Curriculum Vitae - Prof. Dr. P.W. Serruys

Patrick W. Serruys has been a senior interventional cardiologist since 1979, chief of Interventional Research since 1988, chief of the Interventional Cardiology department at the Thoraxcenter from 1997-2012, Prof. of Medicine till April 1st, 2014 at Erasmus MC in Rotterdam (Netherlands).

Dr. Serruys received the first chair in interventional cardiology that was created by the Royal Netherlands Academy of Arts and Sciences (www.knaw.nl).

Honorary professor of Cardiology in the Cardiovascular Science Division of the National Heart and Lung Institute (NHLI) of Imperial College in London till 2021. Currently he is established professor of interventional medicine and innovation at the University of Galway, Ireland, Galway.

Educational- and clinical experience, research training

1965 - 1968	Preclinical medical studies, summa cum laude, University of Leuven (Belgium). In Plymouth, work with Sir Alan Hodgkin (Nobel Prize winner in 1963) on the voltage-clamp technique as a student in biology.
1968 - 1972	Clinical studies, summa cum laude, University of Leuven (Belgium). During clinical study, work with Prof. Xavier Aubert on electro-mechanical coupling in muscle.
March 1972	Internal medicine examination, Second of 29 candidates, University of Leuven (Belgium).
July 1972	Medical degree, summa cum laude, Dux of class of 311 candidates.
July 1972/ Jan.1973	Internship: Rotations in internal and pulmonary medicine, Leuven (Belgium)
Jan.1973/ Aug.1973	Rotation in hematology, University of Leuven (Belgium).
Aug.1973/ Jan.1975	Rotation in the intensive care and coronary care units University of Leuven, (Belgium).
Jan.1975/ Aug.1975	Cardiac surgery and post-operative care. University of Leuven (Belgium).
Aug.1975/ Jan.1976	Department of Cardiology. Prof. Basseur, University of Leuven (Belgium).
Jan.1976/ Aug.1976	Department of Cardiology. Prof. Kremer, University of Leuven (Belgium).
Aug.1976/ July 1977	Department of Cardiology. Prof. Hugenholtz, Erasmus University, Rotterdam (The Netherlands)
	Certification as Cardiologist in Belgium and The Netherlands.
July 1977	Senior Member of Cardiology Staff of the Thoraxcenter, Erasmus Medical Centre, Rotterdam (The Netherlands)
July 1977/Jan.1980	Co-director of the Catheterization Laboratory, Erasmus University, Rotterdam, (The Netherlands).
January 1980	Director of the Clinical Research Program of the Catheterization Laboratory and Clinical Imaging
1983	Correspondent of the French Society of Cardiology.
1984	Chairman of the Working Group on Coronary Blood Flow and Angina Pectoris. (European Society of Cardiology).
1986	Appointed to "Chef de Clinique", and defended cum laude the PhD thesis on Transluminal coronary angioplasty an investigational tool and a non-operative treatment of acute myocardial ischemia.
1988	Nomination as professor of interventional cardiology in the Interuniversity Cardiological Institute of the Netherlands (ICIN). In 1998, became professor of medicine at the Erasmus Medical Centre Rotterdam (The Netherlands).
1993-2012	Head of the Interventional Department, Thoraxcenter, Erasmus University, Rotterdam (The Netherlands)
1998	Professor of Medicine with a chair in Interventional Cardiology, Thoraxcenter, Erasmus University, Rotterdam (the Netherlands); Emeritus per April 1st, 2014
2013 - current	Professor of Cardiology, National Heart & Lung institute, Imperial College in London. Currently, honorary Professor.
2020 - current	Established Professor of Interventional Medicine and Innovation at National University of Ireland, Galway, (NUI Galway).

Research interests

Between 1976 and 1982, before the era of interventional cardiology, Professor Serruys established the methodology of quantitative coronary angiography with the bioengineering group within ErasmusMC. In 1980 the balloon angioplasty was introduced at the Thoraxcentre, and Professor Serruys tried to elucidate the phenomenon

