With just a sample of fluid surrounding a baby in the womb, researchers can make mini organs to test out potential medical treatments

Miniorgans, or “organoids,” are tiny simplified structures that can be used to test new medical treatments or study how the real organs they mimic work, whether they are healthy or diseased.

Researchers from University College London and Great Ormond Street Hospital in the United Kingdom collected cells from amniotic fluid samples taken during 12 pregnancies as part of routine prenatal testing. Then, for the first time, they grew mini-organs from cells taken during active pregnancies. They envision their approach could eventually help doctors monitor and treat congenital conditions before birth and develop personalized therapies for a baby in the womb.

“We’re really excited” about that possibility, said Mattia Gerli of University College London, an author of the study published [March 4] in the journal Nature Medicine.

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The tissue-specific stem cells Gerli and his colleagues collected were shed by the fetus, as normally happens during pregnancy. The scientists identified which tissues the stem cells came from, and found cells from the lungs, kidneys and intestines.

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[University of Wisconsin emeritus professor of law and bioethics Alta] Charo, who wasn’t involved in the study, said the new approach doesn’t raise the same ethical issues. “Obtaining cells from amniotic fluid that is already being sampled for standard clinical purposes does not appear to add any physical risks to either fetus or pregnant woman,” she said in an email.

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