Fall 2020

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2020 SNMMI Annual Meeting

Due to the unforeseen consequences of the global coronavirus outbreak, SNMMI announced on April 30th that the annual meeting would be held in a virtual format from July 11-14. The Cardiovascular Council subsequently modified the Cardiovascular educational program to fit within the virtual framework for the meeting.

The CVC priority topic for the continuing education session was Non-Invasive Evaluation of CAD in 2020, and was the kickoff Continuing Education session for the virtual meeting on July 11th. The session featured six of the leading Nuclear Cardiology experts in the field and was designed to compare and contrast modalities and clinical practice guidelines toward the identification of patients most likely to benefit from imaging and subsequent intervention.

The cardiovascular theme continued with the first Young Investigator Award presentations. Please join the CVC in congratulating the winners:

- **3rd Place Basic Science**: Inga Melvinsdottir, MD; (Yale YTRIC)  
  **Abstract Title**: Intramyocardial hydrogel delivery post myocardial infarction results in increased integrin activation and reduction in left ventricular modeling

- **2nd Place Basic Science**: Jakub Toczek, PhD; (Yale Medicine)  
  **Abstract Title**: Multimodal molecular imaging of phagocytic and proteolytic activity in abdominal aortic aneurysm

- **1st Place Basic Science**: Nele Inga Hermanns; (Hannover Medical School)  
  **Abstract Title**: Molecular imaging of inflammation in the brain-heart axis after ischemic stroke: comparison of two murine stroke models
• **3rd Place Clinical Science**: Mingkai Yun, PhD (Beijing Anzhen Hospital)

  **Abstract Title**: *Assessment of the metabolic heart-brain axis with cardiac and brain 18F-FDG PET/CT imaging in patients with heart failure*

• **2nd Place Clinical Science**: Yuka Otaki, MD, PhD (Cedars-Sinai)

  **Abstract Title**: *Diagnostic Accuracy of Deep Learning for Myocardial Perfusion Imaging in Men and Women with a High-Efficiency Parallel-Hole-Collimated Cadmium-Zinc-Telluride Camera: multicenter study*

• **1st Place Clinical Science**: Jacek Kwiecinski (Edinburgh/Cedars-Sinai)

  **Abstract Title**: *Clinical Predictors of 18F-Sodium Fluoride PET Coronary Uptake in Patients with Advanced Coronary Artery Disease*

All live education sessions in the Virtual Annual Meeting were recorded and are available to registrants by logging back into the [Annual Meeting Web Site](#), and signing in with your registration credentials.

In other Annual Meeting news, two members of the CVC Board of Directors received special recognition by outgoing SNMMI President Vasken Dilsizian, MD himself a former President of the CVC.

Thomas Schindler, MD of Washington University in St. Louis, a past President of CVC and a Blumgart Award winner, was recognized with an Outstanding Educator Award. Dr. Schindler has continued to represent the CVC in the development of the first SNMMI Appropriate Use Criteria for PET Myocardial Blood Flow, which is approved and awaiting publication in the JNM.

Outgoing CVC Board Member Wengen Chen, MD, PhD was recognized with a Distinguished Service Award for his support of the SNMMI’s ongoing activities for membership development. Dr. Chen started in CVC as an Intern and was elected to the Board of Directors at the end of his 2-year internship term. He most recently served the CVC as the Council Secretary.
Congratulations to both of our CVC colleagues for their hard work and special recognition at the Annual Meeting.

With the Annual Meeting comes a number of changes to the leadership of the Board of Directors for 2020-2021:

Timothy Bateman, MD  
Edward J. Miller, MD PhD FASNC FACC  
Piotr J. Slomka, PhD  
Karthikeyan Ananthasubramaniam, MD FACC  
Jamieson M. Bourque, MD, MHS  
Venkatesh L. Murthy, MD, PhD

Council President  
Council President-Elect  
Council Vice President-Elect  
Council Secretary  
Council Treasurer  
Council Immediate Past President

We thank all out outgoing and current Board Members for their distinguished service to the SNMMI and the membership.

