

# Human embryos and the like

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## VALORIZATION

Maastricht University encourages reflection upon the scientific and societal impact of a doctoral thesis in a separate paragraph. In the following section, I will therefore consider how my research has and can continue to contribute to the scientific community and to society in general. I reflect in particular upon how the results of this thesis are useful to the different stakeholders, and I describe how they have been and will continue be disseminated among professionals and laypeople.

### **Advancing societal and scientific debate**

Research with human embryo-like structures is a rapidly emerging field of research for which there are high-stakes and very few leading guidelines. On the one hand, there is anticipation that these models can provide valuable tools to complement and perhaps even replace the use of human embryos in fundamental and clinical research. The unprecedented scalability and adaptability these models provide makes them especially useful, as it enables scientists to create and modify them as necessary for specific research aims, while simultaneously bypassing many of the practical and legal limitations associated with the use of human embryos for equivalent purposes. On the other, there is uncertainty about how these developments will be received by society in general, and about whether human embryo models indeed provide a morally unproblematic way of conducting research into early human development in particular. These uncertainties are further invigorated by the fact that traditional approaches to policymaking in associated fields of research (e.g., time-based constraints) cannot address the particular challenges human embryo models raise, and thus that blinded extension of embryo protective regulations may risk damping important scientific avenues of research for little more than a false sense of political security.

These issues are understandably prompting a great deal of societal and scientific debate. Considering that this thesis inquired whether and under what conditions research with human embryo-like structures can be ethically acceptable, the findings it produced can thus be useful to a series of stakeholders. First, to biomedical researchers. From my talks with scientists directly involved in the development of human embryo models, I learned that most are genuinely concerned about the ethical justification of their work and especially welcoming of further normative clarity. The insights of this thesis with regard to the moral issues that particular human embryo models may raise provides first aid to researchers struggling with the ethics of their work until concrete regulations can be established. They also provide a roadmap for ethicists and policymakers involved in the development of sustainable normative frameworks for research with human embryo models by highlighting certain key issues in need of further ethical scrutiny. In fact, the issues flagged as requiring further ethical inquiry in the first article I co-authored have already been picked up at a national and international level by the experts involved

in the **Third Evaluation of the Dutch Embryo Act** (2021), and those involved in the **Updated Guidelines of the ISSCR** (2021). More recently, they also came to the attention of the institutional bodies responsible for human embryo research regulation in the Netherlands and the United Kingdom. Both of these jurisdictions are now considering if and how legislation for research with human embryos should be adapted to account for human embryo models that might become indistinguishable from them, and the work laid out in this thesis can help inform these discussions. I was therefore invited to join an expert consultation on the topic by the Dutch **Ministry of Public Health, Wellbeing and Sport** (VWS), and the British **Human Fertilisation and Embryology Authority** (HFEA). Follow-up meetings will take place soon. In the Netherlands, the results of this thesis will also be of direct relevance to the researchers involved in the **Pluripotent Stem cell for Inherited Diseases and Embryo Research** (PSIDER), a multidisciplinary research program with several consortia on research with embryo models created from induced pluripotent stem cells. Insights pertaining to the Argument from Potential, for instance, will be of direct relevance to the future post-doc research I look forward to undertake within the HipGametes consortium of PSIDER. Lastly, even though human embryo-like models are still far from clinical practice, and even further from quotidian life, the findings described in this thesis are also relevant to laypeople. The fact that these models exist challenges previous conceptions of human life, and prompts fundamental questions about moral values and moral meaning. These questions become especially pressing when these models are conceived to be used for certain purposes, like commercial and reproductive ones, or in combination with other (traditionally controversial) biotechnologies, such as gene-editing and artificial womb technologies.

### **Research outreach activities**

The results of this thesis were disseminated through academic and non-academic channels in an effort to get the word out to as many different stakeholders as possible. Dissemination through academic channels consisted of publications in international peer-reviewed journals and presentations at international scientific conferences. At the time of writing, three of the articles I co-authored have been published (in **Human Reproduction Update** (2020), **RBMO** (2021), **Humanities and Social Sciences Communications** (2022)), one has been resubmitted to the **Journal of Bioethical Inquiry** (2022), and one has been submitted to **Medicine, Health Care and Philosophy** (2022). Aside from the regular yet informal presentations I held at MERLN throughout the years, I also presented the findings leading up to the aforementioned articles at formal scientific events, such as the virtual **TERMIS** and **Reproductive Ethics** conferences, as well as the virtual **ISSCR** and **ESHRE** annual meetings. I was invited to join as a speaker at the virtual annual conference of the **Progress Educational Trust** (2021), the online **RBMO** live webinar of the same journal and of the International IVF Initiative (2021), the first live **PSIDER** event (2022), and the **ESHRE Campus** symposium entitled “New Approaches for Understanding Early

Human Development” held in October 2022.

Considering that research with human embryo-like structures might be societally sensitive, I also undertook outreach activities to raise awareness about the topic outside the scientific community. The most significant ones to mention are of course the focus group and individual interviews I held in the context of my PhD research. To the best of my knowledge, these interviews were the first to probe the topic empirically and to provide experimental data on public perspectives toward research with human embryo-like structures, which we have made accessible to fellow researchers in an effort to promote further analysis. Other activities included giving an invited talk at the 24th edition of the Dutch philosophical **Talkshow De Idee** (2019), which is also available as a podcast, writing columns about my research findings for **RegMed XB** (2020), and contributing to a piece on the topic by the Dutch **New Scientist** (2022). In my most recent attempt to further increase public outreach, I also inquired at **NEMOKennislink** whether it would be of interest to write on the topic, which was well received and is ongoing.