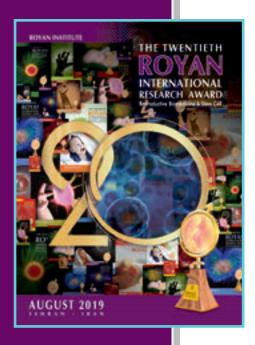


## The Twentieth





**Dr Saeid Kazemi Ashtiani** The Late Founder of ROYAN Institute



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Iranian Academic Center for Education, Culture and Research (ACECR)



Vice Presidency of Science and Technology National Council for Stem Cell Research & Technology



Iran National Science Foundation



Council for Stem Cell Sciences and Technologies



Industrial Development and Renovation Organization of Iran



Iran Science Elites Federation



Middle East Fertility Society



Islamic Development Bank

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## CONTENTS

Foreword	4
Introduction	
Royan Awards	
Table of Titles	
Winners	
• International Winners	29
National Winner	32
Board	33
• Juries	33
Scientific Committee	35
• Executive Committee	37
Royan Institute	38
Endocrinology and Female Infertility Department of RI-RB	41
Andrology Department of RI-RB	43
• Embryology Department of RI-RB	44
Reproductive Genetics Department of RI-RB	46
• Epidemiology and Reproductive Health Department of RI-RB	48
Reproductive Imaging Department of RI-RB	51
• Royan Institute for Stem Cell Biology and Technology (RI-SCBT)	52
Royan Institute for Biotechnology (RI-B)	57
Animal Core Facility	62





**Hamid Reza Tayyebi, PhD, Eng**President of ACECR

## **FOREWORD**

The scientific progress of Islamic Republic of Iran, has drawn the attention of the world in recent years. The Academic Centre of Education, Culture and Research (ACECR) has paid special care to science production and technology development since its establishment in 1980, so that all societies can enjoy the benefits of the scientific achievements. ACECR has focused on different fields including medicine, engineering, agriculture, petrochemistry, culture and art during almost four decades of its activity. Medical and biological activities of ACECR targeted Reproductive Biomedicine, Stem Cell Biology and Technology, Regenerative Medicine, Biotechnology, Cancer Biology, and Herbal Medicine in order to be turned into health services. Royan Institute affiliated to ACECR, is one of the successful centers which has gained a national and international top level for its scientific achievements.

Coming along with the innovative and hardworking scientists, establishing effective scientific collaborations via Royan International Award and Congress is one of the most important factors of Royan's success. Some of the scientists who attended previous Royan awards and congresses, have described these events by releasing essays in international journals, and some have written articles on their collaborative projects with Iranian scientists. I hope the 20th Royan International Research Award can draw outlines in fields of Reproductive Biomedicine, Stem Cell Biology and Technology, Regenerative Medicine and Biotechnology towards scientific society.



As the president of ACECR, I want to revive the memory of Dr Saeid Kazemi Ashtiani, the Late founder of Royan Institute who established Royan International Research Award. Besides, I express my appreciation to all scientists from all around the world who helped us for projects evaluations as well as my colleagues in Royan Institute, specially Dr Abdolhossein Shahverdi, the president of Royan Institute, for their efforts in holding this prestigious Award. I also want to deliver my special thanks to Dr Hamid Gourabi; previous president of Royan Institute, who conducted 12 Awards at high international level. Finally I express my sincere congratulation to Award winners and wish we could continue such a scientific event in the years to come.





## INTRODUCTION

We thank God for giving us another occasion to bring the 20th Royan International Research Award to the end. This scientific event was brought out twenty years ago with the foresight and endeavor of the Late Dr. Kazemi Ashtiani on reproductive medicine, cellular sciences, stem cells, cell therapy and biotechnology fields. It was carried on since then by our other colleagues' efforts.

Over this twenty year period, with the active participation of scholars and scientists from all over the world, an appropriate oppotunity has been provided for exchanging knowledge and the scientific experiences. The implementation of joint research projects and the publication of joint papers during these twenty years approve this scientific collaboration. I hope that the final ceremony of 20th Royan International Research Award in which three researchers out of 67 participants are rewarded for their submitted projects in Stem Cells, Regenerative Medicine and Medical sciences, will pave the way for collaborative interactions among international scholars.

In such scientific events the scholars and scientists have proved they have a common language free from any political ambiances and negative propaganda. Their collaborative interactions have already led to development of biological science in order to relieve human suffering.

The submitted projects in 20th Royan International Research Award evidently demonstrate the shifting approaches into diagnosis and treatment of diseases specially the refractory ones. Molecular diagnosis of diseases by biomarkers and promising devices called biosensors also provide special treatments for refractory patients, beside early diagnosis of diseases. Gene therapy, molecular therapy and genomic editing are new approaches that revive hope in suffering groups, and in these scientific events we hope to take a step forward in this regard.

Conclusively, I welcome all the Royan guests and congratulate the winners. We hope to convey the message of peace and friendship of Iranian people to the whole world, as well as the joint efforts to relieve human suffering. Our guests attending this event will be definitely our messengers for their compatriots.





Royan International Research Award was founded by the late director of Royan Institute, Dr Saeid Kazemi Ashtiani with the aim of encouraging researchers, appreciating their efforts and preparing a friendly scientific atmosphere for them to exchange their knowledge and experiences. Kazemi had wonderful ideas to bring researchers together and motivate them to increase their efforts and perform high level researches via this research award. Royan's staff lost their beloved director in January 2006 by heart attack, May he rest in peace.

This annual award is extending into a higher quality event every year, increasing the scientific level and number of the submitted papers. The research papers are evaluated through an intense jury procedure by Award's national and international Jury board to whom our special thanks goes. Each year the prominent researches with outstanding help in solving problems in reproduction and stem cell fields, are announced, appreciated and rewarded.

As comparing the researches in different fields is very difficult and finding the best researches with variations in methods, implements and results is almost impossible, from the eighth award the same prizes are distributed among winners in different fields of reproductive biomedicine and stem cell such as: female infertility, epidemiology, ethics, andrology, embryology, reproductive imaging, reproductive genetics, stem cell biology and technology, regenerative medicine, and biotechnology.

#### **Nomination and Selection Procedure of Award**

The submitted research articles are categorized according to ten scientific groups: female infertility, reproductive genetics, epidemiology, ethics, embryology, andrology, reproductive imaging, stem cell biology and technology, regenerative medicine and biotechnology. Each article is ranked according to its relevancy, impact factor, and an innovation score.

After the articles are sorted, each scientific group selects their nominees and sends them to national and international referees for evaluation.

Each referee evaluates the research articles related to his/her field of interest, qualitatively in Likert scale according to these norms:

- Relevancy to the award subjects
- Creativity and innovation
- Methodology and research design
- Problem solving
- Applicability on human

Evaluation of the articles by the juries is discussed in the board of juries and their decisions get approved by scientific board of the institute. Finally, international and national winners are selected and invited to present their researches in Royan twin congress on Reproductive Biomedicine and Stem Cell Biology and Technology which is held almost in August/September every year and receive their prizes in prize award ceremony.

Note: It is obligatory for the winners to attend the ceremony and present their research articles in the congress.







#### **International Winners:**

- First Place: Mohamed Mitwally, Canada Comparison of an Aromatase Inhibitor with Clomiphene Citrate for Induction of Ovulation
- Second Place: Ali Ahmady, Canada
   Cell and Molecular Investigation of the Fertilizing Ability of Dead Sperm
- Third Place: Weihau Wang, USA Spindle Observation in Living Human Eggs with Pollaries Microscope and Its Use in Assisted Human Reproduction
- Fourth Place: Simon Marina Avendano, Spain HIV-Seropositive Can Be Fathers without Infecting the Women or Child
- Fifth Place: Jaffar Ali, Qatar Formulation of a Protein-Free Medium for Human Assisted Reproduction

#### **Iranian Winners:**

- Mohammad Hossein Nasr-Esfahani
   Sperm Chromatin Status and Male Infertility
- Mahnaz Ashrafi
   Effect of Metformin on Ovulation and Pregnancy Ratein Women with Clomiphen Resistant PCOS
- Mohammad Ebrahim Parsanezhad
   Section of the Cervical Septum Doesn't Impair Reproductive Outcome











Second
Research Award
Reproductive Biomedicine & Stem Cell

The

#### **International Winners:**

- First Place: Ri-Cheng Chian, Canada
   A New Treatment for Women with Infertility Due to Polycystic Ovarian
   Syndrome: Immature Oocyte Retrieval Followed in vitro Maturation
- Second Place: Ma'asouma Makhseed, Kuwait
   The Possible Immunological Basis of Repeated Pregnancy Loss
- Third Place: Esmail Behboodi, USA
   Production of Goats by Somatic Cell Nuclear Transfer
- Fourth Place: Sayeed Unisa, India Reproductive, Demographic and Behavioral Causes of Infertility in India
- Fifth Place: Ahmed Mohammed Saleh, Saudi Arabia
   Effect of Laparoscopic Ovarian Drilling on Serum Vascular Endothelial
   Growth Factor (VEGF), and on Insulin Response to Oral Glucose
   Tolerance Test in Women with PCOS

#### **Iranian Winners:**

Hossein Baharvand

Improvement of Blastocyst Development *in vitro* and Overcoming the Blastocyst Collapse and Its Effective Factor(s) in Sequential Culture Media

- Marzieh Nojomi Epidemiology of Infertility in the West of Tehran 2000-2001
- Gholamreza Pourmand
   Effect of Renal Transplantation on Sperm Quality and Sex Hormones Level

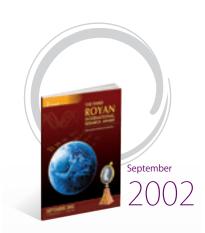


Received Papers: 78









#### **International Winners:**

- First Place: Marco Filicori, Italy
   Novel Approaches to Ovulation Induction: The Critical Role of
   Luteinizing Hormone Activity in Regulating Folliculogenesis
- Second Place: Klaus G. Steger, Canada Influence of Histone-Protmine-Exchange on Male Infertility
- Third Place: Franck Pellestor, France
   Chromosomal Investigations in Human Gametes: Study of the Interchromosomal Effect in Sperm of Chromosomal Rearrangement Carriers and Mechanisms of Non Disjunction in Oocytes
- Fourth Place: Ghazala S. Basir, Hong Kong
   The Effect of High Estradiol Levels on Endometrial Development in Assisted Reproduction Technology: Evaluation of Sonographic Doppler Haemodynamic and Morphometric Parameters
- Fifth Place: Mohamed Ali Bedaiwy, USA Transplantation of Intact Frozen-Thawed Mammalian Ovary with Vascular Anastomosis: A Novel Approach

#### **Iranian Winners:**

Saeed Alborzi

Laparoscopic Salpingoovolysis. Is There Any Place for Second Look Laparoscopy?

• Saeed Rahbar

Laser Assisted Hatching in Young Women Significantly Increases Pregnancy and Implantation Rates

• Shir Ahmad Sarani

Morphological Evidence for the Implantation Window in Human Luminal Endometrium Special Winner in Reproductive Health

#### **Special Winner:**

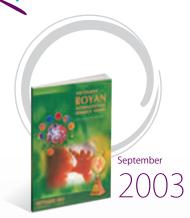
 V. I. Sodestrom- Anttila, Finland
 Embryo Donation-Outcome & Attitude Among Embryo Donors & Recipient











Fourth
Reproductive Biomedicine & Stem Cell

The

#### **International Winners:**

- First Place: Yong-Mahn Han, South Korea Abnormal Structural Integrity and Reprogramming in the Cloned Embryos
- Second Place: Lucille E. Voullaire, Australia
   Chromosome Abnormality In Human Embryos Diagnosed Using
   Comparative Genomic Hybridization: Its Relationship to Infertility
- Third Place: Mauro Maccarrone, Italy
   Low Fatty Acid Amide Hyrolase and Anandamide Levels Are Associated
   with Failure to Achieve an Ongoing Pregnancy after IVF and Embryo
   Transfer
- Fourth Place: Ali Honaramooz, USA
   Sperm from Neonatal Mammalian Testes Grafted in Mice
- Fifth Place: Jan M.R. Gerris, Belgium
   Elective Single Embryo Transfer Halves the Twinning Rate without
   Decrease in the Total Ongoing Pregnancy Rate of an AVF/ICSI Program

#### **Iranian Winners:**

- Mohammad Ebrahim Parsanezhad
   Ovarian Stromal Blood Flow Changes After Laparoscopic Ovarian
   Cauterization in Women with Polycystic Ovary Syndrome
- Mojdeh Salehnia Vitrification of Ovarian Tissue
- Jaleh Zolghadri
   Successful Pregnancy Outcome with IUI in Patients with Unexplained
   Recurrent Miscarriage, Whose Male Partners Have Low Score Hypo-Osmotic Swelling Test















#### **International Winners:**

- Second Place: Alfonso Guiterrez-Adan, Spain
   Long Term Effect of in vitro Culture of Mouse Embryos with Serum on mRNA Expression of Imprinting Genes, Development and Behavior
- Second Place: Maciej K. Kurpisz, Poland
   Reactive Oxygen Species and "Male Factor" of Infertility
- Third Place: Michel von Wolf, Germany Glucose Transporter Proteins (GLUT) in Human Endometrial-Expression, Regulation and Function through out the Menstrual Cycle and in Early Pregnancy
- Fourth Place: **Sophie Lambard**, France Human Male Gamete Quality: Place of Aromatase and Estrogens
- Fifth Place: Naojiro Minami, Japan A Novel Maternal Effect Gene, Oogenesin: Involvement in Zygotic Gene Activation and Early Embryonic Development in the Mouse

