

**Nomination: Prof. Gary Maartens, Professor of Clinical Pharmacology, UCT**

**Applicant: Prof. Karen Sliwa Hahnle, Professor of Cardiovascular Research, Hatter & Cape Heart Institute, Faculty of Health Sciences, UCT**

Applications must be accompanied by

**(i) A citation Short CV**

Citation: Prof. Karen Sliwa

Nominator and orator: Prof Gary Maartens

Professor Karen Sliwa is a clinician researcher and the Director the Cape Heart Institute (CHI) (formerly the Hatter Institute) of the Faculty of Health Sciences at the University of Cape Town. Under her leadership CHI has expanded to more than 100 staff and postgraduate students. Karen has authored more than 350 publications and has an h-index of 84. She is an editorial consultant/ board member of several prestigious journals including the Lancet, the European Heart Journal, Nature Reviews Cardiology, and the European Journal of Heart Failure. Prof. Sliwa is the recipient of Fellowships from the European Society of Cardiology and American College of Cardiology. She has received numerous prestigious awards, including the German Cardiac Society Paul Morwitz Award for Exceptional Cardiovascular Research (2013), an Honorary Doctorate from University Diderot-Sorbonne, Paris (2017), European Cardiac Society Geoffrey Rose Award for Population Sciences (2019) and the South African Medical Research Council Gold award (2020). She was President of the World Heart Federation (2019-2020) and is currently Vice-president of the Southern Region of the Pan African Society of Cardiology.

Her major work is the establishment of a large prospective cohort study, the seminal Heart of Soweto Study, which reported on the prevalence, presentation and management of cardiac disease in an urban African population – these novel findings had major implications for the burden of cardiovascular disease in Africa, resulting in a publication in the Lancet in 2008. This cohort study has led to >25 publications describing e.g., the impact of HIV on cardiovascular disease, the prevalence of rheumatic heart disease diagnosed in adulthood, and the spectrum of conditions leading to heart failure. Under the umbrella of the ‘Heart of Africa Studies’, Prof. Sliwa designed and implemented several multicentre, multi-country cardiovascular population studies in African such as the THESUS acute heart failure study, the BEHAF acute heart failure intervention study, the PAPUCO Pulmonary Hypertension in Africa study- amongst others ( Damasceno et al. Arch Int Med 2012; Sliwa et al. Lancet 2016)

She has made major contributions to understanding the pathophysiology, treatment options and awareness of peripartum cardiomyopathy, a global disease particularly prevalent in African populations (Sliwa et al. Eur J Heart Fail 2010). She initiated and led research on a novel therapeutic option for peripartum cardiomyopathy, bromocriptine, which reduced morbidity and mortality. Her finding has been confirmed by others and has been included in guideline, resulting in a major impact on the health of women with peripartum cardiomyopathy (Sliwa et al. Eur Heart J 2020). To date bromocriptine is the only proven specific intervention for peripartum cardiomyopathy.

Prof Sliwa status as a world leader in cardiovascular disease research is evidenced by her status as the Principal Investigator of the World Heart Federation’s Global Study on COVID-19 and cardiovascular disease (20-country participation) and of the European Cardiac Society’s international cohort study on peripartum cardiomyopathy (54-country participation).

