



PREDICTING
THE FUTURE OF
RADIOLOGY
BY INVENTING IT



13th Biennial International
Symposium of the
International Society
for Strategic Studies
in Radiology

IS3R
2019

Budapest/Hungary
August 22–24, 2019

Scientific Program

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IN MEMORY OF

ALEXANDER R. MARGULIS

FOUNDER OF IS3R



LETTER FROM THE PRESIDENT



Dear Participants,

On behalf of the Executive Board of IS3R, welcome to our 13th biennial symposium in Budapest. Budapest, the capital of Hungary, is our first meeting in Eastern Europe. The venue of this year's symposium was carefully chosen by our local coordinator Dr. András Palkó. His guidance and input in the meeting planning have been invaluable and will ensure a memorable meeting in this vibrant city. I hope you will all have an opportunity to take in some of Budapest's terrific sites.

Congratulations to Dr. Michael Fuchsjäger, our Program Chair, who has brought together an outstanding slate of speakers and highly timely and important topics for this meeting. I am excited to share with you that we will be exploring the rapidly evolving field of AI and machine learning and what it will mean for our field of Radiology. We also will look at Theranostics and new innovative technologies that may change the face of Radiology as we currently know it. Finally, we will spend some time looking at ideas for work/life balance, avoiding burnout, which is now so prevalent in the medical field and especially in Radiology. These and other topics will keep you engaged throughout our time together as we take a fresh look at our profession and some of the challenges we all face.

A change in the Society since our last meeting in 2017 was the establishment of the role of Scientific and Communications Director which has been ably held by Dr. Herbert Y. Kressel. He has done a terrific job on multiple fronts and I hope that key publications/opinion pieces from our society will be enhanced by his significant efforts. In addition, in September of last year we were deeply saddened by the death of our highly esteemed founder, Dr. Alexander R. Margulis. Alex was a remarkable man who made many contributions to the field of Radiology and dramatically influenced the lives and careers of countless radiologists and scientists world-wide. Although his passing was a great loss, his influence continues on today through the many lives he touched during his exceptional lifetime. We have now re-named our annual gold medal to the Alexander Margulis gold medal and the 2019 recipient will be Dr. Max Reiser.

As my term as your President now ends, I am grateful to the Executive Board for their phenomenal contributions throughout these past two years. Everyone has been so helpful and passionate about making this highly unique society a terrific success. In particular Drs. Gabriel Krestin and Hedvig Hricak have been so helpful to me due to their many years of experience and significant wisdom with respect to this society and to the international field of Radiology. Special thanks to Katharina and Monika for all their hard efforts to make the society run so smoothly. My very best wishes go to Dr. Luis Donoso-Bach of Barcelona, Spain, our incoming President, who is already positioned to take our organization to a new level. To all of you who have supported me and the IS3R these past two years, I wish you good health and happiness for many years to come.

Sincerely,



Sanjiv Sam Gambhir, MD, PhD
IS3R President

LETTER FROM THE PROGRAM CHAIR



Dear Colleagues,

On the behalf of the Program Committee, I am pleased to welcome you to our 13th Biannual International Symposium in Budapest, Hungary, August 22-24, 2019, and it is my pleasure to present you the final program and details for our conference. We anticipate a stimulating meeting with lively discussions from a remarkable gathering of thought leaders in radiology with perspectives from academia and industrial partners.

The program of this meeting is dedicated to our dearly missed founding father, colleague and friend, Dr. Alexander R. Margulis, who passed away last year. Alex's vision and spirit stand for the very best of our society. His presence can be felt today through many of our careers he helped shape. We will forever remember him as a brilliant, generous, caring and truly exceptional global leader of radiology.

Following our intention to bring together those who advance medical imaging in academia and industry and to provide them with a forum to communicate, plan strategically and influence future developments in our field, we decided that "predicting the future of radiology by inventing it" fitted perfectly as the overarching theme of our 2019 meeting.

Hence, this year's symposium will focus on three distinct areas: machine vision and its multifold implications, theranostics and emerging technologies as our companions in modern radiology as well as the human factor of leadership approached as never before at any of our meetings.