of restenosis post angioplasty in a multidisciplinary approach. In those days, Professor Serruys developed his worldwide networks with various experts to unravel the problem of restenosis. After multiple unsuccessful pharmacological trials to control restenosis phenomenon, his scientific focus was shifted to mechanical device engineering such as stenting. In 1986 he introduced this technique in patients in the Netherlands. Professor Serruys conducted the first randomized trial with stenting that lead to the approval of the technology by the Food and Drug Administration in USA. Experimentally, at a very early stage he explored the possibility of human cell seeding on the stent as well as the use of polymeric stent in animals. Using the latest scientific and experimental knowledge in the field of molecular biology of neo-intimal inhibition, Professor Serruys and Eduardo Sousa in Brazil introduced the use of drug-eluting stents for the first time in the world, this was in 1999. In those days, Professor Serruys revolutionized the field of interventional cardiology by drastically abating the restenosis rate post intervention; however, the implantation of permanent metallic prosthesis was viewed as a major drawback in the treatment of coronary artery stenosis. Therefore in 2006 Professor Serruys introduced worldwide the use of fully biodegradable drug-eluting scaffolds that eliminated the presence of a permanent metallic foreign body in the coronary circulation. In the same year he implanted percutaneous the first aortic valve in the Netherlands. In the next decade, Professor Serruys will dedicate his scientific and clinical career to re- revolutionize the field of interventional cardiology by altering the atherosclerotic process and the process through local percutaneous treatment.

Scientific leadership and management skills

Professor Serruys has been a Principal Investigator of more than 80 European and Multinational clinical trials in Interventional Cardiology. He is the author of over 3,500 publications in cardiology and interventional cardiology. Through personal reputation, he has attracted young excellent research and clinical investigators and developed large international research projects with them. Professor Serruys has been a promoter of over 90 PhD theses and is the recipient of many awards including Honoris causa doctorates from the University of Athens, the University of Madrid and the University of Melbourne. Professor Serruys is a leader and expert in interventional cardiology including stent thrombosis and invasive imaging. Biomed expert index (www.biomedexperts.com) indicates that Professor Serruys is under the headings of stent, drug eluting stent, angina pectoris the individual with the highest number of publications world-wide.

Professional results

- (co-)authorship of more than 3500 International Scientific Indexing (ISI) recognized publications (with >170,000 citations) since 1975 from which 20 appeared in the New England Journal of Medicine (impact factor: 70); 3 in JAMA (impact factor: 51) and 33 in The Lancet (impact factor: 59).
- Editor of 45 books and textbooks, including the ESC textbook of Cardiovascular Medicine.
- 1st Promoter/supervisor of >90 completed PhD theses and counting
 - > 1400 invited lectures in the last decade
- Founder and past Editor of EuroIntervention.
- Founder and past Sr. Consulting Editor of AsiaIntervention
- Chief Editor Bioresorbable Scaffolds Textbook
- Editorial Board member and Section Editor of the ESC Textbook of Cardiovascular Medicine (1, 2, 3rd edition)
- Chairman of e.g. BENESTENT, FLAIR, IBISII, SYNTAX, ABSORB, EXCEL, GLOBAL LEADERS, RESOLUTE Allcomers, Tryton LM, SURTAVI, TALENT, SYNTAX-II, FLARE, Multivessel TALENT, PIONEER-IV, FAST-TRACK CABG, LANDMARK studies, etc.
- Co-founder of Cardialysis, (Academic Clinical Research Organization), Rotterdam, The Netherlands
- Chairman of the Scientic Committee of the European Cardiovascular Research Institute (ECRI).
- Senior consultant CORRIB Research Centre for Advanced Imaging and Core Laboratory (<u>www.universityofgalway.ie/corrib-corelab</u>)

International functions

- Co-founder and currently at board of EuroPCR (<u>www.europcr.com</u>), Paris, France
- Board and Co-director of Transcatheter Cardiovascular Therapeutics (<u>www.tctmd.com</u>), Washington, USA
- Board and Co-director of Cardiovascular Research Technologies (<u>www.crtonline.org</u>), New York, USA
- Board and Co-director of Chinese Interventional Therapeutics (<u>www.citmd.com</u>), Beijing, China
- Board and Co-director of Complex Cardiovascular Therapeutics (http://cct.gr.jp/2010/), Kobe, Japan
- Chairman and organizer of the Vulnerable Plaque Meetings (VPM), (2003-2023).

- Referee for national scientific societies from USA, UK, Israel, Italy, France and the Netherlands
- Reviewer for NEJM, The Lancet, JACC, Circulation and European Heart Journal
- Co-author of guidelines on revascularization and percutaneous treatment of the European Society of Cardiology
- Visiting professor of the Institute of Cardiovascular Medicine and Science (ICMS) in Royal Brompton & Harefield NHS Foundation Trust (RB&HFT) and Liverpool Heart and Chest Hospital NHS Foundation Trust (LHCH).
- Professor of Cardiology in the Cardiovascular Science Division of the National Heart and Lung Institute (NHLI), Faculty of Medicine within Imperial College of Science, Technology and Medicine
- Chairman of Academic Research Consortium of the ESC/EAPCI Task Force on Clinical Evaluation of Coronary Stents

