

# Contents

Foreword	Chairman of BATAN & Director-General of NM	v
Preface		ix
<i>Aziz Nather</i>		
List of Contributors		xvii
<b>Part I</b>	<b>TERMINAL STERILIZATION OF TISSUE GRAFTS</b>	<b>1</b>
Chapter 1	Types of Terminal Sterilization of Tissue Grafts <i>Aziz Nather, Jocelyn L. L. Chew and Zameer Aziz</i>	3
Chapter 2	Need for Radiation Sterilization of Tissue Grafts <i>Norimah Yusof and Nazly Hilmy</i>	11
<b>Part II</b>	<b>TISSUE BANKING</b>	<b>23</b>
Chapter 3	Tissue Banking in the Asia-Pacific Region — Past, Present, and Future <i>Aziz Nather, Kamarul Ariffin Khalid and Eileen Sim</i>	25
Chapter 4	Ethical, Religious, Legal, and Cultural Issues in Tissue Banking <i>Aziz Nather, Ahmad Hafiz Zulkifly and Eileen Sim</i>	55
Chapter 5	Setting Up a Tissue Bank <i>Aziz Nather and Chris C. W. Lee</i>	67
Chapter 6	A Comprehensive Training System for Tissue Bank Operators — 10 Years of Experience <i>Aziz Nather, S. H. Neo and Chris C. W. Lee</i>	83

<b>Part III</b>	<b>BASIC SCIENCE OF RADIATION</b>	<b>97</b>
Chapter 7	Interaction of Radiation with Tissues <i>Norimah Yusof</i>	99
Chapter 8	Types of Radiation and Irradiation Facilities for Sterilization of Tissue Grafts <i>Norimah Yusof, Noriah Mod Ali and Nazly Hilmy</i>	109
Chapter 9	Radiation Killing Effects on Bacteria and Fungi <i>Norimah Yusof</i>	121
Chapter 10	New Emerging Infectious Diseases Caused by Viruses and Prions, and How Radiation Can Overcome Them <i>Nazly Hilmy and Paramita Pandansari</i>	133
Chapter 11	Effects of Gamma Irradiation on the Biomechanics of Bone <i>Aziz Nather, Ahmad Hafiz Zulkifty and Shu-Hui Neo</i>	147
Chapter 12	Physical and Mechanical Properties of Radiation-Sterilized Amnion <i>Norimah Yusof and Nazly Hilmy</i>	155
<b>Part IV</b>	<b>PROCESSING AND QUALITY CONTROL</b>	<b>169</b>
Chapter 13	Dosimetry and Requirements for Process Qualification <i>Noriah Mod Ali</i>	171
Chapter 14	Validation of Radiation Dose Distribution in Boxes for Frozen and Nonfrozen Tissue Grafts <i>Norimah Yusof</i>	187
Chapter 15	Importance of Microbiological Analysis in Tissue Banking <i>Norimah Yusof and Asnah Hassan</i>	201
Chapter 16	Validation for Processing and Irradiation of Freeze-Dried Bone Grafts <i>Nazly Hilmy, Basril Abbas and Febrida Anas</i>	219

Chapter 17	Validation for Processing and Irradiation of Amnion Grafts <i>Nazly Hilmy, Basril Abbas and Febrida Anas</i>	237
Chapter 18	Validating Pasteurization Cycle Time for Femoral Head <i>Norimah Yusof and Selamat S. Nadir</i>	249
Chapter 19	Radiation Sterilization Dose Establishment for Tissue Grafts — Dose Setting and Dose Validation <i>Norimah Yusof</i>	259
Chapter 20	Quality System in Radiation Sterilization of Tissue Grafts <i>Nazly Hilmy</i>	275
<b>Part V</b>	<b>CLINICAL APPLICATIONS OF IRRADIATED BONE GRAFTS</b>	<b>303</b>
Chapter 21	Clinical Applications of Gamma-Irradiated Deep-Frozen and Lyophilized Bone Allografts — The NUH Tissue Bank Experience <i>Aziz Nather, Kamarul Ariffin Khalid and Zameer Aziz</i>	305
Chapter 22	Use of Freeze-Dried Irradiated Bones in Orthopedic Surgery <i>Ferdiansyah</i>	317
<b>Part VI</b>	<b>CLINICAL APPLICATIONS OF IRRADIATED AMNION GRAFTS</b>	<b>327</b>
Chapter 23	The Use of Irradiated Amnion Grafts in Wound Healing <i>Menkher Manjas, Petrus Tarusaraya and Nazly Hilmy</i>	329
Chapter 24	Amnion for Treatment of Burns <i>Hasim Mohamad</i>	343

Chapter 25	Use of Freeze-Dried Irradiated Amnion in Ophthalmologic Practices	355
	<i>Nazly Hilmy, Paramita Pandansari, Getry Sukmawati Ibrahim, S. Indira, S. Bambang, Radiah Sunarti and Susi Heryati</i>	
Chapter 26	Clinical Applications of Irradiated Amnion Grafts: Use of Amnion in Plastic Surgery	365
	<i>Ahmad Sukari Halim, Aik-Ming Leow, Aravazhi Ananda Dorai and Wan Azman Wan Sulaiman</i>	
<b>APPENDICES</b>		<b>381</b>
Appendix 1	Asia Pacific Association of Surgical Tissue Banks (APASTB) Standards for Tissue Banking	383
	<i>Aziz Nather, Norimah Yusof, Nazly Hilmy, Yong-Koo Kang, Astrid L. Gajiwala, Lyn Ireland, Shekhar Kumta and Chang-Joon Yim</i>	
Appendix 2	International Atomic Energy Agency (IAEA) Code of Practice for the Radiation Sterilization of Tissue Allografts: Requirements for Validation and Routine Control (2004)	443
Appendix 3	The IAEA Program on Radiation and Tissue Banking — Public Awareness Strategies for Tissue Banks (2002)	501
Index		545