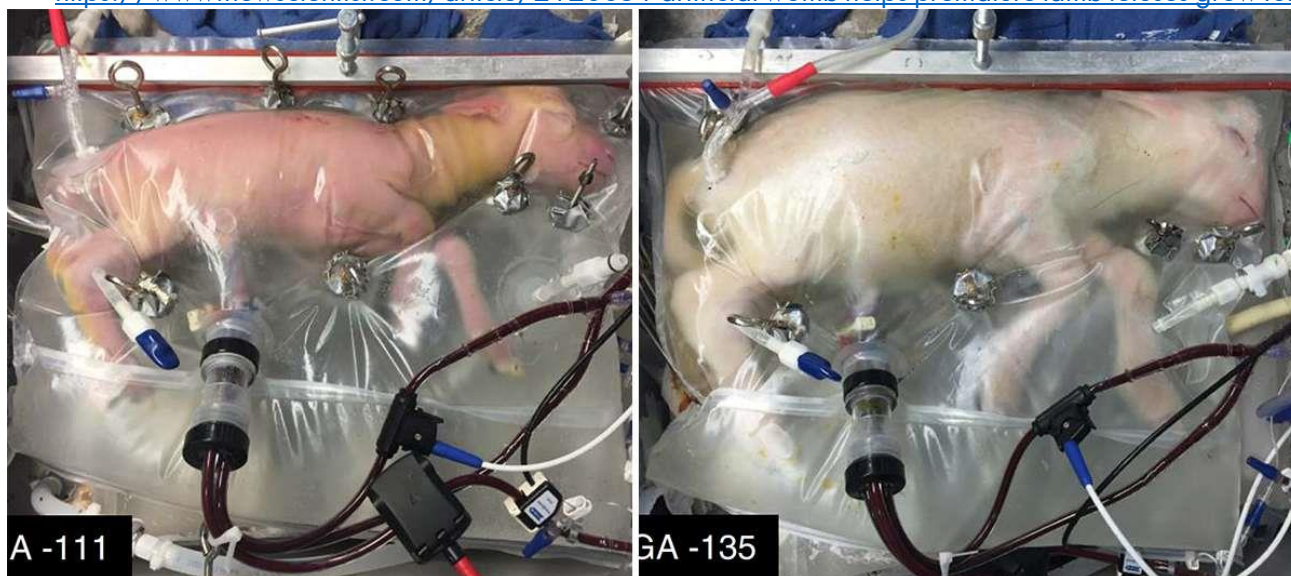


## The Artificial Uterus

1. Appleby, Bredenoord, *Should the 14-day rule for embryo research become the 28-day rule?*, EMBO Molecular Medicine Sep. '18 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6127884/>

The "14-day rule"—broadly construed—is used in science policy and regulation to limit research on human embryos to a maximum period of 14 days after their creation or to the equivalent stage of development that is normally attributed to a 14-day-old embryo (Hyun et al, 2016; Nuffield Council on Bioethics, 2017). For several decades, the 14-day rule has been a shining example of how science policy and regulation can be developed with interdisciplinary consensus and applied across a number of countries to help fulfil an ethical and practical purpose: to facilitate efficient and ethical embryo research. However, advances in embryology and biomedical research have led to suggestions that the 14-day rule is no longer adequate (Deglincerti et al, 2016; Shahbazi et al, 2016; Hurlbut et al, 2017). Therefore, should the 14-day rule be extended and, if so, where should we draw a new line for permissible embryo research? Here, we provide scientific, regulatory and ethical arguments that the 14-day rule should be extended to 28 days (or the developmental equivalent stage of a 28-day-old embryo).