The first session on machine vision and globalization focuses not only on the making of artificial intelligence and the importance of data but also on strategies for integration of AI into clinical workflow and its potential future global impact. We will kick off the second session with a focus on the current state of the art and future of theranostics, also discussing the regulatory side and best practice models and then shifting to emerging technologies and how we will be able to acquire the necessary competence to best make use of them. Our third session focuses on ourselves, providing survival strategies for healthcare leaders in an age of epidemic burnout by offering a completely new workshop format. We will discuss how to avoid burnout on a personal and an organizational level, how to strengthen resilience as well as the potential future impact of AI in this very area.

Our symposium is highlighted by three keynote lectures by distinguished experts in their fields, on ethical and legal implications of AI, precision oncology and radiologist-centered imaging. These keynotes will set the stage for the lectures and the following discussions of our three topic streams. Additionally, extreme climber Thomas Bubendorfer will deliver a special lecture on performance and recovery and offer exciting perspectives on how to burn bright without burning out.

Interactive discussions to facilitate exchange of ideas and as the foundation of the IS3R strategic papers have been paramount to our meeting; therefore we have tailored the structure of our program having interactive panel discussions wrap up the highly important breakout sessions.

First of all, I would like to thank our President Dr. Sam Gambhir, who also serves as the program co-chair, providing unparalleled guidance and extraordinary vision. I would like to extend my thanks to all members of the Program Committee – Dr. Giles Boland, Dr. James A. Brink, Dr. Keith Dreyer, Dr. Christian J. Herold, Dr. Hedvig Hricak, Dr. Gabriel P. Krestin, Dr. Stefan Schönberg and Dr. Ralph Weissleder – for their outstanding efforts in organizing this year's meeting. You have been an incredible inspiration! Together, we would also like to thank the IS3R office staff, Katharina Krischak and Monika Hierath as well as the entire IS3R Executive Board for their support in preparing for this meeting. Last but not least, I would like to thank all invited speakers, moderators, rapporteurs, and panelists for their invaluable contributions. It is your input that will make this meeting a true success!

Welcome to Budapest!

Sincerely,

Michael H. Fuchsjaeger, MD
Chair of the Program Committee

ABOUT THE IS3R

Vision of the IS3R

The IS3R shapes and guides the future of diagnostic and therapeutic imaging for the benefit of patients, our discipline and society as a whole.

Mission of the IS3R

The mission of the IS3R is to actively shape the future of medical imaging and image-guided therapies by leveraging the knowledge and influence of world leaders in these disciplines and in related industries. By assessing the potential impact of disruptive innovations on global healthcare, the IS3R aims to inform and guide clinical practice, medical science and health-care policy.

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Maximilian F. Reiser, MD

Dr. Maximilian F. Reiser will be awarded the 2019 Alexander Margulis Gold Medal at the 13th IS3R Biennial Symposium.

Dr. Reiser received his medical degree from the Ludwig Maximilians University of Munich in 1973 before completing his residency at the diagnostic radiology department of the Technical University of Munich in 1983. He later served as an assistant professor at the same institute, before moving on to become an associate professor at the University of Münster in 1986. He then went on to take up the post of professor and chairman of radiology at the University of Bonn in 1989, where he worked until he returned to his alma mater in 1993. He served as professor and chairman of Ludwig Maximilians University's department of radiology from 1993 to 2017, and as dean of medicine from 2008 to 2015.

A well-known figure within the international radiological community, Dr. Reiser has taken an active interest in promoting and furthering the interests of his discipline. A long-time and active member of the European Society of Radiology (ESR), he served as president of the Society's congress in 2008, went on to serve as president of the society in 2010–2011 and as Editor-in-Chief of the ESR's flagship journal *European Radiology* from 2014 to 2017. He also served as president of the German Radiological Society, the European Society of Musculoskeletal Radiology and the joint congress of the German Radiological Society and Austrian Radiological Society in 2001. One of the first members of the International Society for Strategic Studies in Radiology (IS3R), Dr. Reiser served on the Society's Executive Board from 2003 to 2017 and acted as Program Chair and local organizer of the IS3R 2007 Symposium in Munich, DE.