Editorships scientific journals

Laitorsinps	cientinic journals
2000	Member of the Editorial Board of Journal of American College of Cardiology.
2004	Member of the International Board of the Hellenic Journal of Cardiology.
2004	Member of the International Board of the Journal of Diagnostic and Therapeutic Catheterization.
2004 - 2006	Member of the Advisory Board of Nature Clinical Practice Cardiovascular Medicine.
	Member of the International Advisory Board of Japanese Circulation.
2004-2010	Member of the Editorial Board of Circulation.
2005	Member of the Editorial Board of Current Cardiology Reviews.
2005-2020	Founder and Editor in Chief EuroIntervention.
2005	Member of the Editorial Board of Cardiovascular Revascularization Medicine.
2005	Honorary member of the Mexican Society of Cardiology.
2006	Editor of the International Editorial Board of the Indian Heart Journal.
2006	Senior editorial consultant the Acute Cardiac Care.
2006	Member of the Editorial Board of Minerva Cardio angiologica.
2006-2010	Member of the Editorial Board of the Journal of Catheterization and Cardiovascular Interventions.
2007-2009	Member of the Editorial Board of Clinical Cardiology.
2008-	Member of the scientific committee of Archives of Cardiovascular Diseases.
2008-2009	Member of the Editorial Board of Circulation Cardiovascular Interventions.
2008	Member of the Editorial Board of Heart and Vessels.
2009-	Deputy Editor of the European Heart Journal.
2009-	Member of the Editorial Board of International Journal of Clinical Practice.
2009	Member of the Editorial Board of World Journal of Cardiology
2011	Member of the Editorial Board of World Journal of Translational Medicine
2013-	Member of the Editorial Board of the European Journal of Nanomedicine
2013-	Member of the Editorial Board of the Journal of Surgery
2013-	Member of the Editorial Board of the Journal of Cardiology and Therapy
2013-	Member of the Editorial Board of Biological Markers and Guided Therapy
2015-present	Editorial Board member and Section Editor of the ESC Textbook of Cardiovascular Medicine
2016	Member of the Editorial Board of Archives of Medical Science - Atherosclerotic Diseases
2016-2019	Member of the Editorial Board of the European Journal of Nanomedicine
2016-present	Founder and Sr. Consulting Editor AsiaIntervention
2016	Editor in Chief Editor Bioresorbable Scaffolds Textbook

Prizes and awards

1996	TCT Career Achievement Award, Washington, USA. "most influential world-wide cardiologist"
1997	Wenkebach Prize, Dutch Heart Foundation, Amsterdam, the Netherlands.
1997	Interventional Cardiology Award, Hellenic Cardiological Society, Thessaloniki, Greece.
1998	WIC award, Maastricht, the Netherlands (Dutch and Belgian Working Group in Interventional Cardiology).
2000	The Andreas Gruentzig Award 2000 from the European Society of Cardiology, Amsterdam, the Netherlands
2001	Kurt-Polzer-Price, Salzburg, Austria (European Academy of Science and Arts).
2001	Paul Dudley White award, USA
2004	Andreas Gruentzig Award of the Swiss Society of Cardiology, Switzerland

2005	Mikamo Award of the Japanese Society of Circulation, Japan
2006	J.B. Herrick Award of the American Heart Association, USA (American Heart Association). The highest award of the Clinical Council of the American Heart Association
2007	Arrigo Recordati International Prize, Italy.
2007	ICI Achievement Award, Tel Aviv, Israel (bestowed by the President of Israel – Shimon Perez)
2008	Einthoven-penning, Leiden Cardiology Course, the Netherlands.
2009	Doctor Honoris Causa in Medicine, University of Athens, Greece.
2011	Lifetime Achievement Award, American College of Cardiology, New Orleans
2011	Ray C. Fish Award for Outstanding Achievement and Contribution to Cardiovascular Medicine, Texas Heart Institute, Houston
2012	Gold Medal Award for Outstanding Contribution to the Science and Practice of cardiology, European Society of Cardiology
2013	Recognition Award Interventional Cardiology, Montréal Heart Institute
2013	Doctor Honoris Causa in Medicine, Complutense University Madrid, Spain
2016	Doctor Honoris Causa in Engineering, University of Melbourne, Australia
2019	Lifetime Achievement Award India Live 2019
2019	TCTAP Award "Master of the Masters", Seoul, Korea
2019	Frank Hildner Elite Reviewer Award
2023	"India Live Life Time Achievement Award - Master Researcher", IndiaLive, Chennai.