2. Jessica Hamzelou, *Artificial womb helps premature lamb fetuses grow for 4 weeks*, New Scientist Apr '17 <https://www.newscientist.com/article/2128851-artificial-womb-helps-premature-lamb-fetuses-grow-for-4-weeks/>



## The range of options

3. Rabbi Asher Weiss, <https://en.tvunah.org/2013/12/29/triple-parent-ivf/>

יש להכריע דהאם שכמעט כל החומר הגנטי מעצמה ובשרה היא האם עפ"י ההלכה והולד מתייחס אחריה. ואף דיש מקום להתווכח ולומר דאם באנו לדמות מילתא למילתא, הרי בביטול ברוב אמרינן דדבר המעמיד לא בטל, ועוד דכל דנותן טעם איננו בטל, וכך יש לדון גם בני"ד... אך באמת עיקר חילי ממה דנראה בעיני ברור ופשוט דלא יתכן כלל מבחינת ההלכה שיהיו לאדם שתי אמהות כשם שא"א שיהיו לו שני אבות, ואי דהאי לאו דהאי...

One could conclude that the mother, from whom almost all of the genetic material comes from her flesh and bone, is the halachic mother, and the child is associated with her lineage.

And even though there is room to argue that if we would compare cases, then regarding *bitul b'rov* we say that a *davar hama'amid* is not *batel*, and that entities which affect taste are not *batel*, and so one could argue here.... But in truth, my main force comes from what seems clear and obvious in my eyes, that it is halachically impossible to have two mothers, just as one cannot have two fathers. If it is this one, it is not that one...

4. R' Dr. J. David Bleich, *In Vitro Fertilization: Questions of Maternal Identity and Conversion*, Tradition 25:4 (1991)

A talmudic discussion regarding a similar quandary in the area of agricultural law is cited by Professor Ze'ev Low, Emek Halakhah, II (Jerusalem, 5749), 165-169, as reflecting the principle to be employed in resolving the issue of maternal

identity. It is forbidden to consume newly harvested grain crops until the omer has been offered in the Temple on the second day of Passover. That offering renders permissible not only already harvested grain but also grain in the field that has taken root but which has, as yet, not fully matured. Any crop planted subsequent to the offering of the omer does not become permissible for use as food until the following Passover. The Gemara, Menachot 69b, posits a situation in which a stalk of grain is planted and has reached a stage of development equal to a third of its ultimate growth (i.e., the stage at which the produce has reached a state of maturity at which it is recognized, for halakhic purposes, as a grain product); having reached this stage of development, the stalk is removed from the ground before the omer is offered and replanted after the offering of the omer whereupon it continues to mature and ultimately reaches its normal state of growth. The question posed by the Gemara is whether the omer renders the entire plant permissible since the primary growth of the stalk occurred before the time of offering of the omer or whether, because of its enhanced growth subsequent to the offering of the omer, the produce may not be eaten...

A number of talmudic commentators make it clear that they regard the issue in each of these related cases, not as involving a question concerning the admixture of a small quantity of a forbidden foodstuff with a much larger quantity of a permitted foodstuff, as might perhaps be presumed, but as a question of determination of identity in cases in which there is continued growth and development.

#### 5. Rabbi Moshe Sternbuch, Teshuvot v'Hanhagot 5:318

ולענ"ד יש לצדד ולומר שכיון ששתי הנשים פועלות סוף כל סוף ליצירת הולד ולהתפתחותו, ואי אפשר לאחת מבלי רעותה, יש מקום לומר שלשתיהם דין אם ושלולד שתי אמהות, וכעין זה מצינו בתוס' בסוטה (מב ב) שישנה מציאות שלולד שני אבות.

In my humble opinion, one could contend that since the two women cause the formation and development of the child in the end, and one cannot have one without the other, there is room to say that both have the status of "mother" and the child has two mothers. Similarly, we find in Tosafot Sotah 42b that a child could have two fathers.

