Dear Dr Olsson,
We are grateful for all the reviewing work you have done. You will find the answers in italics for each point.

This paper presents a study of different rearing and hatching conditions for broiler chicks on chick health and performance parameters. The paper is generally well written, but better use of tables/diagrams would make it much easier to understand the experimental design. It is difficult to evaluate the validity of the experimental design in the present presentation.
Specific comments:
Materials and methods
The organisation of information in this section is confusing and the content is not coherent with the headings. I can't distinguish the heading levels in the pdf, but it looks like they are
1. Experimental design
2. Hatching and husbandry
2.1. Hatching conditions
2.2. Contact with hens
3. Behavioural observations

Experimental design is normally understood as the overall plan for how different treatments are applied to the test subjects, and which these treatments and test subjects are. However, under Experimental design in this paper, you are describing aspects of subjects and treatments that are is common to all animals independently of treatment groups. The differential treatments are instead described under Hatching and husbandry (a title that suggests it would be about general practice, not specifics about experimental treatments). To make things more confusing, the order that information is presented is not coherent with chronology, as what is described under Experimental design happen latter in the life of the test subjects than what is described under Hatching and husbandry. In addition to the detailed information on different aspects of the experimental approach that is now provided in narrative form, a table or diagram / timeline illustrating the experimental design would help the reader.
The experimental design included different hatching conditions, chick starting with or without hens, as well as variable rearing conditions (with or without antibiotic treatment) integrating a multifactorial challenge. These different parts have been included in the "Experimental design" section, and a figure (Figure 1) has been added to aid understanding.

Some of the key information is very difficult to extract from the text; for example there is reference to "four tagged chicks" but the information that four specific chicks per pen were tacked is not provided.
The four chicks analysed for behaviour observations were tagged at D0 (information added in the text).

In other places important details are missing, such as:

- Lines 127-128 "Sex was determined on tagged chickens on D19" – do you mean to say that the chickens were tagged on D19 and that sex was determined as part of the handling process when tagging them? The present wording doesn't make that clear.
  There was a mistake, sex was determined on all chickens on D19. This has been corrected.

- Lines 129-131 "On D27, chickens were challenged by combining transport in boxes to a new room at a lower temperature (15 °C instead of 25 °C) and 4 h of feed deprivation. " As in the previous comment, here it looks like you're providing relevant information in

passing, in a way that makes it ambiguous. For how long were the chicks kept in the lower temperature? For the 4h of feed deprivation?

Yes, the total period of transport, exposure to the lower temperature and feed deprivation was 4h. The sentence has been modified: "On D27, chickens were exposed for 4h transport in boxes to a new room at a lower temperature (15 °C instead of 25 °C) and feed deprivation. »

- Line 178 Need more information about what "a wire-latticed space for chicks" is. Is this a cage within the cage? Can the chicks get in and out of it? Does it keep the hen out?

  Free in-access feed and water were placed under wire-latticed space for chicks, not accessible for hens, and in raised troughs for hens, not accessible for chicks. Chicks could get in and out wire-latticed space as they pleased. These comments have been added in the text.

  Pictures have been added to illustrate the experimental system in Figure 2.

- What's the gauge? How many walls and what do they measure? *It is like a tepee, the size on the ground was 101 x 50 cm (indicated in the Figure 2 caption).*

- Line 185 "Chicks and hens were put physically together in a closed nest" please provide information on measures and material for the nest.

The nest was made of wire mesh (23 cm wide x 35 cm long x 40 cm high) covered with a tarpaulin and placed on shavings. It was present throughout the hens' stay. This information is indicated in the text and shown in Figure 2.

I also strongly recommend you change the title to "Animals, materials and methods".
The title has been changed

On lines 527 and onwards, the details on ethics approval are given in what seems to be the most appropriate place, so they can be removed from lines 114-119.
OK, it has been removed.

Results
Lines 273-274 What happened to the chicks from the pens where the hens were removed? Were they removed from the analysis? If so, that should be mentioned. If not, what is the justification for keeping them in the analysis?
The chicks were kept in the analysis as they were in contact with their hen during hatching and with the microbiota the hen deposited in the pen. The data acquired from these chickens made it possible to maintain a balance in the numbers per treatment for the statistical analyses.