	Publication	Impact factor	Citation
1.	<b>Sliwa K</b> , Skudicky D, Candy G, Wisenbaugh T and Sareli P. Randomised investigation of effects of pentoxifylline on left-ventricular performance in idiopathic dilated cardiomyopathy. <i>Lancet</i> . 1998;351:1091-1093.	59.1	274
2.	<b>Sliwa K</b> , Woodiwiss A, Kone V, Badenhorst D, Norton G, Zambakides C, Peters F and Essop MR. Therapy of ischemic cardiomyopathy with the immunomodulating agent pentoxifylline: results of a randomized study. <i>Circulation</i> . 2004;109:750-755 .	23.0	141
3.	<b>Sliwa K</b> , Wilkinson D, Hansen C, Ntyinyane L, Tibazarwa K, Becker A and Stewart S. Spectrum of heart disease and risk factors in a black urban population in South Africa (the Heart of Soweto Study): a cohort study. <i>Lancet</i> . 15 Mar, 2008; 371: 915-922.	59.1 <b>PDF attached</b>	516
4.	Damasceno A, Mayosi M, ..., <b>Sliwa K</b> . The causes, treatment, and outcome of acute heart failure in 1006 Africans from 9 countries. THESUS Study. <i>Arch Intern Med</i> . 2012 Oct 8; 172(18): 1386-94.	20.8 <b>PDF attached</b>	368
5.	Hilfiker-Kleiner D, Kaminski K, Podewski E, Bonda T, Schaefer A, <b>Sliwa K</b> , Forster O, Quint A, Landmesser U, Doerries C, Drexler H. A Cathepsin D-cleaved 16 kDa form of prolactin mediates postpartum cardiomyopathy. <i>Cell</i> . 2007;128:589-600.	36.2	772
6.	<b>Sliwa K</b> , Blauwet L, Tibazarwa K, Libhaber E, Smedema JP, Becker A, McMurray JM, Yamac H, Labidi S, Struhman I, Denise Hilfiker-Kleiner D. Evaluation of bromocriptine in the treatment of acute severe peripartum cardiomyopathy: a proof-of-concept pilot study. <i>Circulation</i> . 2010;121:1465-1473.	23.0 <b>PDF attached</b>	438
7.	<b>Sliwa K</b> , Fett J and Elkayam U. Peripartum cardiomyopathy. <i>Lancet</i> . 2006;368:687-693.	59.1	597
8.	<b>Sliwa K</b> , Hilfiker-Kleiner D, Petrie MC, et al. Current state of knowledge on aetiology, diagnosis, management, and therapy of peripartum cardiomyopathy: a position statement from the Heart Failure Association of the European Society of Cardiology Working Group on peripartum cardiomyopathy. <i>Eur J Heart Fail</i> . 2010;12:767-778.	12.1 <b>PDF attached</b>	862
9.	<b>Sliwa K</b> , Mebazaa A, Hilfiker-Kleiner D, et al. Clinical characteristics of patients from the worldwide registry on peripartum cardiomyopathy (PPCM): EURObservational Research Programme in conjunction with the Heart Failure Association of the European Society of Cardiology Study Group on PPCM. <i>Eur J Heart Fail</i> . 2017;19:1131-1141	12.1	106
10.	<b>Sliwa K</b> , van Hagen IM, Budts W, et al. Pulmonary hypertension and pregnancy outcomes: data from the Registry Of Pregnancy and Cardiac Disease (ROPAC) of the European Society of Cardiology. <i>Eur J Heart Fail</i> . 2016; 18: 1119-1128	12.1	86
11.	<b>Sliwa K</b> , Libhaber E, Elliott C, Momberg Z, Osman A, Zühlke L, Lachmann T, Nicholson L, Thienemann F, Roos-Hesselink J, Anthony J. Spectrum of cardiac disease in maternity in a low-resource cohort in South Africa. <i>Heart</i> 2014;24:1967-1974.	5.4	59
12.	Kassebaum NJ, Bertozzi-Villa A, Coggeshall MS, ... <b>Sliwa K</b> ..., Lozano R, et al. Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. <i>Lancet</i> . 2014;384:980-1004.	59.1	1299
13.	<b>Sliwa K</b> , Johnson M R, Zilla P, Roos-Hesselink JW. Management of valvular disease in pregnancy: a global perspective. <i>European Heart Journal</i> , 2015;36:1078-1089.	24.9	56
14.	<b>Sliwa K</b> , Anthony J. Late Maternal Deaths. <i>Lancet</i> 2016;387:2072-2073.	59.1	23
15.	<b>Sliwa K</b> , Ntusi N. Battling Cardiovascular Disease in a Perfect Storm.	23.0	5

