

# Symposium

## Een halve eeuw Stichting Duik Research

### Half a century Stichting Duikresearch

Saturday, 31 October 2020

Academisch Medisch Centrum  
Prof. Sietzes des Plantes Zaal, B1-120, Meibergdreef 11  
1105 AZ, Amsterdam Z-O

#### Aim

*This symposium aims to give insight in a number of important issues in diving medicine: diving in very unusual environments, 450 m altitude and in the basins of nuclear power plants; the historically increasing importance of cardiac diving medicine; the striking performance of diving sea mammals compared to human free diving. It gives also insight in some though historical misconceptions in diving physiology unmasked by the research of SDR. Finally it informs about two intriguing applications of professional diving; the downfall of the coral biotope in the perspective of saving the biosphere of Mother Earth, and preserving the marine history of the Netherlands by open sea underwater archaeology, and such research is performed in sad safe way.*

The level of this symposium is between basic and advanced.

Besides participants of the Netherlands, we also would like to welcome participants from abroad. We hope that their reduced fee is helpful to enable their attendance.

#### Speakers

**Didier de Bakker**, PhD, Tropical marine ecologist, Wageningen Marine Research (WUR) and formerly The Royal Netherlands Institute for Sea Research (NIOZ), Texel, The Netherlands

**Mattijn Buwalda**, MD, anaesthesiologist-intensivist and dive medicine physician, Odijk, The Netherlands.

**Martijn R. Manders**, PhD, MA, Assoc. Prof. in archeology, University Leiden, The Netherlands.

**Jean Claude Le Péchon**, MSc, MEng, consultant in hyperbaric health and safety at work, Hyperbarie, Paris

**Rienk Rienks**, PhD, MD, cardiologist, diving physician, Central Military Hospital Utrecht, Military Hospital Queen Astrid, Brussels, CardioExpert policlinic Bunnik, The Netherlands.

**Nico A.M. Schellart**, PhD, MSc, emeritus Assoc. Prof. in medical physicist, Academisch Medisch Centrum, University of Amsterdam, The Netherlands.

#### Recommendation

The symposium is recommended by the Nederlandse Vereniging voor Duikgeneeskunde (NVD, Dutch Soc Dive Med).

#### Accreditation

In general, the level of the various lectures / subjects of the meeting are in accordance with that of EDTC and DMAC, level 1 (Medical Examiner). The program comprises 4.5 oral contact hours. The Dutch NICDA, NVAB, and VSG are requested to provide 4 accreditation points for the meeting and "outside own specialism" (GAIA) will yield 4 points too for GP's and clinicians.

On completion of the entire symposium, including the test and when registered for accreditation, the Dutch physicians will obtain their points automatically (via GAIA) or added by Capita Selecta to the NICDA and NVD (under reserve) administration offices.

Physicians from outside of the Netherlands will obtain a certificate (only they) and should themselves submit a request to their own accreditation office.

**Programme committee**

Nico Schellart (chair, medical physicist and diving physiologist), Tjeerd van Rees Vellinga (occupational and hyperbaric physician BIG 19023428401), and Marga Schweigmann (GP, hyperbaric & diving physician), Peter Westerweel (internist-haematologist), Lex Mulder (sports physician, medical examiner of divers) and ad hoc the lecturers.

**Executive committee**

Nico Schellart (course director), Hans van Dam (administrative manager) and Eduard van Riet Paap.

**Responsibility**

The Capita Selecta Duikgeneeskunde are given under the responsibility of the Amsterdam University Medical Centres, location Academic Medical Centre, Univ. of Amsterdam (course leader Nico Schellart). The organization is by the Stichting Duik Research (SDR)<sup>1)</sup> and Biomed. Eng & Physics, AMC (Prof. Dr. A.G.J.M. van Leeuwen, director).

**Announcements**

Ongoing announcements about future courses can be found at [www.duikresearch.org](http://www.duikresearch.org) or are communicated by E-mail.

<sup>1)</sup> SDR is a non-profit organisation aimed to promote dive safety. Work for SDR is done voluntarily.  
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# Symposium

## Een halve eeuw Stichting Duik Research Half a century Stichting Duikresearch

### Programma

9:30 Ontvangst (Welcome)

Dagvoorzitter: **Dr. Bernadette de Bakker**

10:00 10.05 Opening

10.05 - 10.45 **Nico Schellart** Een halve eeuw onderzoek van de Stichting Duik Research (Half a century *Research* by Stichting Duik *Research*)

10:45 - 11.30 **Jean-Claude Le Péchon**. Diving in very unusual environments.

11.30 - 12.15 **Rienk Rienks** Duikcardiologie in heden en verleden (Diving cardiology in past and present)

### Lunch

13.15-14.00 **Didier de Bakker** Teloorgang van het koraalbiotoop (Downfall of the coral biotope).

14:00-14.45 **Martijn Manders** Duiken ten dienste van de mariene onderwater archeologie (Diving at the service of marine under water archaeology).