**Blumgart Award Winner: Piotr Slomka, PhD, FACC, FCCPM, FASNC**

The Hermann Blumgart Award is the highest award and honor bestowed by the Cardiovascular Council. The election by the Board of Directors of the CVC is based on criteria of both scientific contributions to the field of cardiovascular nuclear medicine and service to the Council.

Hermann Ludwig Blumgart is considered the principal pioneer in nuclear cardiology based on his seminal research in 1927 to accurately determine the flow rate of blood. He defined the characteristics of suitable tracers and recognized that radioactive isotopes could fill this need. Also understanding the challenges for a suitable detector, he collaborated with medical student Otto Yens to develop a modified Shimizu dynamic Wilson cloud chamber as the first instrument specifically for use in diagnostic Nuclear Medicine.

The 2020 recipient of the Blumgart Award has followed in these giant footsteps of cardiovascular imaging, instrumentation and physiologic quantification most admirably. The Cardiovascular Council is pleased to announce that its highest recognition in 2020 is awarded to **Piotr Slomka, PhD**, Professor of Medicine, and the Director of Innovation in Imaging for the Artificial Intelligence in Medicine (AIM) Institute at Cedars-Sinai Medical Center in Los Angeles.

His entry into the Nuclear Medicine universe began in Poland at the Warsaw University of Technology, where he earned his Master of Applied Science degree with his thesis on Single Photon Emission Tomography reconstruction algorithms. With an eye clearly on the future of quantification in medicine, he earned his PhD in Medical Biophysics from the University of Western Ontario, Canada, on the basis of his work in the automated analysis of nuclear medicine images toward artificial intelligence. His scientific mentors in Canada were Dr. Trevor Cradduck and Dr. Frank Prato.
Continuing the legacy of innovative cardiovascular radionuclide quantification from Cedars-Sinai that began with Thallium-201 imaging in the late 1970’s, Piotr brought his talents to Los Angeles in 2002 and is best known for a series of novel inventions and approaches that have revolutionized the clinical utility of Nuclear Cardiology in the modern era. His clinical mentor in the area of nuclear cardiology at Cedars-Sinai has been Dr. Daniel Berman.

Since 1993, Dr. Slomka has introduced processes and programs to address image registration and fusion for SPECT and PET, database enhancements for myocardial perfusion quantification, multimodality image registration, 3D coronary fusion, study-to-study change analysis, automated wall motion and thickening assessments, viability analysis, coronary flow analysis for PET, and coronary plaque quantification to integrate the contribution of CT angiography. These approaches are validated, approved, licensed to vendors and in clinical use around the world. His recent developments are in the area of artificial intelligence and novel coronary PET imaging promising even higher clinical utility for nuclear cardiology.

He is a widely recognized expert in detector technology and has provided scientific clarity in efforts to optimize imaging and quantification based on the transition from sodium iodide to new CZT technology. He has recently spearheaded an NIH-funded imaging registry of cardiac CZT SPECT (REFINE SPECT) with over 20,000 datasets with outcomes collected so far.

Science for Dr. Slomka is a nonstop process; he has contributed more than 300 peer-reviewed published papers and 17 book chapters. In 2016 he published his first book, *Frontiers of Nuclear Cardiology*, co-authored with former CV Council President Sharmila Dorbala. He held research funding in Canada from the Canadian Institutes of Health Research since 2000 and continuous support from NIH in US since 2007; with 2 active current NIH NHLBI grants in the area of nuclear medicine (both SPECT and PET).

As an educator, he taught the Nuclear Medicine Physics, PACS, and Human-Computer Interface Design courses at the University of Western Ontario. Since then he has delivered more than 200 invited lectures for faculty appointments, grand rounds and academic proceedings. Throughout his career, he has imparted his knowledge to a large number of students, post-docs and fellows, serving as an instructor, mentor, reader and examiner for doctoral candidates.

