

# AVAILABLE NOW!

RELEASE DATE: JUNE 11, 2022

## PLASTIC AND AESTHETIC REGENERATIVE SURGERY AND FAT GRAFTING: **CLINICAL APPLICATION AND OPERATIVE TECHNIQUES**



**AMIN KALAAJI, MD, PHD**  
OSLO, NORWAY  
*Editor in Chief*

- **2** VOLUMES
- **117** CHAPTERS
- AROUND **2,000** PAGES
- **1,625** EDUCATIONAL FIGURES
- **131** VIDEO CLIPS
- **242** AUTHORS, **72** OF THEM FEMALE COLLEAGUES
- FROM MORE THAN **31** COUNTRIES, **81** CITIES AND **5** CONTINENTS

### Plastic and Aesthetic Regenerative Surgery and Fat Grafting

Clinical Application and Operative Techniques

Amin Kalaaji  
*Editor*

MOREMEDIA

Springer

### WHAT TO EXPECT:

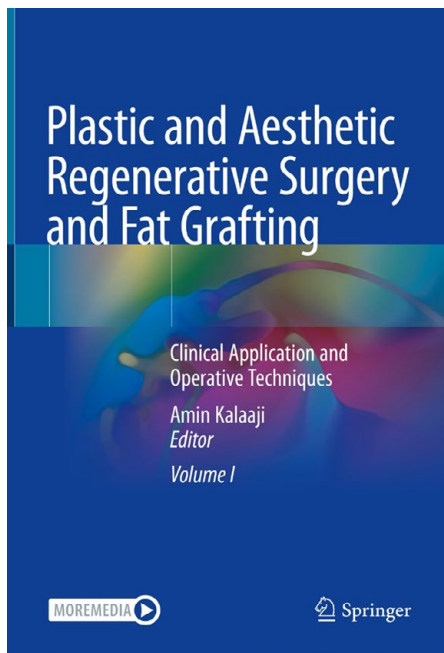
- Comprehensively addresses surgical methods for all parts of the body
- Focuses on clinical techniques and practical applications
- Shares the knowledge and expertise of the most experienced surgeons in the world in their field
- Provides an essential toolbox for both beginners and experienced surgeons

Lifelong 40% discount for authors

**TO BUY THE BOOK: PRESS HERE!**

Contact: [ami.kal@online.no](mailto:ami.kal@online.no)





2022. LVII, 1714 p. 1625 illus., 1581 illus. in color. With online files/update. In 2 volumes, not available separately.

### Printed book

Hardcover  
€ 279,99 | £ 249,99 | \$ 349,99  
€ (D) 299,59 | € (A) 307,99 |  
CHF 330.50

### eBook

€ 234,33 | £ 199,50 | \$ 269.00  
€ (D) 234,33 | € (A) 234,33 |  
CHF 264.00

Available from your library or  
[link.springer.com](http://link.springer.com)

### MyCopy <sup>[1]</sup>

Printed eBook for just  
€ | \$ 39.99  
[springernature.com/mycopy](http://springernature.com/mycopy)



**Special offer / Get 20% off the printed book or eBook!**

Enter the following coupon code at checkout on  
[link.springer.com](http://link.springer.com) to apply discount.

**UnRGKAtD7R1S36 / Valid Jun 11, 2022 – Jul 9, 2022**

A. Kalaaji

# Plastic and Aesthetic Regenerative Surgery and Fat Grafting

## Clinical Application and Operative Techniques

- **Comprehensively addresses surgical methods for all parts of the body**
- **Focuses on clinical techniques and practical application**
- **Shares the knowledge and expertise of the most experienced surgeons in the world in their field**

Readers will discover the relatively new and rapidly growing field of regenerative surgery and fat grafting, valuable for numerous plastic surgery, reconstructive, and aesthetic/cosmetic essentials. Though many books have covered specific areas or topics in regenerative surgery, the market lacks a work that tackles the full spectrum of regenerative surgery and its clinical application. This book responds to that need and presents chapters written by the best: world-renowned surgeons in their field. After an introduction that reflects basic research, most of the book focuses on clinical experience as it relates to applied techniques of processing fat and on the different uses from head to toe. Readers will learn about the history of regenerative surgery, important definitions and background information, and the evidence supporting the use of regenerative surgery. Practitioners will also find valuable guidance regarding the application of stem cells, evaluation of patient needs, and operative techniques for fat transfer. Subsequent chapters address topics such as graft types, the skin, wound healing, scar treatment, osteoarthritis, burns, scleroderma, hair rejuvenation, facial enhancement combined with facelift, chin augmentation with fat, and breast augmentation or reconstruction with fat. Particular attention is paid to gluteal augmentation with fat, body contouring, genital male and female rejuvenation, [...]

**Order online at [link.springer.com](http://link.springer.com)** (Same day processing for Web Shop orders) / or for the Americas call (toll free) 1-800-SPRINGER (777-4643) 24 hours a day, 7 days a week. / or email us at: [customerservice@springernature.com](mailto:customerservice@springernature.com). / for outside the Americas call +49 (0) 6221-345-0 / or email us at: [customerservice@springernature.com](mailto:customerservice@springernature.com)

£ and € are net prices, subject to local VAT. The €(D) / €(A) are gross prices and include German / Austrian VAT. CHF: recommended retail price including VAT. Americas: Tax will be added where applicable. Canadian residents, please add PST, QST and GST.

Standard shipping is free of charge for orders from the website. Express shipping costs are calculated according to the weight, how and where it is shipped. Ordering via phone, email or post, you will be charged shipping, whether shipping Standard or Express. [1] No discount for MyCopy

**TO BUY THE BOOK: PRESS HERE!**

Lifelong 40% discount for authors



Part of **SPRINGER NATURE**

# FACULTY

## OF THE BOOK RELEASE EVENT AT JUNE 11 2022

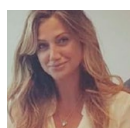
### IN ALPHABETICAL ORDER



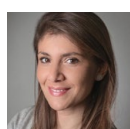
**MARWAN ABOUD**  
Belgium



**NICOLAS ABOUD**  
Belgium



**ANNARITA AGOVINO**  
Italy



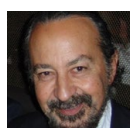
**AURORA ALMADORI**  
UK



**BRADLEY CALOBRACE**  
USA



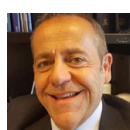
**GIANLUCA CAMPIGLIO**  
Italy



**MARIO PELLE CERAVOLO**  
Italy



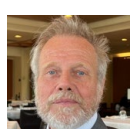
**NAZIM CERKES**  
Turkey



**VALERIO CERVELLI**  
Italy



**FABIAN CORTINAS**  
Argentina



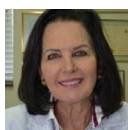
**GIOVANNI DAL PRA**  
Italy



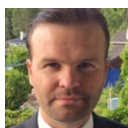
**ALFRED FITOUSSI**  
France



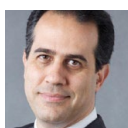
**PIETRO GENTILE**  
Italy



**RUTH GRAF**  
Brazil



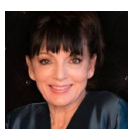
**GUDJON GUNNARSSON**  
Norway



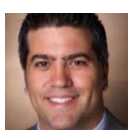
**MOUSTAPHA HAMD**  
Belgium



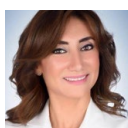
**DANIELA HELLER**  
Springer Nature Project  
Manager



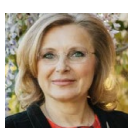
**IZOLDA HEYDENRYCH**  
South Africa



**KYE HIGDON**  
USA



**KARIMA ISMAIL**  
Egypt



**DANA JIANU**  
Romania



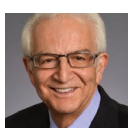
**AMIN KALAAJI, MD, PHD**  
Norway



**KIM SIEA LEE**  
Malaysia



**ALI MOJALLAL**  
France



**FOAD NAHAI**  
USA



**AHMED NORELDIN**  
Egypt



**NORA NUGENT**  
UK



**NORBERT PALLUA**  
Germany



**GERGELY PATAKI**  
Hungary



**FABIO SANTANELLI**  
Italy



**NELSON PICCOLO**  
Brazil



**ELIAS SAWAYA**  
France



**VIACHESLAV  
SERGEEVICH VASILYEV**  
Russia



**LINA TRIANA**  
Colombia



**BJØRN TVEDT**  
Norway



**JORIS A. VAN DONGEN**  
The Netherlands



**GIUSEPPE VISCONTI**  
Italy



**FABIANA ZANATA**  
Brazil



**MICHELE ZOCCHI**  
Italy

# ABOUT THE BOOK

- **Comprehensively addresses surgical methods for all parts of the body**
- **Focuses on clinical techniques and practical application**
- **Shares the knowledge and expertise of the most experienced surgeons in the world in their field**
- **Provides an essential toolbox for beginners and experienced surgeons alike**

We ended up with 2 volumes textbook of around 2000 pages, 117 chapters, 1625 educational figures, and 131 video clips proudly submitted by 242 authors (of these, 72 are female colleagues) from more than 31 countries, 81 cities, and 5 continents.