#### **Iranian Winners:**

Seyed Javad Mowla
 Catsper Gene Expression in Postnatal Dev

Catsper Gene Expression in Postnatal Development of Mouse Testis and in Subfertile Men with Deficient Sperm Motility

Mohammad A. Khalili

Restoration of Spermatogenesis by Adenoviral Gene Transfer into Injured Spinal Cords of Rats

• Mojdeh Salehnia

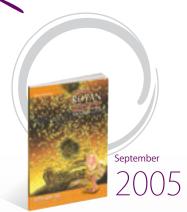
Ultrastructural, Histochemical and Morphometric Studies of Mouse Reproductive Tract after Ovarian Induction













#### **International Winners:**

- First Place: **Kathyjo Ann Jackson**, USA Therapeutic potential of stem cells
- Second Place: Carmen Belen Martinez-Madrid, Belgium
   Ficoll Density Gradient Method for Recovery of Isolated Human Ovarian
   Primordial Follicles
- Third Place: Federico Alejandra Calegari, Germany
   Tissue-Specific Manipulating of Gene Expression of Mouse Embryos
   Using in Utero Electroporation
- Fourth Place: Maryam Kabir-salmani, Japan Different Roles of  $\alpha_5\beta_1$  and  $\alpha_v\beta_3$  Integrins in the IGF-I-Induced Migration of the Human Extravillous Trophoblast Cells
- Fifth Place: Zhenmin Lei, USA
   Testicular Phenotype in Luteinizing Hormone Knockout Animals and the Effect of Testostrone Replacement Therapy

#### **Iranian Winners:**

- Seyed Javad Mowla
  - The Profile of Gene Expression Changes During the Neural Differentiation of Bone Marrow Stormal Cells (BMSCs)
- Jaleh Zolghadri

Pregnancy Outcome Following Laparoscopic Tubal Ligation of Hydrosalpinx Tube in Patients with Early Recurrent Abortion



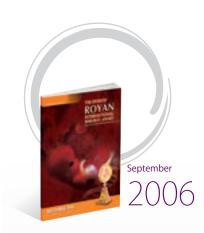
Received Papers: 198











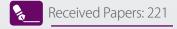
#### **International Winners:**

- First Place: James Affram Adjaye, Germany
   A) Whole-Genome Approaches for Large-Scale Gene Identification and Expression Analysis in Mammalian Preimplantation Embryos
   & B) Primary Differentiation in the Human Blastocyst: Comparative Molecular Portraits of Inner Cell Mass and Trophectoderm Cells
- Third Place: Adrian Richard Eley, UK
   Opoptosis of Ejaculated Human Sperm Is Induced by Co-Incubation with Chlamydia Trachomatis Lipopolysaccaride
- Fourth Place: Lone Schmidt, Denmark
   Does Infertility Cause Marital Benefit? An Epidemiological Study of 2250 Women and Men in Fertility Treatment
- Fifth Place: Louis Chukwuemeka Ajonuma, Hong Kong Molecular and Cellular Mechanisms Underlying Abnormal Fluid Formation in the Female Reproductive Tract: The Critical Role of Cystic Fibrosis Transmembrane Conductance Regulators

#### **Iranian Winners:**

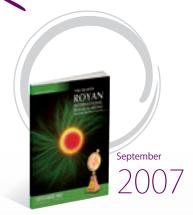
- Mohammadreza Baghban Eslaminejad
   Polarized Culture Systems and Their Effects on Embryo Development
- Mansoureh Movahedin
   New Approaches to Assess the Success and Enhance the Efficiency of Male Germ Cell Transplantation in the Mouse
- Ashraf Alleyassin
   Comparison of Unilateral and Bilateral Transfer of Injected Oocytes into Fallopian Tubes: A Prospective Randomized Clinical Trial











Eighth ROYAN International Research Award

Reproductive Biomedicine & Stem Cell

The

#### **International Winners:**

Best research project in stem cell field

Chiba Shigeru, Japan
 Role of Notch Signaling in Normal and Neoplastic Hematopoietic Stem
 Cells and Clinical Application of Notch Signal Modifiers

Best research project in reproductive genetic field

 Françoise Dantzer, France
 Poly (ADP-Ribose) Polymerase-2 Contributes to the Fidelity of Male Meiosis I and Spermiogenesis

Best research project in female infertility field

 Seyed Mohammad Moazzeni, Iran
 Dendritic Cells and Pregnancy: A Bidirectional Relationship to Protect the Semiallogenic Fetus

Best research project in embryology field

 Bjorn Johannes Oback, New Zealand
 Nuclear Donor Choice, Sperm Mediated Activation and Embryo Aggregation: A Multi-Pronged Approach to Sequentially Improve Cattle Cloning Efficacy

Best research project in andrology field

Reddanna Pallu, India
 Role of Cyclooxygenases in Male Reproduction

#### **Iranian Winners:**

• Ramin Radpour

Novel Mutations and (TG)M(T)N Polymorphism in Iranian Males with Congenital Bilateral Absence of the Vas Deferens

- Mohammad Ebrahim Parsanezhad
   Hysteroscopic Metroplasty of the Complete Uterine Septum, Duplicate Cervix, and Vaginal Septum
- Mehri Azadbakht
   Apoptosis in Mouse Embryos Co-Cultured with Polarized or Non-Polarized
   Uterine Epithelial Cells Using Sequential Culture Media



Received Papers: 248











#### **International Winners:**

Best research project in stem cell field

• Su-Chun Zhang, USA Human Embryonic Stem Cells As a Tool of Discovery

Best research project in reproductive genetic field

• Smita Mahale, India

Structural, Functional and Molecular Aspects of Follicle Stimulating Hormone Receptor: Applications in Designing Receptor Targets and Management of Female Infertility

Best research projects in female infertility field (share)

- Federico Prefumo, Italy
   Uterine Doppler Investigations and Trophoblast Biology in Early Pregnancy
- Saeed Alborzi, Iran Laparoscopic Metroplasty in Bicornuate and Didelphic Uterus

Best research project in embryology field

• Leen.Vanhoutte, Belgium

Nuclear and Cytoplasmic Maturation of *in vitro* Matured Human Oocytes After Temporary Nuclear Arrest by Phosphodiesterase 3-Inhibitor

Best research project in andrology field

• T.O.Ogata, Japan

Haplotype Analysis of the Estrogen Receptor Alpha Gene in Male Genital and Reproductive Abnormalities

#### **Iranian Winners:**

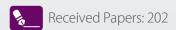
• Ali Fathi

The Molecular Mechanisms Controlling Embryonic Stem Cells (Escs) Proliferation and Differentiation

• Fardin Fathi

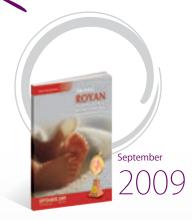
Characterizing Endothelial Cells Derived from the Murine Embryonic Stem Cell Line CCE











Tenth

The

International Research Award Reproductive Biomedicine & Stem Cell

#### **International Winners:**

Best research project in stem cell field

Yi Liu, China
 Dental Stem Cells-Based Tissue Regeneration in a Large Animal Model

Best research project in reproductive genetic field

• Wai-sum 00, China Adrenomedullin in Male and Female Reproduction

Best research projects in female infertility field (share)

• Sherman Silber, USA

A Series of Monozygotic Twins Discordant for Ovarian Failure: Ovary Transplantation (Cortical versus Microvascular) and Cryopreservation

• Melinda Halasz, Hungary

What Harbours the Cradle of Life? The Progesterone-Dependent Immunomodulation

Best research project in embryology field

• Geetanjali Sachdeva, India

Molecular Assessment of the Uterine Milieu during Implantation Window in Humans and Non-human Primates

Best research project in andrology field

• Paolo Chieffi, Italy

PATZ1 Gene Has a Critical Role in the Spermatogenesis and Testicular Tumours

#### **Iranian Winners:**

• Hossein Mozdarani

Reduction of Induced Transgenerational Genomic Instability in Gametes Using Vitamins E and C, Observed As Chromosomal Aneuploidy and Micronuclei in Preimplantation Embryos

Seyed Javad Mowla

OCT4 Spliced Variants Are Differentially Expressed in Human Pluripotent and Nonpluripotent Cells

Mohammad Reza Safarinejad

Evidence Based Medicine on the Pharmacologic Management of Premature Ejaculation



Received Papers: 253











#### **International Winners:**

Best research project in regenerative medicine field

• Stefano Pluchino, Italy Human Neural Stem Cells Ameliorate Autoimmune Encephalomyelitis in Non-human Primates

Best research project in stem cell biology & technology field

• Hooman Sadri-Ardekani, Iran-The Netherlands Propagation of Human Spermatogonial Stem Cells *in vitro* 

Best research project in female infertility field

• Louis Chukwuemeka Ajonuma, Nigeria New Insights into the Mechanisms Underlying Chlamydia Trachomatis Infection Induced Female Infertility

Best research project in reproductive genetic field

 Anu Bashamboo, France Mutations in NR5A1 Associated with Ovarian Insufficiency

Best research project in embryology field

Mohammad Hossein Nasr-Esfahani, Iran
 New Era in Sperm Selection for ICSI Procedure

#### **Iranian Winners:**

Serajoddin Vahidi
 Prevalence of Primary Infertility in the Islamic Republic of Iran in 2004-2005

• Tahereh Ma'dani Improvement of Pregnancy Rate in ART Cycles

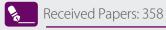
#### • Mehrdad Noruzinia

MTHFR Promoter Hypermethylation in Testicular Biopsies of Patients with Non-obstructive Azoospermia: The Role of Epigenetics in Male Infertility

#### Abbas Piryaei

Differentiation Capability of Mouse Bone Marrow-Derived Mesenchymal Stem Cells into Hepatocyte-Like Cells on Artificial Basement Membrane Containing Ultraweb Nanofibers and Their Transplantation into Carbon Tetrachloride Injured Liver Model









September 201

Twelfth
ROYAN

International Research Award
Reproductive Biomedicine & Stem Cell

The

#### **International Winners:**

Best research project in regenerative medicine field

Lorenzo Piemonti, Italy
 Bone Marrow as Ideal Microenvironment for Human Islet Transplantation to Treat Type 1 Diabetes (Clinical Trials.gov Identifier: NCT01345227)

Best research project in stem cell biology & technology field

Hiromitsu Nakauchi, Japan
 Heterogeneity and Hierarchy Within the Most Primitive Hematopoietic
 Stem Cell Compartment

Best research project in female infertility field

 Elizabeth Stewart, USA
 Safely Extending Focused Ultrasound Surgery for Uterine Leiomyomas to Women Who Desire Future Pregnancies

Best research project in reproductive genetic field

 Paul Thomas, Australia Identification of SOX3 As an XX Male Sex Reversal Gene in Mice and Humans

Best research project in embryology field

• Steve Tardif, UK

Infertility with Impaired Zona Pellucida Adhesion of Spermatozoa from Mice Lacking TauCstF-64

Best research project in epidemiology & ethics fields

• Heping Zhang, USA

Decision Trees for Identifying Predictors of Treatment Effectiveness in Clinical Trials and Its Application to Ovulation in a Study of Women with Polycystic Ovary Syndrome

#### **Iranian Winners:**

Morteza S. Hosseini

Development of an Optimized Zona-Free Method of Somatic Cell Nuclear Transfer in the Goat

Jaleh Zolghadri

Relationship Between Abnormal Glucose Tolerance Test and History of Previous Recurrent Miscarriages, and Beneficial Effect of Metformin in These Patients: A Prospective Clinical Study

#### Batool Rashidi

Simvastatin Effects on Androgens, Inflammatory Mediators, and Endogenous Pituitary Gonadotropins Among Patients with PCOS Undergoing IVF: Results from a Prospective Randomized Placebo-Controlled Clinical Trial



Received Papers: 280











#### **International Winners:**

Best research project in stem cell biology & technology field

Chengcheng (Alec) Zhang, USA
 ex vivo Expanded Hematopoietic Stem Cells Overcome the MHC
 Barrier in Allogeneic Transplantation

Best research project in andrology field

• Kristian Almstrup, Denmark Screening of Subfertile Men for Testicular Carcinoma in Situ by an Automated Image Analysis-based Cytological Test of the Ejaculate

Best research projects in female infertility field (share)

Wenjie Zhu, China
 Transvaginal Ultrasound-guided Ovarian Interstitial Laser Treatment in
 Anovulatory Women with Polycystic Ovary Syndrome: A Randomized
 Clinical Trial on the Effect of Laser Dose Used on the Outcome

Kaei Nasu, Japan
 Role of Mevalonate-Ras Homology (Rho)/Rho-associated Coiled-Coil-Forming Protein Kinase-mediated Signaling Pathway in the Pathogenesis of Endometriosis-associated Fibrosis

Best research project in reproductive genetic field

• Signe Atlmäe, Sweden Interactorme of Human Embryo Implantation: Identification of Gene Expression Pathways, Regulation, and Integrated Regulatory Networks

Best research project in embryology field

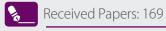
Laura Cecilia Giojalas, Argentina
 Sperm Chemotaxis towards Progesterone, a Guiding Mechanism That
 May Be Used to Select the Best Spermatozoa for Assisted Reproduction