	Circulation 2019;139:1658-1660.		
16.	<b>Sliwa K.</b> The heart of Africa: succeeding against the odds. Lancet 2016; 388:e28-e36	59.1 <b>PDF attached</b>	22
17.	Yusuf S, Bosch J, Dagenais G..... <b>Sliwa K</b> ,.... Lonn, E. HOPE-3 Investigators. Cholesterol Lowering in Intermediate-Risk Persons without Cardiovascular Disease. N Engl J Med. 2016;374:2021-2031.	70.6	599
18.	Lonn EM, Bosch J.... <b>Sliwa K</b> , .... Yusuf S; HOPE-3 Investigators. Blood-Pressure Lowering in Intermediate-Risk Persons without Cardiovascular Disease. N Engl J Med. 2016; 374 2009-2020.	70.6	535
19.	<b>Sliwa K</b> , Petrie MC, van der Meer P, Mebazaa A, et al. Clinical presentation, management, and 6-month outcomes in women with peripartum cardiomyopathy: an ESC EORP registry. Eur Heart Journal. 2020;41:3787	24.8 <b>PDF attached</b>	7
20.	Bohm M, Schumacher H, Teo KK, Lonn EM, Mahfoud F, Mann JFE, Manica G, Redon J, Schmieder RE, <b>Sliwa K</b> , Weber MA, Williams B, Yusuf S. Achieved blood pressure and cardiovascular outcomes in high-risk patients: results from ONTARGET and TRANSCEND trials. Lancet. 2017;389:2226-2237.	59.1	189

## Awards

- South African Medical Research Council Scientific Merit Award- Gold Medal (2021)
- Geoffrey Rose Award from the European Society of Cardiology for Population Studies (2019)
- Honorary Doctorate from the University Diderot-Sorbonne, Paris, France (this is the highest distinction awarded by French Universities as recognition for Research and Global Engagement, which is awarded by the French University Research Board and approved by the French Ministry of Foreign affairs (2017)
- Africa's Most Influential Women in Business and Government Titans Award - Lifetime Achievement Winner (2015 & 2016)
- German Cardiac Society Paul Morawitz Award for Exceptional Cardiovascular Research (this distinguished award is given once per annum for exceptional research in cardiology and cardiothoracic surgery in Germany, Austria and Switzerland) (2013)
- Honorary research appointment at the Population Health Research Institute (PHRI), Hamilton, Canada (2010 – present)

## Building Research Capacity in Africa

Professor Sliwa's research is strongly linked to research capacity generation through the training of postgraduate students from South Africa and Africa (Nigeria, Uganda, Mozambique, Tanzania and Cameroon). To date she has trained >30 postgraduate students, including 16 PhD students. Her 16 PhD students included 5 females and 11 males and 9 were black African, thus contributing to gender equality and diversity.

Herewith, a selection of the work her PhD students who have produced the best research outputs related to her core research areas, such as heart failure in African populations, cardiovascular disease in pregnancy, rheumatic heart disease, African cardiovascular population studies and COVID and cardiovascular disease. All her

students have published several first-author papers related to their PhDs and their joint research.

**Dr Dike Ojji (Black African male).** Graduated at UCT 2012. He is the recipient of a Glaxo Smith Kline (GSK) Award for a multicentre, multi-country project (4 African countries), identifying a suitable treatment regime for Black African patients with moderate to severe hypertension and received R8 million funding for the CREOLE Study. I was appointed by GSK as formal mentor for this project. He presented results of this study as a late-breaking trial at the American College of Cardiology with a simultaneous publication (we are joint authors) in the New England Journal of Medicine (IF 72). He is an exceptional clinician-scientist, with 15 first-author publications contributing to my research outputs. We continue to collaborate closely.