Readers will discover the relatively new and rapidly growing field of regenerative surgery and fat grafting, valuable for numerous plastic surgery, reconstructive, and aesthetic/cosmetic essentials. Though many books have covered specific areas or topics in regenerative surgery, the market lacks a work that tackles the full spectrum of regenerative surgery and its clinical application. This book responds to that need and presents chapters written by the best: world-renowned surgeons in their field.

After an introduction that reflects basic research, most of the book focuses on clinical experience as it relates to applied techniques of processing fat and on the different uses from head to toe. Readers will learn about the history of regenerative surgery, important definitions and background information, and the evidence supporting the use of regenerative surgery. Practitioners will also find valuable guidance regarding the application of stem cells, evaluation of patient needs, and operative techniques for fat transfer. Subsequent chapters address topics such as

graft types, the skin, wound healing, scar treatment, osteoarthritis, burns, scleroderma, hair rejuvenation, facial enhancement combined with facelift, chin augmentation with fat, and breast augmentation or reconstruction with fat. Particular attention is paid to gluteal augmentation with fat, body contouring, genital male and female rejuvenation, and upper and lower extremity regenerative surgery. Surgical anatomy and complications treatment and prevention were emphasized when applied.

Highly informative and carefully structured, this book provides invaluable insight for beginners and experienced plastic surgeons alike, while benefitting advanced surgeons, specialists, and undergraduate and graduate students.

All sections were consistently structured, covering surgical anatomy, safety, complications, and limitations. Furthermore, for almost every chapter, there are multiple figures, tables, and video clips available. These are invaluable to further illustrate the techniques mentioned in the related chapters and to greatly enhance the educational experience for easy reference to some of the most salient knowledge. The contributors' efforts to integrate multimedia content to keep abreast with today's technology requirements is helpful and greatly appreciated.

# CONTRIBUTORS

## MARWAN H. ABOUD

Plastic and Reconstructive Surgery Department, Centre Hospitalier Universitaire de Tivoli, La Louvière, Belgium  
Université Libre de Bruxelles (ULB), Brussels, Belgium

## NICOLAS M. ABOUD

Plastic and Reconstructive Surgery Department, Centre Hospitalier Universitaire de Tivoli, La Louvière, Belgium  
Université Libre de Bruxelles (ULB), Brussels, Belgium

## NICHOLAS KALAVREZOS

Charles Wolfson Center for Reconstructive Surgery, Royal Free Hospital, London, UK, Head and Neck Centre, University College London Hospital, London, UK

## ALY HUSSEIN ABULHASSAN

Plastic and Reconstructive Surgery Unit, Surgery Department, Faculty of Medicine, Alexandria University, Alexandria, Egypt

## HUSSEIN SABER ABULHASSAN

Plastic and Reconstructive Surgery Unit, Surgery Department, Faculty of Medicine, Alexandria University, Alexandria, Egypt

## ASHKAN AFSHARI

Department of Plastic and Reconstructive Surgery, Vanderbilt University Medical Center, Nashville, TN, USA

## ANNARITA AGOVINO

Plastic Reconstructive Surgery Department and Burns Unit, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania, Department of Plastic Surgery, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania

## HUGO ALBERTO DRAGO

Burns Unit, Department Plastic and Reconstructive Surgery, Burns Hospital, Sanatorio Güemes, Ciudad Autónoma de Buenos Aires, Argentina

## JEAN-MAXIME ALET

Institut Aquitain de la Main, Pessac, France

## MONA ALKHOTANI

Pierre Colson Burn Center, Edouard Herriot Hospital, Lyon, France

## AURORA ALMADORI

Centre for Nanotechnology and Regenerative Medicine, Division of Surgery & Interventional Science, University College London, London, UK, Department of Plastic Surgery, Royal Free NHS Foundation Trust Hospital, London, UK, Charles Wolfson Center for Reconstructive Surgery, Royal Free Hospital, London, UK, Department of Plastic Surgery, Policlinic Hospital Agostino Gemelli, Catholic University of Sacred Heart, Rome, Italy, Department of Plastic and Reconstructive Surgery, Royal Free London NHS, Foundation Trust Hospital, London, UK

## KATARINA ANDJELKOV

Faculty of Medicine, University of Belgrade, Belgrade, Serbia, BelPrime Clinic, Belgrade, Serbia

## MATTEO ANGELINI

University of Padua, Italian Association of Aesthetic, Plastic Surgeons, Rome, Italy

## VIOLETA SKOROBAC ASANIN

Hospital Diona, Belgrade, Serbia

## ALEXANDER ASLANI

Cirumed Clinic, Marbella, Spain

## CÉLINE AUXENFANS

Banque de Tissus et de Cellules, Edouard Herriot Hospital, Lyon, France

## A. LUIZ EDUARDO AVELAR

Department of Anthropology and Plastic Surgery, Dermatology, Sao Paulo, Brazil

## M. MUSTAFA AYDINOL

Teşvikiye Mahallesi Fulya, Nişantaşı Hospital, Şişli, Turkey

## PARSHANAK AZDASHT

Park-Klinik Birkenwerder, Plastic Surgery, Birkenwerder, Germany, Park-Klinik, Birkenwerder, Germany

## TRAN LE BAO HA

Tissue Engineering and Biomedical Materials Department, University of Science, Vietnam National University, Ho Chi Minh City, Vietnam

## FRANCO BASSETTO

Institute of Plastic and Reconstructive Surgery, University of Padua, Padua, Italy, Institute of Plastic and Reconstructive Surgery of the University of Padua, Padua, Italy

## JULIE BASTIEN

Institut Aquitain de la Main, Pessac, France

## ANDREA BATTISTINI

Plastic Surgery Post-Graduate School, University of Milan, Milan, Italy

## ELENA V. BATUCHTINA

Central Clinical Hospital of the Presidential Administration, Moscow, Russia

## MELANIE BAUMGARTNER

Oslo Plastikkirurgi Clinic, Oslo, Norway

## ALEJANDRO JORGE BELTRAMI

Burns Unit, Department Plastic and Reconstructive Surgery, Burns Hospital, Sanatorio Güemes, Ciudad Autónoma de Buenos Aires, Argentina

# CONTRIBUTORS

## LAURENT BENADIBA

Geneva, Switzerland

## ALESSANDRO BIANCHI

Dipartimento Scienze Salute della Donna, del Bambino e di Sanità Pubblica, UOC Chirurgia Plastica, Fondazione Policlinico Universitario "Agostino Gemelli" IRCCS, Rome, Italy

## GEORGE J. BITAR

Bitar Cosmetic Surgery Institute, Fairfax, VA, USA

## VLAD BLOANCA

Plastic Reconstructive Surgery Department and Burns Unit, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania, Department of Plastic Surgery, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania

## DANIELE BOLLERO

Burn Unit, Department of Plastic Surgery, CTO Hospital, Turin, Italy

## ANNA A. BOROVIKOVA

Topclinic of Aesthetic Medicine, Moscow, Russian Federation

## SILVIA BOSSI

Burns Unit, Department Plastic and Reconstructive Surgery, Burns Hospital, Sanatorio Güemes, Ciudad Autónoma de Buenos Aires, Argentina

## JEREMY BOSWORTH

UAB Division of Plastic Surgery, Birmingham, AL, USA

## FABIEN BOUCHER

Department of Plastic and Reconstructive Surgery, Croix- Rousse Hospital, Lyon, France

## CARTER BOYD

UAB School of Medicine, Birmingham, AL, USA

## MASSIMILIANO BRAMBILLA

Plastic Surgery Service, Department for the Health of Women, Children and Newborn, IRCCS Fondazione Cà Granda Ospedale Maggiore Policlinico, Milan, Italy  
University of Milan, Milan, Italy

## TIBERIU BRATU

Department of Plastic Surgery, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania

## MIGUEL G. BRAVO

Cirumed Clinic, Marbella, Spain

## SOPHIE BROSSET

Pierre Colson Burn Center, Edouard Herriot Hospital, Lyon, France

## RYAN S. BURKE

Plastic and Reconstructive Surgery, Emory University, Atlanta, GA, USA

## PETER E. M. BUTLER

Centre for Nanotechnology and Regenerative Medicine, Division of Surgery & Interventional Science, University College London, London, UK  
Department of Plastic Surgery, Royal Free NHS Foundation Trust Hospital, London, UK  
Charles Wolfson Centre for Reconstructive Surgery, Royal Free Hospital, London, UK

## M. BRADLEY CALOBRACE

Private Practice, CaloAesthetics Plastic Surgery Center, Louisville, KY, USA  
Clinical Faculty, Division of Plastic Surgery, University of Louisville, Louisville, KY, USA  
Clinical Faculty, Division of Plastic Surgery, University of Kentucky, Lexington, KY, USA

