Atlas of Vitrified Blastocysts in Human Assisted Reproduction
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CONTENTS

Preface ix
List of abbreviations x

Introduction 1

Part A Open Vitrification Method 13
Case 1 Hypogonadotropic hypogonadism: not pregnant 14
Case 2 Male factor infertility: missed abortion (no heart activity) 16
Case 3 Endometriosis, PCO: live birth, healthy boy 18
Case 4 Male factor infertility: live birth, healthy twins (monochorionic diamniotic) 20
Case 5 Male factor infertility: live birth, healthy twins (dichorionic diamniotic) 22
Case 6 PCO: live birth, boy with cerebral edema 24
Case 7 Male factor infertility (translocation carrier): live birth, healthy girl 26
Case 8 Male factor infertility: live birth. Major malformation (cardiac anomaly, child death at age 5 months) 28
Case 9 Male factor infertility: live birth, healthy dichorionic, diamniotic twins (2 girls) 30
Case 10 PCO, male factor infertility: pregnant, intrauterine fetal death due to trisomy 21 32
Case 11 Endometriosis: not pregnant 34
Case 12 Tubal infertility: ectopic pregnancy 36
Case 13 Tubal infertility: dichorionic-diamniotic twin pregnancy, live birth, 1 healthy girl, 1 girl with atresia of duodenum 38
Case 14 Male factor infertility: live birth, healthy girl 40
Case 15 Male factor infertility: live birth, healthy boy 42
Case 16 PCO: live birth, healthy boy 44
Case 17 Male factor infertility: termination of pregnancy due to trisomy 21 46
Case 18  Male factor infertility: live birth, healthy girl  48
Case 19  Male factor infertility (HIV): not pregnant  50
Case 20  Endometriosis, tubal infertility: live birth, healthy boy  52
Case 21  Tubal infertility: live birth, healthy boy  54
Case 22  Male factor infertility: live birth, healthy boy  56
Case 23  Male factor infertility: not pregnant  58
Case 24  Male factor infertility, PCO: live birth, boy with Goldenhar syndrome  60
Case 25  Male factor infertility: live birth, healthy boy  62
Case 26  Male factor infertility: biochemical pregnancy  64
Case 27  Endometriosis, tubal infertility: live birth, healthy boy  66
Case 28  Endometriosis: ectopic pregnancy  68
Case 29  Unexplained infertility: live birth, healthy boy  70
Case 30  Male factor infertility: live birth, healthy girl  72
Case 31  Male factor infertility: biochemical pregnancy  74
Case 32  Male factor infertility, pregnant, missed abortion (no heart activity)  76
Case 33  Male factor infertility: missed abortion (no heart activity)  78
Case 34  Male factor infertility: live birth, healthy boy  80
Case 35  Male factor infertility: not pregnant  82
Case 36  PCO, male factor infertility: live birth, dichorionic diamniotic twins, one girl with minor malformation (ventricular septum defect)  84
Case 37  Male factor infertility: live birth, healthy dichorionic diamniotic twins (boy and girl)  86
Case 38  HIV, male factor infertility: not pregnant  88
Case 39  PCO, male factor infertility: biochemical pregnancy  90
Case 40  Male factor infertility: live birth, healthy boy  92
Case 41  Endometriosis, male factor infertility: live birth, healthy boy  94
Case 42  Endometriosis: live birth, healthy boy  96
Case 43  Male factor infertility: missed abortion (no heart activity)  98
Case 44  Male factor infertility: missed abortion (positive heart activity)  100
Case 45  Male factor infertility: missed abortion (positive heart activity)  102
Case 46  Endometriosis, tubal infertility: live birth, healthy girl  104
Case 47  Male factor infertility: biochemical pregnancy  106
Case 48  Male factor infertility, PCO: live birth, healthy boy 108
Case 49  Tubal infertility, recurrent abortion: ectopic pregnancy 110
Case 50  PCO, male factor infertility: biochemical pregnancy 112
Case 51  PCO: live birth, healthy boy 114
Case 52  Male factor infertility: live birth, healthy boy 116
Case 53  Male factor infertility: not pregnant 118
Case 54  Unexplained infertility: biochemical pregnancy 120
Case 55  Male factor infertility: live birth, healthy boy 122
Case 56  Male factor infertility: live birth, healthy boy 124
Case 57  Male factor infertility: live birth, healthy girl 126
Case 58  Male factor infertility: live birth, healthy girl 128
Case 59  Male factor infertility: not pregnant 130
Case 60  Male factor infertility: live birth, healthy girl 132
Case 61  Tubal infertility: live birth, healthy girl 134
Case 62  Tubal infertility: pregnant, missed abortion
(no heart activity) 136
Case 63  Male factor infertility: live birth, healthy girl 138
Case 64  Male factor infertility: live birth, healthy boy 140
Case 65  Male factor infertility: missed abortions (2 positive heart
activities) 142
Case 66  Tubal infertility, male factor infertility: missed abortion
(positive heart activity) 144
Case 67  Male factor infertility: live birth, healthy girl 146
Case 68  Endometriosis: live birth, healthy boy 148
Case 69  Male factor infertility, hypothalamic pituitary failure: live birth,
healthy girl 150
Case 70  Endometriosis: live birth, healthy girl 152

