In Danger of Science Fiction(s): When (Science) Communication of Human Cerebral Organoids needs Philosophy Communication

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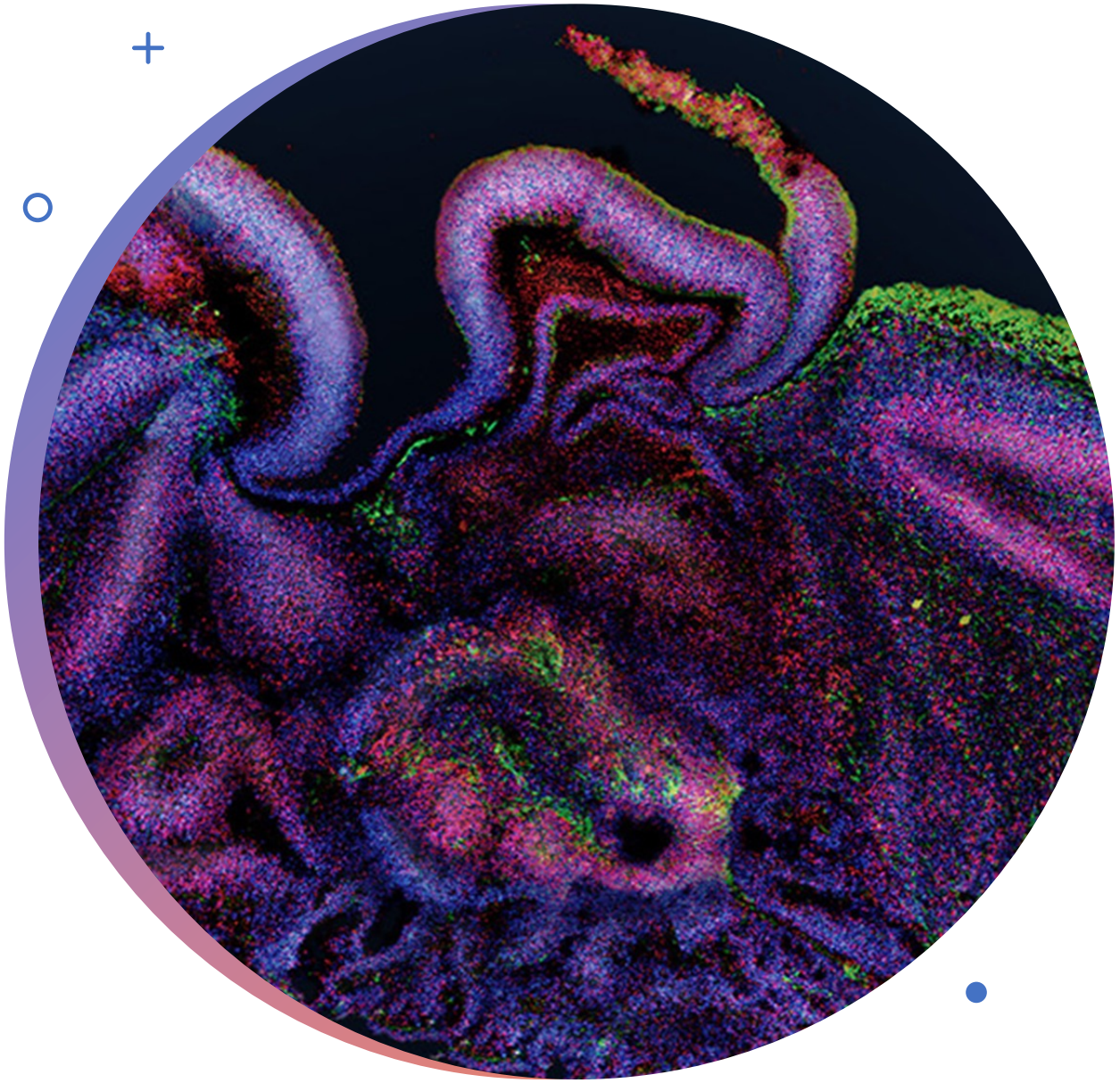
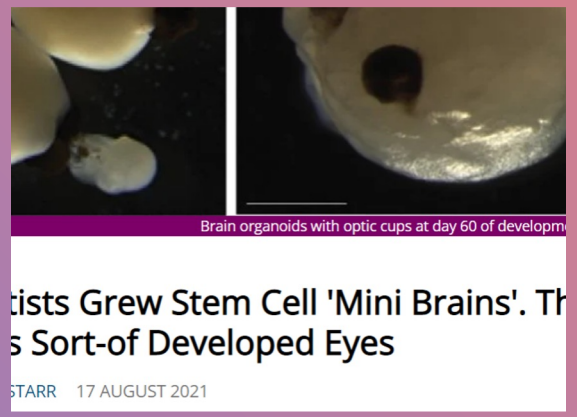
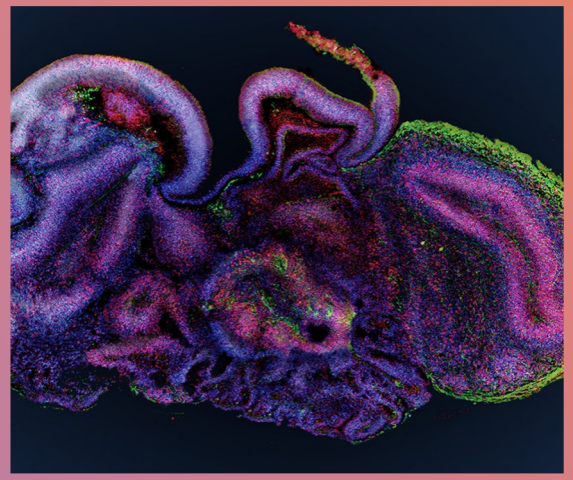
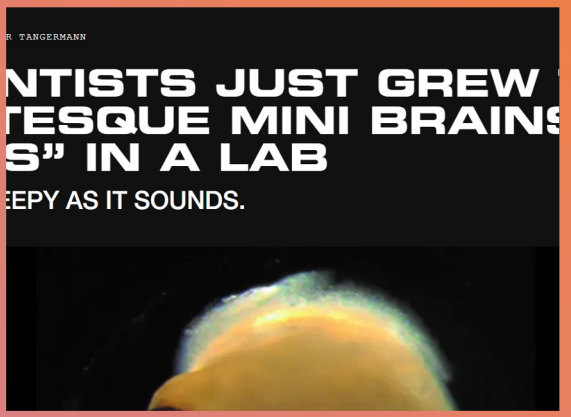


