

**Physics, Instrumentation and Data Sciences Council
Business Plan FY2019**

1. Executive Summary

The Physics, Instrumentation and Data Sciences Council is made up of Society members who have an interest in medical physics, nuclear instrumentation, and data sciences and their applications in diagnostic, therapeutic, or investigational nuclear medicine. It provides a source of information relating to medical physics, nuclear instrumentation science and data analysis to the Society through meetings, seminars, and publications as well as promoting the advancement and dissemination of knowledge in this area.

2. Mission

The mission of the Physics, Instrumentation and Data Sciences Council (PIDSC) of the Society of Nuclear Medicine and Molecular Imaging (SNMMI) is to promote advancement of and proper use of computers, instrumentation, data analysis and medical physics in diagnostic, therapeutic, and investigational molecular medicine, particularly diagnostic, therapeutic, and investigational nuclear medicine. The PIDSC has pursued this mission:

- by creating, organizing, and presenting educational programs focused on molecular diagnostic, therapeutic, and investigational technologies—including, but not limited to, imaging technologies,
- by assisting in development of scientific paper and poster sessions focused on molecular diagnostic, therapeutic, and investigational technologies,
- by providing awards for outstanding contributions to molecular diagnostic, therapeutic, and investigational technologies, and
- by providing awards to individuals who have made outstanding contributions in the area of molecular diagnostic, therapeutic, and investigational technologies.

3. Council Leadership

Officers

President: Arman Rahmim, PhD
Vice President: Richard Laforest, PhD
Vice President Elect: Osama R. Mawlawi, PhD
Treasurer: Chi Liu, PhD
Secretary: R. Glenn Wells, PhD
Immediate Past President: Mark F. Smith, PhD

Term

June 2018 – June 2019
 June 2018 – June 2019
 June 2018 – June 2019
 June 2018 – June 2020
 June 2017 – June 2019
 June 2018 - June 2019

Board members

Robert Doot, PhD
 Phillip Kuo, MD, PhD
 Nicolas Karakatsanis, PhD, PIDSC Intern
 Yong Du, PhD
 Joyita Dutta, PhD
 James Tyler Middlebrooks, BS, CNMT, RT(N)(CT)

June 2017 – June 2019
 June 2017 – June 2019
 June 2017 - June 2019
 June 2018 – June 2020
 June 2018 – June 2020
 June 2018 – June 2020

Intern

Nicolas A. Karakatsanis, PhD

June 2017 – June 2019

4. Current Status

A. Financial

As of August 3, 2018, the PIDSC had a total revenue of \$23,472 and projected FY2018 expenses of \$7,045. This includes \$2,930 in member dues and a carryover of \$18,542 from FY2017. Revenue is generated through annual membership dues which are \$15.00 per member.

B. Membership

As of June 4, 2018, the PIDSC has 252 members which includes 149 physicians and scientists, 43 technologists, and 60 in-training members with complimentary membership. The PIDSC membership history for the past few years is listed below:

PIDSC Membership History

2017 = 193
 2016 = 201
 2015 = 211

C. Member Benefits

- PIDSC members influence the scientific program of the SNMMI AMs as the PIDSC President serves as or appoints the SNMMI AM SPC Vice Chair and Sub Chairs for the SNMMI AM Physics, Instrumentation & Data Sciences Track.
- PIDSC members may serve on the sub-committee to select the Edward J. Hoffman Memorial Lecturer.
- PIDSC members are eligible to serve as Physics, Instrumentation & Data Sciences Track Session Moderators at the SNMMI AM.
- PIDSC members are eligible to serve as PIDSC YIA judges.
- PIDSC members may serve as Physics, Instrumentation & Data Sciences Track Scientific Poster Award judges.
- PIDSC members are eligible to vote in elections to select PIDSC board members and officers.
- PIDSC members are eligible to be reviewers of submissions to the SNMMI Annual Meeting Physics, Instrumentation & Data Sciences Track.
- PIDSC members are eligible to propose, organize, and present at PIDSC-sponsored educational sessions for the SNMMI Mid-Winter and Annual meetings.