With more than 500 original publications to his name, Dr. Reiser has authored extensively throughout his distinguished clinical and academic career. His main research interests include skeletal radiology, magnetic resonance imaging, abdominal and cardiac imaging, as well as oncologic interventions. Among the many awards he has received throughout his career are Honorary Fellowship of the Royal College of Radiologists and the American College of Radiology. He was also awarded the Holthusen Ring Award of the German Radiological Society and received the Gold Medal of the European Society of Radiology in 2013. Dr. Reiser is also an honorary member of many national radiological societies, including those of Austria, France, Germany, Switzerland, Korea, Greece, Japan, India and Iran, as well as being an honorary member of the Radiological Society of North America. He has also received honorary membership of the Leopoldina, the German National Academy of Science, as well as an honorary doctorate from the veterinary faculty of Ludwig Maximilians University and Tiflis State University and was made Foreign Associate of the National Academy of Science (USA) Institute of Medicine (IOM).

PROGRAM OVERVIEW

Thursday, August 22

- 08:30 **OPENING AND WELCOME**
-
- SESSION I: MACHINE VISION AND GLOBALIZATION**
- 08:45 KEYNOTE LECTURE 1:
ETHICAL AND LEGAL
IMPLICATIONS OF AI
B. Prainsack
- 09:30 **TOPIC A: THE MAKING OF AI**
- 11:15 **TOPIC B: INTEGRATION OF AI –
CONTINUOUS LEARNING AND
INDUSTRY PERSPECTIVES**
- 13:45 **BREAKOUT SESSION:
AI WORKFLOW INTEGRATION**
- 15:30 **PANEL DISCUSSION:
AI WORKFLOW INTEGRATION**
- 16:15 **PANEL DISCUSSION:
THE FUTURE GLOBAL IMPACT OF AI**
-
- 17:00 Adjourn
-
- 17:00 **IS3R GENERAL ASSEMBLY
(members only)**

Friday, August 23

- SESSION II: THERANOSTICS AND
EMERGING TECHNOLOGIES**
- 08:30 KEYNOTE LECTURE 2:
PRECISION ONCOLOGY:
USING BIOLOGY TO ADVANCE
THERANOSTICS
M. Baumann
- 09:15 **TOPIC A: THERANOSTICS –
STATE-OF-THE-ART AND LOOKING
TO THE FUTURE**
- 11:00 **PANEL DISCUSSION: REGULATORY
SIDE AND BEST PRACTICE MODELS
FOR THERANOSTICS**
- 13:00 **TOPIC B: NEW DIAGNOSTICS –
NEW TECHNOLOGIES**
- 15:25 **PANEL DISCUSSION:
TRAINING AND COMPETENCE FOR
NEW TECHNOLOGIES**
-
- SESSION III: DON'T LOSE THE
LEADERS TO LEADERSHIP**
- 16:25 KEYNOTE LECTURE 3:
RADIOLOGIST-CENTERED
IMAGING: HOW WE CAN SAVE
OURSELVES AND OUR SPECIALTY
IN AN AGE OF EPIDEMIC BURNOUT
-
- 18:00 Adjourn

Saturday, August 24

- CONT. SESSION III: DON'T LOSE
THE LEADERS TO LEADERSHIP**
- 08:30 WORKSHOP: BALANCING
PERSONAL AND PROFESSIONAL
LIFE: SURVIVAL STRATEGIES FOR
HEALTHCARE LEADERS
P. Moskowitz
- 10:00 **BREAKOUT SESSION:
STRATEGIES TO DEAL WITH
BURNOUT**
- 11:45 **PANEL DISCUSSION:
STRATEGIES TO DEAL WITH
BURNOUT**
- 12:15 SPECIAL LECTURE
HOW TO BURN BRIGHT WITHOUT
BURNING OUT: PERFORMANCE
AND RECOVERY – TWO SIDES OF
THE SAME COIN
T. Bubendorfer
- 13:00 **SUMMARY AND CLOSING**
-
- 13:30 Adjourn