Research mentoring record (Promotor 98 of PhD Thesis)

1991 B.H. Strauss 1 1992 W.R.M. Hermans; K. Beatt; B. Rensing; P. Den Heijer 5 1993 P.P.T. de Jaegere; J. Haase; C. di Mario; H. van Beusekom 9 1994 J. Escaned; V.A.W.M. Umans 11 1995 J.M.P.S. Baptista; D.P. Foley; F. Kiemeneij; D.T.J. Keane 15 1997 J.P.R. Herrmann 16 1998 A.G. Violaris; C. von Birgelen 18 1999 J.N. Hamburger 19 2000 M. Sabaté; M.A. Costa; R.J.M. van Geuns; G. von Langenhove 23 2001 I.P. Kay; A.J. Wardeh; K. Kozuma; S.G. Carlier; .M. Albertal 28 2002 E.S. Regar 29 2003 S. IJsselmuiden; N.F. Mercado Ramirez; G. Sianos; V. Coen; M. Degertekin 34 2004 P. Lemos; F. Saia; A. Arampatzis 37 2005 A. den Boer; K. Tanabe; Y. Ozaki; J.A. Schaar; S.H. Hofma 42 2006 A.J. Hoye; M. Valgimigli; J. Aoki; F.A. Baldewsing; A.G. ten Have; G. Rodriguez-Granillo 48 2007 A.E.L. Ong 49 2008 S. Ramcharitar; J. Daemen 51 2009 C. Van Mieghem; H.M. Garcia-Garcia; E. Meliga; P. Barlis 55 2010 S. Tanimoto; M. Patterson 57 2011 S. Garg; N. Gonzalo; A. Tzikas; J. Wykrzykowska; N. Piazza; N. Krukeja 63 2012 J. Gomez-Lara; S. Brugaletta; P. Vranckx 66 2014 J.L. Gutiérrez Chico, C. Simsek, V. Farooq, Y. Onuma, V. Gkogkas, J. Houtgraaf, L.Raëber, M.Radu 74 2015 C. Bourantas, M. Magro, T. Muramatsu, C. Campos 78 2016 S. de Boer, S. Nakatani, Y. Ishibashi, R. Diletti, M.Grundeken 83 2017 P. Suwannasom, M. Echavarría Pinto 85 2018 Y. Sotomi 86 2020 C. Collet, P. Chichareon, R. Tijssen, T. Asano 93 2021 L. Kerkmeijer 94	Resea	Research mentoring record (Promotor 98 of PhD Thesis)		
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Scientific Leadership Profile

Scientific career

Between 1976 and 1982, before the era of interventional cardiology, Professor Serruys established the methodology of quantitative coronary angiography with the bioengineering group within ErasmusMC. In 1980 he introduced the balloon angioplasty at the Thorax Centre and tried to elucidate the phenomenon of restenosis post angioplasty in a multidisciplinary approach. In those days, Professor Serruys built up his international networks with various experts to unravel the problem of restenosis. After multiple unsuccessful pharmacological trials to control restenosis phenomenon, his scientific focus was shifted to mechanical device engineering such as stenting. In 1986 he introduced this technique in patients in the Netherlands. Professor Serruys conducted the first randomized trial with stenting that lead to the approval of the technology by the Food and Drug Administration in USA. Experimentally, at a very early stage he explored the possibility of human cell seeding on the stent as well as the use of polymeric stent in animals. Using the latest scientific and experimental knowledge in the field of molecular biology of neointimal inhibition, Professor Serruys and Eduardo Sousa in Brazil introduced the use of drug-eluting stent for the first time in the world, this was in 1999. In those days, Professor Serruys revolutionized the field of interventional cardiology by drastically abating the restenosis rate post intervention; however, the implantation of permanent metallic prosthesis was viewed as a major drawback in the treatment of coronary artery stenosis. Therefore in 2006 Professor Serruys introduced worldwide the use of fully biodegradable drug-eluting stent that eliminated the presence of a permanent metallic foreign body in the coronary circulation. The same year he implanted percutaneously the first aortic valve in the Netherlands and chaired the first randomized trial of percutaneous valve self-expanding versus surgery that demonstrated the non-inferiority of percutaneous treatment versus surgical approach. In the next decade, Professor Serruys will dedicate his scientific and clinical career to re- revolutionize the field of interventional cardiology by altering the atherosclerotic process and the process through local percutaneous treatment.