## ROSSELLA CAMPA

General Surgery Unit, Ospedale Santo Spirito – Asl Roma1, Rome, Italy

## GIANLUCA CAMPIGLIO

Plastic Surgery Post-Graduate School, University of Milan, Milan, Italy, Campiglio Plastic Surgery Center, Milan, Italy

## ALVARO LUIZ CANSANÇÃO

Plastic Surgery, Universidade Iguacu, Rio de Janeiro, Rio de Janeiro, RJ, Brazil

## GIOVANNA CANTARELLA

Department of Clinical Sciences and Community Health, Università degli Studi di Milano, Milan, Italy, Otolaryngology Department, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy, Department of Clinical Sciences and Community Health, Fondazione IRCCS Ca Granda Ospedale Maggiore Policlinico, Milan, Italy

## PIETRO CAVALCANTI

Plastic Surgery Unit, Ospedale Santo Spirito – Ospedale San Filippo Neri - ASL Roma 1, Rome, Italy

## FABIO CAVIGGIOLI

Plastic Surgery Post-Graduate School, University of Milan, Milan, Italy

## ABEL CHAJCHIR

Instituto Medico Quirurgico Buenos Aires, Ciudad Autónoma de Buenos Aires, Argentina

## SARAH HOUIMLI CHARFEDDINE

University Tunis el Manar, Faculty of Medicine, Tunis, Tunisia, Université Pierre et Marie Curie Paris VI, Paris, France, Head of Department of Plastic, Reconstructive and Aesthetic Surgery, in Trauma and Burns Center, Ben Arous, Tunisia

## OBAID CHAUDHRY

Private Practice, Beverly Hills, CA, USA, Manhattan Eye, Ear, and Throat Hospital, New York City, NY, USA

# CONTRIBUTORS

## VINOD K. CHOPRA

*Chantilly Cosmetic Surgery, Chantilly, VA, USA*

## ANCA MARIA CIMPEAN

*Department of Histology, Angiogenesis Research Center, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania*

## STEVEN R. COHEN

*FACES+ Plastic Surgery, Skin and Laser Center, La Jolla, CA, USA, Plastic Surgery, University of California, San Diego, CA, USA*

## ALFREDO COLAPIETRA

*Plastic Surgeon in Private Practice, Milan, Italy*

## SHERRY COLLAWN

*UAB Division of Plastic Surgery, Board Certified American Board of Plastic Surgery, Birmingham, AL, USA, UAB Division of Plastic Surgery, Birmingham, AL, USA*

## ALEXANDRA CONDÉ-GREEN

*ACG Plastic Surgery, Boca Raton, FL, USA*

## ANDREA CONVERSI

*Plastic Surgery Unit, Azienda Ospedaliera Policlinico, Umberto I, Rome, Italy*

## FABIÁN E. CORTIÑAS

*Instituto Medico Quirurgico Buenos Aires, Ciudad Autónoma de Buenos Aires, Argentina*

## ZORIN CRAINICEANU

*Plastic Reconstructive Surgery Department and Burns Unit, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania, Department of Plastic Surgery, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania*

## MATTEO D'ALESSIO

*Plastic Reconstructive Surgery Department, University of Naples "Luigi Vanvitelli", Naples, Italy*

## ROBERTO D'ALESSIO

*Plastic Reconstructive Surgery Department and Burns Unit, "A. Cardarelli" National Hospital, Naples, Italy, Plastic Reconstructive Surgery Department, University of Naples "Luigi Vanvitelli", Naples, Italy*

## GIOVANNI DAL PRA

*Plastic Surgery Unit, Ospedale Santo Spirito – Ospedale San Filippo Neri - ASL Roma 1, Rome, Italy*

## RICHARD ANTHONY D'AMICO

*Englewood Medical Center, Englewood, NJ, USA*

## FRANCESCO D'ANDREA

*Department of Plastic Reconstructive and Aesthetic Surgery, University Federico II, Naples, Italy*

## STEFANIA DE FAZIO

*International Liaison SICPRE, Rome, Italy*

## EMMANUEL DELAY

*Unité de Chirurgie Plastique et Reconstructrice, Centre Léon Bérard, Lyon, France*

## DANIEL DEL VECCHIO

*Private Practice, Beverly Hills, CA, USA, Manhattan Eye, Ear, and Throat Hospital, New York City, NY, USA, Massachusetts General Hospital, Boston, MA, USA, Back Bay Plastic Surgery, Boston, MA, USA*

## DAYANE RAQUEL DE PAULA

*Division of Plastic and Reconstructive Surgery, Hospital de Clínicas, Federal University of Paraná, Paraná, Brazil, Pietà Medical Center, Paraná, Brazil*

## NELSON DE PAULA PICCOLO

*Department of Plastic Surgery, Pronto Socorro para Queimaduras, Goiânia, Goiás, Brazil*

## PAULO DE PAULA PICCOLO

*Department of Plastic Surgery, Pronto Socorro para Queimaduras, Goiânia, Goiás, Brazil*

## GEORGYI P. DIMOV

*South Ural State Medical University, Chelyabinsk, Russia*

## FABIO SANTANELLI DI POMPEO

*Department of Plastic Surgery, University of Rome, Rome, Italy*

## NCOZA C. DLOVA

*Department of Dermatology, University of KwaZulu-Natal, Nelson R Mandela School of Medicine, Durban, South Africa*

## DE FAZIO DOMENICO

*Plastic and Reconstructive Surgery Unit, IRCCS Galeazzi Orthopedic Hospital Institute, Milan, Italy*

## DINO ELYASSNIA

*Marten Clinic of Plastic Surgery, San Francisco, CA, USA*

## DELAY EMMANUEL

*Unité de Chirurgie Plastique et Reconstructrice, Centre Léon Bérard, Cancer Institute, Lyon, France*

## ILYA I. EREMIN

*National Research Center "Kurchatov Institute", Moscow, Russia*

## NATOLI FARBER

*University of Pittsburgh, Pittsburgh, PA, USA*

## FAZEL FATAH

*The Westbourne Centre, Birmingham, UK*

# CONTRIBUTORS

## **LYDIA MASAKO FERREIRA**

*Plastic Surgery Division, Universidade Federal de Sao Paulo UNIFESP, Sao Paulo, Brazil*

## **JOSEPH M. FIRRIOLO**

*Division of Plastic and Reconstructive Surgery, University of California Davis, Sacramento, CA, USA*

## **ALFRED FITOUSSI**

*Breast Center Paris, Paris, France*

## **ANNA FOGLI**

*Dr. Anna Fogli Aesthetics, Turin, Italy*

## **TOMAS FORTOUL**

*Plastic Surgery, Centro Medico Docente La Trinidad, Caracas, Venezuela*

## **JORDAN D. FREY**

*Hansjörg Wyss Department of Plastic Surgery, NYU Langone Health, New York, NY, USA*

## **GABRIELE STORTI**

*Plastic and Reconstructive Surgery, Department of Surgical Sciences, University of Rome "Tor Vergata", Rome, Italy*

## **PIETRO GENTILE**

*Surgical Science Department, Plastic and Reconstructive Surgery Unit, University of Rome "Tor Vergata", Rome, Italy*

## **LOBNA Y. GHANEM**

*Department of Clinical Pathology, Theodore Bilharz Research Institute, Cairo, Egypt*

## **IOANA GHIURCO**

*Emergency University Hospital Elias, Bucharest, Romania*

## **DINA T. GHORRA**

*Plastic and Reconstructive Surgery Unit, Surgery Department, Faculty of Medicine, Alexandria University, Alexandria, Egypt*

## **CAMPIGLIO GIANLUCA**

*Campiglio Plastic Surgery Center, Milan, Italy*

## **SERGEY ILSUVEROVICH GILFANOV**

*Central Clinical Hospital of the Presidential Administration, Moscow, Russia*

## **JEFFREY M. GIMBLE**

*Center for Stem Cell Research and Regenerative Medicine, Tulane University School of Medicine, New Orleans, LA, USA*

## **LUIGI GLIOSCI**

*Plastic Surgery Unit, Ospedale Santo Spirito - Ospedale San Filippo Neri - ASL Roma 1, Rome, Italy*

## **EDUARDO GONZALEZ**

*Hansjörg Wyss Department of Plastic Surgery, NYU, School of Medicine, New York, NY, USA*

## **RUTH MARIA GRAF**

*Division of Plastic and Reconstructive Surgery, Hospital de Clínicas, Federal University of Paraná, Paraná, Brazil Pietà Medical Center, Paraná, Brazil*

## **MARISTELLA GUERRA**

*Plastic Surgery Unit, Ospedale Santo Spirito – Ospedale San Filippo Neri - ASL Roma 1, Rome, Italy*

## **GUDJON LEIFUR GUNNARSSON**

*Department of Plastic Surgery, Sørlandet Hospital, Arendal, Norway*

## **ASHOK GUPTA**

*Division of Plastic and Reconstructive Surgery, Bombay Hospital Institute of Medical Sciences, Mumbai, India*