5. Accomplishments for FY2018

- a. The PIDSC changed its name from Computer and Instrumentation Council, in order to better align the council's name with the interests and programmatic activities of the council members
- b. The PIDSC sponsored or co-sponsored the following CE sessions at the 2018 SNMMI Annual Meeting:

Categorical

- CAT 4: Radiomics and Machine Learning Methods and Applications in Radiology and Nuclear Medicine (with CMIIT)

Education Sessions

- CE58: Motion Correction Strategies in PET
- CE72: Quantitative Imaging for Dosimetry in Radionuclide Imaging and Therapy
- CE84: Measurement of Absolute Myocardial Blood Flow, Part II: Current State of Dynamic SPECT Imaging
- CE44: Council Business Meeting / Edward J. Hoffman Memorial Award Lecture
- CE30: Advances in Simultaneous PET/MRI Imaging and Clinical Applications

- CE09: Crystals to Quantitation to QC: A Field Guide to SPECT and PET Instrumentation
- c. PIDSC organized and moderated the PIDSC YIA Symposium at the 2018 SNMMI Annual meeting and presented YIA winners with certificates during the YIA ceremony:
- 1st Place – Yihuan Lu - "Data-driven motion detection and event-by-event correction for brain PET."
 - 2nd Place – Jeffrey P. Schmall - "Deep learning based attenuation correction for whole-body PET studies."
 - 3rd Place – Jason M. Bini - "PET Imaging of Pancreatic β -Cell Mass with ^{11}C - (+)-PHNO: Determination of the appropriate approach for quantitative analysis."
 - Honorable Mention: Bao Yang - "Brain PET dose reduction using a shallow artificial neural network."
 - Honorable Mention: Alvin Ihsani - "A Novel Penalized Joint Image Reconstruction Method for Tau-PET Imaging."
 - Honorable Mention: Donhwil Hwang - "Deep learning-based attenuation correction for whole-body PET studies."
 - Honorable Mention: Saeed Ashrafinia - "Application of Texture and Radiomics Analysis to Clinical Myocardial Perfusion SPECT Imaging."
 - Honorable Mention: Jun Yeon Won - "Development and initial results of a prototype brain PET scanner using a time-based digitizer and an FPGA-based real-time coincidence processor."
- d. Presented the 2018 Edward J. Hoffman Memorial Award to Eric Frey, PhD, for outstanding contributions to the field of computer and instrumentation in nuclear medicine.
- e. Presented the 2018 Tracy Lynn Faber Memorial Award to Greta Mok, PhD, for outstanding contributions in multimodality and molecular image reconstruction and analysis.
- f. The PIDSC provided communications to members via email blast announcements, periodic newsletters, and the PIDSC website.
- g. Support the internship of Nicolas Karakatsanis, PhD, with mentoring and a project which supports PIDSC's programs/goals.

6. Goals and Programs for FY2019

The goals and programs of the PIDSC are given below. Their alignment with the SNMMI Strategic Plan and Value Initiative will then be discussed.

- a. The PIDSC will continue to hold a Board of Directors (BOD) and business meeting at the SNMMI Annual Meeting as well as fall and spring PIDSC BOD conference calls as necessary to address programmatic needs and discussion topics.
- b. The PIDSC will continue to sponsor educational opportunities and materials relevant to technological topics of interest to PIDSC members and to SNMMI members in general.