Major scientific achievements in the last decade

Under Professor Serruys' major scientific breakthroughs in treatment and imaging of coronary artery disease have been accomplished in the last decade; with the use of epidemiological tools he has investigated a large number of patients treated with the unrestricted use of drug-eluting metallic stent. Short and long-term outcomes were assessed with novel imaging techniques such as optical coherence tomography. Professor Serruys pioneered the development and validation of these novel imaging technologies. The unrestricted use of drug-eluting metallic stent in comparison with invasive surgical treatment and established the indication for this alternative treatment. Over the decade, Professor Serruys conducted the European and multi-continental major trials comparing these new therapies with the conventional surgical approach. In long-term follow-up, Professor Serruys could identify the subset of patients who could benefit from this percutaneous approach without safety concerns. In this process, he developed the novel risk stratification score that has been embraced by the medical community and is now being validated in multiple clinical trials (www.syntaxscore2020.com). In other words, Professor Serruys was instrumental, and recognized as such, in changing the course and mode of treatment of coronary artery disease over the last two decades by assessing major breakthroughs, in scientifically rigorous fashion, such as drug-eluting metallic stent and drug-eluting fully bioresorbable stents.

Efforts and ability to inspire younger researchers

Professor Serruys' group at the Erasmus University Medical Centre and his scientific profile act as a breeding ground for high level scientists in the field of (interventional) cardiology. Many former graduate and post-docs students and fellows now occupy permanent research positions at universities, hospitals and research institutes. The following former young researchers obtained the position of professor. *Examples*:

- Bradley H. Strauss: Professor in cardiology in Toronto (Canada)
- Carlo Di Mario: Professor in cardiology in Florence (Italy)
- Peter Lemos: Professor in cardiology in Sao Paulo (Brazil)
- Marco Costa: Professor in cardiology in Cleveland Ohio (USA)
- David P. Foley: Professor in cardiology in Dublin (Ireland)
- Yukio Ozaki: Professor in cardiology in Fujita health university (Japan)
- Clemens von Birgelen: Professor in cardiology in Medisch Spectrum, Enschede/ University of Twente (NL)

• Manel Sabate: Professor in cardiology in Barcelona (Spain)

- Ken Kozuma: Professor in cardiology, Tokyo (Japan)
- Robert-Jan van Geuns, Professor in cardiology, Nijmegen (Netherlands)
- Marco Valgimigli, Professor in cardiology, Bern (Switzerland)
- Javier Escaned, Professor in cardiology, Madrid (Spain)
- Peter Barlis, Professor in cardiology, Melbourne (Australia)
- Lorenz Räber, Professor in cardiology, Bern (Switzerland)

Funding ID

- 1) Wenkebach Prize, Dutch Heart Foundation, Amsterdam, the Netherlands (500,000 Guilders)
- 2) Arrigo Recordati International Prize, Italy (100,000 Euro)
- 3) Unrestricted grant from Boston Scientific (1,000,000 Euro)
- 4) Unrestricted grant from Abbott Vascular (2,000,000 Euro)
- 5) PW Serruys was a principal investigator of the following large projects. All projects have been carried out by scientific teams, with multidisciplinary background.

Co-principle investigator in the project:

ATHEROREMO European Union grant Project (1,000,000 Euro for IVUS sub-study)

Examples of some major publications:

- 1) Title: Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX study) Author(s): Serruys PW, Morice MC, Kappetein AP, et al. Source: NEW ENGLAND JOURNAL OF MEDICINE; Volume: 360; Issue: 10; Pages: 961-972; Published: MAR 5 2009, Times Cited: 89
- 2) Title: A pooled analysis of data comparing sirolimus-eluting stents with bare-metal stents Author(s): Spaulding C, Daemen J, Boersma E, et al. Source: NEW ENGLAND JOURNAL OF MEDICINE; Volume: 356; Issue: 10; Pages: 989-997; Published: MAR 8 2007, Times Cited: 231
- 3) Title: Drug therapy Coronary-artery stents Author(s): Serruys PW, Kutryk MJB, Ong ATL Source: NEW ENGLAND JOURNAL OF MEDICINE; Volume: 354; Issue: 5; Pages: 483-495; Published: FEB 2 2006, Times Cited: 141
- 4) Title: Comparison of coronary-artery bypass surgery and stenting for the treatment of multivessel disease. Author(s): Serruys PW, Unger F, Sousa JE, et al. Source: NEW ENGLAND JOURNAL OF MEDICINE; Volume: 344; Issue: 15; Pages: 1117-1124; Published: APR 12 2001. Times Cited: 433
- 5) Title: A randomized comparison of a sirolimus-eluting stent with a standard stent for coronary revascularization. Author(s): Morice M, Serruys PW, Sousa JE, et al. Source: NEW ENGLAND JOURNAL OF MEDICINE; Volume: 346; Issue: 23; Pages: 1773-1780; Published: JUN 6 2002. Times Cited: 1,583
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