SCIENTIFIC PROGRAM SCHEDULE

Thursday, August 22

08:30 **OPENING AND WELCOME**

SESSION I: MACHINE VISION AND GLOBALIZATION

Moderator: G. Krestin

08:45 **KEYNOTE LECTURE 1: ETHICAL,
SOCIAL AND LEGAL IMPLICATIONS
OF AI**
B. Prainsack

09:30 **TOPIC A: THE MAKING OF AI**
*Moderators: G. Krestin,
L. Martí Bonmati*
Data Is the New Oil
K. Dreyer
**How to Manage and Prepare Data
to Feed to Machines**
W. Niessen
**Creating a Healthy Radiology AI
Ecosystem: Education, Research,
Validation, and Public Policy**
C. Langlotz
10:15 **Discussion**

10:45 **Coffee Break**

11:15 **TOPIC B: INTEGRATION OF AI –
CONTINUOUS LEARNING AND
INDUSTRY PERSPECTIVES**
Moderators: C. Claussen, C. Hess
**How Does Clinical Integration of AI
Work?**
R. Cascella
**The Seamless Interface between
Humans and Machines**
D. Comaniciu
**The Vision of a Surveillance and
Continuous Learning Platform**
K. Bigelow
Continuous Learning AI Methods
O. Pianyk
12:15 **Discussion**

12:45 **Lunch**

13:45 BREAKOUT SESSION: AI WORKFLOW INTEGRATION

**Group 1: How Will AI Help to Bring
Established Operations and Clinical
Decision Support to the Next Level?**

Moderators: J. Brink, M. Dewey
Panelists: G. Boland, L. Donoso,
M. Recht, V. Sinitsyn

**Group 2: How Does AI Help with
Clinical Interpretation Today, How
Will It Tomorrow?**

Moderators: T. Grist, Z. Jin
Panelists: C. Catalano, D. Enzmann,
S. Schönberg, B. Triaire

**Group 3: Trends in Data Acquisition
and Smart Devices**

Moderators: U. Attenberger, O. Ratib
Panelists: J. Hill, P. Koerte, H. Pien

14:45 **Coffee Break**

15:15 BREAKOUT SESSION REPORTS

Group 1: J. Brink

Group 2: T. Grist

Group 3: U. Attenberger

15:30 PANEL DISCUSSION: AI WORKFLOW INTEGRATION

Moderators: J. Brink, C. Kuhl

Panelists: G. Boland, F. Gilbert,
T. Grist, P.-L. Khong, O. Ratib

16:15 PANEL DISCUSSION: THE FUTURE GLOBAL IMPACT OF AI

Moderators: B. Brkljacic, G. Cerri
Differences Around the World

C. Herold
**The Ivory Tower of Radiology vs.
Reality in Africa**

K. Soyebi
**Industry Perspective on Technology
Deployment in Developing
Countries**

M. McHugh
**Mobile Imaging Service to the
Developing World with AI**
Q. Y. Ma

17:00 **Adjourn**

17:00 IS3R GENERAL ASSEMBLY (MEMBERS ONLY)

19:30 **SOCIAL EVENT** at Spoon Restaurant
Meeting point in the hotel foyer
at 19:00

SCIENTIFIC PROGRAM SCHEDULE

Friday, August 23

SESSION II: THERANOSTICS AND EMERGING TECHNOLOGIES

Moderator: H. Hricak

- 08:30 KEYNOTE LECTURE 2: PRECISION ONCOLOGY: USING BIOLOGY TO ADVANCE THERANOSTICS
M. Baumann
- 09:15 TOPIC A: THERANOSTICS – STATE-OF-THE-ART AND LOOKING TO THE FUTURE
Moderators: H. Hricak, M. Schwaiger
Radioisotope-based Theranostics
K. Herrmann
Theranostics and Interventional Oncologic Radiology
S. Solomon
Combining Soluble Biomarkers and Imaging Diagnostics
R. Weissleder
- 10:00 Discussion

10:30 Coffee Break

- 11:00 **PANEL DISCUSSION: REGULATORY SIDE AND BEST PRACTICE MODELS FOR THERANOSTICS**
Moderators: J. Lewis, B. McNeil
Panelists: C. Buchpiguel, T. Balzer, O. Clément, A. Nakanishi, F. Nicolas, A. Spinazzi