HCOs – from the bench to the newsfeeds…

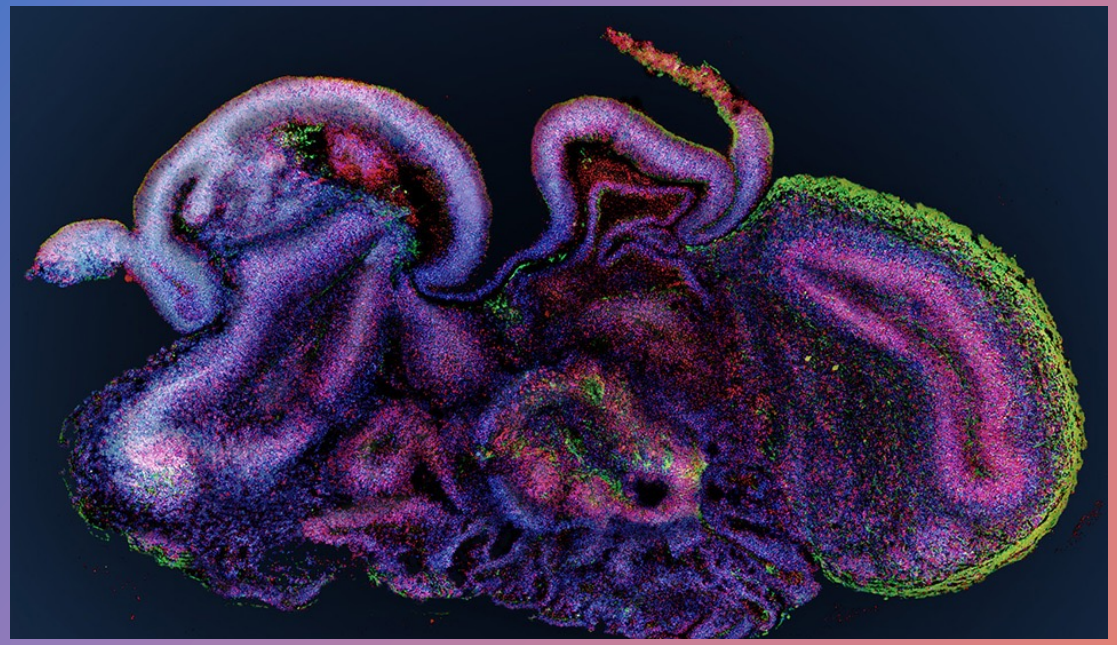
- Human cerebral organoids in biomedicine - recent examples:
- -developmental biology (cortical development)
- -neurooncology
- Cerebral/ neuronal stress response
- …