### Pauze

15:05-15.50 **Mattijn Buwalda**. Anatomische en fysiologische adaptaties van duikende zoogdieren (Anatomical and physiological adaptations of diving mammals)

15.50 Feestelijke toespraakjes

### Receptie

Accreditation (4 c.p.): NICDA, NVAB, VSG

Language: most lectures in Dutch, all slides in English

## The lecturers



**Didier de Bakker, PhD**, studied biology at the University of Amsterdam and completed Master Limnology and Oceanography in 2014. Since 2012, he has been studying various aspects of coral reefs, and principally its recent large-scale degradation in relation to the increasing anthropogenic impact. In April 2019, he successfully defended his doctoral thesis titled: “40 years of change on the coral reefs of Curaçao and Bonaire”, at the University of Wageningen and in Collaboration with the NIOZ. Besides his work-related diving activities he has been an active recreational diver since 2006 and PADI open water instructor since 2011.



**Mattijn Buwalda, MD**, is an anaesthesiologist-intensivist and dive medicine physician, and practises in The Netherlands, Belgium and UK. He is interested in extreme physiology and medicine and has given many lectures in the Netherlands and abroad (see website [www.mattijnb.nl](http://www.mattijnb.nl)). Mattijn wrote dive medicine related chapters about drowning in textbooks, is instructor in wilderness and trauma life support courses which he organized. As a former normoxic trimix CCR diver he lived up to the motto: ‘dive docs should dive themselves’. He is a board member of the Dutch Ned. Ver. v Duikeneeskunde.



**Martijn Manders, PhD, MA** is an underwater archaeologist, head of the international maritime program of the Rijksdienst voor het Cultureel Erfgoed (RCE; Cultural Heritage Agency of the Netherlands) and is associate professor at the University Leiden. During his career of more than 3 decades he did research on Dutch shipwrecks all over the world, for instance the Batavia (1629) in Australia, the Rooswijk (1740) in England and the Hoorn (1615) in Argentina.



**Jean-Claude Le Péchon, MSc, MEng** graduated as biochemical engineer and as marine biologist. from Nice University. He worked at the Musée Océanographique of Monaco and with J.Y. Cousteau and dove to 400 m in a simulation. In 1986 he founded JCLP Hyperbarie, an agency specialized in life support and safety under pressure (commercial diving, space and hyperbaric medicine, and 80 tunnelling projects with saturation technology. He lectures physiology and technology of diving and hyperbaric medicine at universities and international congresses all over the world. He is Instructor (Air, Nitrox and Trimix) and published in scientific journals and textbooks.



**Rienk Rienks, MD, PhD** graduated in medicine in 1981 and was confirmed as cardiologist in 1986 after training in the Utrecht Medical Centre. In 1991 he obtained his doctorate on a dissertation on the applications of lasers in cardiology. He is retired, and works momentarily at the the Centraal Military Hospital in Utrecht, the Military Hospital Queen Astrid in Brussels and the CardioExpert policlinic in Bunnik. His main interest lies in diving, aeromedical and sports cardiology. He is an authority and consultancy on hypo- and hyperbaric cardiology, with many memberships in boards and committees on sports medicine (VSG) and Dutch Society for Cardiology (NVvC) and member of UHMS. He dives almost 40 years, and has Nitrox licence.



**Nico Schellart, PhD, MSc, Assoc. Prof (ret)**, graduated as biologist, specialized in neurophysics (PhD 1973, Univ. of Amsterdam). He studied information processing of the visual and auditory system in the brain by fundamental and clinical research, resulting in some 150 papers etc. After his retirement of the Amsterdam University Medical Centres, he performed lab and field studies in diving and HBO medicine, published in 20 papers and many conference proceedings. He teaches diving physiology, is EUBS and NVD member, tested dozens of dive computers ([www.duikresearch.org](http://www.duikresearch.org)), founded the Capita Selecta Diving Medicine, and is a recreational scuba (Nitrox) and formerly a free diver.

## The lectures

### **Nico Schellart** Half a century *Research* by Stichting Duik *Research*

In the early 1970s the SDR developed and constructed a monoplace chamber, which was extensively used for simulated dives and for visual research (N<sub>2</sub> narcosis at 7.5 ATA). In the 80-ties, visual research was also performed in open water. Later (1990s), the SDR focussed to the examination of the performance of dive computers, with surprising results. In addition, SDR did scientific studies to unmask touch myths circulating once even more than a century in diving medicine. In addition, open sea and dive-simulation studies were performed with Doppler bubble detection and measurements of lung function and air consumption. Finally, SDR organized for nearly 10 years the AMC Capita Selecta Diving Medicine.

### **Jean-Claude Le Péchon** Diving in very unusual environments

Among dives carried out in special conditions, three situations will be addressed:

- High altitude (4500 m) diving with semi closed rebreather. Type of equipment selected, choice of the gas, altitude adaptation, water temperature, decompression issues, etc. ...
- Nuclear diving: Risk assessment, choice of equipment, water temperature, undressing procedures...

Conclusion, when facing a requirement for “extra-ordinary” underwater work, a sound risk evaluation is the key to find out how to perform safely.

