

## Vascular function in health and disease Review Series

Guest Editor

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Cardiovascular disease (CVD) is currently the largest cause of death worldwide. World Health Organisation data [1] suggest that one-third, 17.1 million, of all deaths in 2004 were attributable to CVD. The majority of these relate to situations of coronary artery disease, stroke, hypertension and/or peripheral artery disease. A feature common to each of these conditions is that alteration of vascular structure and/or function is a prominent contributor to the CVD risk. It is timely, therefore, for this review series to bring together expert scientific and clinical expertise to assess the role of the vascular system in health and disease.

As befits the remit of the *Journal of Cellular and Molecular Medicine* as a conduit for reporting translational medicine, the series will cover a research base from the scientific to the clinical, the *in vitro* to the *in vivo*. Of course, it would be impossible to supply an exhaustive overview of all important research in this area without occupying several whole journal issues. Of necessity, therefore, the review series will be focussed and the areas to be discussed are three-fold. First, the molecular mechanisms that regulate the physiological constriction and dilation of arteries and arterioles are key components that are likely to be targeted either by the insult associated with CVD or by the intended therapeutic treatment for CVD. This will encompass consideration of the intracellular  $Ca^{2+}$  regulatory signalling pathways, the role of the endothelium, smooth muscle and extracellular matrix. Second, and analogously to the first point, alterations in arterial structure and function may predicate

CVD onset or may be attractive pathways for beneficial intervention. The impact of alterations of cell growth, motility and altered phenotype, and the correlation of disease risk with vessel wall mineralization, will be addressed. Third, a discussion of the benefits of various therapeutic strategies currently in clinical practice for treating CVD that target amelioration of altered vascular function and/or remodeling. Particular attention will be given to such strategies in the treatment of hypertensive and diabetic patients, whether central (large artery) or peripheral (small, resistance) arterial systems are most affected and the importance of organ-specific changes associated with CVD and particular treatment options [2–4].

WHO data also estimate that by 2030 there will have been a 27% increase in the numbers dying from CVD [1]. This may in large part be related to the forecasts of health and socioeconomic time bombs associated with rising rates of obesity and diabetes and, albeit somewhat counter-intuitive, a population of prolonged age [4–6]. Thus, in spite of the many advances in our understanding of vascular physiology and vasculopathology that the review series will highlight, it should also be apparent that there is a continued need to tailor, improve and invent new strategies for treating vascular dysfunction in CVD. As such, all the review authors will gaze in to their looking glasses and look forward to what they consider will be the key areas of advancement in their field for the next 5–10 years. In this regard it is of note that modelling the cost-effectiveness of large-scale interventions is becoming a prevalent consideration [7–8].

## References

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