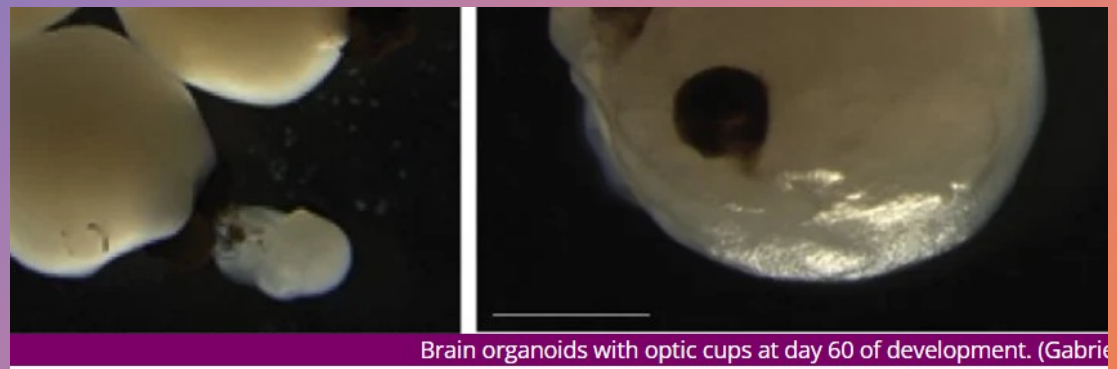






HCOs – making the news…





Brain organoids with optic cups at day 60 of development. (Gabri

UMANS

cientists Grew Stem Cell 'Mini Brains'. Then,
rains Sort-of Developed Eyes

ICHELLE STARR 17 AUGUST 2021

1. HCOs – making the news…

- -> HCOs as a case in point for science communication:
- What is meant by “mini brains”?
- What is meant by “eyes”?
- Communication of nature, limits and possibilities of HCOs required

The Project of Science Communication (SC)

Science Communication: “any organised action aiming to communicate scientific knowledge, methodology, processes of practices in settings where non-[experts] are part of the audience.” (Medvecky and Leach, 2019)

-> but why engage in science communication in the first place?

-> taking a look at Science Communication and Neuroethics …

Science Communication & the field of Neuroethics

Neuroethics

three perspectives on neuroethics that track the implications of cognitive neuroscience research, neuro-technology, and brain-based clinical practice (neurology, neurosurgery and neuropsychology): the “knowledge-driven,” the “technology-driven,” the “healthcare-driven” perspectives.”

Additionally: The socio-political role of neuroethics:

1) “clarify and resolve conflicts

2) orient the public with regards to the moral status of neurotechnology,

3) reconcile the public with the reasonable neurotechnological changes (for the public benefit […][and]

4) probe the limits of practical social and neurotechnological possibilities.”(Dubljević et al., 2022)

The socio-political role of neuroethics and the project of science communication (I)

In order to fulfill its socio-political role, neuroethics must engage in science communication:

neuroethics can help us

(1) identify and possibly help resolve conflicts between competing views on the nature of human cerebral organoids,

(2) orient the public with regards to the moral status Human cerebral organoids

(3) reconcile the public with the reasonable neurotechnological/neuromedical changes (for the public benefit) that may – realistically – stem from research on human cerebral organoids or already be in use, and …

(4) probe the limits of practical possibilities stemming from HCO research, i.e. probe what are realistic possibilities in HCO research at the moment but also in the foreseeable future

The socio-political role of neuroethics and the project of science communication (II)

->Probing the current and potential limitations and possibilities of HCO research: requires scientific knowledge for reasonable assessments.