## **BETH GUSENOFF**

*University of Pittsburgh, Pittsburgh, PA, USA*

## **JEFFREY GUSENOFF**

*University of Pittsburgh, Pittsburgh, PA, USA*

## **MOUSTAPHA HAMDJ**

*Plastic Surgery Department, Brussels University, Hospital—Vrije Universiteit Brussel (VUB), Brussels, Belgium*

## **FOUED HAMZA**

*The London Welbeck Hospital, London, UK*

## **FELICIA R. HATAWAY**

*UAB School of Medicine, Birmingham, AL, USA*

## **TROND HUGO HAUKEBØ**

*Oslo Plastic Surgery Clinic, Oslo, Norway*

## **AMANI LANDOULSI HELAL**

*University Tunis el Manar, Faculty of Medicine, Tunis, Tunisia  
Universite Pierre et Marie Curie Paris VI, Paris, France,  
Department of Plastic, reconstructive and cosmetic Surgery,  
Oriana Hospital, Pulman Hotel Sharjah, Dr Kayle Aesthetic Clinic,  
Valiant Clinic and Hospital Dubai, Dubai, UAE*

## **BARBARA HERSANT**

*Department of Maxillofacial and Plastic & Reconstructive Surgery, Henri Mondor Hospital, Créteil, France*

## **SIERRA HEWETT**

*FACES+ Plastic Surgery, Skin and Laser Center, La Jolla, CA, USA,  
Plastic Surgery, University of California, San Diego, CA, USA*



# CONTRIBUTORS

## **IZOLDA HEYDENRYCH**

Cape Town Cosmetic Dermatology Centre, Milnerton, South Africa  
Division of Dermatology, Faculty of Health Sciences, Stellenbosch University, Cape Town, South Africa

## **K. KYE HIGDON**

Department of Plastic Surgery, Vanderbilt University Medical Center, Nashville, TN, USA

## **AMITA HIREMATH**

Division of Plastic and Reconstructive Surgery, Bombay, Hospital Institute of Medical Sciences, Mumbai, India

## **ALFREDO HOYOS**

Total Definer Research Group, Bogota, Colombia, Dhara Clinic, Bogota, Colombia

## **KARIMA ISMAIL**

Dept. of Plastic Surgery, Cairo University (Kasr Al-Ainy Hospitals), Cairo, Cairo Governorate, Egypt

## **CHARLOTTE JALOUX**

Hand Reconstructive Surgery, Timone Hospital, Marseille, France

## **SHIMA JAMSHIDI**

Royal Free Hospital NHS Trust, London, UK

## **MÁTÉ JANCsó**

Action for Defenceless People Foundation, Budapest, Hungary, Premium Plastic Surgery, Budapest, Hungary, Department for Plastic Surgery and Burns, Hungarian Defence Forces Medical Centre, Budapest, Hungary

## **DANA MIHAELA JIANU**

ProEstetica Clinic, Bucharest, Romania

## **STEFAN JIANU**

Emergency University Hospital Elias, Bucharest, Romania

## **VANJA JÖNSSON**

University of Oslo, Working at Oslo Plastikkirurgi Clinic, Oslo, Norway

## **CARLOS RODRIGO JORRAT**

Burns Unit, Department Plastic and Reconstructive Surgery, Burns Hospital, Sanatorio Güemes, Ciudad Autónoma de Buenos Aires, Argentina

## **AMIN KALAAJI**

Oslo Plastikkirurgi Clinic (Oslo Plastic Surgery Clinic), Oslo, Norway

## **ARTÚR KALATOVICS**

Action for Defenceless People Foundation, Budapest, Hungary  
Premium Plastic Surgery, Budapest, Hungary

## **ROMAN A. KAMYSHINSKY**

National Research Center "Kurchatov Institute", Moscow, Russian Federation

## **NOLAN S. KARP**

Hansjörg Wyss Department of Plastic Surgery, NYU, Langone Health, New York, NY, USA

## **ANNE MARIE KENNEDY**

Queen Victoria Hospital, East Grinstead, UK

## **NATALIA I. KHRAMTSOVA**

Perm State Medical University, Perm, Russian Federation

## **BONG-SUNG KIM**

Department of Plastic Surgery and Hand Surgery, University Hospital Zurich, Zurich, Switzerland

## **FRANCESCO KLINGER**

Plastic Surgery Post-Graduate School, University of Milan, Milan, Italy

## **MARCO KLINGER**

Plastic Surgery Post-Graduate School, University of Milan, Milan, Italy

## **RASHMI KSHIRSAGAR**

Technical Development, Cambridge, MA, USA

## **PALLAVI ARCHANA KUMBLA**

UAB Division of Plastic Surgery, Birmingham, AL, USA

## **KIM SIEA LEE**

Plastic and Aesthetic Surgeon, The M Clinic, Penang and Kuala Lumpur, Malaysia

## **KWANG LEE**

Plastic Reconstructive Surgery Department and Burns Unit, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK

## **RÉGIS LEGRÉ**

Hand Reconstructive Surgery, Timone Hospital, Marseille, France

## **CLAUDIO LIGRESTI**

Department of Plastic Surgery, Italian Academy Wound Care (IAWC)—University of Asti, Asti, Italy, Maria Pia Hospital, Turin, Italy, Istituto Clinico Ligure di Alta Specialità, Rapallo, Italy, University of Trieste, Trieste, Italy University of Pavia, Pavia, Italy

## **CELESTE S. LIMOLI**

Low Vision Research Center, Milan, Italy

## **PAOLO G. LIMOLI**

Low Vision Research Center, Milan, Italy

## **ROBERTA PICCOLO LOBO**

Department of Plastic Surgery, Pronto Socorro para Queimaduras, Goiânia, Goiás, Brazil

## **ZOLTÁN LÓDERER**

Department of General, Vascular and Plastic Surgery,

# CONTRIBUTORS

Markusovszky University Teaching Hospital, Szombathely, Hungary

## **EVGENYI A. LOMAKIN**

South Ural State Medical University, Chelyabinsk, Russia

## **BENEDETTO LONGO**

Division of Plastic and Reconstructive Surgery, Department of Surgical Sciences, School of Medicine and Surgery, Tor Vergata University of Rome, Rome, Italy

## **LENA LØVFOLD**

Oslo Plastikkirurgi Clinic, Oslo, Norway

## **ELENA LUCATELLI**

Plastic and Reconstructive Microsurgery, Careggi University Hospital, Florence, Italy

## **GUY MAGALON**

Plastic Surgery Department, Assistance Publique Hôpitaux de Marseille (APHM), Aix Marseille University, Marseille, France

## **JEREMY MAGALON**

Culture and Cell Therapy Laboratory, INSERM CBT 1409, AP-HM, Aix Marseille University, Conception Hospital, Marseille, France

## **SAROLTA MAGYAR**

Premium Plastic Surgery, Budapest, Hungary Department of Ophthalmology, St. Imre University Teaching Hospital, Budapest, Hungary

## **LUCA MAIONE**

Plastic Surgery Post-Graduate School, University of Milan, Milan, Italy

## **TIMOTHY MARTEN**

Marten Clinic of Plastic Surgery, San Francisco, CA, USA

## **CHET MAYS**

Private Practice, CaloAesthetics Plastic Surgery Center, Louisville, KY, USA

## **ISABELLA C. MAZZOLA**

Private Practice, Milan, Italy

## **RICCARDO F. MAZZOLA**

Department of Clinical Sciences and Community Health, University of Milan, Policlinico Hospital, Milan, Italy, G. Sanvenero Rosselli Foundation for Plastic Surgery, Milan, Italy, Plastic Surgery, Department of Clinical Sciences and Community Health, Fondazione IRCCS Ca' Granda, Policlinic Hospital, Milan, Italy, Department of Clinical Sciences and Community Health, Università degli Studi di Milano, Milan, Italy, Otolaryngology Department, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

## **JEAN PAUL MENINGAUD**

Department of Maxillofacial and Plastic & Reconstructive Surgery, Henri Mondor Hospital, Créteil, France

## **SOPHIE MENKES**

Nescens clinique de Genolier, Genolier, Switzerland, Geneva, Switzerland

## **ONDŘEJ MĚŠŤÁK**

Department of Plastic Surgery, First Faculty of Medicine, Charles University and Na Bulovce Hospital, Prague, Czech Republic

## **IVAN MOGOLLON**

Total Definer Research Group, Bogota, Colombia

## **ALI A. MOJALLAL**

Department of Plastic and Reconstructive Surgery, Croix-Rousse Hospital, Lyon, France, Pierre Colson Burn Center, Edouard Herriot Hospital, Lyon, France, Department of Plastic Surgery, Croix-Rousse Hospital, Hospices Civils de Lyon, University of Lyon, Lyon, France

