

### 特別講演 3 SL3

## The History of Research Related Hyperbaric and Diving Medicine at University of Wisconsin-Madison

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The history of research related to hyperbaric and diving medicine at the University of Wisconsin-Madison is rich and varied, showcasing significant contributions to the field. Let's break down the timeline and key developments:

#### 1. Establishment of the Diving Physiology Laboratory (1979) :

The Diving Physiology Laboratory was founded in 1979, marking the beginning of research endeavors in hyperbaric and diving medicine at the University of Wisconsin-Madison.

#### 2. Pioneering Studies (1979–1990) :

Under the leadership of Dr. Edward Lanphier, the laboratory focused on investigating the medical aspects of diving and work in compressed air.

Collaborations with Japanese colleagues, including Motoo Kitano, Mahito Kawashima, and Yasusi Taya, led to groundbreaking experiments on dysbaric osteonecrosis in sheep.

#### 3. Continued Research (1990–2007) :

After Dr. Lanphier's passing, Dr. Charlie Lahner assumed the role of director and expanded research collaborations, particularly with the U.S. Navy.

Studies on dysbaric osteonecrosis and respiratory decompression sickness were conducted, with a special emphasis on developing decompression tables for submarine escape and rescue.

#### 4. Focus on Oxygen Pre-Breathe (2007–2010) :

Dr. Aleksey SOBAKIN took over as the project leader, with a major focus on Navy grants to study oxygen pre-breathe (OPB) before decompression from significant depths.

Research findings indicated that oxygen pre-

breathing could mitigate dysbaric diseases in sheep undergoing hyperbaric exposure, including dysbaric osteonecrosis.

Challenges arose from ethical concerns raised by PETA, leading to a two-year investigation that ultimately cleared the research team of any wrongdoing.

#### 5. Exploration of Decompression Strategies and Injury Mechanisms (2010–2022) :

The laboratory delved into the development of protective decompression strategies following saturation dives, utilizing a sheep model.

Advanced imaging techniques such as diffusion tensor imaging (DTI) MRI were employed to detect central nervous system decompression injury.

#### 6. Closure of the Diving Physiology Program (2022) :

Unfortunately, the Diving Physiology Program came to an end in 2022 due to the university's decision to demolish the Biotron building, where the hypobaric chamber was located.

Loss of the facility resulted in the discontinuation of research activities, including financing from sponsors like the U.S. Navy.

Despite the closure of the program, the University of Wisconsin-Madison's contributions to hyperbaric and diving medicine remain significant, reflecting a legacy of pioneering research and dedication to advancing scientific knowledge in the field.