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Scientific refutation of ESHG statement on embryo selection

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TO THE EDITOR:

Recently the European Society of Human Genetics (ESHG) published a Viewpoint article entitled *The use of polygenic risk scores in pre-implantation genetic testing: an unproven, unethical practice* [1].

It is important to clarify the scientific status of embryo selection using polygenic scores. The ESHG fails to cite many of the most important recent papers on this topic. Their statement therefore misrepresents the current scientific consensus and potential utility of this new technology.

It is a well-established result, replicated many times in the research literature, that polygenic scores can identify which of two siblings is at higher risk for a disease condition [2–7] (https://twitter.com/ShaiCarmi/status/1487694576458481664, https://twitter.com/hsu_steve/status/1487771721155452928), and that selection between them may confer disease risk reduction comparable to that of embryo selection for monogenic disease.

IVF embryos are potential siblings. Therefore the inference that polygenic scores can reduce health risks by embryo selection among those potential siblings is based on established scientific results.

The main benefit of PGT-P is identifying risk outliers – individuals with unusually high disease risk. These outliers can be detected among sibling IVF embryos using polygenic scores, with particularly beneficial risk reduction for families with a history of specific disease conditions.

Embryo screening for chromosome structure (e.g., Trisomy 21) or Mendelian risk variants with only partial penetrance (e.g., BRCA) has long been common practice, and called ethically justified by the ASRM ethics committee. Roughly 50% of US IVF embryos undergo some form of genetic screening today.

It would be morally wrong to hinder IVF families access to new technology that improves the chances for their children to have healthy lives.

We invite the authors of [1] to an open scientific discussion of the merits of embryo selection.

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ADDITIONAL INFORMATION

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