- Provide the Vice Chair and three Sub-Chairs to oversee the Physics, Instrumentation & Data Sciences Track for the 2019 SNMMI Annual Meeting Scientific Program Committee in the areas of Data Analysis and Management, Image Generation and Instrumentation. In addition, a Sub-Chair will be provided to oversee the PIDSC Young Investigator Award Symposium.
 - Provide approximately 100 reviewers for the submissions to the Physics, Instrumentation & Data Sciences Track for the 2019 SNMMI Annual meeting.
 - Sponsor CME sessions at the 2019 SNMMI Mid-Winter Meeting.
 - Sponsor CME sessions and/or Categorical Seminars at the 2018 SNMMI Annual Meeting.
- c. The PIDSC will continue to recognize innovation and excellence in the arena of technology in molecular medicine, particularly nuclear medicine imaging.
- Organize and moderate the PIDSC Young Investigators Award (YIA) Symposium for the 2019 SNMMI Annual meeting.
 - Organize and moderate the 2018 Edward J. Hoffman Memorial Lecture to be held at the 2019 SNMMI Annual meeting.
- d. The PIDSC will organize the PIDSC Physics, Instrumentation & Data Sciences Track Summary Session to be held at the 2019 SNMMI Annual meeting.
- e. The PIDSC will communicate with members via email blast announcements, periodic newsletters, and the PIDSC website.
- f. The PIDSC provides expertise for the oversight of technological aspects of SNMMI scientific conferences and publications.
- g. The PIDSC supports efforts on standards relevant to molecular medicine, particularly nuclear medicine. Digital Imaging and Communications in Medicine (DICOM) and Integrating the Healthcare Enterprise (IHE) represent areas of significant interest to SNMMI members. Other areas of interest include technical accreditation standards for nuclear medicine and PET of entities such as the Intersocietal Accreditation Commission (IAC), American College of Radiology (ACR) and the Joint Commission (JC).
- h. The PIDSC will seek constructive interactions with other entities both within the SNMMI and externally with other organizations when relevant. SNMMI entities that have membership and interests overlapping with PIDSC include, but are not limited to, the Young Professionals Committee, Quality Assurance Committee, Clinical Trials Network, PET Center of Excellence, and Center for Molecular Imaging Innovation and Translation. Outside entities with overlapping interests include the American Board of Science in Nuclear Medicine (ABSNM), the American Association of Physicists in Medicine (AAPM) and the Nuclear and Plasma Sciences Society (NPSS) of the Institute of Electrical and Electronics Engineers (IEEE).
- i. The PIDSC will seek to increase engagement of its members and broaden the speaker pool for CE sessions that it sponsors at the SNMMI Annual and Mid-Winter meetings.

The aforementioned goals and programs contribute to the Goals and Objectives of the SNMMI Strategic Plan in the following manner:

- 1) Goal A: Advance the development and approval of nuclear medicine and molecular imaging technologies.

The PIDSC will provide technical expertise in the area of new instrumentation and data analysis technologies. Its members will propose and organize CE sessions on new imaging technologies.

- 2) Goal B: Facilitate and support the availability and clinical utilization of nuclear medicine and molecular imaging technologies.

The PIDSC will provide technical expertise in the area of quality control and proper use of new instrumentation and data analysis technologies. Its members will propose and organize CE sessions on quality control and accreditation for standard of care and newly developed instrumentation, imaging and data analysis technologies.

3) Goal C: Increase appropriate utilization of Radionuclide Therapy.

The PIDSC will provide expertise as needed on dosimetry of radionuclide therapy and incorporate appropriate technical educational information in CE sessions.

4) Goal D: Advance and promote quality, value and safety of Molecular Imaging and Nuclear Medicine.

The PIDSC, through its educational efforts, will provide information on imaging instrumentation quality control, and patient dosimetry and its optimization.

5) Goal E: Support and enhance the professional workforce and environment.

The PIDSC will sponsor CE sessions on technical aspects of computation, data analysis and instrumentation in nuclear medicine. Efforts will be made to provide core educational information to those who may be new in the field, refresher information and information on new and evolving technologies.

The aforementioned goals and programs contribute to the Domains of the SNMMI Value Initiative in the following manner:

- 1) Domain 1: Quality of Practice
Sponsor CE sessions and provide expert advice in the areas of instrumentation quality control and dosimetry.
- 2) Domain 2: Research, Discovery and R&D
Sponsor CE sessions, workshops and provide expert advice on advances in nuclear medicine and PET instrumentation and data analysis.
- 3) Domain 3: Workforce Pipeline
Sponsor CE sessions at the SNMMI annual meeting on board certification and career paths for nuclear medicine scientists. Outreach to nuclear medicine physicist accreditation boards.
- 4) Domain 6: Organizational Strength and Stability
Continue efforts by the PIDSC to make SNMMI and PIDSC membership relevant and of value to its members.

7. Budget and Resource Requirements

a. Summary of Financial Needs

The attached budget summarizes the total resources needed to accomplish all of the goals set forth in the business plan.

b. Resource Requirements

No additional staff, materials, technology, or marketing support is required beyond the usual support provided by SNMMI headquarters.