

<b>Introduction</b> .....	1
1. Microspore embryogenesis.....	3
2. Methods for microspore embryogenesis.....	4
3. Main factors involved in microspore embryogenesis.....	5
Donor plants.....	5
Developmental stage of the microspore.....	7
Stress treatment.....	7
Medium and culture conditions.....	8
Conversion to plantlets.....	9
Chromosome duplication.....	10
4. Other methods for DH production.....	11
Other androgenic methods.....	11
Gynogenesis.....	12
Wide hybridization.....	12
Irradiated pollen.....	13
Centromere-mediated chromosome elimination.....	13
5. Applications of DHs and DH technology.....	14
DHs in plant breeding.....	14
DHs as an assisting tool for plant breeding.....	15
Microspore embryogenesis as a research platform.....	16
6. The basis of microspore embryogenesis.....	17
Role of stress in embryogenic induction.....	18
Role of calcium in microspore embryogenesis.....	19
Structural markers related to embryogenic induction.....	21
Tissue patterning and embryo development.....	22
7. Limitations of microspore embryogenesis.....	23
<b>Objectives</b> .....	25
<b>First block</b> .....	29

<b>Chapter 1:</b> Development and characterization of an eggplant ( <i>Solanum melongena</i> ) doubled haploid population and a doubled haploid line with high androgenic response.....	33
<b>Chapter 2:</b> Evaluation of the <i>in vitro</i> performance of microspores from DH36, a highly embryogenic eggplant doubled haploid line.....	61
<b>Chapter 3:</b> Improved regeneration of eggplant doubled haploids from microspore-derived calli through organogenesis.....	87
<b>Second block</b> .....	103
<b>Chapter 4:</b> Dynamics of calcium during <i>in vivo</i> microspore development and <i>in vitro</i> microspore embryogenesis in <i>Brassica napus</i> .....	109
<b>Chapter 5:</b> Callose deposition in the cell wall and subintinal layer during induction of microspore embryogenesis are independent processes, differently modulated by calcium and variable among genotypes .....	141
<b>General discussion</b> .....	181
<b>Conclusions</b> .....	191
<b>References</b> .....	195