Lines 327-336 This paragraph is very difficult to understand. In particular "when considering the subtotal scores linked to the appearance, the tiredness or the abdomens of the chicks it appeared that the subtotal of the appearance score changed depending on the treatment (Figure 4), with the two other subtotals not being significantly changed". Reword to something like "the subtotal score for appearance depended on treatment whereas the subtotal scores for tiredness and abdomens of the chicks remained unaffected by treatment".
The sentence has been changed as suggested: "However, the subtotal score of the appearance was impacted by treatment whereas the subtotal scores for tiredness and abdomens of the chicks were unaffected by treatment ($p > 0.05$, data not shown). Indeed, whereas the subtotal score for appearance was not different between CH chicks or OFH chicks, it was deteriorated by the presence of the hen

within the hatching pen in OFH + H compared to OFH chicks (p = 0.01) (Figure 4). The deterioration of chick quality with hens was due to the hen aggressiveness."

What is the reason for treating BW data as data points for the specific measurement dates, rather than considering growth/weight gain over time? And is the time point at which treatments start to differ the same for all treatments? It's difficult to decipher what the treatments really consist in (see my comment under Materials and methods above!) but from the description under Contact with hens, it looks like some of the treatments only start to differ at hatching. When this is the case, then the weight at D19 (and possible also later) may be dependent on weight at hatching in a way that is not related to the treatment since the treatment up until hatching was the same.
Body weight data have the advantage of giving raw data. All informations concerning zootechnical performances are available, weight gains have been added in the Table 3, and feed intake in the text in addition to body weights when it is informative, and are included in the FCR calculation which takes feed consumption into account.
The time when CH chicks were placed under heat lamps in pens was considered D0 as well as for the OFH chicks already in place. This was specified in the M&M.

Discussion
Line 432 "These degraded indicators" – please change to "The negative effect on these indicators"
This has been modified.

Lines 495-496 "It appeared that male OFH chicks developed more fear and 496 stress responses than females when placed in the presence of a hen that was not their mother" – on what data is this conclusion based?
This is a possible interpretation of our results; the sentence has been modified.

I miss a discussion of the limitations of the study and suggestions for further research.
A few points were added in the discussion of the study's limitations and possible perspectives.

Anna Olsson

Dear Dr Bédère,

We are very grateful for all the reviewing work you have done. You will find the answers in italics for each point.

Dear Dr Gondret,

Please, find bellow the review I made of the preprint entitled “On-farm hatching and contact with adult hen post hatch induce sex-dependent effects on performance and welfare in broiler chickens" (https://doi.org/10.1101/2023.05.17.541117).

Sincere
ly,
Nicolas
Bédère

Review:

My understanding of the article:

With the development of antibiotics resistance in some bacteria populations, it has been discouraged, if not forbidden, to use antibiotics as growth enhancers in livestock. The chicken sector is looking for preventive actions to promote robustness and performance of the birds without antibiotics supply. In addition, chicks are usually hatched in hatcheries and moved to farms thereafter. This has been documented to be stressful for them and to induce long-lasting metabolic change, affecting their performance. There is a lack of knowledge about alternative hatchery systems, that could also promote gut health and thus animals’ performance and robustness.

L. A. Guilloteau and her collaborators have investigated the effect of alternative farming practices, consisting in on-farm hatching and contact with an adult bird, on the performance of the chicks.

To do so, they conducted an experiment involving 700 fertilized eggs or day-old chicks distributed among 5 conditions: hatchery hatching, hatchery hatching with antibiotics, hatchery hatching with an adult hen, on-farm hatching, and on-farm hatching with an adult hen. There were about 18 individuals per treatment, each condition was repeated 8 times summing up to about 700 individuals. On day 27 (approximately half-way in the rearing period) the birds were challenged with a stress: they were transported in a box to a new room, with a lower temperature, and experience a 4h food deprivation. When they came back to their original pen, there were vaccinated against the Gumboro disease and the available space was twice as small as it was originally.

Body Weight was recorded for each chick at day 1, 19, 34, and 55. About 25 chicks for 3 out of the 5 experimental conditions were scored for quality. Dead birds were examined to identify the cause of death. Feed intake and gut parasite infestation were recorded for each pen. Parasite load and behavior (qualifying the global activity as well as interaction with the chicks) was recorded for each hen.

Diverse statistical analyses were performed according to the dependent variable.