#### **Iranian Winner:**

• Alireza Pouya

Human Induced Pluripotent Stem Cells Differentiation into Oligodendrocyte Progenitors and Transplantation in a Rat Model of Optic Chiasm Demyelination











Fourteenth
ROYAN
International Research Award
Reproductive Biomedicine & Stem Cell

The

#### **International Winners:**

Best research project in stem cell biology & technology field

Antonio Uccelli, Italy
 Mesenchymal Stem Cells Shape Microglia Effector Functions Through
 the Release of CX3CL1

Best research project in reproductive genetic & andrology fields

• Pierre F Ray, France Search for Genetic Causes of Male Infertility

Best research project in female infertility field

Paola Panina Bordignon, Italy
 The Selective Vitamin D Receptor Agonist Elocalcitol Reduces
 Development of Endometriosis and Formation of Peritoneal Adhesion in a Mouse Model

Best research project in embryology field

Mariano Buffone, USA
 Role of Actin Cytoskeleton During Mouse Sperm Acrosomal Exocytosis

#### **Iranian Winners:**

Ashraf Moini

Risk Factors Associated with Endometriosis Among Iranian Infertile Women

#### Malek Hossein Asadi

OCT4B1, A Novel Spliced Variant of OCT4, Is Highly Expressed in Gastric Cancer and Acts as an Antiapoptotic Factor

#### • Hossein Mozdarani

Genome Instability and DNA Damage in Male Somatic and Germ Cells Expressed as Chromosomal Microdeletion and Aneuploidy Is a Major Cause of Male Infertility

#### • Armin Towhidi

Omega-3 Fatty Acids Accompanied with A-Tocopherol Improved Fresh and Post-thaw Sperm Quality in Ruminants











20





#### **International Winners:**

Best research project in regenerative medicine field

Anne S. Baron-Van Evercooren, France
 Role of Endogenous Neural Precursor Cells in Multiple Sclerosis

Best research project in stem cell biology & technology field

Milena Bellin, Netherlands
 Human Pluripotent Stem Cells for Modelling and Correcting Long-QT Syndrome

Best research project in andrology & reproductive genetic fields

• Sophie Rousseaux, France
Male Genome Programming, Infertility and Cancer

Best research project in female infertility field

• Christiani Andrade Amorim, Belgium New Steps Towards the Artificial Ovary

Best research project in embryology & biotechnology fields

Guoping Fan, USA
 Transcriptome Dynamics of Human and Mouse Preimplantation
 Embryos Revealed by Single Cell RNA-sequencing

Best research project in ethics field

Kristien Hens, Netherlands
 Towards the Transparent Embryo? Dynamics and Ethics of Comprehensive Pre-implantation Genetic Screening

#### **Iranian Winners:**

Seyedeh Nafiseh Hassani

The Augmented BMP Pluripotency Pathway via TGF- $\beta$  Suppression Maintains the Ground State of Embryonic Stem Cells Self-Renewal

• Rouhollah Fathi

Optimal Strategy Toward Fertility Preservation: *in vivo* and *in vitro* Post-thaw Options in Gamete, Embryo and Ovarian Tissue Cryostorage









21



Sixteenth
ROYAN
International Research Award
Reproductive Biomedicine & Stem Cell

The

#### **International Winners:**

Best research project in female infertility field

• **Geetanjali Sachdeva**, India Endometrial Secretome and Its Role in Uterine Functions

Best research project in embryology field

Priyanka Parte, India
 Tubulin Reversible Acetylation – Driving the Moves and the Moves
 Behind the Drive

Best research project in biotechnology field

• **Zhang,** USA Identifying and Overcoming an Epigenetic Barrier for SCNT Reprogramming

Best research project in reproductive genetic field

Masoud Zamani Esteki, Belgium
 Concurrent Whole-Genome Haplotyping and Copy Number Profiling of Single Cells

Best research project in stem cell biology and technology field

 Guoliang Xu, China DNA Oxidation Towards Totipotency in Mammalian Development

#### **Iranian Winners:**

• Maryam Shahhoseini

Expression Profile of Macrophage Migration Inhibitory Factor (MIF) Signaling Pathway as a Potentional Biomarker in Pathophysiology of Endometriosis

Morteza Mahmoudi
Bioinspired Substrates Direct the Fate of Stem Cells



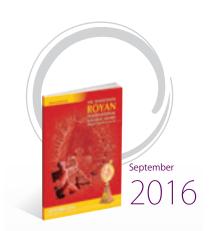
Received Papers: 204











#### **International Winners:**

Best research project in biotechnology field

Jianguo Zhao, China
 High Efficient Genome Editing in Pigs for Making Human Disease
 Models

Best research project in embryology field

 Peter Koopman, Australia
 Validation of Retinoic Acid as the Master Inducer of Meiosis in Fetal Germ Cells

Best research project in regenerative medicine field

Mohammad Sharif Tabebordbar, USA
 In vivo DMD Gene Editing in Muscles and Muscle Stem Cells of Dystrophic Mice

Best research project in reproductive genetic field

Miguel Ramalho-Santos, USA
 Hira-Mediated H3.3 Incorporation Is Required for DNA Replication and Ribosomal RNA Transcription in the Mouse Zygote

Best research project in stem cell biology and technology field

Xiaohua Shen, China
 Cis-regulatory Roles of IncRNAs in Transcription Regulation and Stem
 Cell Differentiation

#### **Iranian Winners:**

Mohsen Sharafi

Optimization of Domestic Animal Sperm Freezing Using Novel Plant-Origin Cryopreservation Media

Anahita Mohseni Meybodi

Beneficial Application of Molecular Cytogenetics in Delineation of Chromosomal Abnormalities Involved in Male Infertility: From Rare to Care

• Kamran Ghaedi

Utilization of Pioglitazone as a Novel Approach to Increase the Colony Formation Efficiency of Individualized Human Pluripotent Stem Cells









September 2017



#### **International Winners:**

Best research project in stem cell biology and technology field

Thomas Braun, Germany
 Compaction of Chromatin Seals Quiescence of Muscle Stem Cells

Best research project in embryology field

 David Greening, Australia
 Exosomes: A New Paradigm in Embryo-Maternal Cross-Talk for Successful Implantation

Best research project in regenerative medicine field

 Riccardo Fodde, Neatherlands
 Diet, Inflammation, and Stem Cells: Trading off Regenerative Response with Cancer Risk

Best research project in reproductive genetic field

Kaei Nasu, Japan
 Roles of Aberrantly Expressed microRNAs in Endometriosis

Best research project in female infertility field

**Khaleque Khan,** Japan Molecular Detection of Intrauterine Microbial Colonization in women with Endometriosis

#### **Iranian Winners:**

• Mahnaz Ashrafi

Assisted Reproductive Outcomes in Women with Different Polycystic Ovary Syndrome Phenotypes: The Predictive Value of Anti-Müllerian Hormone

#### Fereshteh Esfandiari

*in vitro* Generation of Meiosis-Competent Germ Cells from Embryonic Stem Cells by Engineering the Delivery of BMP4

#### • Mahdi Sheikh

Granulocyte Colony Stimulating Factor in Repeated IVF Failure: A Randomized Trial

#### • Hossein Ghanbarian

RNA-Directed Programming of Embryonic Stem Cell

#### Kambiz Gilani

Untargeted Metabolomic Profiling of Seminal Plasma in Non-obstructive Azoospermia Men: A Non-invasive Detection of Spermatogenesis



Received Papers: 239











#### **International Winners:**

Best research project in stem cell biology and technology field

SaverioBellusci, Germany
 Two-Way Conversion Between Lipogenic and Myogenic Fibroblastic
 Phenotypes Marks the Progression and Resolution of Lung Fibrosis

Best research project in embryology & andrology fields

Reza Nosrati, Australia
 Microfluidics for Male Fertility

Best research projects in reproductive genetic field

- Pradeep Kumar, India (share Winner)
   Epigenetic Regulation of Coding and Non-coding RNA Expression
   During the 1st Wave of Spermatogenesis
- Amir Amiri-Yekta, Iran (Share Winner) Genetics and Molecular Characterization of the Multiple Morphological Abnormalities of the Sperm Flagella (MMAF) Syndrome

Best research project in female infertility field

Teresa Kaye Woodruff, USA
 A Bioprosthetic Ovary Created Using 3D Printed Microporous Scaffolds
 Restores Ovarian Function in Sterilized Mice

Best research project in biotechnology field

 Ali FouladiNashta, UK Impact of Sperm Hyaluronidase and VLMWHA on Sheep Blastocyst Formation in vitro, Viability After Cryopreservation and Pregnancy Rate After Embryo Transfer

#### **Iranian Winners:**

Sarah Rajabi

Bioengineering of a Humanized Heart by Seeding of hiPSC-Derived Cardiovascular Progenitor Cells into Growth Factor-Tethered Rat Heart Matrix

#### Mazdak Razi

Antioxidant, Anti-inflammatory and Testosterone Therapy Reinforces Spermatogonial Stem Cells Self-Renewal in Experimentally-Induced Varicocele; Possible Mechanisms











## Table of Titles

No.	Last Name, First Name	Country	Title
	Abedi, Niloufar		Usage of Stem Cells and Tissue Engineering in the Field of Dentistry
2	Alborzi, Saeed	Iran	Efects of Clarithromycin on Inlammatory Markers and Clinical Manifestations in Postsurgical Follow-Up of Patients with Endometriosis: A Double-Blinded Andomized Placebo-Controlled Clinical Trial
3	Alborzi, Saeed	Iran	Diagnostic Accuracy of Magnetic Resonance Imaging, Transvaginal, and Transrecta Ultrasonography in Deep Infiltrating Endometriosis
4	Aliakbar Maleklou, Mahsa	lran	Long Term Exposure to Nitric Oxide Caused Cell Cycle Arrest Due to Down Regulation of Cdk2
5	Alizadeh Moghadam Masouleh, AliReza	Iran	Dietary Fatty Acids as Factors Influencing Fertility in Male and Female; Fatty Acids and Antioxidants Cross-talk
6	Alsoy Altinkaya, Sacide	Turkey	A New Approach for Brain Tissue Engineering: Biomimetic Scaffolds Integrated with Nerve Growth Factor
7	Ardestani, Amin	Germany	YAP Restoration For $eta$ -cell Regeneration in Diabetes
8	Aref Nezhad, Reza	Iran	Association of Survivin-c.*148T>C Gene Polymorphism with Prostate Cancer Risk
9	Arian, Sara	USA	Maternal Loss of NLRP2 Results in Abnormal Reproductive Outcomes Independent of the Maternal Uterine Environment
10	Asadi, Malek Hossein  Iran The Expression and Function of Stemness Long Non-coding RNAs in Breast C Cells		The Expression and Function of Stemness Long Non-coding RNAs in Breast Cancel Cells
11	Asgari, Fatemeh  Iran Human Placenta Decellularized Matrix as a Scaffold for Use in Proliferar Spermatogonial Stem Cells		Human Placenta Decellularized Matrix as a Scaffold for Use in Proliferation of Spermatogonial Stem Cells
12	Ashrafi, Mahnaz	Iran	The Effect of "Delayed Start" Protocol with Gonadotropin-Releasing Hormone Antagonist on Cycle Outcome in Bologna Poor Responders: A Randomized Clinical Trial
13	Ciebiera, Michał	Poland	The Pathophysiology of Uterine Fibroid with Particular Consideration of Biologica Pathways Depending on Selected Growth Factors and the Resultant Therapeutic Possibilities
14	Cosson, Jacky	France	Imaging and Analysis of Sperm Flagella in Movement
15	Emokpae, Mathias	Nigeria	Aging Effect and Semen Quality
16	Esmaeili Gouvarchin Ghaleh, Hadi	Iran	Stem Cell Therapy
17	Evans, Jemma	Australia	The Negative Impact of Obesity Associated Advanced Glycation End Products on Female Fertility
18	Fadavi, Mahla	Iran	Evaluation of The Health of 5 to 6 Years Old Children Conceived by Intra Cytoplasmic Sperm Injection (ICSI) in the Novin Infertility Treatment Center (Mashhad,Iran)
19	Fani, Nesa	Iran	Endothelial and Osteoblast Differentiation of Adipose-Derived Mesenchymal Stem Cells Using a Cobalt-Doped CaP/Silk Fibroin Scaffold
20	Gajbhiye, Rahul	India	Heterogeneous Spectrum of CFTR Gene Mutations in Obstructive Azoospermia Associated with Congenital Bilateral Absence of Vas Deferens: Clinical Relevance, Genetic Risk Assessment, Counselling and Prevention of Transmission of CFTR Gene Mutations
21	Gerhardt, Christoph	Germany	Cell Type-Specific Regulation of Ciliary Transitionzone Assembly in Vertebrates
22	Hashemi, Maryam	Iran	Adnexal Mass in Pregnancy Diagnosed as Heterotopic Pregnancy: A Case Report
23	Hermann, Brian	USA	Single-Cell Transcriptomes of Mouse and Human Spermatogenic Cells Defines Heterogeneity in Spermatogonial Stem Cells
24	Hiraike, Osamu	Japan	Activation of Nrf2/Keap1 Pathway and Oxidative Stress Pathway in Age-Associated Infertility Decline
25	Huang, Tian-Hua	China	Study on Vertical Transmission of Human Immunodeficiency Virus Type 1 (HIV-1) via Human Sperm
26	Jiji, Wiselin	India	Statistical Tool to Diagnose Dermatology