#### 6. R' Dr. J. David Bleich, *In Vitro Fertilization: Questions of Maternal Identity and Conversion*, Tradition 25:4 (1991)

R. Eliezer Waldenberg, *Ziz Eli'ezer*, XV, no. 45,5 has advanced the novel view that, in the eyes of Halakhah, a child born of in vitro fertilization has neither a father nor a mother even if the biological mother and the gestational mother are one and the same, as is the case in the majority of instances in which in vitro procedures are employed. Rabbi Waldenberg's arguments, which are not based upon cited precedents or analogy to other halakhic provisions, are three in number: 1) Fertilization in the course of an in vitro procedure occurs in an "unnatural" manner through the intermediacy of a "third power" extraneous to the father or mother, i.e., the petri dish....

To this writer, those arguments appear to be without substance. In response to the first argument it must be stated that the petri dish is not a "third power" and in no way contributes biologically or chemically to the fertilization process. It is simply a convenient receptacle designed to provide a hospitable environment in which fertilization may occur.

#### 7. Tzvi Reisman, **רחם מלאכותית**, Techumin 37

מכאן לכאורה נוכל להסיק שמכיוון שיש תחליף מלאכותי לאשה שברחמה התפתח וגדל הוולד, גם אם במציאות הוולד התפתח ברחם טבעי ולא באופן מלאכותי, אין זה קובע כלל לדיני יוחסין, שהרי ניתן לבצע את התהליך גם באמצעים מלאכותיים.

Apparently, we could conclude that since there is an artificial substitute for a woman in whose womb the fetus grows and develops, then even if in reality a child develops in a natural womb and not an artificial one, that has no effect on the laws of lineage, for one could have executed this process through artificial means as well.

#### Three Paths to Maternity

#### 8. Talmud, Niddah 31a

שלשה שותפין יש באדם: הקב"ה ואביו ואמו. אביו מזריע... אמו מזרעת אודם... והקב"ה נותן בו...

There are three partners in a person: Gd, his father and his mother...

#### 9. Rabbi Itamar Warhaftig, **קביעת אמהות**, Techumin V

בסברה נראה לי כי ההורה, ממנה נלקחה הביצית ראוייה יותר להחשב האם. הילד נוצר מתרכובת זרע האב וביצית האם והם המשפיעים על תכונותיו, ראה נדה לא... משמע בשעת הזריעה, ההריון. התפתחות הולד בבטן האם אינה אלא מקום גידולו, וכיום חלק מתהליך זה יכול להעשות במעבדה. גם אם נאמר כי תרומת האם המגדלת בבטנה עולה על זו של מעבדה, עדיין אין היא אלא בגדר תוספת לגרעין שכבר נוצר בהריון.

It appears logical to me that a parent from whom an egg is taken is more likely to be considered the mother. The child is born from a blend of the father's seed and the mother's egg, and they impact his traits – see Niddah 31a... It appears that this is from the time of insemination, of conception. The fetal development in the womb of the mother is only the place where it grows. Today, part of this process can be done in a laboratory. Even if we will say that the contribution of a mother developing it in her womb is better than that of a laboratory, still, it would only be adding to the seed which has been formed in conception.

10. R' Dr. J. David Bleich, *In Vitro Fertilization: Questions of Maternal Identity and Conversion*, Tradition 25:4 (1991) [I]t seems to this writer that the analogy to the provisions of agricultural law fails entirely with regard to in vitro fertilization if the statement of the Gemara, Yevamot 69b, categorizing an embryo within the first forty days of gestation as "mere water" is to be understood literally. If the fetus is entirely lacking in status and identity during this period it would stand to reason that no maternal relationship can be established during that period. It is only logical that an entity that has no identity cannot be the subject of a relationship, or better, it stands to reason that that which is "mere water" knows no mother. On the other hand, if, as many authorities maintain, categorization of an embryo in the early stages of development as "mere water" is limited in application and, for example, does not serve to prohibit destruction during that period, the analogy is quite apt.