12:00 Lunch

- 13:00 TOPIC B: NEW DIAGNOSTICS – NEW TECHNOLOGIES
Moderators: K. Nikolaou, R. Pettigrew
Strategic Planning for Future Use of Phase Contrast CT
J. Herzen
New X-ray Breast Imaging Techniques – Ready for Clinical Use?
N. Pelc
Strategic Applications of Optical Imaging
W. Drexler
Novel Focus US Interventional Approaches
P. Ghanouni
Strategies for Radiology and Surgery to Work Together to Optimize Fluorescence-guided Surgery
R. Swijnenburg
- 14:15 Discussion

14:55 Coffee Break

- 15:25 **PANEL DISCUSSION: TRAINING AND COMPETENCE FOR NEW TECHNOLOGIES**
Moderators: R. Dunnick, V. Vilgrain
Panelists: V. Jackson, C. Meltzer, M. Schnall, S. Ternovoy

SESSION III: DON'T LOSE THE LEADERS TO LEADERSHIP

Moderators: M. Fuchsjäger, K. Riklund

- 16:25 KEYNOTE LECTURE 3: RADIOLOGIST-CENTERED IMAGING: HOW WE CAN SAVE OURSELVES AND OUR SPECIALTY IN AN AGE OF EPIDEMIC BURNOUT
P. Moskowicz
- 17:10 Adapt or Perish: The View of Young Leadership
R. Kubik
- 17:25 How Can AI Help to Avoid Burnout?
R. Mather
- 17:40 Discussion

18:00 Adjourn

- 19:00 **SOCIAL EVENT** at Gundel Restaurant
Meeting point for bus transport in the hotel foyer at 18:30

SCIENTIFIC PROGRAM SCHEDULE

Saturday, August 24

CONT. SESSION III: DON'T LOSE THE LEADERS TO LEADERSHIP

Moderator: M. Fuchsjäger

08:30 WORKSHOP: BALANCING PERSONAL AND PROFESSIONAL LIFE: SURVIVAL STRATEGIES FOR HEALTHCARE LEADERS
P. Moskowitz

10:00 BREAKOUT SESSION: STRATEGIES TO DEAL WITH BURNOUT

Group 1: How Do I Avoid Burnout?

Moderators: D. Akata, A. Saindane

Panelists: N. Beauchamp, M. Kircher, G. von Schulthess

Group 2: My Strategies for Resilience

Moderators: G. Rubin, H. Xue

Panelists: B. Choi, P. Grenier, A. Palkó

Group 3: How Do Organizations Need to Change to Avoid Burnout?

Moderators: G. Krestin, M. Recht

Panelists: R. Illing, T. Lawton, C. Reckziegel, M. Reiser

11:00 Coffee Break

11:30 BREAKOUT SESSION REPORTS

Group 1: D. Akata

Group 2: G. Rubin

Group 3: M. Recht

11:45 PANEL DISCUSSION: STRATEGIES TO DEAL WITH BURNOUT

Moderators: B. Hillman, J. Sosna

Panelists: D. Bluemke, H. Kressel, K. Wesdorp, M. Barber

12:15 SPECIAL LECTURE: HOW TO BURN BRIGHT WITHOUT BURNING OUT: PERFORMANCE AND RECOVERY – TWO SIDES OF THE SAME COIN

T. Bubendorfer

13:00 SUMMARY

H. Ringertz

13:15 CLOSING

13:30 Farewell Lunch



Hotel Information

Kempinski Hotel Corvinus Budapest

Erzsébet tér 7–8

1051 Budapest

Hungary

Phone: +36 1 429 3777

Email: hotel.corvinus@kempinski.com

Web: www.kempinski.com/en/budapest/hotel-corvinus/

Located in the heart of Budapest's thriving downtown, the luxurious Kempinski Hotel Corvinus is just a short walk away from the Danube River and all of the city's main attractions. With its terrace backing onto the road colloquially known as Fashion Street (Deák Ferenc utca), Kempinski Hotel Corvinus Budapest combines the luxury of contemporary design with the best in the city's gastronomy scene (two restaurants, two bars, a coffee house and a deli) topped off with its Zen in-house spa. This modern hotel connects to local history through the customized designs of its suites and an extensive and diverse



collection of original Hungarian art. Its elegant New Empire-style rooms deliver all the 21st-century comforts that travelers expect.