### ... TABLE OF TITLES

No.	Last Name, First Name	Country	Title
27	Kamali, Amir	Iran	Recruitment and Osteoinduction of Mesenchymal Stem Cells (MSCs) Using Sma Molecule and Bioactive Compounds: An Experimental Study in Rat
28	Khezri, Samran	Iran	Effect of Genistein on the Follicular Structure and Hormonal Changes in Induced Polycystic Ovarian Syndrome (PCOS) in Female Rats
29	Kohsaka, Tetsuya	Japan	Insulin-Like Factor 3 (INSL3) in Male Reproduction: A View from an Animal
30	Kumar, Dharmendra	India	Developed a Semen Extender and Fast Freezing Protocol for Improvement in the Post-thawed Sperm Motility Through Reducing Oxidative Stress and Cryo capacitation
31	Laloraya, Malini	India	Integrated miRNA-mRNA Network Reveals Immune Dysregulation as a Majo Dysregulated Pathway in Polycystic Ovary Syndrome (PCOS)
32	Laloraya, Malini	India	Interactome Proteomics and <i>in vivo</i> Silencing Establishes that DOCK180-AIRI Partnership Is Crucial for Uterine Reprogramming During Implantation and Early Pregnancy
33	Lazzarino, Giuseppe	Italy	Redox Energy Test: A Useful Biochemical Tool for the Diagnosis and Managemen of Male Infertility
34	Lee, Dung-Fang	USA	Dissect Osteosarcoma Etiology with LFS iPSCs
35	Li, Hongjun	China	Erectile Dysfunction in Chinese Men of Infertile Couples
36	Li, Xin	USA	Single-Molecule Long-Read Sequencing Reveals Conserved Selection Mechanism Regulating Sperm mRNA Profile in Mice and Humans
37	Lu, Qi	China	Rosuvastatin Regulates Odontoblast Differentiation by Suppressing NF- $\kappa$ Activation in an Inflammatory Environment
38	Lykke-Hartmann, Karin	Denmark	Global Gene Expression Analysis as a Toll to Improve Infertility Treatments
39	Madani, Tahereh	Iran	Live Birth Rates After Different Endometrial Preparation Methods in Frozen Cleavag Stage Embryo Transfer Cycles: A Randomized Controlled Trial
40	Mamsen, Linn Salto	Denmark	Concentrations of Perfluoroalkyl Substances (PFASs) in Human Embryonic and Feta Organs from First, Second, and Third Trimester Pregnancies
41	Matorras, Roberto	Spain	Differential Proteomic Analysis of Endometrial Fluid Suggests Increased Inflammation and Impaired Glucose Metabolism in Non-implantative IVF Cycles and Pinpoints PYGB as a Putative Implantation Marker
42	Merkle, Florian	UK	Optimised Stem Cell Resources for Disease Modelling and Regenerative Medicine
43	Mohamed, Tamer	USA	Regulation of Cell Cycle to Stimulate Adult Cardiomyocyte Proliferation and Cardia Regeneration
44	Mohammadi Kian, Mahnaz	Iran	Combination Effect of ATO/THAL on PI3K/AKT/mTOR Pathway in AML Cell Lines
45	Montazeri, Leila	Iran	Design and Fabrication of Novel Culturing Mico-platform to Enhance Developmenta Rate and Quality of Mouse Single Blastomeres into Blastocysts
46	Moros Nicolás, Carla	Spain	The Zona Pellucida of Carnivores: A Molecular and Phylogenetic Approach
47	Nakao, Toshihiko	Japan	Monitoring Nutritional and Metabolic Status in Dairy Cows During the Periparturien Period for Improvement of Reproductive Performance
48	Palmerini, Maria	Italy	Morpho-Functional Analysis of Mammalian Oocytes Under Physiologica Experimental and Pathological Conditions
49	Pant, A	India	Neuronally Differentiating Human Cord Blood Stem Cell: A Mimicking Model System for Stage Specific Developmental Neurotoxicity Assessment
50	Peruzzotti- Jametti, Luca	UK	Macrophage-Derived Extracellular Succinate Licenses Neural Stem Cells to Suppres Chronic Neuroinflammation
51	Petite, Hervé		Human Mesenchymal Stem Cell Failure to Adapt to Glucose Shortage and Rapidly Use Intracellular Energy Reserves Through Glycolysis Explains Poor Cell Survival After Implantation
52	Roudebush, William	USA	Relationship Between Blastocoel Cell-Free DNA and Day-5 Blastocyst Morphology
53	Sasaki, Kotaro	USA	Early Germ Cell Development and <i>in vitro</i> Gametogenesis in Humans and Nonhuman Primates
54	Sharma, Sunita		Efficacy of GnRH Agonist Trigger in Women Having History of Follicular–Endometria Asynchrony with Clomiphene/IUI Cycles in Unexplained Infertility
55	Shoorei, Hamed	Iran	The Ameliorative Effect of Carvacrol on Oxidative Stress and Germ Cell Apoptosis ir Testicular Tissue of Adult Diabetic Rats





### ... TABLE OF TITLES

•••	IADEE OF THEE		
No.	Last Name, First Name	Country	Title
56	Sills, E Scott	USA	Normalized Ploidy Following 20 Consecutive Blastocysts with Chromosomal Error: Healthy 46,XY Pregnancy with IVF After Intraovarian Injection of Autologous Enriched Platelet-Derived Growth Factors
57	Singh, Shio	India	Natural Products in Management of Male Infertility: A Viable Approach
58	Singh, Rajender	India	Epigenetic (Methylation-Based) Markers of Male Infertility
59	Song, Yihua	China	Wedelolactone Enhances Odontoblast Differentiation by Promoting Wnt/ $\beta$ -Catenin Signaling Pathway and Suppressing NF- $\kappa$ B Signaling Pathway
60	Swearman, Harriet	Australia	pH: The Silent Variable Significantly Impacting Meiotic Spindle Assembly in Mouse Oocytes
61	Taghiyar, Leila	Iran	Decellularized Osteochondral Sheets as a Bioscaffold Support Mesenchymal Stem Cell Proliferation and Differentiation in a Rabbit Model
62	Totonchi, Mehdi	Iran	Application of Genomic Studies in Uncovering Sperm Defects Mechanisms
63	van der Molen, Renate	Netherlands	Endometrial Natural Killer (NK) Cells Reveal a Tissue-Specific Receptor Repertoire
64	Viville, Stéphane	France	Exome Sequencing Reveals a Nonsense Mutation in TEX15 Causing Spermatogenic Failure in a Turkish Family
65	Wu, Xianfang	USA	Intrinsic Antiviral Mechanims of Mammalian Stem Cells
66	Yuliawati, Dwi	Indonesia	Genistein Suppresses the Expression of MMP-2 and MMP-9 Through Suppressing the Activity of NF-kB in the Peritoneum of Mice Model of Endometriosis
67	Zhou, Xiaohui	China	Effect of T2 Peptide on Chronic Prostatitis/Chronic Pelvic Pain Syndrome

# Winners

## Reproductive Biomedicine

## **№** The Negative Impact of Obesity Associated Advanced Glycation End Products on Female Fertility

#### **Objective:**

The incidence of overweight and obesity is growing worldwide. Around 60% of reproductive aged women in developed countries are overweight/obese before conception and these women experience a higher incidence of infertility and placental associated pregnancy complications. The pre-conception uterine environment is key in achieving embryo implantation and a healthy pregnancy. Therefore, we aimed to quantify levels of advanced glycation end products (known to be elevated systemically in obese subjects) within the obese infertile versus lean fertile uterine environment and determine if obese levels of advanced glycation end products (AGEs) within the uterine cavity detrimentally alter tissue function in embryo implantation and placental development.

#### **Material and Methods:**

Levels of AGEs examined within uterine lavage assessed by ELISA to determine differences between lean and obese women. Expression and localization of AGEs, receptor for AGEs (RAGE) and NF  $\kappa$  B within endometrial tissues obtained from lean and obese women determined by immunohistochemistry. Endometrial epithelial cells (ECC-1), primary human stromal cells and trophoblast cells (HTR8-SVneo) treated with lean (2000nmol/mol lysine) or obese (8000nmol/mol lysine) uterine levels of AGEs and p65-NF  $\kappa$  B (western immunoblot), real time adhesion, proliferation migration and invasion (xCelligence real time cell function analysis), decidualization (cell morphology and prolactin release), endoplasmic reticulum stress (western immunoblot for p-PERK) determined. Co-cultures of endometrial epithelial cells and blastocyst mimics (trophectoderm spheroids) similarly treated with lean or obese uterine levels of AGEs to determine their impact on embryo implantation.

#### **Results:**

AGEs were significantly elevated (p=0.004) within the obese (6503.59  $\mu$ mol/mol lysine) versus lean (2165.88  $\mu$ mol/mol lysine) uterine cavity (uterine lavage) with increased immunostaining for AGEs, RAGE and NFkB within obese endometrial tissues during the proliferative phase of the menstrual cycle. Obese uterine levels of AGEs demonstrated a trend to activate NF  $\kappa$  Bsignaling within endometrial epithelial (ECC-1) cells and inhibited their adhesion and proliferation versus treatment with lean uterine levels of AGEs. Obese uterine AGE levels impacted primary human endometrial stromal cell decidualization and activated endoplasmic reticulum stress within these cells. Obese uterine levels of AGEs also inhibited trophectodermal spheroid adhesion to hormonally primed endometrial epithelial cells and trophoblast cell line HTR8/SV-neo invasion.

#### **Conclusion:**

These data corroborate clinical data suggesting the presence of an altered uterine environment in obese women and demonstrate that elevated uterine levels of AGEs within these women may detrimentally impact endometrial function, embryo implantation and placental development.

#### Keywords:

Obesity, Infertility, Endometrial Receptivity, Advanced Glycation End Products, Inflammation

#### **INTERNATIONAL WINNER**



2019

Jemma Evans, PhD



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Dr Jemma Evans is Deputy Head of the Endometrial Remodelling Laboratory in the Centre for Reproductive Health at The Hudson Institute of Medical Research. Dr Evans' research is focused on understanding how the lining of the uterus becomes ready (receptive) for the implantation of an embryo, as well as the key controllers of communication between the uterus and the embryo. This readiness and communication in the peri-

This readiness and communication in the perimplantation period is critical to understand new ways to 1) improve pregnancy rates in infertile couples and 2) target these critical factors to maintain the endometrium in a non-receptive state through the development of novel contraceptives.

It is becoming increasingly clear that the local environment within the uterus can have an effect on development of the baby. Optimising this environment is, therefore, critical in ensuring the health of both mother and baby.

Dr Evans' current research focuses on the role of obesity-associated advanced glycation end products in uterine health and maternal-embryo communication. She is also examining the role of local exosomes in the uterine environment and how these may be altered in infertile women.



#### **INTERNATIONAL WINNER**



2019

Brian P. Hermann, PhD



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Dr Brian P. Hermann is an associate professor and Director of Genomics Core at Texas University. He got his BS in Biology in 1999 from Villanova University and in 2005 he had his PhD in Molecular and Integrative Physiology from University of Kansas. In 2010 he completed his Postdoctoral studies in Obstetrics, Gynecology, and Reproductive Sciences in University of Pittsburgh.

His laboratory's research interests lie in determining how Spermatogonial stem cells (SSCs) are regulated and ultimately behave like stem cells to maintain sperm production, and how they can be exploited to treat male infertility. Ongoing studies in his laboratory are utilizing mouse models to elucidate the fundamental molecular and cellular mechanisms driving the SSC fate decisions and origin during development.

The most significant contributions to science he has done include: The first definitive spermatogonial stem cell transplants in primates, Phenotypic and functional characterization of primate spermatogonial stem cells, Establishing male fertility preservation paradigms, Identifying spermatogonial stem cells and uncovering mechanisms controlling their fate and function, and Identification of novel gene regulatory mechanisms in testicular somatic

### Reproductive Biomedicine

## Single-Cell Transcriptomes of Mouse and Human Spermatogenic Cells Defines Heterogeneity in Spermatogonial Stem Cells

#### **Objective:**

Spermatogenesis is a highly complex and temporally dynamic cellular differentiation process that is absolutely critical for male reproduction and infertility. At the foundation of spermatogenesis are spermatogonial stem cells (SSCs), although their identity has remained elusive in all biomedically-relevant mammalian species. Patterns of gene expression at the mRNA level have been described for batches of aggregated spermatogenic cells, the full extent of continual gene expression change underlying steady-state spermatogenesis, and moreover, for SSCs, has remained unclear.

#### **Material and Methods:**

In order to address this gap in knowledge, we performed single-cell RNA-seq using two methods and >62,000 individual spermatogenic cells from immature (postnatal day 6) and adult male mice and adult humans. Identity of mouse SSCs was established empirically by transplantation. Cross-platform comparisons, immunostaining, and high-throughput qRT-PCR studies served as validation methods of our single-cell results.

#### **Results:**

These single-cell transcriptome data allowed us to resolve functionally-defined SSCs from progenitor spermatogonia in mice and men, and importantly, identify unique subtypes never before reported and their biological features. We also determines the full range of gene expression changes occurring across male meiosis and spermiogenesis. Lastly, we identified a panel of uniquely expressed genes that allowed us to recognize 11 different spermatogenic cell types in mouse and human testes.