The authors reported that despite a faster growth for the on-farm chicks

compare to the hatchery ones at the beginning of the experiment, the body weight was similar in the second half of the experiment. Both the presence of a hen and antibiotics treatment impaired growth. Feed intake was a little lower in the presence of an adult hen and no difference was find in terms of parasite load. The distribution of behaviors of the hens were similar with chicks from both hatching conditions, as well as the proximity between the chicks and the hen. The authors conclude that on-farm hatching is no different (if not better) than conventional hatching in hatchery.

Merits of the paper:

I think the research is interesting, investigating disruptive farming practices such as on farm hatching, and the presence of foster adults with the chicks. The experimental set up is complex (I will come back to this later) but appropriate to address the research questions. I think most of the information to repeat the study is described in sufficient details.

I think the results reported in the paper are a valuable contribution to a knowledge gap.

flaws of the paper:

- The experimental set up is complex. I ended up drawing a diagram and it helped me a lot to understand the paper. In the details bellow, I suggest removing some figures, this will give room to add a diagram explaining the experimental set up.

    A diagram explaining the experimental design has been added (Figure 1). Figures 2 and 3 were removed

- The introduction is explaining why there was an antibiotic challenge quite late, I would refer earlier to antibiotic resistance and the urge to change some farming practices from the beginning.

    The information about the global context of reducing the risks of antibiotic resistance and of developing alternative rearing practices to reduce the use of antibiotics was introduced at the beginning of the introduction. However, the focus of the study is on the evaluation of new rearing practices for chickens, particularly at hatching and starting period, and not on antibiotics.

- Concerning antibiotics, can you explain why the experimental set up did not include an on-farm hatching + antibiotics treatment?

- *The group of chickens hatched at the conventional hatchery and treated with antibiotics was added as an experimental control group of antibiotic growth promoter use, which is no longer used in farming. So there was no reason to test an OFH group with antibiotics.*

- The data made available for behaviour is already processed, I don't think it is very useful "dataset" as such.

We used the scan sampling method to record the behaviour of each hen. We present the mean percentage of scans for each behavioural category and hen, which is the most classical representation of these kind of data. We don't think that providing the raw data with the 177 scans per hen would be very informative for the readers. We think that the representation chosen is appropriate to describe the behaviour of hens. This representation

is also necessary to present the parameters used to compare the behaviours of CH and OFH hens.

- I don't understand the rationale behind the challenge, please explain it in the paper. Why did you do such a challenge, why don't you report a comparison of the performance before and after the challenge to relate to robustness? I know growth is a dynamic process, but there are way to tackle this difficulty and make the best use out of the experimental design.

The challenge used included various stress factors that chickens may encounter during rearing. We are aware that it is not completely realistic with the rearing conditions, we are in an experimental situation, but the choice of these factors and especially the combination had for objective to challenge the chickens by suboptimal environmental conditions at the same time as a vaccination without inducing pathology or mortality. These arguments have been added to the text.

As far as performance measurement is concerned, it is conditioned by the feed change phases, which provide data in reference to known performance data. We don't have body weight and weight gain data just before and after the challenge, only at the time of the feed change. The challenge is part of the rearing conditions, but not the central event of the experiment. However, the timing of the challenge was chosen to coincide with the growth phase, during which environmental disturbances can affect chicken health and performance.

Concerns:

I don't have major concerns about the research, I think that important improvements in writing or presenting it are needed.

Suggestions for general improvement:

- It is not always clear to me when you compare all treatments with each-other and when you take some of them only (e.g. L224, or figure 2, 3 and 4). Particularly, I have the feeling that CH refer to different data subsets throughout the paper.

L224, Figures 3& 4: Hatchability and chick quality scores were determined on D0, i.e. when hatched CH chicks were taken out of the hatchery before placement. At the same time, hatched OFH chicks were already in pens in contact or not with hens. So, at that time, there were 3 groups, the CH chicks were not yet with the hens and had not consumed antibiotics.

Figures 2: The behaviour of the chicks in contact with the hens concerned only the CH and OFH groups of chicks with hens.

Otherwise, all groups (5) were compared with each other.

- I was confused about the ordering of the result section: the first results reported are the behaviour of the hens, which seems (to me) to be an additional question in the study that focuses on chick performance. Therefore, I recommend some structural changes: starting with the hatchability and chick quality (L307...), secondly with the growth(L344...), thirdly with the health (L402…), forth and lastly with the behaviour (L272…).

