibroblast cells. Fibroblast cells are the cells needed to hold skin and other connective tissue together. The fetal embryo fibroblast cells used to grow vaccine viruses were first obtained from elective termination of two pregnancies in the early 1960s. These same embryonic cells obtained from the early 1960s have continued to grow in the laboratory and are used to make vaccines today. No further sources of fetal cells are needed to make these vaccines.

The reasons that fetal cells were originally used included:

- Viruses need cells to grow and tend to grow better in cells from humans than animals (because they infect humans).
- Almost all cells die after they have divided a certain number of times; scientifically, this number is known as the Hayflick limit. For most cell lines, including fetal cells, it is around 50 divisions; however, because fetal cells have not divided as many times as other cell types, they can be used longer. In addition, because of the ability to maintain cells at very low temperatures, such as in liquid nitrogen, scientists are able to continue using the same fetal cell lines that were isolated in the 1960s.

As scientists studied these viruses in the lab, they found that the best cells to use were the fetal cells mentioned above. When it was time to make a vaccine, they continued growing the viruses in the cells that worked best during these earlier studies.

Learn more about fetal tissues used in vaccines by watching this short video, part of the *Talking about Vaccines with Dr. Paul Offit* video series.

Editor's note: Discussion in this video is relevant only to the Zostavax® shingles vaccine. For information on the Shingrix® shingles vaccine, visit our shingles vaccine webpage.