->Orientation and reconciliation of the public towards beneficial neuroscientific innovations: requires ability to communicate expertise and its implications

->Fulfilling its first task, to help identify and resolve conflicts: presupposes engagement with publics about their views and attitudes towards HCOs.

But: What are we and ought we be communicating? (I) –

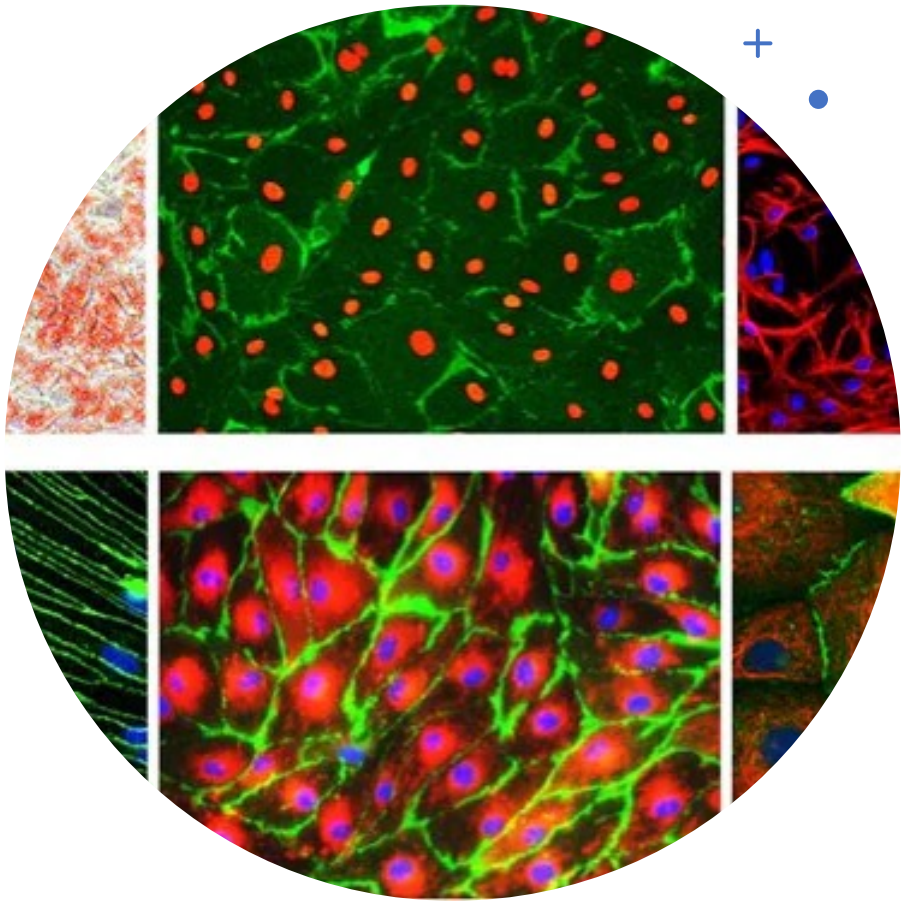
- “The Science”: communication of neuroscientific and biomedical knowledge, methods and practices.

- But also: purposes, nature and most of all, limits and possibilities of the scientific model: may draw on scientific expertise and practice as concrete examples, but essentially: questions in *philosophy of science.*

(II)What are we and ought we be communicating?

- Essential areas to communicate: controversy around HCOs also stems from their potential for consciousness, cognition, sentience, perception, etc. :