Dr. Slomka is a longtime energetic participant in the SNM’s activities since joining the organization in 1991. He has been an important component of the Cardiovascular Council Categorical seminar on numerous occasions, and has participated in regional as well as international chapter meetings, where his expertise is routinely sought. In continuing service to the Society of Nuclear Medicine, he has been a JNM reviewer since 2000, on the editorial board of JNM in 2005, and ascended to Associate Editor in 2016. He was first elected to the CV Council Board of Directors in 2007 and re-elected to the Council Board in 2017; during both tenures he has been a prolific session organizer and participant in both the Mid-Winter and Annual Meetings. This year he was chosen by the CVC Board as the Vice-President Elect of Cardiovascular Council.

SNMMI is not the full measure of his advocacy and engagement; he is also actively involved in ASNC, IEEE, and EANM. He was named a Fellow of the Canadian College of Physicists in
Medicine in 1997, a Fellow of the American College of Cardiology in 2008 and was recognized as a Fellow of the American Society of Nuclear Cardiology in 2020.

When one considers the level of effort required to be successful in medicine today, between students, abstracts, papers, grants, deadlines and meetings, Piotr Slomka epitomizes the work ethic and innovation that has taken Nuclear Cardiology to the threshold of Artificial Intelligence in Medicine. It is not hard to imagine that Dr. Blumgart himself would be quite pleased to see the progress made in the work he started, embodied in the winner of the 2020 Blumgart Award.

Dr. Slomka delivered his Blumgart Award presentation via Webinar on November 19th. It was very well attended with 110 registrants, and the archive upload is pending. It will be available for viewing and attainment of CE credit for 3 years. Please join the Cardiovascular Council in Congratulating Piotr Slomka, Ph.D.

**Outstanding Educator Award Winner: Diwakar Jain, MD, FRCP, FACC, FSNMMI, MASNC**

In February of last year, the Cardiovascular Council Board approved the CVC Outstanding Educator Award and Lectureship, a new accolade designed to recognize an outstanding educator in the field of cardiovascular radionuclide imaging. The CVC recognizes the critical role of dedicated educators in support of the Council and the SNMMI in educating not only imagers but the broader medical community, as well as the public. The inaugural winner of this new award exemplifies this vision in every way.

The Cardiovascular Council is pleased to announce the first winner of the Outstanding Educator Award is Diwakar Jain, MD, a Professor of Medicine (Cardiovascular) at New York Medical College, and Director of Nuclear Cardiology and Cardio-Oncology at Westchester Medical Center in Valhalla, New York.

Over the course of his medical career which began in Chandigarh, India, Dr. Jain has demonstrated an enthusiastic commitment to sharing his vast knowledge and developing the skills of students and fellow medical professionals alike. Having completed internship and residency in Internal Medicine, he developed a broad scope of experience across medical disciplines, including Endocrinology, Gastroenterology, Hepatology, Nephrology, Neurology, Thoracic Medicine, Pediatrics, Emergency Medicine and Psychiatry. While he is uniquely suited to establishing and advancing the role and value of Nuclear Medicine imaging across medical disciplines, his multiple fellowships in cardiology and cardiovascular research began an illustrious career for which he is most widely known. Even in this arena his knowledge is formidable, spanning every aspect of Nuclear Cardiology from tracer development to instrumentation to the psychological aspects of coronary physiology.

In consideration of the vast number of abstracts, manuscript and book publications, editorial roles and committee appointments, recognitions and awards, a more affable, engaging and energetic facilitator of important professional interaction would indeed be hard to find.
His high level of enthusiasm for teaching has led to numerous visiting professorships and consultancies around the world; he has given literally hundreds of invited lectures across a wide range of topics of interest to both the imaging and medical communities in the US, South America, Europe and Asia. Dr. Jain is never one to refuse an invitation to the regional SNMMI Chapter meetings, where he is a regular feature for the Technologist Section; bestowing his clinical expertise against a large number of compelling case studies that he updates and maintains, despite the significant and continuous effort involved. His commitment to case studies led to the 2-volume Atlas of Nuclear Cardiology Case Studies Series, first published in 2007.

Dr. Jain was recognized as a Fellow of the American College of Cardiology in 1994, and as a Fellow of the Royal College of Physicians in 2002. He received the Gopal Subramaniam Lifetime Achievement Award, given by the Indo-American Society of Nuclear Medicine during the annual meeting of the SNM in June 2004. He was recognized as a Fellow of the Society of Nuclear Medicine and Molecular Imaging in June 2017, after years of service to several Councils, and ascended to President of the Cardiovascular Council in 2007-2008.