PRACTICAL INFORMATION

Certificate of Attendance

Participants who would like to receive a certificate certifying their attendance at the symposium are encouraged to request one from the registration desk (located outside the main lecture hall) before adjournment on Saturday.

Credit Cards/Currency Exchange

Major Credit Cards are accepted. The closest ATM is located at OTP Bank on Deák Ferenc utca (1 minute walk from the back entrance of the hotel). Hungary's official currency is the Hungarian Forint (HUF). The Kempinski provides currency exchange for its guest. An exchange office is located next to the back entrance of the hotel.

Insurance

Neither the IS3R nor the symposium organizers can accept liability for personal injury, or loss/damage to property, personal or otherwise, belonging to meeting participants or accompanying persons, either during or as a result of the symposium or during all tours or their stay in Budapest. Participants and accompanying persons should ensure that their own personal health, accident and/or travel insurance are up-to-date and valid for use in Budapest.

Meals

Buffet breakfast is included at the Kempinski Hotel Corvinus and will be served in the ÉS Bisztró for all guests during the symposium (August 22–24). Business lunch buffet for all Symposium participants will be provided in ÉS Bisztró, coffee breaks are served in Foyer A outside the main lecture hall. Thank you for your understanding that the IS3R does not provide lunch and coffee breaks for accompanying persons.

Official Language

English (no translation of the meeting will be provided).

Recording

Audio or video recording of any part of the symposium without prior express permission is prohibited.

Registration Desk

Staff at the symposium registration desk will be available on Wednesday afternoon from 15:00–17:00, as well as during the symposium hours from Thursday to Saturday. The registration desk is located outside the main lecture hall. Upon registration, participants are moreover asked to complete a conflict of interest form and sign a presentation release consent form for archiving purposes and use in pdf format in the protected members area on the IS3R website.

Smoking Policy

The meeting venue and hotel rooms are fully non-smoking. Smoking is only permitted in front of the building and on the terrace.

Speaker Ready Room

Speakers are kindly requested to upload their presentation at the Speaker Ready Room located in Room 5 next to the Business Center on the conference floor at least 90 minutes before the session starts.

Tourist Information

The Kempinski Hotel Corvinus' Concierge team will be happy to assist you with local information for sightseeing in Budapest, booking optional tours or taxi rides, making dinner reservations or any questions regarding your accommodations.

SOCIAL EVENING EVENTS

Social Evening Events

WEDNESDAY 07:00–08:30 p.m.

Welcome reception at the Kempinski Hotel Corvinus. Drinks and light hors d'oeuvres will be served in Foyer A on the first floor outside the main lecture hall (The Grand Room).

Dress code: Smart casual

THURSDAY at 07:30 p.m.

Cocktails and dinner will be held at the Spoon restaurant. Located in downtown (5 min walk from Kempinski) with a stunning view of the Royal Palace, the Spoon is a modern and well-equipped restaurant on a boat permanently docked on the river Danube. The fusion cuisine offers national trends and Hungarian specialties as well as a wide range of meals from the Far East.

Aperitif will be served on upper deck terrace.

Dress code: Business casual attire, jacket not required

The restaurant is located in walking distance from the hotel. Meeting point is in the hotel foyer on the ground floor at 07:00 p.m.



FRIDAY at 07:00 p.m.

The IS3R Gold Medal Dinner will be held at Gundel Restaurant. The restaurant located in the beautiful City Park of Pest at the Heroes' Square was founded in 1894. It is one of the most famous restaurants of the city having welcomed eminent personalities such as the King of Siam, Charlie Chaplin, Richard Strauss, Queen Elizabeth II. and Pope John Paul II. The Gundel offers a fascinating choice of the chef's master pieces representing the best of the Hungarian gastronomy. The 21st century version of the most traditional courses can be tasted as well as international gourmet specialties.

Aperitif will be served on terrace.

Dress code: Dinner attire, jacket required

Meeting point for bus transport is in the hotel foyer on the ground floor at 06:30 p.m.





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