I. Introduction
The relevance of ELSI-research for the life sciences

Aim of ELSI/ethics-research: contribute to responsible innovation

At the interface of Stem Cell-research, regenerative & reproductive(?) medicine: embryo-like structures (ELS)

What about the ethics of human ELS?

Questions:

Conceptual

&

Normative

A detour via the traditional Human Embryo Research (HER) debate (NB ‘instrumental’/‘non-therapeutic’ research)
II. Human Embryo Research (HER): the traditional debate

Central (but often disregarded): the concept of the embryo

Necessary and sufficient conditions/defining characteristics?

- Fertilization (F; cf Spanish law) – different versions
  * Dolly/SCNT →

- Potentiality (P) – different versions

P1: ‘Commencing’ development

Dutch & Belgian Act on Embryos → the non-viable embryo is a contradictio in terminis

P2: ‘Potential to develop into a human being’:

The status of the (preimplantation) embryo

3 different views → do E deserve protection ‘in their own right’?

- a person right from the start → HER is deeply problematic
- just a cluster of cells → HER is morally indifferent
- (dominant) though not a person, E is special - in view of its potential (but why?) → conditional justification of HER

The potentiality argument: variants

Active vs passive potentiality, or the potential to become vs the potential to produce (Buckle)

Reductio ad absurdum: active potentiality of gametes ...?

the prerequisite of identity/ontological individuality

Implications for the status of the preimplantation embryo: just symbolic value?
HER: the traditional debate (cont.)

Conditions for HER

**Procedural**
- informed consent & central ethics review

**Material (balancing)**
- proportionality: only if the aim of HER is important
- subsidiarity: only if there are no alternatives – ELS?
- max. 14 days: contested; implications for ELS?
- some countries (incl. the Neth.): just spare embryos, no ‘research embryos’: implications for ELS?

III. The dynamics of ELS

ELS include:

**Blastoids:** mESC & mTSC → resemble blastocysts, show features of implantation (in mice)

**Gastruloids:** mESC → show post-implantation development in vitro, incl. primitive streak

**ETX-embryos:** mESC & mTSC & extra-embryonic endoderm → show implantation and brief development (in mice)

...? etc.

Dynamics of ELS (cont.)

Aim and expectations: a better/perfect replica of the (‘natural’) embryo →
- research in embryology, toxicology, fertility, etc.

The very same features that make ELS scientifically interesting also give rise to normative (ethical & regulatory) questions.

* analogy: research with great apes vs human subjects

IV. Ethics of (human) ELS

Pro-active normative reflection: distinguish both

1. Research & 2. (maybe ...) Reproduction

A. Conceptual &

B. Normative issues
IV.1.A. Conceptual issues

1. Are ELS embryos?
   - if F is a necessary condition: no. But problematic.
   - if P is a sufficient condition: it depends. E.g.
     - P1 probably yes, but P2? Treat as if ...?
     - P2 could be knocked-out → ‘down-grading’
     NB scrutiny of active potentiality

2. Would the making of human research ELS involve non-reproductive human cloning?
   - definition and types of cloning, incl. embryo cloning
   - analogy: ‘therapeutic’/non-reproductive cloning (SCNT)

IV.1.B. Normative issues incl.

- if (some types of) ELS are embryos (→ if the AoE applies)
  - subsidiarity; jumping to ‘categorial’ conclusions (reg. all ELS); no donor oocytes needed
  - in a.o. Belgium, ‘research embryos’ are not prohibited → neither should ELS – but:
    - the 14-day rule: some ELS have primitive streak-like features right from the start ...

- if (some types of) ELS are not embryos (→ if the AoE does not apply): they may still have some moral standing:
  - sentience (cf brain organoids);
  - other features relevant for symbolic value?

Is some regulation still needed?
IV.2. human ELS for reproduction?

Preliminary questions:
- is such reproductive use realistic or science fiction?
- would this serve a legitimate reproductive aim, need, or interest? If so, how/which one?

A. Conceptual Issues
- wouldn’t this involve reproductive human cloning?
- other?

B. Normative Issues

If this would/could involve reproductive human (adult or embryo) cloning, the ethics of such cloning is back on the agenda: what about possible moral objections?
- deontological: dignity; unnaturalness; other?
- consequentialist:
  - health risks for children thus conceived?
  - Brave New World (a ‘mixed’ objection)
  - other?