## **MEREDITH MONTGOMERY**

UAB School of Medicine, Birmingham, AL, USA

## **AFSHIN MOSAHEBI**

Royal Free Hospital NHS Trust, London, UK, University College London, London, UK

## **NIKOLA MUSIC**

"Colic" Hospital, Belgrade, Serbia

## **NAGHMEH NADERI**

Royal Free Hospital NHS Trust, London, UK

## **FOAD NAHAI**

Plastic Surgery, Emory University, Atlanta, GA, USA

## **FABIO XERFAN NAHAS**

Plastic Surgery Division, Universidade Federal de Sao Paulo UNIFESP, Sao Paulo, Brazil

## **NGUYEN THI NGOC MY**

Tissue Engineering and Biomedical Materials Department, University of Science, Vietnam National University, Ho Chi Minh City, Vietnam

## **LYLY NGUYEN**

Department of Plastic and Reconstructive Surgery, Vanderbilt University Medical Center, Nashville, TN, USA, Department of Plastic Surgery, Vanderbilt University Medical Center, Nashville, TN, USA

## **CATHRINE NORDAHL**

Oslo Plastikkirurgi Clinic, Oslo, Norway

## **AHMED A. NORELDIN**

Department of Plastic and Reconstructive Surgery, Faculty of Medicine, Cairo University, Cairo, Egypt

# CONTRIBUTORS

## **NORA F. NUGENT**

*Purity Bridge Clinic, Tunbridge Wells, UK*

## **MARIA CECILIA CLOSS ONO**

*Division of Plastic and Reconstructive Surgery, Hospital de Clínicas, Federal University of Paraná, Paraná, Brazil  
Pietà Medical Center, Paraná, Brazil*

## **ANDREA PAGANI**

*Institute of Plastic and Reconstructive Surgery, University of Padua, Padua, Italy*

## **NORBERT PALLUA**

*Aesthetic Elite International—Private Clinic, Düsseldorf, Germany*

## **GERGELY PATAKI**

*Department of Pediatric Surgery and Traumatology, St. John's Hospital and North Buda Unified Hospitals, Budapest, Hungary  
Action for Defenceless People Foundation, Budapest, Hungary,  
Premium Plastic Surgery, Budapest, Hungary, Department of Pediatric Surgery and Traumatology, Action for Defenceless People Foundation, Budapest, Hungary*

## **ROHAN PATIL**

*Bioprocess Development, Sanofi, Framingham, MA, USA*

## **FROBERT PAUL**

*Unité de Chirurgie Plastique et Reconstructrice, Centre Léon Bérard, Cancer Institute, Lyon, France*

## **MARIO PELLE-CERAVOLO**

*University of Padua, Italian Association of Aesthetic Plastic Surgeons, Rome, Italy*

## **MAURICIO PÉREZ**

*Total Definer Research Group, Bogota, Colombia Dallas, TX, USA*

## **PAUL M. PHILLIPS**

*El Paso Cosmetic Surgery, El Paso, TX, USA*

## **MÔNICA SARTO PICCOLO**

*Department of Plastic Surgery, Pronto Socorro para Queimaduras, Goiânia, Goiás, Brazil*

## **NELSON SARTO PICCOLO**

*Department of Plastic Surgery, Pronto Socorro para Queimaduras, Goiânia, Goiás, Brazil*

## **GENTILE PIETRO**

*Plastic and Reconstructive Surgery, University of "Tor Vergata", Rome, Italy*

## **SERGEY A. PLAKSIN**

*Perm State Medical University, Perm, Russian Federation*

## **PETR POLÁK**

*Department of Plastic Surgery, Hospital České Budějovice, České Budějovice, Czech Republic*

## **IGOR POPOV**

*Municipal Clinical Hospital No. 2, Chelyabinsk, Russia*

## **MIKHAIL Y. PRESNYAKOV**

*National Research Center "Kurchatov Institute", Moscow, Russian Federation*

## **LEE L. Q. PU**

*Division of Plastic Surgery, University of California at Davis, Sacramento, CA, USA*

## **ANDREY A. PULIN**

*National Medical Surgical Center named after N.I. Pirogov, Moscow, Russia, Pirogov National Medical and Surgical Center, Moscow, Russia*

## **LISA RAMAUT**

*Plastic Surgery Department, Brussels University Hospital— Vrije Universiteit Brussel (VUB), Brussels, Belgium*

## **VINCENT RICCELLI**

*Vanderbilt University Medical School, Nashville, TN, USA*

## **RICARDO LUIS RODRIGUEZ**

*Cosmeticsurg.net, Baltimore, MD, USA*

## **JOSEPH PETER RUBIN**

*Department of Plastic Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA, USA*

## **ERIND RUKA**

*Department of Plastic Surgery, Italian Academy Wound Care (IAWC)—University of Asti, Asti, Italy, Department of Plastic Surgery, Mauriziano Hospital of Turin, Turin, Italy*

## **THOMAS RYLL**

*VP Technical Operations, ImmunoGen, Inc., Waltham, MA, USA*

## **MARZIA SALGARELLO**

*Department of Plastic Surgery, Policlinic Hospital Agostino Gemelli, Catholic University of Sacred Heart, Rome, Italy, Dipartimento Scienze Salute della Donna, del Bambino e di Sanità Pubblica, UOC Chirurgia Plastica, Fondazione Policlinico Universitario "Agostino Gemelli" IRCCS, Rome, Italy*

## **ARA A. SALIBIAN**

*Hansjörg Wyss Department of Plastic Surgery, NYU Langone Health, New York, NY, USA*

## **ELIAS T. SAWAYA**

*Institut Aquitain de la main, Pessac, France*

## **CARLOTTA SCARPA**

*Institute of Plastic and Reconstructive Surgery, University of Padua, Padua, Italy*

# CONTRIBUTORS

## **KAI-UWE SCHLAUDRAFF**

*Concept-Clinic, Geneva, Switzerland*

## **JAKOB SCHNEGG**

*Oslo Plastic Surgery Clinic (Oslo Plastikkirurgi Clinic), Oslo, Norway*

## **ANNA B. SEMENOVA**

*Chelyabinsk Regional Clinical Center for Oncology and Nuclear Medicine, Chelyabinsk, Russia*

## **RANA SHALHOUB**

*Bitar Cosmetic Surgery Institute, Fairfax, VA, USA*

## **HRISTO SHIPKOV**

*Department of Plastic and Reconstructive Surgery, Croix- Rousse Hospital, Lyon, France*

## **NICOLAY B. SHISMENTSEV**

*Purulent Surgery Department, Chelyabinsk Railway Clinical Hospital, Chelyabinsk, Russia*

## **MOUNIA SIDAHMED-MEZI**

*Department of Maxillofacial and Plastic & Reconstructive Surgery, Henri Mondor Hospital, Créteil, France*

## **EVA SIOLO**

*Aesthetic Wellness Practice, Sandton, Johannesburg, South Africa*

## **IVAN ALEKSANDROVICH SMYSHLYAEV**

*Central Clinical Hospital of the Presidential Administration, Moscow, Russia*

## **BENJAMIN SOMMIER**

*Institut Aquitain de la main, Pessac, France*

## **MICHAIL SOROTOS**

*Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana", PhD School of Translational Medicine of Development and Active Ageing, University of Salerno, Salerno, Italy*

## **SADRI O. SOZER**

*El Paso Cosmetic Surgery, El Paso, TX, USA*

## **NEBOJŠA SRDANOVIĆ**

*Private Practice, Belgrade, Serbia*

## **DOUGLAS S. STEINBRECH**

*Gotham Plastic Surgery, New York, NY, USA, Hansjorg Wyss Department of Plastic Surgery, NYU School of Medicine, New York, NY, USA*

## **ARIS STERODIMAS**

*Department of Plastic and Reconstructive Surgery, Metropolitan General Hospital, Athens, Greece*

## **HIERONYMUS P. STEVENS**

*Velthuis Kliniek, Rotterdam, the Netherlands*

## **FILIP B. J. L. STILLAERT**

*Department of Plastic and Reconstructive Surgery, University Hospital Ghent, Ghent, Belgium*

## **FLAVIO MATEO STURLA**

*Burns Unit, Department Plastic and Reconstructive Surgery, Burns Hospital, Sanatorio Güemes, Ciudad Autónoma de Buenos Aires, Argentina*

## **KASEY KISU SUNG**

*Cosmetic Fat Surgeon, Lilac BLC Clinic, Seoul, South Korea*

## **WILLIAM BLAKE SWICORD**

*UAB School of Medicine, Birmingham, AL, USA*

## **JØRN BO THOMSEN**

*Department of Plastic Surgery, Odense University Hospital, Odense, Denmark*

## **K. TUNC TIRYAKI**

*Cadogan Clinic, Istanbul, Turkey*

## **LENA TORSKE**

*Oslo Plastikkirurgi Clinic, Oslo, Norway*

## **BRYANT A. TOTH**

*Craniofacial Program, UCSF Benioff Children's Hospital, Oakland, CA, USA*

## **LINA TRIANA**

*Department of Plastic Surgery, Clinica Corpus y Rostrum, Cali, Colombia*

## **ZHANNA I. TRIUSHKOVA**

*Coloproctology Department, City Hospital #8, Chelyabinsk, Russia*

## **ANGELO TRIVISONNO**

*Clinica Assunzione di Maria Santissima, Rome, Italy*

## **BJØRN J. TVEDT**

*Akademikliniken Oslo, Oslo, Norway*

## **KLAUS UEBERREITER**

*Park-Klinik Birkenwerder, Plastic Surgery, Birkenwerder, Germany*

## **ROBERTO VALERIANI**

*Specializing in Plastic Surgery, Università Sapienza – Asl Roma 1, Rome, Italy*

## **VALERIO CERVELLI**

*Plastic and Reconstructive Surgery, Department of Surgical Sciences, University of Rome "Tor Vergata", Rome, Italy*