From a chronological point of view, it seems more logical to us to describe the behaviour of the hens and chicks at the beginning of the results and then to give the results on the performance and health parameters. The presence of the hens with

the chicks interacted with the hatching conditions and the sex of the chicks on the performance, this is the originality of this study and the results obtained.

Suggestions for details improvement:

TITLE

L2: I don't think the paper is about welfare, please remove it from the title. The paper, however, is about antibiotics, and this is not mentioned. I think this point is deeper than just the title, I would tune down interpretations about welfare and tell more about the challenge and the antibiotics.

As already mentioned above, the focus of the study is on the evaluation of alternative rearing practices for chickens, particularly at hatching and starting period, and not on antibiotics. The challenge is part of the rearing conditions, but not the central event of the experiment.

We understand that the term welfare is not ideal, so we changed it to health and robustness, even though the presence of hens has had an impact on the chick welfare.

ABSTRACT

L25-28: why did you do such a challenge? What are you aiming for in terms of animal response? Why don't you report it?

We added a few details about the nature of the challenges to test the chicken robustness.

L28: you could change "performance" to "growth" to be more specific

We did not just measure growth but a whole range of parameters that define chicken performance (body weight, weight gain, FCR, muscle yield), so the term performance is more appropriate.

L28: you could change "robustness" to "survival" to be more

specific

The objective was not to test the chicken survival but only to expose chickens to suboptimal environmental conditions at the same time as a vaccination without inducing pathology or mortality. The term "survival" is not appropriate.

L34: I did not understand this sentence, which other groups than OFH are you referring to, CH ? So there is one other group only ?

No, all groups (5) were compared with each other.

L38 an 40: I would avoid the use of "eventually" to give a clear message.

OK

L42-43: what do you mean with this sentence "In conclusion, the OFH system was a hatching system at least equivalent to the CH system, <u>if not better</u> in this study." ? Be specific please.

OK, we removed "if not better"

L45-46: how did you conclude that “The health status and brooding behaviour of the hens are essential to ensure the health and welfare of the chicks” based on you results ? I did not see any variation in the health status of the hens reported in the paper, so how can you estimate its effect and conclude about it ? I have the same question about brooding, the eggs were not in a nest, and the hen did not have any access to the eggs nor to the resting place of the chicks (except for the night with the adoption protocol) so can you explain how they had the opportunity to show brooding behaviour?

The health status of the hens was controlled to ensure that no pathogens were transmitted to the chicks. However, the presence of hens, categorised according to their behaviour, revealed deleterious effects on hatching rate, the appearance quality score and hatching mortality. So, the health status and behaviour (in general, not only brooding) of the hens towards chicks are essential to ensure the health and welfare of the chicks. This information was added in the text.

INTRODUCTION

L60: You could be more specific than the broad terms “development, performance, and welfare” ?

We refer to the publication of a meta-analysis on effects of post-hatch food and water deprivation on development performance and welfare of chickens (de Jong et al, 2017).

L64: are there more stressors than the ones already mentioned? If so, cite them please.

No there are no others.

L75-81, there is a lot of information, some of it (e.g. fear) is already mentionned L59, and some information does not seems to be crucial (age of the parents’).

In the paragraph, the data refer to the comparison between CH and OFH hatching systems. The impact on fear responses mentioned in L59 concerned CH chicks only. We added to the first sentence to make it clearer "OFH chickens being more fearful and less active than CH chickens (Giersberg et al., 2020). The age of the parents can have a significant impact on chick quality and performance, which is why we have mentioned this study.

L89-93: these few lines are quite wordy. Can you explain facts, what is already known, where is the knowledge gap concerning gut health and microbiota?

These lines have been withdrawn.

M&M

L114-119, please remove this paragraph. It is about ethics (already stated in the ethic section L528), and about giving credit to the experimental unit (already stated in the acknowledgments L548).

Yes, it has been removed.

L130-132: as already mention, you need to explain why such a challenge was applied: including a rationale in the introduction, explaining how you analyzed it in the methods, and presenting the results of the challenge. I assume every individual is it’s own control because every chicks were challenged? This implies methods about longitudinal data or prediction of an unperturbed performance.

It seems more appropriate to talk about suboptimal conditions, common to all groups, rather than challenge. The aim was to reproduce suboptimal rearing conditions without causing pathology or mortality. It was not to specifically study the effect of these suboptimal conditions. It has been explained in Introduction and M&M.

