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Edited by Catherine Racowsky , Jacques Cohen , Nicholas Macklon
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Manual of Embryo Selection in Human Assisted Reproduction

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Preface

Most of us remember the first time we witnessed an embryo being selected for transfer, whether this was as a trainee embryologist or as a clinician visiting the mysterious IVF laboratory. Watching the careful selection of an embryo over others for a chance of life can border on the astounding.

Yet, just as doctors are expected to bring a professional objective detachment to the care of their patients, so are embryologists to the care of the gametes and embryos in their charge. And they do this many times, every day, all around the world.

However, to succeed as an embryologist requires more than an ability to bring a forensic approach to decision-making. It requires exquisite hand–eye coordination and, among other attributes, a "feel" for what indicates is a viable embryo. That is why, even when specific criteria can be applied to assess quality, embryologists often have difficulty in describing how they use these. Identifying the best embryo has been described as recognizing a handwritten signature. You know whose it is, but you can't explain why.

Embryology and embryo selection have both evolved over the years. Although training as a clinical embryologist typically takes years of acquired knowledge, even then embryologists may not "know what they really know." While numerous studies have demonstrated reassuring correlations between the main scoring systems they employ and treatment outcomes, a number of developments in our field have put this approach under increasing pressure.

The most significant of these pressures has been the drive to reduce multiple pregnancies arising from IVF treatment. Agreement that the aim of treatment should no longer be a positive pregnancy test but a healthy singleton baby was an important milestone indicating the maturity of the discipline of IVF. However, this imposed a heavy and complex burden on embryologists. Reducing this most important risk of treatment while at the same time continuing the expected increase in success rates has without doubt brought to the forefront the continued central importance of embryo selection.

Embryology has responded to these challenges in a myriad of ways. Over the past 10 years, the speed and breadth of innovation in the field of embryo selection has been at times breathtaking. As with all rapid journeys, there have been notable bumps on the road and indeed the occasional wrong turn. As IVF waves to its second generation of children, the technologies that will lead us into the third generation are beginning to appear as valid and safe.

We hope that this manual will provide both embryologists and clinicians a clear and informative overview of the tools now available to assist in embryo selection, as well as evidence for their efficacy and safety and the broader considerations that must underlie these important clinical decisions.

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