# CONTRIBUTORS

## **BEREND VAN DER LEI**

*Department of Plastic Surgery, University of Groningen and University Medical Center of Groningen, Groningen, the Netherlands Bergman Clinics, Heerenveen, the Netherlands*

## **JORIS A. VAN DONGEN**

*Department of Plastic and Reconstructive Surgery, University Medical Center Utrecht, Utrecht, the Netherlands, Department of Plastic Surgery, University of Groningen and University Medical Center of Groningen, Groningen, the Netherlands*

## **TAMÁS VARGA**

*South Pest Central Hospital —National Institute for Hematology and Infectious Diseases, Department of Plastic Surgery, Budapest, Hungary*

## **MAURO VASELLA**

*Department of Plastic Surgery and Hand Surgery, University Hospital Zurich, Zurich, Switzerland*

## **IGOR S. VASILYEV**

*Department of Plastic Surgery and Cosmetology, South Ural State Medical University, Chelyabinsk, Russia*

## **SERGEY A. VASILYEV**

*Plastic Surgery and Cosmetology, South Ural State Medical University, Chelyabinsk, Russia*

## **VIACHESLAV S. VASILYEV**

*Plastic Surgery and Cosmetology, South Ural State Medical University, Chelyabinsk, Russia*

## **YURI S. VASILYEV**

*Plastic Surgery and Cosmetology, South Ural State Medical University, Chelyabinsk, Russia*

## **RICHARD VAUCHER**

*Unité de Chirurgie Plastique et Reconstructrice, Centre Léon Bérard, Lyon, France*

## **ANDREY V. VAZHENIN**

*Chelyabinsk Regional Clinical Center for Oncology and Nuclear Medicine, Chelyabinsk, Russia*

## **VALERIANO VINCI**

*Plastic Surgery Post-Graduate School, University of Milan, Milan, Italy*

## **GIUSEPPE VISCONTI**

*Dipartimento Scienze Salute della Donna, del Bambino e di Sanità Pubblica, UOC Chirurgia Plastica, Fondazione Policlinico Universitario “Agostino Gemelli” IRCCS, Rome, Italy*

## **JASON WALTHER**

*Bioprocess Development, Sanofi, Framingham, MA, USA*

## **JULIAN S. WINOCOUR**

*Department of Plastic and Reconstructive Surgery, Vanderbilt University Medical Center, Nashville, TN, USA*

## **LAURA WULFF**

*Cirumed Clinic, Marbella, Spain*

## **VIKEN VAHAN YERGANYAN**

*Institut Aquitain de la Main, Pessac, France*

## **FABIANA ZANATA**

*Plastic Surgery Division, Universidade Federal de Sao Paulo UNIFESP, Sao Paulo, Brazil*

## **MICHELE L. ZOCCHI**

*Institute of Plastic and Reconstructive Surgery, University of Padua, Padua, Italy C.S.M. Institute for Regenerative Surgery, Turin, Italy, Tissue Engineering and Biomedical Materials Department, University of Science, Vietnam National University, Ho Chi Minh City, Vietnam*

## **LUCAS SEBASTIAN ZURLO**

*Burns Unit, Department Plastic and Reconstructive Surgery, Burns Hospital, Sanatorio Güemes, Ciudad Autónoma de Buenos Aires, Argentina*

# TABLE OF CONTENT

## PART I INTRODUCTORY PART

### 1 The Era of Regenerative Surgery

Ryan S. Burke and Foad Nahai

### 2 Evolving of Concepts in Fat Grafting and Regenerative Surgery

Riccardo F. Mazzola

### 3 Regenerative Surgery: Definitions and Background

Stefania de Fazio and Elena Lucattelli

### 4 Current Status of Regenerative Plastic Surgery

Joseph M. Firriolo and Lee L. Q. Pu

### 5 Adipose Tissue Transplantation: Autologous Versus Cryopreserved (Frozen) Versus Heterologous. Present and Future of Fat Transfer

Fabiana Zanata, Fabio Xerfan Nahas, Tomas Fortoul, Jeffrey M. Gimble, and Lydia Masako Ferreira

### 6 Fluid Balance, Electrolytes, and Anesthetic Options in Regenerative Surgery and Fat Grafting

Lyly Nguyen, Vincent Riccelli, and K. Kye Higdon

### 7 Comparison Between Fat and Fillers

Gianluca Campiglio and Nebojša Srdanović

## PART II STEM CELLS AND CLINICAL PATH

### 8 Features and Biological Properties of Different Adipose Tissue Based Products. Milli-, Micro-, Emulsified (Nano-) Fat, SVF, and AD-Multipotent Mesenchymal Stem Cells

Viacheslav S. Vasilyev, Anna A. Borovikova, Sergey A. Vasilyev, Natalia I. Khramtsova, Sergey A. Plaksin, Roman A. Kamyshinsky, Mikhail Y. Presnyakov, and Ilya I. Eremin

### 9 Regenerative Technologies and Adipose-Derived Stem Cells (ADSCs): Regulatory, Ethical, and Technical Updates

Michele L. Zocchi, Andrea Pagani, and Franco Bassetto

### 10 Stem Cell Research, Concepts, and Emerging Technologies

Angelo Trivisonno

### 11 Stem Cells and Their Clinical Applications

Shima Jamshidi, Naghme Naderi, and Afshin Mosahebi

### 12 Fat Grafting, Tissue Banking, and Adipose Stem Cell Therapies: European Regulatory Status in 2021

Kai-Uwe Schlaudraff

## PART III OPERATIVE TECHNIQUES FOR FAT GRAFTING

### 13 Aesthetic Lipofilling: Trends, Patient Needs and Assessment

De Fazio Domenico, Gentile Pietro, and Campiglio Gianluca

### 14 Novel Strategies to Improve Graft Survival and Retention

Valerio Cervelli and Gabriele Storti

### 15 Injectable Tissue Replacement and Regeneration: A New Standardized Fat Grafting Technique

Steven R. Cohen and Sierra Hewett

### 16 Fat Processing Methods

Alexandra Condé-Green and Alvaro Luiz Cansanção

### 17 Impact of Age, Gender, Body Mass Index, Harvesting Site, Suction Pressure, Smoking, Diabetes, Systemic Lupus and Other Diseases on the

### Regenerative Properties of the Grafted Adipose Tissue

Ahmed A. Noreldin, Lobna Y. Ghanem, Hussein Saber Abulhassan, Aly Hussein Abulhassan, and Dina T. Ghorra

### 18 New Strategies in Regenerative Medicine: The Bio-active Composite Grafts

Michele L. Zocchi and Andrea Pagani

### 19 New Perspective in Regenerative Surgery: The Acellular Adipose Matrix

Michele L. Zocchi, Nguyen Thi Ngoc My, Carlotta Scarpa, Andrea Pagani, Tran Le Bao Ha, and Franco Bassetto

### 20 Classification of Safe Autologous Fat Grafting: Quantity and Location Site

Meredith Montgomery, Carter Boyd, Pallavi Archana Kumbla, William Blake Swicord, and Sherry Collawn

## **21 Complications in Regenerative and Fat Transfer Surgery: Pathophysiology and Management with Technical Tips to Reduce Risk**

*Nora F. Nugent, Anne Marie Kennedy, Riccardo F. Mazzola, and Foued Hamza*

## **22 Fat Grafting and Fat Embolism. How to Prevent, Diagnose, and Treat**

*Katarina Andjelkov and Nikola Music*

## **23 Potentials and Limitations of the Use of Platelet-Rich Plasma (PRP) in Combination with Lipofilling. An Evidence-Based Approach**

*Joris A. van Dongen, Hieronymus P. Stevens, and Berend van der Lei*

## **24 The Role of Nurses and Surgical Assistants in Fat Grafting Procedures: Planning, Preparation, and Implementation**

*Cathrine Nordahl, Lena Løvfold, Lena Torske, and Amin Kalaaji*

# **PART IV REGENERATIVE SURGERY: RECONSTRUCTIVE AREAS OF APPLICATION**

## **25 Fat Grafting as an Ancillary Treatment for Burns and Other Complex Wounds and Their Sequelae**

*Nelson Sarto Piccolo, Mônica Sarto Piccolo, Nelson de Paula Piccolo, Paulo de Paula Piccolo, and Roberta Piccolo Lobo*

