

## Heart and blood vessels: investing in pre-university education



**C**ardiovascular diseases have an enormous impact in the Netherlands: almost 43,000 Dutch people die from them yearly. In addition, the chronic burden of disease continues to grow: at this moment around 1 million cardiovascular patients live in the Netherlands. To reduce these levels, fundamental and clinical research remains essential, and will continue to do so. Therefore, it is important to interest young talented scientists in cardiovascular research (cardiovascular disorders). Too little attention is being paid to these subjects in secondary education, and this may endanger the current high quality of Dutch scientific research and thus the fight against cardiovascular diseases in the long term. It is therefore vital to pay sufficient attention to increase knowledge of heart and blood vessels and their disorders in modern pre-university education.

The Dutch educational system is still one of the best in the world. If the Netherlands wants to remain on top in the long term, we will have to continue investing enough in the quality of pre-university education. The new science subject 'Nature, Life and Technology' (NLT) in the subject clusters Nature & Health (NG) and Nature & Technology (NT) is that kind of investment. This subject was first taught in August 2007 in the senior general and pre-university streams of secondary education. The NLT subject, which is made up of modules, treats current themes on the cutting edge of science disciplines. With the translation of social problems to NLT modules, education reflects what is actually important to society. Thus, the NLT subject contributes to the modernisation of education.

The Netherlands Heart Foundation (NHF) invests considerable sums of money in scientific research into cardiovascular diseases. To encourage research talent and interest them in cardiovascular research and to give cardiovascular knowledge a strong basis in pre-university education, the NHF has invested in the NLT module 'Heart and Blood Vessels'.

The NLT module 'Heart and Blood Vessels' was created under the responsibility of the Junior College Utrecht (JCU). This College is an initiative of the University of Utrecht. Talented and motivated juniors and seniors in pre-university schools follow a special, challenging science programme at the Junior College. After the JCU, more than 80% of the students go on to study a science or biomedical university course.

The Junior College also acts as a testing ground for the modernisation of education by continuously developing new

forms of appealing science education. New modules are tested here and then introduced to pre-university education schools.

The 'Heart and Blood Vessels' module was developed by university teachers/researchers of the Department of Medical Physiology, Division Heart & Lungs of the University Medical Center Utrecht, by teachers from secondary education and staff members from the JCU and by employees from the Heart Foundation. In the module, the focus lies on cardiovascular physiology in relation to the evolving pathology of myocardial infarction, which is presented using biological, physical and chemical approaches. The teaching module consists of PowerPoint presentations, practicals, group projects and individual assignments. The module concludes with a final examination and a peer-review of the group projects.

A first group of seniors from pre-university education recently took the module and finished in mid-March 2008. The students were very enthusiastic; they particularly appreciated the topicality and the medical nature of the subject matter treated. The students also asserted that the module shows that medical scientific problems demand an interdisciplinary approach. After some adjustments, the module will 'run' in the 2008/2009 academic year at several pre-university education schools in the Utrecht region. After the evaluation of this limited trial, the NLT module 'Heart and Blood Vessels' will become available nationally in the 2009/2010 academic year. Until then, the project's development will be monitored by various sections of the broadly composed supervisory committee.

The working of the healthy and diseased cardiovascular system is an excellent subject for a NLT module. In addition, the Netherlands Heart Foundation feels that knowledge about the heart and blood vessels (and their disorders), acquired in secondary education, is a precondition for high-quality scientific research and is essential for successfully fighting cardiovascular diseases. It is only logical that the Netherlands Heart Foundation has invested in the development of the NLT module Heart and Blood Vessels. An investment that is worth more than the effort. ■

*M. Vos  
University Medical Center Utrecht  
S. Tromp  
Junior College Utrecht  
H. Stam  
Netherlands Heart Foundation*