**Dr Kemi Tibazarwa (Black African female).** She graduated in 2013 and received the World of Academic Sciences (TWAS) Award in 2013. She also received the National Institute of Health Millennium Postdoctoral Fellow Emerging Leader Award/University of Witwatersrand. I was one of 4 Programme Chairs for this prestigious US programme (2010-2018). She is current Chairperson of the Pan-African Society of Cardiology (PASCAR) Task Force: Cardiovascular Disease Prevention. 5 first-author publications emerged from her PhD project, contributing to my research on Peripartum Cardiomyopathy.

**Dr Gerald Maarman (South African male).** He obtained his PhD in Cardiovascular Medicine under my co-supervision in 2014 and received an award for Clinical Excellence at the 15th South African Heart Association Congress for Best Oral Presentation. He was offered a research training scholarship in Germany with one of my long-term collaborators and, through this, has established a career in medicine research and is now an NRF-rated researcher. He is currently a lecturer at the University of Stellenbosch and is a principle investigator at Tygerberg Medical School, where he leads a range of biomedical and clinical studies. He published 4 first-author papers under my supervision, contributing to my research.

**Dr Anastase Dzudie (Black African male).** Graduated at UCT 2015. He was elected to the World Heart Federation Emerging Leaders Programme 2015. He is a Cameroon-born internist and consultant cardiologist and is Head of the Cardiac Intensive Care and Cardiac Pacing Unit at Douala General Hospital in Cameroon. He has 10 first-author publications, under my supervision, contributing to my research output. We still collaborate and I am his mentor.

**Dr Okechukwu Ogah (Black African male).** He awarded a Lown Scholars Program at Harvard T.H. Chan School of Public Health in March 2016. He is a Consultant Physician/Cardiologist (Special Grade) at University College Hospital, Ibadan and served as Commissioner/ Chief Executive officer, Ministry of Health and member of Abia State Executive Council. He has an extensive publication list, which includes six first-author publications from his PhD project. These papers have contributed to my research output and we co-authored one book chapter in 2019. We continue to work together in African multi-centre studies such as THESUS.

**Prof Mahmoud Sani (Black African male).** He was elected for the 1-year World Heart Federation Emerging Leaders Program which fosters global collaboration between clinician scientists identifying global solutions to cardiovascular health. Based on his excellent PhD he was not only appointed as Professor and Head of Cardiology, but became Dean of Medicine at Kano University, Nigeria in 2018 and Vice-chancellor of Kano University in 2021. He trains several graduate and

postgraduate students and was elected to serve on the Pan-African Society of Cardiology (PASCAR) Cardiology Heart Failure Task Force, which I had established before his appointment. We remain in close contacts and he participates in African multi-centre and multi-country study that I lead. He contributed to my research output with 5 first-author publications.

**Dr Sandra Pretorius (White South African female).** She received the National Institute of Health Millennium Postdoctoral Fellow Emerging Leader Award/University of Witwatersrand in 2016. I was one of 4 Programme Chairs for this US programme (2010-2018). She is currently the Health in Action Program Coordinator for INMED South Africa. INMED South Africa, which is an affiliate of INMED Partnerships for Children, a global non-profit humanitarian development organization. It has local staff and programmes focusing on challenges that are unique to South Africa. She has presented work related to her PhD at international conferences and has 6 first-author publications under my supervision.

### **Scholarly outputs and traditional research impact bibliometrics: please find below and in main CV**

ORCID No. 0000-0002-8272-0911

Karen Sliwa has authored more than 350 publications.

Her papers are highly cited (72 270 citations; h-index of 84, i10-index 239; accessed Feb 2021).

More than 75 papers have been cited more than 100 times.