## **26 Cellular Optimized Nanofat for Microneedling and as a Unique Nanofat Biocrème**

*Steven R. Cohen and Sierra Hewett*

## **27 Treatment of Radiation-Induced Rectovaginal Fistula: Safety and Efficacy of Fat Grafting and Stromal Vascular Fraction Injections**

*Viacheslav S. Vasilyev, Zhanna I. Triushkova, Andrey V. Vazhenin, Anna B. Semenova, Evgeniy A. Lomakin, Georgiy P. Dimov, Ilya I. Eremin, Igor S. Vasilyev, and Andrey A. Pulin*

## **28 Post-burn and Keloid Scar Treatment with Adipose-Derived Stem Cells (ADSC)**

*Gianluca Campiglio, Francesco Klinger, Fabio Caviggioli, Luca Maione, Andrea Battistini, Valeriano Vinci and Marco Klinger*

## **29 Fat Grafting as Plastic Surgeons' Best Friend: Solving Complex Reconstruction Problems with Simple Regenerative Solutions**

*Fazel Fatah*

## **30 Scar Modulations and Maturation in Post-burn Scar Contractures and Skin Grafts Using Autologous Fat Injections Grafts**

*Ashok Gupta and Amita Hiremath*

## **31 Treatment of Chronic Wounds with Fat Grafting and Adipose-Derived Stromal Vascular Fraction**

*Viacheslav S. Vasilyev, Nicolay B. Shishmentsev, Sergey A. Vasilyev, and Yuri S. Vasilyev*

## **32 Treatment of Scleroderma with Fat Grafting, PRP, and Adipose-Derived Stem Cells**

*Aurora Almadori and Peter E. M. Butler*

## **33 Treatment of Fibrotic Radiotherapy Damages in Head and Neck with Fat Grafting**

*Aurora Almadori, Nicholas Kalavrezos, and Peter E. M. Butler*

## **34 Vampire Scar: Outpatient Quality Improvement of Scar Regeneration with a Composite Approach with Needling and PRP**

*Daniele Bollero and Anna Fogli*

## **35 Complex Regional Pain Syndrome and Steroid Atrophy Scar Retraction Treatment with Adipose Grafting**

*William Blake Swicord, Carter Boyd, Jeremy Bosworth, Felicia R. Hataway, and Sherry Collawn*

## **36 Acute Burns Management: The Current Role of Regenerative Surgery and its Challenges**

*Annarita Agovino, Matteo d'Alessio, Kwang Lee, Vlad Bloanca, Zorin Crainiceanu, and Roberto d'Alessio*

## **37 Regenerative Surgery Choices in Burns Sequelae Management**

*Annarita Agovino, Kwang Lee, Matteo d'Alessio, Zorin Crainiceanu, and Roberto d'Alessio*

## **38 The Role of Adipose Tissue Graft on Nerve Regeneration from the Perspective of the Adipose-Derived Stem Cell**

*Vlad Bloanca, Zorin Crainiceanu, Tiberiu Bratu, Annarita Agovino, and Anca Maria Cimpean*

## **39 Physical Therapies to Improve Fat Grafting and Regenerative Surgery Results in Wound Healing**

*Claudio Ligresti and Erind Ruka*

## **40 Fat and Stromal Cells for Acute Burn Treatment**

*Sophie Brosset, Mona Alkhotani, Fabien Boucher, Hristo Shipkov, Céline Auxenfans, and Ali A. Mojallal*

## **41 Combined Fat, PRP, and Laser for Skin and Soft Tissues Regeneration. Clinical Applications**

*Dana Mihaela Jianu, Ioana Ghiurco, and Stefan Jianu*

## **42 Regenerative Surgery and Acellular Dermal Matrix as Reconstructive Surgical Options in Plastic Surgery. Theoretical and Practical Basis**

*Carlos Rodrigo Jorrat, Hugo Alberto Drago, Alejandro Jorge Beltrami, Lucas Sebastian Zurlo, Silvia Bossi, and Flavio Mateo Sturla*

## PART V REGENERATIVE SURGERY: AESTHETIC AREAS OF APPLICATION, HAIR

### **43 Hair Regrowth with Micrografts Enriched with Human Follicle Mesenchymal Stem Cells and Platelet-Rich Plasma**

*Pietro Gentile*

### **44 The Efficacy of Platelet-Rich Plasma for Hair Loss: A Proven Therapy**

*Vinod K. Chopra, Rana Shalhoub, and George J. Bitar*

## PART VI REGENERATIVE SURGERY: AESTHETIC AREAS OF APPLICATION, SKIN

### **45 The Process of Aging, State-of-the-Art: Evidence Behind Regenerative Surgery**

*Lina Triana*

### **46 Wrinkles, Etiology, Causes, Treatment, and Prevention**

*Fabián E. Cortiñas and Abel Chajchir*

### **47 Skin and Structural Aging in Patients of African Ethnicity. Features, Management and the Role of Regenerative Surgery**

*Izolda Heydenrych, Eva Siolo, Ncoza C. Dlova, and A. Luiz Eduardo Avelar*

### **48 The Use of Fat Grafting to Improve Skin Quality**

*Angelo Trivisonno*

## PART VII REGENERATIVE SURGERY AESTHETIC AND RECONSTRUCTIVE AREAS OF APPLICATION, FACE

### **49 Surgical Anatomy in Regenerative Surgery of Face, Scalp, and Neck**

*Amani Landoulsi Helal and Sarah Houimli Charfeddine*

### **50 Facial Fat Grafting During Facelift Surgery**

*Timothy Marten and Dino Elyassnia*

### **51 Properly Diluted Fat (P.D.F.): A Safer Approach to Periocular Fat Grafting**

*Mario Pelle-Ceravolo and Matteo Angelini*

### **52 Improved Facial Rejuvenation and Scar Regeneration by the Autologous Stem Cell-Rich Lipoconcentrate**

*Norbert Pallua, Mauro Vasella, and Bong-Sung Kim*

### **53 Aesthetic Chin Augmentation With Fat: Is There Still a Need for Chin Implants?**

*Amin Kalaaji and Vanja Jönsson*

### **54 Microfat Graft in Facial Rejuvenation**

*Gianluca Campiglio and Alfredo Colapietra*

### **55 Transgender Facial Aesthetics and Regenerative Techniques**

*Ashkan Afshari, Lyly Nguyen, and Julian S. Winocour*

### **56 Posttraumatic Contour Deformities Reconstruction**

### **and Scar Treatment with Microstructural and Nanofat Grafting in the Face**

*Gergely Pataki, Tamás Varga, Artúr Kalatovics and Sarolta Magyar*

### **57 Nanofat Grafting in Facial Rejuvenation: An Innovative Technique**

*Sophie Menkes*

### **58 Parry-Romberg Syndrome Treatment with Microstructural Fat Grafting of the Face**

*Gergely Pataki, Artúr Kalatovics, and Zoltán Lóderer*

### **59 Correction of Secondary Craniosynostosis Deformities with Autologous Fat**

*Karima Ismail and Bryant A. Toth*

### **60 The Regenerative Approach For The Management of Severe Dysphonia**

*Giovanna Cantarella and Riccardo F. Mazzola*

### **61 The Safe Treatment of Mild Velopharyngeal Insufficiency (VPI) with Autologous Fat Grafting**

*Riccardo F. Mazzola, Giovanna Cantarella and Isabella C. Mazzola*

### **62 Degenerative Retinopathy Treatment with ADSC: Our Experience**

*Paolo G. Limoli, Gianluca Campiglio, and Celeste S. Limoli*

## PART VIII BREAST AUGMENTATION AND MASTOPEXI WITH FAT

### **63 Aesthetic Breast Augmentation Using Autologous Fat Grafting: Indications, Patient Assessment, and Comparison Between Different Processing Methods in 204 Cases**

*Amin Kalaaji, Vanja Jönsson, and Melanie Baumgartner*

### **64 New Trends in Breast Augmentation with Fat**

### **Grafting: Implant Conversion with Fat and Hybrid Implant-Fat Breast Augmentation/Revision**

*Amin Kalaaji and Vanja Jönsson*

### **65 Implant Conversion with Fat Grafting**

*Klaus Ueberreiter and Parshanak Azdasht*



### **66 Composite Breast Augmentation with Implants and Fat Grafting**

*Obaid Chaudhry and Daniel Del Vecchio*

### **67 Correction of Severe Congenital Breast Asymmetry in Poland Syndrome and Other Breast Asymmetries with Autologous Microstructural Fat Transfer and the Combination of Other Techniques**

*Gergely Pataki, Máté Jancsó, and Artúr Kalatovics*

### **68 Autologous Fat Grafting for Breast Augmentation in Asian Women**

*Kim Siea Lee and Kasey Kisu Sung*

### **69 Treatment of Tuberous Breast by Fat Grafting**

*Klaus Ueberreiter and Parshanak Azdasht*

### **70 Stromal Enriched Lipograft for Breast Augmentation**

*Aris Sterodimas*

### **71 Mastopexy with Auto-Augmentation and Fat Grafting**

*M. Bradley Calobrace and Chet Mays*

### **72 Breast Augmentation with Fat and Threads Using Power-Assisted Liposuction, Loops, and Lipofilling (PALLL) Technique**