L141, about the comparison between OFH and CH: among the things that differ between the two treatment there is the lighting regime, the temperature (and eventually the humidity). Can you comment on that in the discussion since you give those details in the M&M?

This point was taken up in the discussion

L163: the laying hens are 31 weeks, this should be around their laying peak period. Is there any relationship between laying and brooding like in other birds when one comes after the other? Would that explain the relative aggressiveness of the hens toward the chicks, meaning it could be the wrong time for them to adopt chicks? Can you comment on that?

We agree, this may be an explanation for the lack of maternal behaviour. As mentioned line 182, the hens were slighty deprived of feed and water before the noctural procedure of maternal induction. Feed and water deprivation is an empirical way used to stop laying and induce brooding in hens (Richard-Yris MA, Leboucher G (1987) or Richard-Yris, M. A., Leboucher, G., Chadwick, A., & Garnier, D. H. (1987): Induction of maternal behavior in incubating and non-incubating hens: Influence of hormones. Physiology & behavior, 40(2), 193-199)). Our period of deprivation was perhaps too short to favor the induction of maternal behavior. And, as mentioned in the discussion section, the season was also not the more appropriate.

L191: why were the hens removed?

It is mentioned just above that they were only present during the critical starting period of chicks, which is 2 weeks for certified chickens.

L222 and 224: it is not always clear to me if CH always refer to the same thing (the CH treatment, which is different from CH+AB and CH+H) or if it sometimes refers to all of CH chicks. Can you please make sure that CH abbreviation stands for one thing only, and that it is clear for the reader?

All abbreviations were defined L124-126 and used advisedly in the text.
It is the same for OFH and OFH + H

L226: Do you think the type of funding and name of the project of the chick quality grid is a valuable information? I would remove “CASDAR QUALICOUV project” and keep only intelligible information, for any reader, in the M&M. If necessary, you can mention this project in the funding or acknowledgment section.

The Tona grid is scientifically recognized for assessing chick quality scores. The name of the Qualicouv project is not of major interest, since the parameters are mentioned in the article by Guinebretière et al, 2022. This information was removed.

L240-241: Can you cite which disorders and the causes of death please?

The disorders and causes of death are detailed in the results.

L251: I found the statistical analysis section a little blurry, I don't think a reader can repeat the same analysis using the text. It is always difficult for me with a plain text, would you try to write it in formula syntax please?

The model of the 2-way ANOVA was indicated as follow in the text:
The statistical model used was then: $Y_{ij} = \mu + a_i + b_j + ab_{ij} + e_{ij}$ where Y_{ij} is the dependent variable, μ the overall mean, a_i the hatching condition (CH, CH + AB, CH + H, OFH, OFH + H), b_j the sex effect, ab_{ij} the two-by-two interaction and e_{ij} the residual error term.

L253: I think it could be valuable to use a GLM instead of a Kruskal-Wallis test. That would enable to test the effect of the treatment, while taking the experimental design into consideration as fixed effect (e.g. pen). Using a Poisson distribution, you would take into account the fact that the variable is discrete and is a score.

A non-parametric test is classically used for this type of measurement (scores). Chicks hatched in conventional hatchery were not dependent because the measurement was made before they were placed in the pens. This is why we tested the treatment effect without including the pen effect in the model.

L255: you don't need to mention you checked the distribution of the residuals, checking the initial conditions of statistical analyses should be a common practice. In addition, this comes before the model, thus it is confusing.

OK, we removed these informations.

L260-261: I think there is a typo with the P-value threshold, it should be 0.05<P<0.10, isn't it?

Yes, of course

L263: same remark for behaviour than for chick quality variables: are you sure you can't use parametric models? In addition, the data for behaviour is preprocessed, thus it is hard to have an opinion about alternative statistical approaches.

For the behavioural data, the pen (the group) was the statistical unit because the observations were conducted on groups and not on individuals (the data were dependent). We thus have a sample size of N=6 for CH hens and chicks and N=7 for OFH hens and chicks for all the data. This is too small sample size to use parametric statistics. In addition, our data did not meet the assumptions of normally or homogeneity of variances required for parametric tests. The non-parametric tests chosen are based on ranks and are particularly appropriate for non-normal data and small sample sizes.

RESULTS

L287: Is table 1 really needed?

Our aim was to provide a description of the behaviour of hens. We think the table 1 provides a synthetic representation of the behavioural data.

L288-294: I think this paragraph should be in the M&M section, L295 only is a

result.

