Diabetic Complications Consortium

Application Title: Frontiers in Diabetes Complications: From Biologies to Technologies

Principal Investigator: Rodica Pop-Busui, MD, PhD

1. Project Accomplishments:

The Frontiers in Diabetes Complications Conference (FIDCC) met on May 10th-12th 2022 at the University of Michigan's North Campus Research Complex for two full days of lectures and workshops targeting the most up-to-date and novel science in the field of diabetes complications. Our conference had 130 registrants and included representation from over 15 health or academic systems including but not limited to Joslin (Harvard), University of Washington, UCLA, Tulane, Michigan State, and Ohio State University.

This allowed us to pair highly recognized experts in the field with early career investigators and trainees, and to integrate ideas from multiple areas of inquiry in a diverse yet intimate setting for collaboration.

Specific Aims:

Aim 1: Bring together investigators and experts from diverse fields of diabetes complications, metabolism, cell biology, "omics", diabetes technologies and systems biology. The conference is designed to promote interactions between scientists from these diverse disciplines from Michigan, other peer academic institutions, funding agencies and community stakeholders.

Accomplishments: The FIDCC had 130 registrants. 66 of them were faculty, 21 graduate students, 16 post-doc fellows, and 7 were foundation representatives, and 20 of them were staff or undergraduate students. We had a diverse range of fields including both clinical and academic representation from internal medicine, molecular and integrative physiology, pharmacy, dentistry, ophthalmology, surgery, pediatrics, kinesiology, podiatry, ad more. We had four nationally recognized plenary invited speakers, Dr. Dale Abel (Professor and Chief of Medicine at University of California Los Angeles), Dr. Ian De Boer (Professor of Internal Medicine-Nephrology at University of Washington), Dr. Jennifer Sun (Professor of Opthamology and Visual Science, Harvard University), and Dr. Vivian Fonseca (Professor of Medicine, Endocrinology, Tulane University and Editor-in-Chief of Journal of Diabetes and its Complications). And we had several University of Michigan plenary speakers and steering committee members: Matthias Kretzler, MD (Professor of Nephrology), Subramanium Pennathur, MD (Professor and Division Chief of Nephrology), Dan Lawrence, PhD (Professor of Cardiovascular Medicine), Eva Feldman, MD, PhD (Professor of Neurology), Eve Kerr, MD, MPH, MACP (Professor and Division Chief of General Medicine), David Antonetti, PhD (Professor of Ophthalmology and Visual Sciences), Thomas Gardner, MD, MS (Professor of Ophthalmology and Visual Sciences), Brian Callaghan, MD, MS (Associate Professor of Neurology), Martin Myers Jr, MD, PhD (Professor of Internal Medicine and Molecular Integrative Physiology), Aruna Sarma, PhD, MHA (Professor of Urology), Yooni Blair, MD (Assistant Professor of Urology), Crystal Holmes, DPM, CWSP (Clinical Associate Professor of Podiatry); Brian Schmidt, DPM (Clinical Assistant Professor of Podiatry), and Wenche Borgnakke, DDS, MPH, PhD (Senior Research Associate and Adjunct Professor of Dentistry)

Aim 2: Through its interactive sessions, this symposium will specifically address the needs, challenges and opportunities for implementing multidisciplinary diabetes complications research.

Accomplishments: The morning sessions of both days of this conference were dedicated to lectures from nationally recognized diabetes complications researchers. This helped to provide each attendee with a review of the literature across each discipline on what we know as both clinicians and researchers about various diabetes complications. The afternoons of each day were dedicated to workshops in which the audience was divided into five groups each with a targeted group of diabetes complications. The goal of each workshop was to identify the gaps in the literature for each group of diabetes complications and foster new collaborations. On day 2 of the conference, the workshops reconvened in the main auditorium to present the work from each workshop. The audience was able to provide feedback or additional points to the discussion which helped to foster new collaborations across all disciplines.

Aim 3: Provide an excellent training platform for students, postdoctoral researchers and early scientists by connecting them with experts in diabetes complications, to assimilate knowledge and stimulate critical, innovative thinking, thereby empowering their future research in the field of diabetes and its complications.

Accomplishments: By dedicating both afternoons to the targeted workshops, we were able to pair highly recognized experts in each group of diabetes complications with early career faculty and trainees. Each workshop was moderated by one expert and one early career attendee which allowed our early career moderator to gain practice in leading scientific discussions. Each workshop was a mix of all levels of trainees, which fostered a more diverse discussion and brought in new ideas and developments from differing perspectives. Each workshop had an average of 20-30 attendees, which created an intimate environment for our early career attendees to speak about their work in front of experts in their specific disciplines whom they may not have had a chance to interact with outside of this conference. We encouraged our moderators for each workshop to promote conversations to be early career-led and supplemented by our experts. Each workshop will produce 1-2 white papers covering the vast range of diabetes complications (see below in PUBLICATIONS).

Aim 4: Provide travel grants to enable young trainees and early career investigators, who may not have the resources to cover registration, travel and housing, to attend the symposium

Accomplishments: We were able to offer two early career faculty a full travel grant to cover the costs to attend the conference, one research fellow from University of Washington (Seattle, WA) and the other an early career faculty from University of North Dakota.

Aim 5: Our conference program includes women and members from under-represented groups in research, and the support requested by this application will ensure their adequate participation, independent of their available resources.

Accomplishments: We attribute a large portion of the success of this conference to its richness in diversity, equity and inclusion. This conference brought together people who were professionally diverse, from clinicians, to scientists, from students and other trainees to experts, geographically diverse, from local to international attendees, and cognitively diverse across many disciplines. We ensured equally distributed participation across gender and race and

ensured that we had representation throughout our attendees list but also within our lecturers. Additionally, we held a plenary presentation, “Promoting Workplace Equity in the Research Environment”, presented by Dr. Eve Kerr (Senior Advisor, Gender Equity Initiatives, Department of Medicine, University of Michigan) which helped to enrich the audience with further considerations of how to promote diversity, equity, and inclusion within their research and workplaces nationally.

2. Publications:

The Journal of Diabetes and Its Complications has agreed to produce a special issue for this conference in which participants of the symposium will be asked to generate a series of white papers structured along the same format: a problem statement, relevant background, innovative methods to address the problem with a look towards the future, followed by final recommendations based on the provided solutions. There will be 1-2 white papers from each workshop (described in Aim 3) covering each major group of complications:

- Metabolic Programing, Multi-Organ Autonomic Networks and Use of Big Data for Personalized Care in Diabetes Complications
- Cerebrovascular Disease, Dementia, Psychosocial Implications and Gender Differences
- Foot Ulcers, Healing Biomarkers and Clinical Care Translations
- Urologic Complications, Sexual Dysfunction, Kidney Disease and Distress in Diabetes
- Beyond the Eye