#### **Conclusion:**

These transcriptome datasets provided our group and the scientific community with a unique and powerful information resource for further studies of SSCs, the process of meiosis, potential underlying drivers of testicular cancer, etiologies of male infertility, and means to interfere with reproduction and achieve contraception. Indeed, as male reproductive biology begins to employ approaches relevant to regenerative medicine, we expect that our results will form the complete gene expression roadmap to be emulated in efforts to achieve spermatogenesis *in vitro*.

#### **Keywords:**

Stem Cells, Spermatogonia, Single-Cell RNA-Seq, Heterogeneity, Transplantation



#### **INTERNATIONAL WINNER**

## Stem Cell Biology and Technology

### Human Mesenchymal Stem Cell Failure to Adapt to Glucose Shortage and Rapidly Use Intracellular Energy Reserves Through Glycolysis Explains Poor Cell Survival After Implantation

#### **Objective:**

While there is tremendous excitement regarding the use of mesenchymal stem cell (MSC) therapies for regenerative medicine, it is essential to temper hype with reality. In fact, the initial "proof of concept" of these therapies has not yet been translated into routine clinical practices. A significant roadblock to these therapies is the occurrence of massive MSC death post-implantation as demonstrated by B3OA team upon implantation of human MSCs (hMSCs) in bone defects (Manassero 2016). Lack of functional vascularization in engineered constructs expose MSCs to the rigors of an ischemic milieu, a prime cause responsible for the observed massive cell death post-implantation (Becquart 2012). In fact, upon implantation, MSCs must compete for fuels in a crowded, nutrient-limited tissue environment. Rational engineering of "niches"/scaffolds requires thorough understanding of the specific metabolic needs of MSCs exposed to ischemic conditions. To this aim, my research team (Deschepper 2011 and 2013; Moya 2018) explored the respective roles of the two major insults (specifically, glucose deprivation and continuous near-anoxia (0,1% oxygen tension)) associated with ischemia on hMSC viability and functions.

#### **Results:**

Intriguingly, we found that hMSCs survival is independent of oxygen tension. In fact, hMSCs exposed to severe, continuous near-anoxia, but without glucose shortage, remained viable and maintained both their *in vitro* proliferative ability and, most importantly, their functions pertinent to tissue repair *in vivo*. Most specifically, my research team demonstrate that, under near-anoxia, hMSCs are unable to use either exogenous glutamine, serine, or pyruvate as energy substrates but rely almost exclusively on glucose through anaerobic glycolysis for ATP production. In these studies, we unraveled three critical metabolic characteristics of hMSCs relevant for their use in regenerative medicine: (i)hMSCs are unable to adapt their metabolism to the lack of exogenous glucose, (ii) hMSCs possess a very limited internal stock of glucose and, (iii) hMSCs have virtually no ATP reserves. This lack of downregulation of energy turnover as a function of exogenous glucose level resulted in a rapid depletion of hMSC energy reserves that explains their poor survival rate.

#### Conclusion:

These findings challenge traditional views according to which lack of oxygen per se is responsible for the massive death of MSCs upon implantation and provide evidence that these cells can withstand exposure to near-anoxia provided that a glucose supply is available. Taken together, they underscore the importance of glucose supply to ensure hMSC survival post-implantation.

#### **Keywords:**

Mesenchymal Stem Cells, Survival, Bioenergetic, Anoxia, Regenerative Medicine



2019

Dr. Hervé Petite, DSc



France

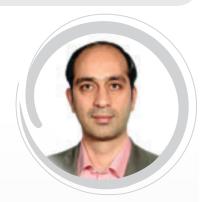
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Dr Hervé Petite has extensive expertise (including specialized training and established track record) regarding various aspects of mesenchymal stem cells culture, bioreactor technology, small and large animal models in orthopaedic research and biomedical engineering pertinent to enhancing cell survival and engraftment. He is the Director of Research and Head of Department at French National Institute of Health and Medical Research. He is a member of European Tissue Engineering Society and European Association for the Study of Diabetes. Dr Hervé Petite is also a member of the Scientific Council of the CIC-Biothérapie AP-HP Hôpital Saint-Louis and Scientific Council of the team Engineering and Aging of Living Tissues, Ecole Centrale. He has been elected at the French Academy of Surgery as a "free" member in 2018. Dr Pétite has been reviewer of manuscipts submitted for publication to many remarkable scientific journals and he has published many articles in the fields of cross-link collagens-based biomaterials, tissue regeneration in bone defects, loading mesenchymal stem cells into glucose-enriched material scaffolds, bioengineered airways using a technique based on the implantation of stented aortic





#### **NATIONAL WINNER**



2019

#### Mehdi Totonchi, PhD



Iran

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After MSc in Molecular Genetics, Tehran-Iran in 2005, for the next three years, he was a research assistant in the Department of Genetics and Stem Cells at Royan Institute. There, he generated the first induced pluripotent stem cell (iPSC) in Iran in 2008, in collaboration with a team of Royan Institute, when he also started PhD of Cellular & Developmental Biology in a joint project between university of Science and Culture and Royan Institute.

His PhD thesis was to reveal mechanisms behind maintenance and derivation of mouse embryonic stem cells (mESC) from the inner cell mass (ICM) in a collaborative project in Prof Dr Hans Schöler's lab at the Max Planck Institute for Molecular Biomedicine (Muenster).

In this project they were able to generate high throughput transcription profiles of the mouse ICM and numerous time points during its derivation to the mESCs, from which they were able to develop and validate new mechanistic insights into the pluripotency.

Since 2012, he has established the "clinical bioinformatics" group at Genetic department where their main goal is genetic basis of infertility using whole exome sequencing (WES) technology. Their main question is discovering novel gene/pathogen variants in the field of infertility using family-based exome sequencing. Recently they have published several peer reviewed articles in this field.

## Reproductive Biomedicine

## Application of Genomic Studies in Uncovering Sperm Defects Mechanisms

#### **Objective:**

It is estimated that about 40 % of male infertility cases are idiopathic. While asthenozoospermia is the most frequent condition observed in infertile male, very few genes in relation to this phenotype have been introduced. The main reason for this in many cases is the large number of potential candidate genes. It is assumed that more than two thousand genes are involved in spermatogenesis. Therefore, lots of potential candidate genes may exist in each case making it very difficult to identify the pathogenic variation behind the condition. However, novel gene and variation identification by using newly available technologies is a beneficial approach to uncover the asthenozoospermia pathophysiology potentially leading to new treatments. Accordingly, in the last decade the advent of Next Generation Sequencing (NGS) technology and particularly Whole Exome Sequencing (WES) has revolutionized our knowledge of reproductive genetics. This unprecedented success is due to the nature of this method in which the exons of known human genes are sequenced with adequate coverage making it possible to study various candidate genes simultaneously. In recent years, we have actively recruited consanguineous families with multiple infertile male patients. Routine tests have failed to establish the cause of infertility in all of these patients while generations of consanguineous marriages indicated it to be of genetic nature. Therefore, we applied WES to study these families which led to the identification of novel and rare pathogenic variations in genes involved in natural sperm functions.

#### Results

Using WES, we managed to identify a pathogenic frameshift variant in ADCY10 which codes for the soluble adenylatecyclase (sAC), the main source of cAMP in sperm tail and an essential enzyme for the regulation of sperm motility. Functional analysis experiment using treatment of patients' sperm samples with a cAMP analogue significantly raised the percentage of progressively motile spermatozoa and confirmed the pathogenicity of the variation. Moreover, a rare missense variant in GFPT2 was discovered in another studied family and dynamic protein modeling identified this variation to inflict negative effects upon the resulting protein. This gene is involved in the antioxidant defense system and its inactivity can lead to high levels of Reactive Oxygen Species in sperm with adverse effects on sperm motility.

#### **Conclusion:**

On the whole, using WES we managed to provide the first evidence of ADCY10 and GFPT2 involvement in human asthenozoospermia. The frameshift variant in ADCY10 was particularly considerable as it had already been shown by a mouse model study that this gene was implicated in asthenozoopspermia.

#### **Keywords:**

Male Infertility, Genomics, WES, Familial, Asthenozoospermia



# Board

Last Name, First Name, Degree	Country
Abbasy, Homayoun, MD	Iran
Acker, Jason, MBA, PhD	Canada
Aflatoonian, Abbas, MD	Iran
Afsharian, Parvaneh, PhD	Iran
Ahmadi, Firoozeh, MD	Iran
<b>Ajonuma,</b> Louis Chukwuemeka, MD, PhD	Hong Kong
Albertini, David F., PhD	USA
Alini, Mauro, PhD	Switzerland
Almadani, Seyed Navid, MD	Iran
Almstrup, Kristian, PhD	Denmark
Altaner, Cestmir, PhD, DSc	Slovakia
Altmae, Signe, PhD	Spain
Amirchaghmaghi, Elham, MD, PhD	Iran
Amiri-Yekta, Amir, PhD	Iran
Andrade Amorim, Christiani, DMV, PhD	Belgium
<b>Ao,</b> Asangla, PhD	Canada
Ashrafi, Mahnaz, MD	Iran
<b>Azadbakht, Mehri, PhD</b>	Iran
Azin, Seyed Ali, MD, PhD, FECSM	Iran
<b>Baghaban Eslamine jad,</b> Mohamadreza, PhD	Iran
Bagheri Lankarani, Narges, PhD	Iran
<b>Bahadori Mohammad,</b> Hadi, PhD	Iran
<b>Balasinor,</b> Nafisa, PhD	India
Bazrgar, Masood, PhD	Iran
Behravan, Javad, PhD	Iran
BeigiBoroujeni, Mandana, PhD	Iran
<b>Benagiano,</b> Giuseppe, MD, PhD, FACOG, FICOG, FRCOG	Switzerland
Colpi, Giovanni M., MD	Switzerland
Daemi, Hamed, PhD	Iran
<b>Dalman, Azam, PhD</b>	Iran
Daya, Salim, MBChB, FRCSC	Canada
<b>De Geyter,</b> Christian, MD	Switzerland
de Rooij, Dirk G., PhD	Netherlands
	Iran
Ebrahimi, Bita, PhD	
<b>Ebrahimi,</b> Bita, PhD <b>Eftekhari-Yazdi,</b> Poopak, PhD	Iran
	Iran USA
Eftekhari-Yazdi, Poopak, PhD	
Eftekhari-Yazdi, Poopak, PhD Erouglou, Ali, PhD, DVM	USA
Eftekhari-Yazdi, Poopak, PhD Erouglou, Ali, PhD, DVM Esfandiari, Fereshte, PhD	USA Iran

Last Name, First Name, Degree	Country
Fakhr Taha, Masoumeh, PhD	Iran
Fathi, Ali, PhD	USA
Gao, Shaorong, PhD	China
<b>Ghaedi, Kamran</b> , PhD	Iran
<b>Ghanian, Mohammad Hossein, PhD</b>	Iran
Gourabi, Hamid, PhD	Iran
Hamidieh, Amir Ali, MD	Iran
Hammarberg, Karin, RN, PhD	Australia
Hassani, Fatemeh, PhD	Iran
<b>Hescheler, Jurgen,</b> Dr med, Dr h c	Germany
Honaramooz, Ali, DVM, PhD	Canada
Hosseini far, Hani, PhD	Australia
Huhtaniemi, Ilpo, MD,PhD	UK
Inanloorahatloo, Kolsoum, PhD	Iran
<b>Jafarpour,</b> Farnoosh, PhD	Iran
Javeri, Arash, PhD	Iran
Johnson, Martin, MA, PhD	UK
Kalantar, Seyed Mehdi, PhD	Iran
Kamali, Koorosh, MD, MPH, PhD	Iran
Kamali, Mohammad, PhD	Iran
Karimian, Leila, MSc	Iran
KazemiAshtiani, Mohammad, PhD	Iran
Khanbabaee, Ramazan, PhD	Iran
Khochbin, Saadi, PhD	France
Kiani, Kiandokht, PhD	Iran
Kiani, Sahar, PhD	Iran
Kim, JeongBeom, PhD	Korea
Koopman, Peter, MD	Australia
Kumar, Pradeep, PhD	India
Maccarrone, Mauro, PhD	Italy
Maranna, Sandhya, MD	Australia
Mathur, Premendu, PhD	India
<b>Minami,</b> Naojiro, PhD	Japan
Minchiotti, Gabriella, PhD	Italy
Moein, Mohammad Reza, MD	Iran
Moghaddasali, Reza, PhD	Iran
MohammadiRoushandeh, Amaneh, PhD	Iran
Mohseni Meybodi, Anahita, PhD	Iran
Mohseni, Jafar, PhD	Iran
Monsees, T.K., PhD	South Africa





### ... JURIES

Last Name, First Name, Degree	Country
Montano, Luigi, MD	Italy
Montazeri, Leila, PhD	Iran
Movaghar, Bahar, PhD	Iran
Mozdarani, Hossein, PhD	Iran
Mukhopadhyay, Asok, PhD	India
Nakao, Toshihiko, DVM, PhD	Japan
Nakatsuji, Norio, PhD	Japan
Nardi, Nance Beyer, PhD	Brazil
Nasr-Esfahani, Mohammad Hossein, PhD	Iran
Ng, Ernest, MD	Hong Kong
<b>Niknejadi,</b> Maryam, MD	Iran
Nouri, Mohammad, PhD	Iran
Nowroozi, Mohammad Reza, MD	Iran
NumanBucak, Mustafa, PhD	Turkey
Nussler, Andreas, PhD	Germany
<b>Ory,</b> Steven, MD	USA
Pahlavan, Sara, PhD	Iran
Pandit, Abhay, PhD, MPH	Ireland
Parte, Priyanka, PhD	India
Paul, Mozdziak, PhD	USA
Ping Lu, Kun, MD, PhD	USA
Piryaei, Abbas, PhD	Iran
Popov, Aleksandr, MD	Russia
Pourmand, Gholamreza, MD	Iran
Rahbarizadeh, Fatemeh, PhD	Iran
<b>Rajabi,</b> Sarah, PhD	Iran
Ramezanzadeh, Fatemeh, MD	Iran
Rastegar, Mojgan, PhD, DEA	Canada
Ray, Pierre F, PhD	France
Rostami, Sirous, MD	Iran
Rousseaux, Sophie, MD, PhD	France
Sabbaghian, Marjan, PhD	Iran