### **Knowledge products**

Professor Sliwa has contributed to several position papers and guidelines related to her field of research, including:

- Brainin M, **Sliwa K.** World Stroke Organization and World Heart Federation joint position statement on population-wide prevention strategies. *Lancet.* 2020; 396: 533–534 (Impact factor 59)
- Regitz-Zagrosek V, Roos-Hesselink JW, Bauersachs J, .... **Sliwa K.**... Warnes CA; ESC Scientific Document Group . 2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy. *Eur Heart J.* 2018;39(34):3165-3241 (Impact Factor 24)
- Hitzeroth J, Mpe M, Klug E, ...**Sliwa K,** ... Ntusi NAB. 2020 Heart Failure Society of South Africa perspective on the 2016 European Society of Cardiology Chronic Heart Failure Guidelines. *S Afr Med J.* 2020;110(8b):13057.
- Bauersachs J, König T, van der Meer P, Petrie MC, ... **Sliwa K.** Pathophysiology, diagnosis and management of peripartum cardiomyopathy: a position statement from the Heart Failure Association of the European Society of Cardiology Study Group on peripartum cardiomyopathy. *Eur J Heart Fail.* 2019;21(7):827-843 (Impact Factor 11)
- Mocumbi AO, Jamal KK, Mbakwem A, Shung-King M, **Sliwa K.** The Pan-African Society of Cardiology position paper on reproductive healthcare for women with rheumatic heart disease. *Cardiovasc J Afr.* 2018;29:394-403. doi: 10.5830/CVJA-2018-044.

- **Sliwa K**, Zühlke L, Kleinloog et al. Cardiology-cardiothoracic subspeciality training in South Africa: a position paper of the South Africa Heart Association. *Cardiovasc J Afr.* 2016 May/Jun; 27(3): 188-193. doi: 10.5830/CVJA-2016-063.
- **Sliwa K**, Hilfiker-Kleiner D, Petrie MC, et al. Current state of knowledge on aetiology, diagnosis, management, and therapy of peripartum cardiomyopathy: a position statement from the Heart Failure Association of the European Society of Cardiology Working Group on peripartum cardiomyopathy. *Aug, Eur J Heart Fail.* 2010; 12: 767-778 (Impact Factor 11)

- **Impact (changes in practice or policy, economic, societal, cultural, and/or behavioural);**
- **Specific details on and evidence of pathways to impact;**

**New Medication for Peripartum Cardiomyopathy:** Based on her collaborative, basic science, translational research, she discovered a novel pathomechanism, leading to peripartum cardiomyopathy (PPCM), a condition common in African women, with a mortality of 10-15%. Her clinical research led to a new therapeutic option - namely the use of bromocriptine - and a reduction in morbidity and mortality. She carried out the first clinical pilot trial on this new therapy (Sliwa et al. *Circulation* 2010) and her findings have, over the past 8 years, been confirmed by other groups. A position paper, led by Karen Sliwa as the senior author, included this new medication as a recommendation (Bauersachs et al. *Eur J Heart Fail.* 2019). It has also been listed in the European Society of Cardiology Guidelines in Cardiac Disease in Pregnancy 2018, as a therapeutic option which needs to be considered. Globally this affordable medication is now commonly used.

**Highlighting that heart failure in low-to-middle-income countries is not a disease of the elderly:**

Based on her local ( Heart of Soweto), African ( Heart of Africa) and global studies (such as Global PPCM study) she provided evidence that heart failure is multi-faceted in Low-to-middle income countries affecting often a young or middle age population – the bread-winner generation. This impacts on health care planning and disease management. In recognition of her research that changed practice Karen Sliwa has received three very prestigious European Awards (1. Geoffrey Rose Award from the European Society of Cardiology for Population Studies (2019); 2. Honorary Doctorate from the University Diderot-Sorbonne, Paris, France (this is the highest distinction awarded by French Universities as recognition for Research and Global Engagement, which is awarded by the French University Research Board and approved by the French Ministry of Foreign affairs (2017); 3. German Cardiac Society Paul Morawitz Award for Exceptional Cardiovascular Research (this distinguished award is given once per annum for exceptional research in cardiology and cardiothoracic surgery in Germany, Austria and Switzerland) (2013).