The American Society of Nuclear Cardiology awarded Dr. Jain with a Fellowship in 2006, and ultimately the Master of the American Society of Nuclear Cardiology (MASNC) in September of 2017. As a Founding Member of ASNC, he presented at its inaugural meeting in 2003.

He delivered his Outstanding Educator Award Lecture on October 6th via Webinar, and the archive is available for viewing and CE credit until September 2023. You can access his presentation by clicking here.

Dr. Jain represents the best of what an educator can be; he is patient, committed, hard-working and generous. Please join the Cardiovascular Council in congratulating one of our finest, the first winner of the Outstanding Educator Award, Dr. Diwakar Jain.

2019-2021 CVC Intern Updates

The 2019 - 2021 CVC Interns are René Packard, MD, PhD, and Matthieu Pelletier-Galarneau, MD, MSc, FRCPC. CVC Interns are elected by the Board of Directors upon careful review of nominated candidate qualifications.

While 2020 may have been devoid of live conferences since early in the year, both of our interns have been extremely productive in their respective clinical and research practices, and in service to the Council. They actively contribute the journal reviews for each newsletter publication.

Matthieu Pelletier-Galarneau is a resident physician at the Institut Cardiologie de Montréal and has recently completed a research fellowship at the Gordon Center for Medical Imaging at Massachusetts General Hospital. He is currently serving as an Instructor at MGH and Harvard Medical School in Boston, MA.

His current research interests focus on PET imaging of peri-cardiac infection, such as infective endocarditis and hardware infections, with ongoing prospective clinical studies. In addition, he is pursuing his work on the use of fluorinated triphenyl-phosphonium to study mitochondrial membrane potential in vivo and exploring different potential clinical applications.
Dr. Pelletier-Galarneau has recently been appointed to the Early Career Professionals Committee, and as such has served as an abstract reviewer for the 2020 meeting. He was directly involved in the planning for the CVC Categorical Program and scheduled as a speaker and a moderator. He has also contributed to the following new manuscripts since the beginning of the new year:


Revisiting the relevance of the 3-month safety period in the evaluation of prosthetic valve endocarditis with FDG-PET/CT. J Nucl Cardiol. 2020 Feb 13

FDG-PET/CT for the Detection of Infection Following Aortic Root Replacement Surgery., JACC Cardiovasc Imaging. 2020 Mar 13

[18F] FDG-PET CT for the evaluation of native valve endocarditis. J Nucl Cardiol. 2020 Mar 16

René R. Sevag Packard is Assistant Professor in Residence (Cardiology) at UCLA in Los Angeles, CA.

He is currently focusing his research efforts on quantitative approaches to Flurpiridaz PET MPI, and the identification of novel mediators in the pathobiology of anthracycline-induced cardiac injury. He is currently serving as a reviewer for the Journal of Nuclear Cardiology, Life Sciences, and the European Journal of Clinical Investigation.

Dr. R. Sevag Packard has also contributed the following new manuscripts since fall of 2019:

Haploinsufficiency of mechanistic target of rapamycin ameliorates bag3 cardiomyopathy in adult zebrafish. Disease Models and Mechanisms (Original article); 2019: Oct 1

Displacement analysis of myocardial mechanical deformation (DIAMOND) reveals segmental heterogeneity of cardiac function in embryonic zebrafish. Journal of Visualized Experiments (JoVE); 2020: Feb 6

Low Wall Shear Stress is Associated with Saphenous Vein Graft Stenosis in Patients with Coronary Artery Bypass Grafting. Journal of Cardiovascular Translational Research (Original article); 2020: April 2

18F-FDG PET imaging of myocardial inflammation and viability following experimental infarction and anti-inflammatory treatment with compound MCC950. Journal of Nuclear Cardiology (Editorial); 2020: Apr 24.