Last Name, First Name, Degree	Country
Sachdeva, Geetanjali, PhD	India
Sadeghi, Hamid, PhD	Iran
Sadeghi, Mohamad Reza, PhD	Iran
Sadri-Ardekani, Hooman, MD, PhD	USA
Saric, Tomo, MD, PhD	Germany
Satarian, Leila, PhD	Iran
Sawamoto, Kazunobu, PhD	Japan
Shahhoseini, Maryam, PhD	Iran
<b>Shahverdi,</b> Abdolhossein, PhD	Iran
Sharafi, Mohsen, PhD	Iran
<b>Shojaeisaadi,</b> Habiballah, PhD	USA
Singh, Rita, MD	India
Siniscalco, Dario, ChemD, PhD	Italy
Sipp, Douglas, BA	Japan
Stewart, Elizabeth, MD	USA
Taghiyar, Leila, PhD	Iran
TaheriPanah, Robabeh, MD	Iran
Taketo, Teuko, PhD	Canada
Tavalaee, Marziyeh, PhD	Iran
Tavana, Somayeh, PhD	Iran
Thorn, Petra, PhD	Germany
van der Veen, Fulco, PhD	Netherlands
<b>Vesali, Samira</b> , MSc	Iran
VosoughTaghiDizaj, Ahmad, MD	Iran
<b>Vosough, Massoud</b> , PhD	Iran
<b>Wai-Sum,</b> O, PhD	Hong Kong
Woodruff, Teresa K, PhD	USA
<b>Xu,</b> Guoliang, PhD	China
<b>Zafarani,</b> Fatemeh, MSc	Iran
Zamani, Mahdi, PhD	Iran
Zamanian, Mohammadreza, MD, PhD	Iran
Zarei Moradi, Shabnam, MSc	Iran

# Board SCIENTIFIC COMMITTEE

Last Name, First Name, Degree	Country
Abbasy, Homayoun, MD	Iran
Abroun, Saeid, PhD, Post Doct	Iran
<b>Aflatoonian,</b> Abbas, MD	Iran
Aflatoonian, Reza, MD, PhD	Iran
Afsharian, Parvaneh, PhD	Iran
Aghdami, Nasser, MD, PhD	Iran
Aitken, R. J., PhD, ScD, FAHMS, FRSN, FRSE, FAA	Austria
Al-Ali, Haifa Kathrin, MD	Germany
<b>Alberio, Ramiro,</b> DVM, PhD	UK
<b>Alborzi,</b> Saeed, MD	Iran
Aleyasin, Ashraf, MD	Iran
<b>Al-Hasani, Safaa</b> , DVM, PhD	Germany
<b>Aliabadi, Elham,</b> PhD	Iran
Alini, Mauro, PhD	Switzerland
Alipour, Hiva, DVM, PhD, Postdoc	Denmark
Alizadeh Moghadam Masouleh, AliReza, PhD	Iran
Almadani, Seyed Navid, MD	Iran
Almstrup, Kristian, PhD	Denmark
Andrade Amorim, Christiani, DMV, PhD	Belgium
Annabi, Nasim, PhD	USA
<b>Ao, Asangla,</b> PhD	Canada
<b>Arefi,</b> Soheila, MD	Iran
<b>Asghari,</b> Fariba, MD	Iran
Ashrafi, Mahnaz, MD	Iran
Azadbakht, Mehri, PhD	Iran
Azin, Seyed Ali, MD, PhD, FECSM	Iran
Azin, Seyyed Mohammad, PhD	Iran
BagheriLankarani, Narges, PhD	Iran
Bahadori, Mohammad Hadi, PhD	Iran
<b>Baharvand</b> , Hossein, PhD	Iran
Bakhtiari, Mitra, PhD	Iran
Balasinor, Nafisa, PhD	India
Basiri, Mohsen, PhD	Iran
Beaujean, Nathalie, PhD	France
BeigiBoroujeni, Mandana, PhD	Iran
<b>Benagiano, Giuseppe,</b> MD, PhD, FACOG, FICOG, FRCOG	Switzerland
Breitkotf, Daniel, MD	USA
Brivanlou, Ali H, PhD	USA
<b>Buffone,</b> Mariano, PhD	Argentina
Chavarro, Jorge, MD, ScD	USA
Chieffi, Paolo, MD, PhD	Italy
Cibelli, Jose Bernardo, DVM, PhD	USA
Colpi, Giovanni M., MD	Switzerland

Last Name, First Name, Degree	Country
<b>Dadkhah,</b> Farid, MD	Iran
<b>Daemi,</b> Hamed, PhD	Iran
<b>Dalman,</b> Azam, PhD	Iran
<b>De Geyter,</b> Christian, MD	Switzerland
<b>de Rooij,</b> Dirk G., PhD	Netherlands
<b>Dean, Wendy, PhD</b>	UK
Ebner, Thomas, PhD	Austria
Ebrahimi, Bita, PhD	Iran
Ebrahimi, Marzieh, PhD	Iran
Eimani, Hussein, PhD	Iran
Engin,Gulgun, MD	Turkey
Eshrati, Babak, PhD	Iran
Evans, John, PhD	New Zealand
Fakhr-Taha, Masoumeh, PhD	Iran
Fan, Guoping, PhD	USA
Farrahi, Faramarz, MD	Iran
Farzadi, Laya, MD	Iran
Fathi, Ali, PhD	USA
Fathi, Fardin, PhD	Iran
Fathi, Rouhollah, PhD	Iran
Ferrara, James L.M., MD, DSc	USA
Franco Junior, Jose G., MD, PhD	Brazil
Geraedts, Joep, PhD	Netherlands
Ghaderian, Sayyed Mohammad Hossein,	Iran
MD, PhD, Post doct fellowship	
<b>Ghaedi, Kamran,</b> PhD	Iran
<b>Ghafari,</b> Firoozeh, MD	Iran
<b>Gheisari, Yousof</b> , MD, PhD	Iran
Giojalas, Laura, PhD	Argentina
Gourabi, Hamid, PhD	Iran
<b>Greening,</b> David, PhD	Australia
Haghighat Khah, Hamidreza, MD	Iran
Hajizadeh, Ensiyeh, PhD	Iran
<b>Hamidieh,</b> Amir Ali, MD	Iran
Hassani, Seyedeh Nafiseh, PhD	Iran
Hens, Kristien, PhD	Belgium
Honaramooz, Ali, DVM, PhD	Canada
Hoppler,Stefan, PhD	UK
Hosseini, Ahmad, PhD	Iran
Hosseini, Jalil, MD	Iran
Hosseini, Roya, MD	Iran
<b>Howards,</b> Stuart S, MD	USA
<b>Johnson, Martin,</b> MA, PhD	UK
Kalantar, Seyed Mehdi, PhD	Iran





## ... SCIENTIFIC COMMITTEE

Last Name, First Name, Degree	Country
Kamali, Koorosh, MD, MPH, PhD	Iran
Kamali, Mohammad, PhD	Iran
Karimian, Leila, MSc	Iran
KarimzadehMeybodi, Mohammad Ali, MD	Iran
Kazemeyni, Seyed Mohammad, MD	Iran
Khademhosseini, Ali, PhD	USA
Khalili, Mohammad Ali, PhD	Iran
Khochbin, Saadi, PhD	France
<b>Kiani,</b> Sahar, PhD	Iran
Kim, JeongBeom, PhD	Korea
Kirkeby, Agnete, PhD	Denmark
Kuhlmann, Tanja, MD	Germany
Kupesic Plavsic, Sanja, MD	USA
L. Herrera, Pedro, MD	Switzerland
<b>Laible,G</b> ötz, PhD	New Zealand
<b>Larijani,</b> Bagher, MD	Iran
Loi, Pasqualino, DVM, PhD	Italy
Madani, Tahereh, MD	Iran
Mathur, Premendu, PhD	India
McElreavey, Kenneth, PhD	France
Milanifar, Alireza, PhD	Iran
Minami, Naojiro, PhD	Japan
Minchiotti, Gabriella, PhD	Italy
Moein, Mohammad Reza, MD	Iran
Moghaddam Matin, Maryam, PhD	Iran
Mohseni Meybodi, Anahita, PhD	Iran
<b>Moini,</b> Ashraf, MD	Iran
Momtaz, Mohamed, MB, BCh, MSc, MD	Egypt
Monsees, T.K., PhD	South Africa
Mosavifar, Nezhat, MD	Iran
Movahedin, Mansoureh, PhD	Iran
Movassagh, Hooman, LLB, LLM, PhD	USA
Mowla, Seyed Javad, PhD	Iran
Mozdarani, Hossein, PhD	Iran
Mukhopadhyay, Asok, PhD	India
Namazi, Hamidreza, MD, PhD	Iran
Nasr-Esfahani, Mohammad Hossein, PhD	Iran
Nematollahi-mahani, Seyed Noureddin, PhD	Iran
Newgreen, Don, PhD, BScHons	Australia
Nielsen, Hans Ingolf, PhD, MEd, MSc	Denmark
Nottola, Stefania, MD, PhD	Italy
Nowroozi, Mohammad Reza, MD	Iran
Nussler, Andreas, PhD	Germany
<b>Oback,</b> Björn, Scientist	New Zealand
Omani Samani, Reza, MD	Iran

Last Name, First Name, Degree	Country
Ott, Michael, MD	Germany
Pahlavan, Sara, PhD	Iran
Parsanezhad, Mohammad Ebrahim, MD	Iran
Parte, Priyanka, PhD	India
Paul, Mozdziak, PhD	USA
Piemonti, Lorenzo, MD	Italy
Pinborg, Anja, PhD	Denmark
Ping Lu, Kun, MD, PhD	USA
Piryaei, Abbas, PhD	Iran
Pourmand, Gholamreza, MD	Iran
Puri, Chander P., PhD, FAMS, FNASc	India
Raffaella, Fabbri, PhD	Italy
Ramalho-Santos, Miguel, PhD	USA
Ramezanzadeh, Fatemeh, MD	Iran
Rashidi, Batool, MD	Iran
Rastegar, Mojgan, PhD, DEA	Canada
Ray, Pierre F, PhD	France
Reik, Wolf, FRS	USA
Rezazadeh, Mojtaba, PhD	Iran
Rostami, Sirous, MD	Iran
Rousseaux, Sophie, MD, PhD	France
Sabbaghian, Marjan, PhD	Iran
Sabeti, Shokofeh, MD	Iran
Sabour, Davood, PhD	Germany
Sadeghi, Mohamad Reza, PhD	Iran
SadighiGilani, Mohammad Ali, MD	Iran
Sadri-Ardekani, Hooman, MD, PhD	USA
<b>Saeidi,</b> Hojjatollah, PhD	Iran
Salamati, Masoumeh, MD	Iran
<b>Salehnia, M</b> ojdeh, PhD	Iran
Salehpour, Saghar, MD	Iran
Salman Yazdi, Reza, DCLS	Iran
Sanati, Mohammad Hossein, PhD	Iran
Santos, Fatima, PhD	USA
Saric,Tomo, MD, PhD	Germany
Sawamoto, Kazunobu, PhD	Japan
Schlegel, Peter, MD	USA
Schoeler, Hans R., PhD	Germany
<b>Sebastiano, Vittorio,</b> PhD	USA
SepidarKish, Mahdi, PhD	Iran
<b>Shahhoseini, M</b> aryam, PhD	Iran
Shahpasand, Koorosh, PhD	Iran
Shahverdi, Abdolhossein, PhD	Iran
<b>Shahzadeh Fazeli,</b> Seyed Abolhassan, MD, PhD	Iran
Shamsi pour, Mansur, PhD	Iran

#### ... SCIENTIFIC COMMITTEE

SCIENTIFIC COMMITTEE	
Last Name, First Name, Degree	Country
Sharafi, Mohsen, PhD	Iran
Shariatinasab, Sadegh, PhD	Iran
Shen, Xiaohua, PhD	China
Shirazi, Abolfazl, PhD	Iran
Shiva, Marzieh, MD	Iran
Silber, Sherman, MD	USA
Sirard, Marc-André, DVM, PhD	Canada
Sodeifi, Niloofar, MD, AP, CP	Iran
Sofikitis, Nikolaos, MD, PhD	Greece
Solter, Davor, MD, PhD	Singapore
Soom, Ann Van, DVM, PhD	Belgium
Spadafora, Corrado, PhD	Italy
Spears, Norah, BSc Hons, D Phil	UK
Stambrook, Peter, PhD	USA
Stewart, Elizabeth, MD	USA
TaheriPanah, Robabeh, MD	Iran
Tahmasebpour, Ahmad Reza, MD	Iran
Taketo, Teuko, PhD	Canada
<b>Tapia, Natalia,</b> PhD	Spain
Tardif, Steve, PhD	USA
Tarzamni, Mohammad Kazem, MD	Iran
Tavalaee, Marziyeh, PhD	Iran
<b>Tehraninejad,</b> Ensieh, MD	Iran