### **Rienk Rienks....** Diving cardiology in past and present

About 150 years ago large scale compressed air work started. Much later large scale professional diving started. Under both conditions the focus was on safe decompression. It took nearly a century before the crucial non-physiological performance of the heart (and lungs) were noted. With immersion, there is a cardiac response that evoke an enormous stress that may be deadly with an underlying cardiac disease. The numbers of divers with (subclinical) coronary and conduction disease are growing due to aging. In addition, there is the phenomenon of left right shunts (arterialization of bubbles of the venous circulation). What are the tools of the diving cardiologist to manage and treat these disorders?

### **Didier de Bakker** The challenges associated with coral reef Research

Coral reefs are among the richest ecosystems on earth and have, as such, sparked off particular interest within the recreational diving community. Few divers, however, realize the delicate balance in which these ecosystems exist, or will be aware of the processes underlying the dramatic ecological changes that are currently occurring on reefs worldwide. Besides the struggle to maintain and possibly restore what is left of coral reefs, low-quality diving and research facilities, stubborn politicians, and risky diving conditions are some of the challenges that marine biologists face in their daily routine. Special attention will be paid to the underwater research methods and equipment in relationship to the constrains of safe diving

### **Martijn Manders** Diving at the service of marine under water archaeology

There are strict regulations to perform underwater archaeology by diving at the bottom of the sea. One of the things one needs anyhow is a professional diving licence. Dive safety is a primary prerequisite and this may conflict with the aim of the archaeological work. In the presentation, the research of the Rooswijk, a VOC ship wreck, will illustrate how such work is performed, which dangers are met and which considerations affect the process of the investigation.

### **Mattijn Buwalda** Anatomical and physiological adaptations of diving mammals

Why does the sperm whale (*Physeter macrocephalus*) not suffer from barotrauma, DCS and most importantly hypoxia? He can dive for more than two hours and reach depths up to 4 km. And all this with one set of lungs. This lecture deals with the physiological and anatomical adaptations that make this extreme breath hold dives possible.

## Fees

Physician:	€ 70,-
Non- physician:	€ 30,-

The following Dutch accreditations are included in the fee.

NICDA  
NVAB  
VSG  
Outside own field<sup>1)</sup>

<sup>1)</sup> for GP's, and clinicians..

The fee includes, test, certificate (*only for physicians without Dutch BIG registration*), lunch and drinks and a reception. Receipts are NOT provided: use your registration confirmation or bank transcription.

*Registration implies agreeing with these and additional conditions of the CSD (see also website).*

Registration starts 1 May 2020 by transferring the fee on the bank account of SDR:

NL51 INGB 0000 0337 31 (BIC/Swift INGBNL 2A)

Write on the transfer order under 'description' **your name (with initials) E-mail address and BIG number** (Dutch physicians):

## Hotels

Suggestions for nearby hotels are:

### Hotel Abcoude

Kerkplein 7, 1391 GJ Abcoude  
+31 294 281 271, info@hotelabcoude.nl  
Rooms from ca. 85 €/day  
Bus connection with AMC: no. 120 and no. 126, 2 times per hour (ca. 15 min).

### Hotel Fletcher

Schepenbergweg 50, 1105 AT Amsterdam  
+31 (0)20- 3113670 , http://www.fletcherhotellamsterdam.nl/locatie  
Rooms from ca. 150 €/day  
Walking distance (ca. 20 min in total)

### Further:

Hotel De Witte Dame, Rooms from ca. 120 €/day. <https://www.hoteldwd.nl/>  
Hotel de Goudvink, Rooms from ca. 140 €/day. [www.hoteldegoudvink.nl/](http://www.hoteldegoudvink.nl/)

## Entertainment

Stay one more night for culture and entertainment in one of the most exciting cities of Europe with everything at walking distance.

The **Koninklijk Concertgebouw** (Royal Concert Hall, acoustically the number 1 in the world and for years with the number 1 in-the-world orchestra, the Koninklijk Concertgebouw Orkest)

- (*Ticket should be ordered long in advance*).

The **National Opera** ('Stopera', opera and ballet)

- (*Ticket should be ordered long in advance*).

And many more flamboyant podium art theatres.

## Museums

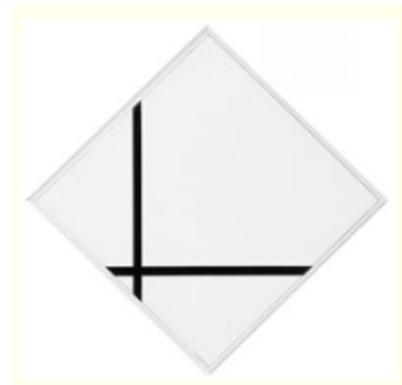
- **Rijksmuseum** (The National Museum), according to various rankings of general museums it belongs with the Louvre to the top 1-2 in Europe.
- 
- **Van Gogh Museum**
- **Stedelijk Museum** (City Museum) with 20 Century Art
- Many more attractive museums.



**Rijksmuseum**  
Rembrandt van Rijn  
*The "Nachtwacht"*



**Van Gogh Museum**  
Vincent van Gogh  
*Self-portrait*



**Stedelijk Museum,**  
Piet Mondriaan  
*Composition with 2 lines*



**Scheepvaartmuseum**



**The Amsterdam Canals**