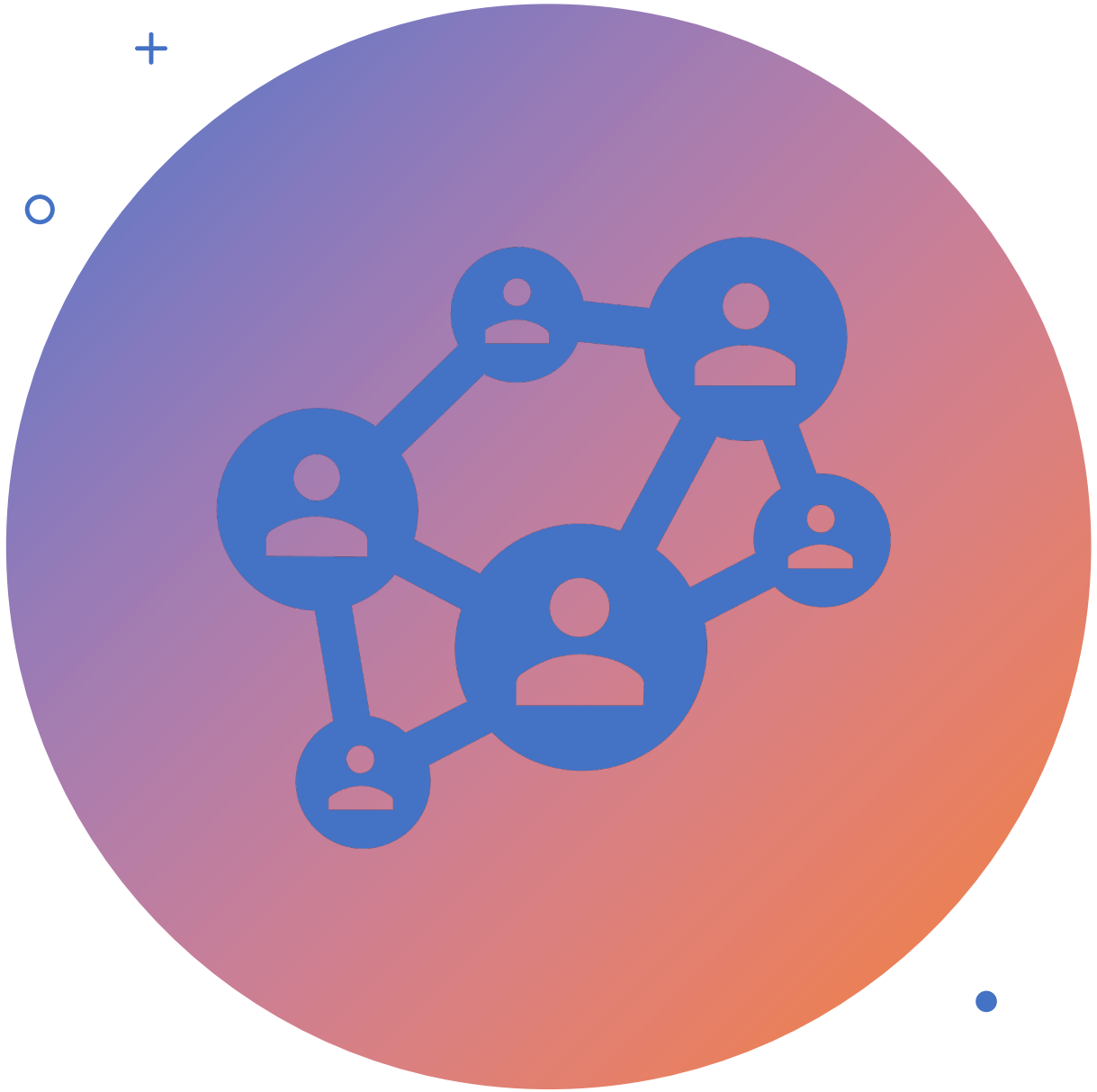
-> Areas of cognitive science and philososphy of mind



(III) What are we and ought we be communicating? – Neuroethics Research

- the fourth role of neuroethics deals with the potential benefits from neurotechnological advances -> typical subject of neuroethical scholarship

->neuroethics research offers perspectives beyond biomedical and scientific ones -> ought to be included in SC



Conclusion: From SC to Research Communication

- widening the concept of science communication to include fields such as philosophy
- SC as an enterprise not limited to the natural sciences, but a form of "research communication" rather than "science communication"
- if research communication aims to provide engagement about societally relevant information about HCOs – but also in general - it should not be limited to research from areas in neuroscience and philosophy,
- -> umbrella term for a project that drawing on many disciplines and fields, e.g. legal, literary, linguistic and historical and many more humanities and sciences.

Thank you!

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