Part B  Closed Vitrification Method 155
Case 71  Male factor infertility: live birth, 2 healthy twin boys 156
Case 72  Male factor infertility: clinical pregnancy, abortion gestation
week 7 158
Case 73  PCOS: live birth, healthy boy 162
Case 74  Endometriosis, male factor infertility: not pregnant 164
Case 75  PCOS, male factor infertility: live birth twins (2 healthy boys) 166
Case 76  PCOS: stillbirth after premature birth and loss of amniotic fluid in
gestation week 24 168
Case 77  PCOS, male factor infertility: not pregnant/early pregnancy loss gestation week 8 after one positive heart activity  170
Case 78  Male factor infertility: live birth, healthy boy  174
Case 79  Unexplained infertility: biochemical pregnancy  176
Case 80  Azospermia after seminoma and chemotherapy: live birth, healthy boy  178
Case 81  Tubal factor: not pregnant  180
Case 82  PCOS, male factor infertility: live birth, healthy boy  184
Case 83  Endometriosis: live birth, healthy girl  186
Case 84  Male factor infertility: not pregnant  188
Case 85  Endometriosis: live birth, healthy girl  190
Case 86  Tubal factor: after detection of 2 embryos with positive heart activity live birth of one healthy girl  194
Case 87  Tubal factor: biochemical pregnancy  198
Case 88  PCOS, male factor infertility: live birth, healthy boy  200
Case 89  Tubal factor: live birth, healthy girl  202
Case 90  Amenorrhea, tubal factor: not pregnant  204
Case 91  Ovarectomy right, cervical anomaly: live birth, healthy boy  206
Case 92  Endometriosis, male factor infertility: live birth, healthy girl  208
Case 93  PCOS, male factor infertility: live birth, healthy girl  210
Case 94  PCOS, OAT: live birth, healthy boy after 2 positive heart activities  212
Case 95  Tubal factor, endometriosis: live birth of a healthy twin pair (one girl and one boy)  216
Case 96  PCOS: live birth, healthy girl  218
Case 97  Male factor, endometriosis: live birth, healthy girl  220
Case 98  Endometriosis, uterine polyps, male factor infertility: live birth, healthy twin pair (one girl and one boy)  222
Case 99  Tubal factor, uterus anomaly, male factor infertility: triplet pregnancy, loss of one embryo after positive heart activity, birth of monozygotic twins gestation week 36 (healthy girls)  224
Case 100  Male factor infertility, recurrent pregnancy loss: live birth, healthy girl  228

Index  231
In Assisted Reproduction Technologies we live in times when pictures have already started moving. Time-lapse imaging has taken over control of non-invasive embryo selection. However, the quality and the success of the previous *Atlas on Oocytes, Zygotes and Embryos in Reproductive Medicine* (edited by M. Van den Bergh, T. Ebner and K. Elder) emphasize the value of static images in the field of IVF.