Last Name, First Name, Degree	Country
Thomson, Jeremy, BSc (Hons), PhD	Australia
Thorn, Petra, PhD	Germany
Tian, Xiuchun Cindy, PhD	USA
Totonchi, Mehdi, PhD	Iran
Vahidi, Serajoddin, MD	Iran
Vajta, Gabor, MD, PhD, DSC	Australia
van der Horst, Gerhard, PhD	South Africa
Verlhac, Marie-Helene, PhD	France
Vosough Taghi-Dizaj, Ahmad, MD	Iran
Vosough, Massoud, MD, PhD	Iran
Wai-Sum,O, PhD	Hong Kong
Walter, Jorn, PhD	Germany
Wang, Dong-An, PhD	Singapore
Weichert, Alexander, MD, PhD	Germany
Wolf, Eckhard, Dr med vet	Germany
Woodruff, Teresa K, PhD	USA
Zahedi Anaraki, Farzaneh, MD	Iran
Zamani, Mahdi, PhD	Iran
Zamanian, Mohammadreza, MD, PhD	Iran
<b>Zhang, Yi,</b> PhD	USA
<b>Zhao,</b> Jianguo, PhD	China
<b>Zini,</b> Armand, MD	Canada
<b>Zolghadri,</b> Jaleh, MD	Iran

# Board

## EXECUTIVE COMMITTEE

Last Name, First Name, Degree
<b>Abdollahian,</b> Enayatollah, BSc
Afsharian, Parvaneh, PhD
Ahmadi, Seyyed Ebrahim, MSc
Alizadeh, Seyyed Kamal, BSc
Alizadeh Moghadam Masouleh, AliReza, PhD
Azimi, Reza, BSc
<b>Dadkhah,</b> Fatemeh, BSc
<b>Daliri,</b> Leila, MSc
<b>Ezabadi,</b> Zahra, MSc
Farrokh, Sima, BSc
Fathi, Rouhollah, PhD
<b>Ghaffari,</b> Firoozeh, MD
Hosseini, Samaneh, PhD
Jafarpour, Farnoush, PhD
<b>Kashfi,</b> Fahimeh, MSc

Last Name, First Name, Degree
<b>Lotfipanah, M</b> ahdi, MSc
Mirshekar, Zeynab, BSc
Omri-zadeh, Maryam, MSc
<b>Pahlevan,</b> Fattaneh, MSc
Sabbaghian, Marjan, PhD
<b>Shahverdi,</b> Abdolhossein, PhD
<b>Shajarehpoor,</b> Laleh, BSc
Tavana, Somayyeh, PhD
<b>Tavassolian,</b> Rahim, BSc
Vasefi, Narges, MSc
<b>Vesali,</b> Samira, MSc
Vosough, Ahmad, MD
Vosough, Masood, MD, PhD
Zarei Moradi, Shabnam, MSc



# **ROYAN** INSTITUTE





Royan Institute is a world-renowned center committed to multidisciplinary, campus-wide, integration and collaboration of scientific, academic, and medical personnel for understanding male/ female infertility, embryo development, stem cell biology, and biotechnology. Royan Institute provides comprehensive services for the treatment of infertility, regenerative medicine/ cell therapy and production of recombinant proteins.

Royan Institute was established in 1991 by the late Dr Saeid Kazemi Ashtiani (May he rest in peace) in Tehran, Iran. The center supports innovation, excellence and the highest ethical standards focusing on increasing the success rate of infertility treatment alongside embryo health. Furthermore, this center supports the placement of stem cell research findings into operation in cell therapy and disease treatment with the purpose of increasing the level of health.

#### Mission

The mission of Royan Institute, which is aligned with the country's comprehensive scientific roadmap and the Iranian Academic Center for Education, Culture and Research (ACECR) development plan, can be categorized in the following aspects:

- Research and development of science and technology in the fields of reproductive biomedicine, stem cells and biotechnology
- Education and promotion of scientific findings at national and international levels
- Commercialization of research findings to offer services and biological products for the purpose of resolving the country's specialized needs
- Treatment of infertile patients and difficult-to-treat diseases by the efficient use of research findings

#### Vision

Royan Institute is a center of excellence in research and technology at an international level, a pioneer in development of science, technology and innovation of biological sciences, and an internationally renowned authority on stem cells science, reproduction, biotechnology, and regenerative medicine alongside its effective role in improving the society's health.

#### Royan Consists of Three Research Institutes and a Core Facility

- 1. Royan Institute for Reproductive Biomedicine (RI-RB)
- 2. Royan Institute for Stem Cell Biology and Technology (RI-SCBT)
- 3. Royan Institute for Biotechnology (RI-B)
- 4. Laboratory Animal Core Facility

#### **Royan Institute for Reproductive Biomedicine (RI-RB)**

Royan Institute for Reproductive Biomedicine (RI-RB), founded in 1991, consists of six departments and one infertility clinic actively working on different aspects of infertility and the development of new methods for infertility treatment. Its vision is to improve the population's health through infertility treatments and giving infertile families the hope of having children.

In this regard, RI-RB's mission is to research on different aspects of infertility and its treatment in order to increase the success rate alongside improving embryo health.

#### **RI-RB Departments**

- Endocrinology and Female Infertility
- Andrology
- Embryology
- Reproductive Genetics
- Epidemiology and Reproductive Health
- Reproductive Imaging
- Infertility Clinic

For more communication between basic sciences and clinics, there are also four subgroups:

- Polycystic Ovary Syndrome (PCOS)
- Oncofertility
- Recurrent Implantation Failure (RIF)
- Premature Ovarian Failure (POF)



## **Royan Institute for Stem Cell Biology and Technology (RI-SCBT)**

Royan Institute for Stem Cell Biology and Technology (RI-SCBT) was established in 2002 to promote research on general stem cell biology in Iran. Since early 2010, it has continued its activities in:

Stem Cells and Developmental Biology
 Regenerative Medicine
 Cell Engineering Group
 14 Programs
 8 Programs
 5 Programs

24 Core Facilities

• Advanced Therapy Medicinal Product Technology Development Center (ATMP)

RI-SCBT's vision is to efficiently put stem cell research findings into operation in disease treatment with the aim of improving health. RI-SCBT's mission is to generate insights into the biology of stem cells through basic research and to provide the foundation needed for novel therapies from regenerative medicine.

#### Royan Institute for Biotechnology (RI-B)

Royan Institute for Biotechnology (RI-B) was initially established in 2004 as the first research branch of Royan Institute. It is located in Isfahan Province.

RI-B was established with the purpose of advancing research in reproduction, development, cell and molecular biology, in addition to the fields of bioengineering and reproductive technology. In this regard, this Institute has focused on somatic cell nuclear technology (SCNT), interspecies-SCNT, transgenesis, the establishment of novel sperm selection methods for assisted reproductive technology, cell differentiation, production of recombinant proteins and the cell biology of peroxisomes. The endeavors of RI-B have made us the pioneer of animal cloning in Iran and the Middle East. Therefore, this Institute is well known for its cloned animals, Royana and Hanna, the first cloned sheep and goat in Iran, and Bovana; the first calf born with IVF. Areas of interest at this Institute are: gene reprogramming during SCNT, transgenesis, sperm cell biology, the role of sub-cellular organelles in differentiation and recombinant protein technology. In addition, the Institute is providing a comprehensive and coordinated "bench to production" approach in recombinant protein technology, animal farming and the establishment of methods to increase the efficiency of assisted reproductive techniques.

The institute's vision is to attain new heights in biotechnology research, shaping biotechnology into a premier precision tool of the future for creation of wealth, ensuring social justice and efficiently bridging science with daily life.

#### **RI-B Groups**

- Cellular Biotechnology- Genetic Laboratory
- Cellular Biotechnology- Stem Cell Laboratory
- Molecular Biotechnology- Recombinant Protein Laboratory
- Reproductive Biotechnology- Andrology Laboratory
- Reproductive Biotechnology- Embryology Laboratory

#### **Overview of the Institute**

- The first IVF child born in Tehran (1993)
- The first ICSI child born in Tehran (1995)
- Iran's second success in open testicular biopsy to treat severe male infertility (1996)
- The first frozen embryo child born in Iran (1996)
- The first ICSI birth by frozen sperm of a gonadectomized man in Iran (1999)
- The first human embryonic stem cell line established in Iran and the region (2003)
- The first PGD child born in Iran (2004)
- First time use of adult stem cells in the treatment of MI during CABG in Iran (2004)
- Production of insulin producing cells from human embryonic stem cells (2004)
- Culture of human limbal stem cells on chorionic membrane (2004)
- Establishment of the first Private Cord Blood Bank in Iran (2005)
- The first IVM-IVF sheep born in Iran (2006)
- The first cloned sheep born in Iran (2006)
- Establishment of mouse and human induced pluripotent stem cells (iPS) (2008)
- The first cloned goat born in Iran (2009)
- A new method for treatment of Vitiligo by cell transplantation (2009)
- The first transgenic goats born in Iran (2010)



- The first calves born from vitrified in vitro developed embryos in Iran (2011)
- Establishment of cell therapy pre-hospital (2011)
- Establishment of Stem Cell Bank (2011)
- The first healthy child birth after Molecular PGD for beta-thalassemia in Iran (2012)
- Birth of eight cloned goats through the simplified method of SCNT in Iran (2013)
- Birth of the first cloned wild ram as an endangered species in Iran (2015)

## Royan Institute for Reproductive Biomedicine (RI-RB)

#### **Endocrinology and Female Infertility Department of RI-RB**

#### **History and Introduction**

This department was established in 1995, and began to research on new strategies and advanced methods for the diagnosis and treatment of female infertility and recurrent abortion with the intent of increasing implantation rates.

#### Goals

- Evaluation and treatment of infertile couples
- New guidelines for improving IVF outcomes
- Achieving new strategies for diagnosing infertility causes
- Ovulation induction and COH
- Improving methods for oocyte and embryo culture
- Endometrial preparation
- The promotion of prenatal care



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- 2. Malekzadeh F, Moini A, Amirchaghmaghi E, Daliri L, Akhoond MR, Talebi M, Hosaini R. **The Association Between ABO and Rh Blood Groups and Risk of Endometriosis in Iranian Women**. Int J Fertil Steril. 2018; 12(3): 213-217



- Kiani K, Movahedin M, Malekafzaliardakani H, Mirfasihi F, Sadatilamardi SN, Moini A, Ostad SN, Aflatoonian R. Effect of the Estrus Cycle Stage on the Establishment of Murine Endometriosis Lesions. Iranian Journal of Reproductive Medicine. 2018; 16(5): 303-314
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#### **Andrology Department of RI-RB**

#### **History and Introduction**

This department was established in 1995 and started to research on male infertility factors. The first step in infertility management is to evaluate the couple. Male factor infertility accounts for approximately 50% of all infertility cases. Thus in order to study male factor infertility it is necessary to use appropriate diagnostic and therapeutic techniques. The intent of this research department is to develop new diagnostic methods and treatment for male factor infertility.

#### Goals

- Determining the etiology of spermatogenesis, sperm function and ejaculation disorders
- Determining the etiology of azoospermic, genetic, and maturation disorders
- Determining the etiology of dry and retrograde ejaculation

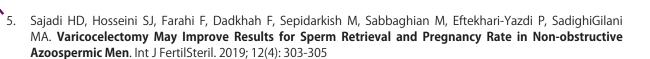
#### **Main Activities**

- Improving diagnostic and therapeutic methods
- Determining the etiology of spermatogenesis, as well as functional and ejaculation disorders



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#### **Embryology Department of RI-RB**

#### **History and Introduction**

The Department of Embryology, founded in 1995, is a part of Royan Institute's Reproductive Biomedicine. During the preceding decade, a fundamental description of human and animal experimental studies has emerged in the field of embryology.

#### **The Main Focuses**

- Increasing the quality of gametes and embryos
- Studying molecular aspects of gamete maturation and embryo development
- Performing embryo co-culture with various types of somatic cells
- Studying molecular aspects of gamete and embryo freezing
- In vitro maturation of animal and human gametes
- Evaluating molecular and cellular events of embryo implantation
- Three-dimensional culture of cells to design an endometrial biomodel
- Three-dimensional culture of follicles in order to acquire good quality oocytes
- Performing nuclear transfers
- Performing animal cloning and transgenesis
- Finding the best method for preserving gametes, ovarian, and testicular tissues

#### Goals

- Increasing the number of high quality human embryos
- Producing transgenic animals with selected genes
- Establishing in vitro human follicle culture following ovarian tissue cryopreservation



The mission of the RI-RB Embryology Department is to perform multiple research activities regarding different aspects of fertility preservation and different treatments of infertility in order to improve embryo health and increase the pregnancy success rate.

Its aim is to make the wish of having children for infertile couples come true, and to give them a promising future.

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#### **Reproductive Genetic Department of RI-RB**

#### **History and Introduction**

Department of Genetics was established in 2001. Some routine activities of this department include: genetic counseling, lymphocyte karyotyping, preimplantation genetic diagnosis (PGD), as well as molecular diagnostic tests which involve the diagnosis of Y chromosomal micro deletions and certain mutations in candidate genes that may be related to the causes of abortions or failed ART.