*Nicolas M. Abboud and Marwan H. Abboud*

### **73 Improving Breast Footprint and Shape Using Anchor Threads in Fat Grafting Breast Augmentation**

*Giuseppe Visconti, Alessandro Bianchi, and Marzia Salgarello*

### **74 Inverted Nipple Correction with Central Tunnel Technique and Fat Grafting**

*Amin Kalaaji, Vanja Jönsson, and Jakob Schnegg*

## **PART IX BREAST RECONSTRUCTION WITH FAT**

### **75 Breast Reconstruction with Fat and Threads Using Power-Assisted Liposuction, Loops, and Lipofilling (PALLL) Technique**

*Nicolas M. Abboud and Marwan H. Abboud*

### **76 Fat Grafting for Breast Reconstruction**

*Alfred Fitoussi*

### **77 The Prepectoral, Hybrid Breast Reconstruction: The Synergy of Lipofilling and Breast Implants**

*Filip B. J. L. Stillaert*

### **78 Breast Reconstruction with Inferior Flap and Fat Transfer as Curative Treatment for BIA-ALCL**

*Ruth Maria Graf, Maria Cecilia Closs Ono, and Dayane Raquel de Paula*

### **79 Management of “Surgical Disasters” After Breast Implants Postmastectomy Reconstruction: The Role of “Conservative Hybrid Regeneration Approach (HRA)”**

*Giovanni Dal Pra, Luigi Gliosci, Andrea Conversi, Rossella Campa, Maristella Guerra, Pietro Cavalcanti and Roberto Valeriani*

### **80 Stem Cell-Enriched Fat Injection in Aesthetic, Reconstructive Breast Surgery**

*K. Tunc Tiryaki and M. Mustafa Aydinol*

### **81 Enhancing Flap Breast Reconstruction with the Percutaneous Purse-String Suture and Fat Grafting**

*Moustapha Hamdi and Lisa Ramaut*

### **82 Lipomodeling for Breast-Conservative Treatment Sequelae**

*Emmanuel Delay and Richard Vaucher*

### **83 Lipomodelling as a Useful Complement to Autologous Latissimus Dorsi Flap Breast Reconstruction**

*Delay Emmanuel and Frobert Paul*

### **84 Revision Surgery with Fat Grafting After Implant and Flap Breast Reconstruction**

*Ara A. Salibian, Jordan D. Frey, and Nolan S. Karp*

### **85 Safety of Autologous Fat Transplantation in Oncological Postmastectomy Breast Reconstruction: A Prospective Study**

*Fabio Santanelli di Pompeo, Benedetto Longo, and Michail Sorotos*

### **86 Oncologic Safety of Fat Graft to the Breast**

*Jordan D. Frey, Ara A. Salibian, and Nolan S. Karp*

## **PART X GLUTEAL AUGMENTATION WITH FAT, BRAZILIAN BUTT LIFT (BBL) AND RELATED BODY CONTOURING**

### **87 Gluteal Augmentation with Fat: Patient Assessment, Operative Technique, and Safety Guidelines**

*Amin Kalaaji, Vanja Jönsson, and Trond Hugo Haukebø*

### **88 Artnatomy for Advanced Body Contouring and Aesthetic Balance Between Breast and Body**

### **89 Gluteal Augmentation with Fat and Threads Using**

### **Power-Assisted Liposuction, Loops and Lipofilling (PALLL) Technique**

*Nicolas M. Abboud and Marwan H. Abboud*

### **90 Expansion Vibration Lipofilling (EVL) Technique in Gluteal Augmentation and Waist Feminization**

*Alexander Aslani, Daniel Del Vecchio, Laura Wulff, and Miguel G. Bravo*

**91 Gluteal Augmentation: Avoidance of Intramuscular Injection Using Precise Superficial Fat Graft Technique**

*Ricardo Luis Rodriguez, Richard Anthony D'Amico, and Joseph Peter Rubin*

**92 Gluteal Augmentation Assisted by Stromal Enriched Lipograft**

*Aris Sterodimas*

**93 Circumferential Lipoabdominoplasty Combined with Fat Grafting the Hips and Buttocks**

*Paul M. Phillips and Sadri O. Sozer*

**94 MWL and Post Bariatric Surgery Patients: The Role of Fat Grafting and Regenerative Surgery**

*Gudjon Leifur Gunnarsson and Jørn Bo Thomsen*

**95 High-Definition Abdominal Sculpting with Fat Grafting Highlights**

*Douglas S. Steinbrech and Eduardo Gonzalez*

**96 Safety for Advanced Body Contouring: The Darkest Hour**

*Alfredo Hoyos, Mauricio Pérez, and Ivan Mogollon*

**PART XI GENITAL REJUVENATION**

**97 Surgical Anatomy of Female Genital Area to Achieve Safety in Fat Grafting**

*Massimiliano Brambilla*

**98 Vulvovaginal Rejuvenation by Fat and Stromal Cells**

*Fabien Boucher, Hristo Shipkov, Sophie Brosset, and Ali A. Mojallal*

**99 Quality of Life and Rejuvenation Techniques in Female Intimate Cosmetic Genital Surgery**

*Amin Kalaaji and Vanja Jönsson*

**100 Fat Graft for the Treatment of Vulvar and Vaginal Laxity**

*Massimiliano Brambilla*

**101 Fat Grafting as a Regenerative Measure for Vulvar Atrophy and Vaginal Laxity**

*Nelson Sarto Piccolo, Mônica Sarto Piccolo, Nelson de Paula Piccolo, Paulo de Paula Piccolo, and Roberta Piccolo Lobo*

**102 Microfat and Nanofat Grafting in Genital Rejuvenation**

*Sophie Menkes, Mounia SidAhmed-Mezi, Jean Paul Meningaud, Laurent Benadiba, Guy Magalon, and Barbara Hersant*

**103 Fat Grafting and Adipose Stem Cells to Treat Vulvar Scarring and Fibrosis Post Female Genital Mutilation (FGM)**

*Aurora Almadori, Marzia Salgarello, and Peter E. M. Butler*

**104 Male Genital Regenerative Surgery**

*Bjørn J. Tvedt*

**105 Penile Enlargement by Fat Grafting**

*Fabien Boucher, Hristo Shipkov, Sophie Brosset, and Ali A. Mojallal*

**106 The Treatment of Genital Vulvar and Penile Lichen Sclerosus with Autologous Fat Grafting**

*Aurora Almadori, Francesco D'Andrea, and Peter E. M. Butler*

**107 Fat Grafting to Treat Vulvo-Vaginal Stenosis**

*Massimiliano Brambilla*

**PART XII UPPER EXTREMITY**

**108 Microfat Grafting in Dupuytren's Contracture: From Hypodermis Reconstruction and Scar Optimization to Recurrence Prevention**

*Elias T. Sawaya, Viken Vahan Yerganyan, Julie Bastien, and Jean-Maxime Alet*

**109 Management of Dupuytren's Disease: The Role of Regenerative Surgery. Overview**

*Petr Polák and Ondřej Měšťák*

**110 Hands Function and Esthetic with Regenerative Surgery**

*Guy Magalon, Jeremy Magalon, Charlotte Jaloux, and Régis Legré*

**111 Hand Rejuvenation by Minimally Invasive Injection of Stromal Enriched Lipograft**

*Aris Sterodimas*

**112 Emulsified Fat Grafting to the Atrophic Post-traumatic Digital Pulp: A Promising Reconstruction Procedure**

*Benjamin Sommer, Viken Vahan Yerganyan, Jean-Maxime Alet, and Elias T. Sawaya*

**113 Fat Grafting in the Surgical Treatment of Pressure Sores and as a Preventive Measure Against Recurrences**

*Nelson Sarto Piccolo, Mônica Sarto Piccolo, Nelson de Paula Piccolo, Paulo de Paula Piccolo, and Roberta Piccolo Lobo*

**114 Fat Grafting for Pedal Fat Pad Atrophy**

*Natoli Farber, Beth Gusenoff, and Jeffrey Gusenoff*

**115 Leg Augmentation with Autologous Fat Tissue**

*Violeta Skorobac Asanin*

**116 Composite Calf Augmentation Combining Fat and Implants**

*Katarina Andjelkov*

**117 Osteoarthritis of the Knee: Comparison Between Intra-articular Injection of Adipose-Derived Stromal Vascular Fraction and Nanofat**

*Ivan Aleksandrovich Smyshlyayev, Sergey Ilsvverovich Gilfanov, Elena Viktorovna Batuchtina, Igor Popov, Viacheslav Sergeevich Vasilyev, Andrey Alexeevich Pulin, and Ilya Igorevich Eremin*

**INDEX**

*In addition to these chapters, there is "front matter" and "back matter": Prefaces, acknowledgment, table of contents, contributors list, index, and "about the editor."*