It is especially in cryopreservation that it is almost impossible to create proper video sequences since during the cooling and warming steps several cryopreservation media have to be used, thus requiring numerous transfers of the embryos from one drop to another. In addition to this technical limitation, the different concentrations of cryoprotectants used change media viscosity which will lead to floating of the embryos not allowing for proper focusing. As a matter of fact, in these cases serial images may provide for a better view of morphological changes during cryopreservation and subsequent embryo viability.

Since slow freezing has virtually been replaced by vitrification this Atlas is exclusively focused on the latter technique representing the state of the art in cryopreservation. Embryologists performing vitrification may be divided into two groups: those who allow direct contact between the embryos and liquid nitrogen, thus optimizing cooling and warming rates, and advocates of the closed system, who hermetically seal the embryos before vitrifying them, which avoids theoretical contamination due to impure nitrogen.

The book in hand is the first to cope with both vitrification strategies – the open and the closed one. This dichotomy is also reflected by the contents of the Atlas. The open system is covered by the Kinderwunsch Zentrum Linz, Austria, and the cases of the closed system stem from the team of the IVF Centers Prof. Zech in Bregenz, Austria. Regardless of the mode of vitrification chosen it was decided to include at least three images per case, one before vitrification, one immediately after warming, and one prior to transfer. This not only illustrates morphological changes of the embryos but also documents their survival.

Treatment outcome up to birth in combination with the clinical data provided makes this Atlas unique. It should provide valuable insight into daily practical procedures such as controlled ovarian hyperstimulation, embryo culture and selection, and vitrification as performed by two experienced and successful IVF teams.

We are confident that this collection will provide a helpful learning and reference tool, not only for students and trainees but also for experienced clinical embryologists and clinicians.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMH</td>
<td>anti-Müllerian hormone</td>
</tr>
<tr>
<td>AW</td>
<td>after warming</td>
</tr>
<tr>
<td>BMI</td>
<td>body mass index</td>
</tr>
<tr>
<td>BT</td>
<td>blastocyst transfer</td>
</tr>
<tr>
<td>BV</td>
<td>before vitrification</td>
</tr>
<tr>
<td>COC</td>
<td>cumulus–oocyte complex</td>
</tr>
<tr>
<td>ET</td>
<td>embryo transfer</td>
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<tr>
<td>FSH</td>
<td>follicle stimulating hormone</td>
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<tr>
<td>HMG</td>
<td>human menopausal gonadotropin</td>
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<tr>
<td>ICM</td>
<td>inner cell mass</td>
</tr>
<tr>
<td>ICSI</td>
<td>intracytoplasmic sperm injection</td>
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<tr>
<td>IUI</td>
<td>intrauterine insemination</td>
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<tr>
<td>IVF</td>
<td>in vitro fertilization</td>
</tr>
<tr>
<td>LH</td>
<td>luteinizing hormone</td>
</tr>
<tr>
<td>MH</td>
<td>menstrual history</td>
</tr>
<tr>
<td>NAD</td>
<td>no abnormality detected</td>
</tr>
<tr>
<td>OHSS</td>
<td>ovarian hyperstimulation syndrome</td>
</tr>
<tr>
<td>PCO</td>
<td>polycystic ovaries/polycystic ovarian syndrome</td>
</tr>
<tr>
<td>PVS</td>
<td>perivitelline space</td>
</tr>
<tr>
<td>TE</td>
<td>trophectoderm</td>
</tr>
<tr>
<td>TESE</td>
<td>testicular sperm extraction</td>
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<td>zona pellucida</td>
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