Please join the Cardiovascular Council in congratulating these two young professionals for their outstanding achievements in their service to Cardiovascular Council. We will continue to report on their research throughout their 2019-2021 term.
CV Council News: Guidance Document Updates

The CV Council has taken a leadership role in the development of two new guidance documents this year.

A new guidance document has been made available as a joint effort between the American Society of Nuclear Cardiology and the SNMMI. In Guidance and Best Practices for Nuclear Cardiology Laboratories during the Coronavirus Disease 2019 (COVID-19) Pandemic: An Information Statement from ASNC and SNMMI, Hicham Skali, MD, MSc, and colleagues address the practice of nuclear cardiology in the setting of the pandemic, reflecting perspectives of diverse practices across the United States and worldwide. The statement focuses on how to adapt nuclear cardiology practice to COVID, including steps for protecting healthcare personnel and patients.

On March 29th of this year, SNMMI approved a new Procedure Standard for Gated Equilibrium Radionuclide Ventriculography Version 4.0. The CV Council effort was spearheaded by Council Board Member Saurabh Malhotra, MD, as Chair, and the Co-Chair and EANM representative was Panagiotis Georgoulias, PhD. Dr. James Galt, PhD, also contributed as a representative of the CVC.

The document was designed to assist nuclear medicine practitioners in recommending, performing, interpreting, and reporting the results of gated equilibrium radionuclide angiocardiography (ERNA). This was been submitted to the JNMT and was subsequently published as J. Nucl. Med. Technol. 202048:126-135.

Congratulations to the writing group for this new and important guidance document in support of one of the longstanding procedures in nuclear cardiology.

New in the Literature: Incidental Findings in Infective Endocarditis

Clinical usefulness of FDG-PET/CT for identification of abnormal extra-cardiac foci in patients with infective endocarditis by Holle et al (PMID: 32060776)

Holle and colleagues studied 114 patients investigated for infective endocarditis and found that FDG-PET/CT allowed detection of unsuspected extra-cardiac findings (cancers, other sites of infection, etc.) in 62 patients, resulting in a change in management in 29 patients. They concluded that 1 out of 10 the patients with definite endocarditis underwent a change in treatment regimen based on the FDG-PET/CT findings.
New in the Literature: Kinetic Modeling of FDG Uptake

Accuracy of arterial [18F]-Fluorodeoxyglucose uptake quantification: A kinetic modeling study (PMID: 320343239)

Toczek and colleagues sought to evaluate the accuracy of mean SUV\textsubscript{max} and mean TBR\textsubscript{max} for aortic wall FDG signal quantification in comparison with the net uptake rate of FDG, as these methods have not been validated against a gold standard such as tissue activity ex vivo or net uptake rate of FDG (K\textsubscript{i}) obtained using kinetic modeling.

Dynamic PET data from 13 subjects without prior history of cardiovascular disease who enrolled in a study of vascular inflammation were used for this analysis. Ex vivo measurement of plasma activity was used as the input function and voxel-by-voxel Patlak analysis was performed with t* = 20 minute to obtain the K\textsubscript{i} image. The FDG signal in the ascending aortic wall was quantified on PET images following recent guidelines for vascular imaging to determine mean SUV\textsubscript{max} and mean TBR\textsubscript{max}.

The K\textsubscript{i} in the ascending aortic wall did not correlate with mean SUV\textsubscript{max} (r = 0.10, P = NS), but correlated with mean TBR\textsubscript{max} (r = 0.82, P < 0.001) (Figure 1B). K\textsubscript{i} and K\textsubscript{i_max} strongly correlated (R = 0.96, P < 0.0001) and similar to K\textsubscript{i}, K\textsubscript{i_max} did not correlate with mean SUV\textsubscript{max} (r = 0.17, P = NS), but correlated with mean TBR\textsubscript{max} (r = 0.83, P < 0.001).

They concluded that kinetic modeling supports the use of mean TBR\textsubscript{max} as a surrogate for the net uptake rate of FDG in the arterial wall. These results are relevant to any PET imaging agent, regardless of the biological significance of the tracer uptake in the vessel wall.

The Newsletter continues on the next page.
### CVC Board of Directors

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Follow us on Twitter at [@CVC_SNMMI](#) for more news and updates.