**Specific areas of original contribution:**

**Cardiology, Heart Failure, Cardiac Disease in Pregnancy, African population Studies**

Professor Karen Sliwa is highly experienced in developing, designing and leading cardiovascular disease (CVD) studies in various healthcare environments in Africa. She devised innovative strategies to raise funds through numerous sources at a time when very limited funding was available for non-communicable disease (NCD)

research. Her seminal *Heart of Soweto Study*, reporting on the prevalence, presentation and management of cardiac disease in an urban African population (8000 patients), published in the *Lancet* in 2008. This led to >25 publications describing e.g., the impact of HIV/AIDS on CVD, the prevalence of rheumatic heart disease diagnosed in adulthood, and the spectrum of conditions leading to heart failure, amongst others. These studies underpin Prof Sliwa's status as a world-recognized expert in cardiac conditions common in Africa. Her fundamental role as an innovative leader in the field has been further highlighted in published profiles in the *Lancet* (2014) and the *European Heart Journal* (2015). Under the umbrella of the '*Heart of Africa Studies*', several multicentre cardiovascular population studies have been expanded to other African countries, largely through her design and implementation of several innovative research programs and her ability to leverage funding for these projects. Prof. Sliwa is also the Principal Investigator and leader of '*cardiovascular global studies*', such as the WHF-COVID 19 and cardiovascular disease study (20-country participation) and the large international cohort study on peripartum cardiomyopathy (PPCM), funded by the European Cardiac Society (54-country participation) . All cohort studies under her leadership incorporate biological variables interlinked with sociodemographic parameters and the impact on health outcomes.

Karen Sliwa is widely recognised as a world expert in cardiovascular diseases, with a special interest in reducing mortality in women with cardiac disease in maternity. She has contributed to better understanding on the pathophysiology, treatment options and awareness of peripartum cardiomyopathy (PPCM), a global disease particularly prevalent in African populations. She has initiated and led research on a novel therapeutic option for PPCM, namely bromocriptine, which has been included as a recommended therapy in medical guideline documents.

Karen Sliwa has authored and co-authored >350 articles, including 36 in the *Lancet* (IF 59.1). Her work is highly cited, with 70+ cited >100 times.

In addition, she has made significant contributions to highly regarded expert opinion books, including:

**Single Editor and contributor to several chapters:** Sliwa K ed. *Peripartum Cardiomyopathy: From Pathophysiology to Management*. Elsevier Academic Press. January 2021. ISBN 978-0-12-817667-2.

**Lead author of the most widely used cardiology book:** Sliwa K, Stewart S. Heart failure in the developing world. In: *Heart Failure: A companion to Braunwald's Heart Disease, 3<sup>rd</sup> Edition*. DL Mann, GM Felker (eds),. Chapter 27, pp 410-420, Elsevier, Philadelphia, 2014. ISBN: 978-4557-7237-7.

**Lead author of the most widely used Cardiology book:** Sliwa K, Stewart S. Heart failure in the developing world. In: *Heart Failure: A companion to Braunwald's Heart Disease, 4<sup>th</sup> Edition*. GM Felker DL, Mann (eds),. Chapter 29, , pp 385-394. Elsevier, Philadelphia, **ISBN-10: 0323609872**

**Book editor and contributor:** Sliwa K, Anthony JA eds. *Cardiac Drugs in Pregnancy*. Springer, 2013. ISBN978-1-4471-5472-1. **ISBN-10: 0323609872**



**Teerlink JR, Sliwa K, Opie LH.** Heart failure. In: *Drugs for the Heart, 8<sup>th</sup> Edition*. Opie L, Gersh B (eds). Chapter 6, pp 169-223, 2013. Elsevier Saunders, Philadelphia. ISBN: 978-1-4557-3322-4

She also holds an International patent with the University of Cape Town & University Diderot, Paris, France on Biomarker in pregnancy and a patent with Bayer-Schering.