11. Rabbi Uri Orlian, *R' Asher Weiss on Artificial Wombs & Artificial Meat*, Oct. '18  
<https://www.yutorah.org/lectures/lecture.cfm/912938>

12. Talmud, Sotah 43b

ילדה שסיבכה בזקינה, בטלה ילדה בזקינה ואין בה דין ערלה.  
If a young plant is grafted to an old plant, the young plant is *bateh* to the old plant, and it is not subject to *orlah*.

13. Rabbi Moshe Sternbuch, *Teshuvot v'Hanhagot* 2:689

מסברא נוכל לומר כיון שהעיבור ולידה היו אצל השני, והראשון לא פעל מאומה אלא אם כן יעשה השתלה אחר כך, והיינו שצריך עקירה, ודאי אזלינן בתר שני...  
Logically, we could say that since the pregnancy and birth happened with the second, the first did nothing without the subsequent implantation. It needed to be uprooted. And so definitely follow the second one...

14. Rabbi Ezra Bick, *Ovum Donations: A Rabbinic Conceptual Model of Maternity*, Tradition 28:1 (1993)

There is, however, no clear source in rabbinic literature which suggests that a woman has ova. Inasmuch as the rabbis certainly had a concept of motherhood, such a concept must be definable without reference to the ovum. This in and of itself might argue for birth as the sole determining factor for motherhood.

However, there is another conceptual model of parenthood, one based on the model of fertilization rather than donation and combination. This model perceives the role of father and mother as essentially parallel to what takes place in agriculture, where a seed is placed in a fertile environment.

15. Pamela Laufer-Ukeles, *GESTATION: WORK FOR HIRE OR THE ESSENCE OF MOTHERHOOD?*, Duke Journal of Gender Law and Policy, 9 (2002)

The majority opinion in Jewish law is that gestation is the defining characteristic of motherhood. Defining motherhood by that which is unique to mothers, as discussed by Rabbi Engel, and more explicitly by Rabbi Bick, is based on the Jewish law recognition of differences between men and women.

16. Talmud, Megilah 13a

"כי אין לה אב ואם, ובמות אביה ואמה" - למה לי? אמר רב אחא: עיברתה מת אביה, ילדתה מתה אמה.  
"For she had neither father nor mother, and when her father and mother died" – Why all of this [text]? Rav Acha said: Upon conception her father died, and upon birth her mother died,

17. Targum Yonatan to Bereishit 30:21

ושמיע מן קדם ד' צלותא דלאה ואיתחלפו עובריא במעיהון ונהו יהיב יוסף במעקה דרחל ודינא במעקה דלאה:

And Gd heard the prayers of Leah, and the fetuses were switched in their wombs, and Joseph was placed into the womb of Rachel, and Dinah into the womb of Leah.

18. Talmud, Yevamot 97b

שני אחים תאומים גרים וכן משוחררים לא חולצין ולא מייבמין ואין חייבין משום אשת אח היתה הורתן שלא בקדושה ולידתן בקדושה לא חולצין ולא מייבמין אבל חייבין משום אשת אח

If twin brothers convert or are freed from servitude, they do not perform chalitzah or yibum for each other, and one would not be liable for relations with his brother's wife.

If they were conceived before their mother became Jewish but they were born once their mother was Jewish, they do not perform chalitzah or yibum for each other, but one would be liable for relations with his brother's wife.

19. R' Dr. J. David Bleich, *In Vitro Fertilization: Questions of Maternal Identity and Conversion*, Tradition 25:4 (1991)

Although there is a minority view that regards the donor mother as the sole mother of a child born of in vitro fertilization, the consensus of rabbinic opinion is that a maternal-filial relationship is generated between the gestational mother and the child, despite the absence of any genetic relationship, by virtue of parturition alone. Whether or not the genetic mother, i.e., the woman who produced the ovum from which the child was conceived, is also a mother from the vantage point of Jewish law is a more complex question. The question of whether the baby may, in effect, have two halakhic mothers must be regarded as yet open.