The major research interests in this department are genetic causes of male and female infertility, recurrent spontaneous abortion (RSA), genetic factors leading to azoospermia, mutations leading to congenital agenesis of the vas deferens, preimplantation genetic diagnosis, pharmacogenetics plus epigenetic and gene expression profiles of early embryogenesis.

The production of recombinant proteins by genetic manipulation in different host cells in addition to the joint production of transgenic animals in a mutual project with Embryology Group is another main activity of this department. Activities carried out in collaboration with Royan Institute for Stem Cell Research are karyotyping of stem cell lines following various manipulations, epigenetic and genetic studies of stem cells and iPS cells, in addition to other common research interests.

#### Goals

- To improve implantation rates along with health of embryos by preimplantation genetic screening and diagnosis
- To assist physicians with prescribing medicine for controlled ovarian stimulation via pharmacogenetics
- Genetic follow up of newborns conceived by ART
- Evaluation of candidate genes related to recurrent abortion in the Iranian population
- Epigenetic studies of oocytes, sperm and embryos



The mission of the Genetic Department is basic research on genetic and epigenetic factors that may influence fertility, embryo development, and implantation, bringing these research results to the clinical setting with the purpose of improving the health of patients and newborns, as well as the production of pharmaceutical proteins through transgenic animals.

The vision of this department is to perfect diagnosis and treatment of infertility based on reproductive genetic knowledge, which will lead to healthy newborns in a short period of time.



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# **Epidemiology and Reproductive Health Department of RI-RB**

#### **History and Introduction**

The Epidemiology and Reproductive Health Department was established in 1999 with the aim of doing extensive researches on epidemiological aspects of infertility and reproduction in addition to reproductive and sexual health. This department cooperate with five other research groups in Royan as research methodologist or statistical

analyzer. One section has been recently established in this department called Royan Center of professional services for quantitative and qualitative studies, its job is to offer the professional services for methodology and research analysis to local groups and other researcher beyond Royan institute as a commercial sector. This department undertakes multicenter research between Iran and other countries in the following areas:

- Frequency, incidence and influencing factors for all subfertility and infertility types
- Environmental and occupational factors affecting fertility and reproduction
- Psychosocial issues affecting infertile couples, their treatment and coping mechanisms
- Experiences, quality of life, marital and sexual satisfaction of infertile couples, even after IVF failure
- Ethical issues, legislation and guidelines in assisted reproduction
- Statistical models and methods for research in reproduction, genetics and the cellular and molecular fields
- Animal ethics

The mission of this department is the promotion of reproductive health in Iran which is an important aspect of general health and involves people of all ages within the society, from an embryo to the elderly. Focusing on sexual and reproductive health guarantees the future health of society by ensuring healthy children and healthy adults. Finally, its job involves research into all reproduction related areas including social, medical, psychological and ethical issues, and therefore its vision is to ensure the health of the society.

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## Reproductive Imaging Department of RI-RB

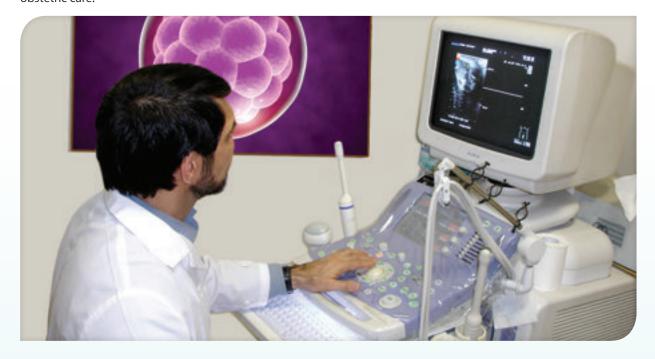
#### **History and Introduction**

Reproductive Imaging Department was established in 2008 to focus on infertility assessment as well as evaluation of pregnancies in both clinic and research fields.

During the last two decades, dynamic advances have been made in the evaluation and treatment of infertility. Imaging technique has been a significant breakthrough in the diagnosis and management of infertility. A broad range of imaging techniques, from the old and proven - such as hysterosalpingography- to the latest and cutting edge - such as three-dimensional hysonosterography, has been employed.

After applying these advanced techniques in this department, we are able to upgrade the management of infertility and obstetric care, and thereby, positively provide better services for infertile couples.

The main goal of imaging department is to provide comprehensive evaluation of infertility using the latest knowledge and innovative research in order to provide the highest quality of infertility management and to monitor emergency obstetric care.





The mission of this research department is to expand clinical and fundamental research in reproductive imaging in order to provide modern strategies and improve clinical services for infertile couples. The main aim of these projects classified as:

- Diagnostic accuracy investigation of imaging modalities (hysterosalpingography, hysterosonography and three-dimensional ultrasound)
- Role of imaging in (male & female) infertility management
- Fetal screening
- Measurement standards/ultrasound measurement charts appropriate for Iranian fetuses

The vision of this department is performing national and international multicentral researches and having collaboration with universities and other infertility centers to provide educational courses in diagnostic ultrasound including transvaginal, color

Doppler, power Doppler, 3D/4D imaging and radiology for radiologist, gynecologist and fellowships.

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## Royan Institute for Stem Cell Biology and Technology (RI-SCBT)

#### **History and Introduction**

Royan Institute for Stem Cell Biology and Technology (RI-SCBT), formerly known as the Department of Stem Cells was first established in 2002 to promote research on general stem cell biology in Iran. Thereafter, Department of Stem Cells expanded to fourteen main research groups that conduct studies on stem cells and developmental biology and molecular systems' biology. Moreover Department of Regenerative Medicine consists of eight main research groups which conduct research focused on translational and clinical studies using cell therapy. Throughout, the vision of RI-SCBT has been to make stem cell research findings applicable in disease treatment to improve public health. Therefore, today, RI-SCBT is providing a comprehensive and coordinated "bench to bedside" approach to regenerative

medicine, as well as a greater understanding of fundamental biology of stem cells, developmental biology, development of translational research of stem cell therapeutics and administration of new cell-therapy approaches that can restore tissue function to patients.



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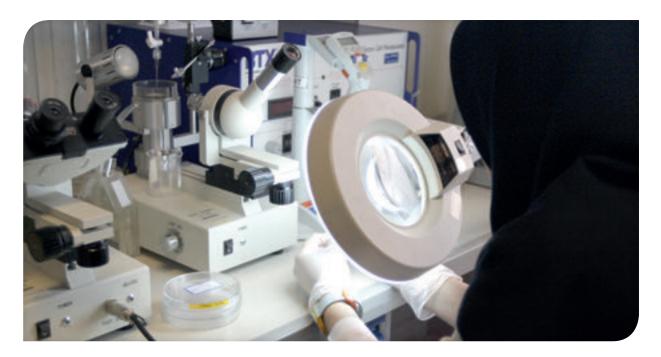
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# Royan Institute for Biotechnology (RI-B)

#### **History and Introduction**

In 2004, the late Dr Kazemi Ashtiani, the founder of Royan Institute, along with Dr Nasr- Esfahani established Royan Institute for Biotechnology (RI-B), as the first research branch of Royan Institute, in Isfahan Province. Their goal were advancing research in reproduction, development, cell and molecular biology, in addition to the fields of bioengineering and reproductive technology.

At present, this branch homes around 100 researcher and students working in 5 groups to expand the science over their areas. Therefore over the time the below subgroups and laboratory were established.

- Cellular Biotechnology- Laboratory of Genetics
- Cellular Biotechnology- Laboratory of Stem Cell Biology and Tissue Engineering
- Molecular Biotechnology- Laboratory of Recombinant Protein and Nano-Biotechnology
- Reproductive Biotechnology- Laboratory of Andrology
- Reproductive Biotechnology- Laboratory of Embryology





This Institute has focused on somatic cell nuclear technology (SCNT) of farm animal, interspecies-SCNT, transgenesis, novel sperm selection methods for assisted reproductive technology, male infertility, production of recombinant proteins, neuro-degenerative disease, RNA biology, cancer and stem cell biology, tissue engineering and nanobiotechnology. The endeavors of RI-B, have made us the pioneer of animal cloning in Iran and the Middle East. Therefore, this Institute is well known for its cloned animals, Royana and Hanna, the first cloned sheep and goat in Iran. It is of note that SCNT in goat has reached an efficacy that it is commercialized.

The intensive seminar schedule in each group has encouraged interactivity and opportunity for scientific discussion between students and the scientists to facilitate the progress of science in their filed. Therefore, in 2010 through this interactive science, this department has achieved a number of important goals, including establishment of zona free somatic cell nuclear transfer (SCNT) in goat, evaluation of epigenetic modifier on outcome of SCNT and vitrified embryos, introducing novel approach for selection of intact sperm for ICSI based on sperm functional characteristics, understanding the role of embryonic structure in neurogenesis and cardiogenesis, assessment of the role of PEP (a peroxisomal protein) and PPAR  $\gamma$  in neurogenesis and finally role of biotechnology in production of biological products.

RI-B also offers PhD and MSc post graduate courses with university of Isfahan and ACECR Institute of Higher Education (Isfahan Branch) in the fields of developmental biology and cell and molecular biology, respectively.

The institute's vision is to attain new heights in biotechnology research, shaping biotechnology into a premier precision tools of the future, for creation of wealth, ensuring social justice and efficiently bridging science with daily life.



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**Animal Core Facility** 

#### Introduction

The Laboratory Animal Science Core Facility of Royan Institute plays a national role in education of scholars performing ground researches on experimental animals, by organizing proficient gadget in all categories within the animal research fields. Each center has three major activities:

- Maintenance and breeding the animals
- Creating animal models with surgical manipulations or chemical interactions
- Research and develop animal modeling

Scientists of this service unit facility who are responsible for the design of animal experiments have to be graduated in Veterinary Medicine or one of biomedical science fields and must have taken a course on laboratory animal science which concentrates on humane and gentle handling of animals. They also should be aware of knowledge of alternative routes and ethical aspects of animal experimentation.

Modern laboratory animal science builds on the three Rs of Russell & Burch:

- Replacement: Replace animal experiments with alternatives whenever possible
- Reduction: Reduce the number of experiments and number of animals in each experiment to an absolute minimum
- Refinement: Refine experiments so that the animals undergo a minimum of discomfort The primary aim of the Laboratory Animal Facility is to ensure that the three Rs are followed in practice.

#### Goals

- Providing quality care for all animals used at Royan Institute
- Assisting researchers in their mission of quality research with respect to humane use of laboratory animals
- Providing researchers with a relevant education to enable them achieve scientific eminences in selected areas
- Producing, supporting and maintaining laboratory animals required for research
- Managing the animal care and having commitment to them
- Managing a preventive medicine program for disease control
- Advising research departments on all aspects of experimental use of animals, including experimental design, surgical, pre and post-operative care, oocyte and embryo harvesting, and experimental animal modeling establishment



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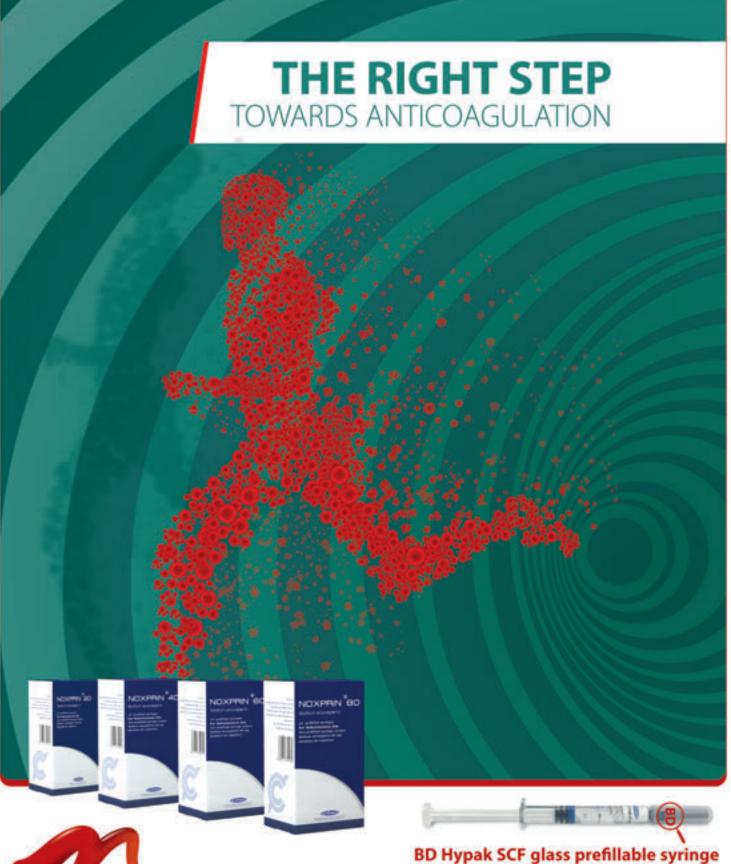




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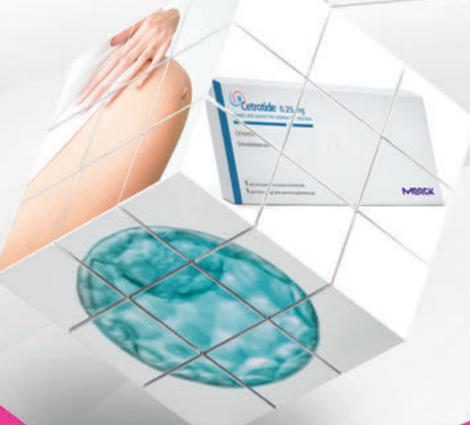
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