OK, this paragraph has been moved in the M&M section.

L304: Is Figure 2 really needed?
+ Part of the legend is actually some M&M elements, the legend is not so clear. Why not simply say "Mean number of chicks in the hen's zone according to the hatching condition (CH…. OFH….)"? That comment about legends or title could be applied to other tables and figures.

The Figure 2 has been removed and replaced by the indication of data in the text.

L313: so there were significantly more eggs in the pen next to the pen with one of the 3 aggressive hens? Is it really significant?
These are observations, and the numbers are too small for statistical analysis.

L322: Is figure 3 needed ?
OK, data are detailed in the text, this figure has been removed.

L328-333: please split the ideas in different and short sentences.
The sentence has been reformulated: "However, the subtotal score of the appearance was impacted by treatment whereas the subtotal scores for tiredness and abdomens of the chicks were unaffected by treatment ($p > 0.05$, data not shown). Indeed, whereas the subtotal score for appearance was not different between CH chicks or OFH chicks, it was deteriorated by the presence of the hen within the hatching pen in OFH + H compared to OFH chicks ($p = 0.01$) (Figure 4). »

L335 & Figure 4: I don't understand this results, I am very puzzled about this. What was compared : all CH against OFH and OFH+H? What about the CH+H then?
Chick quality scores were determined on D0, i.e. when hatched CH chicks were taken out of the hatchery before placement. At the same time, hatched OFH chicks were already in pens in contact or not with hens. So, at that time, there were 3 groups, the CH chicks were not yet with the hens.

L336: so is this due to the hens' aggressiveness or not

specifically?

The deterioration of chick quality with hens was due to the hen aggressiveness

indeed.

L363-366: please split the ideas in different and short

sentences.

OK

Figure 5&6: I think the diagram is not appropriate. If you want to refer to growth, which is a dynamic process, I recommend drawing growth curves instead of these different barplots. This would enable to check the effect of the challenge on growth. This would also enable to understand if CH chicks have a compensatory growth. This phenomenon is documented, yet not discussed in your paper. Could you please add few words about compensatory growth in your discussion?

Drawing the growth curves doesn't make it possible to clearly see the differences between the groups, even if this is indeed a dynamic process. Moreover, we don't have body weight data just before and after the challenge, which makes it difficult to see any compensatory growth. Body weight data have the advantage of giving raw data. To complement the growth data, we have added weight gain data by period in Table 3.

DISCUSSION

L423 please keep a constant vocabulary, what is a "OFH-certified JA757" chick in your experiment?

This is to remind that the study was on certified broiler chickens, which is indicated in M&M, and not fast-growing broilers.

L429: is this a reminder of OFH compared with CH, or is this compared with other studies?

This is our data. It has been indicated.

L432: can you write differently, in simple syntax "These degraded indicators could be since in our experimental design, very few hens expressed a clear maternal behaviour towards the chicks (n = 2/16), and some even showed agonistic behaviour" please?

The sentence has been reformulated: "The negative effect on these indicators could be linked to the very few hens expressing a clear maternal behaviour towards the chicks (n = 2/16); some of them even showed agonistic behaviour."

L436: Is that so? I think this is a very strong statement… Is really one of the breeding goals of the breeders to reduce brooding? If so how do they record it to select against it in their selection index? If it's not intended, do you have evidence that selection for laying resulted in an indirect genetic selection against brooding (that's related to my comment about L163 in the M&M)? If you do have evidence please cite them and report the genetic correlations. If it is speculative, I would strongly recommend removing this statement because it would be flawed or to tune it down while explaining the rationale that makes you think there is an indirect selection against brooding. This is possible, if the breeders don't check, they don't know.

This is rather a speculation, we removed "and counter-selected"

L483: This is where I would mention that CH chick may have display a compensatory growth response induced by the starvation between the hatchery and the farm.

This point has been added to the discussion: "This may reflect late compensatory growth in CH chickens that have feed deprivation after hatching. Indeed, weight gain

between CH and OFH chickens was no longer different from D19 for females, and from D34 for males."

L497-498: do you have evidence that the fact they are not their mother is the cause? Or is it a question?

To our knowledge, there are no publications to answer this question.

L515: indeed you did not set the unchallenged condition: why is that? Please explain your rationale.

As mentioned before, the objective was to expose all chickens to suboptimal conditions.

L520: I would remove the "if not better"

OK