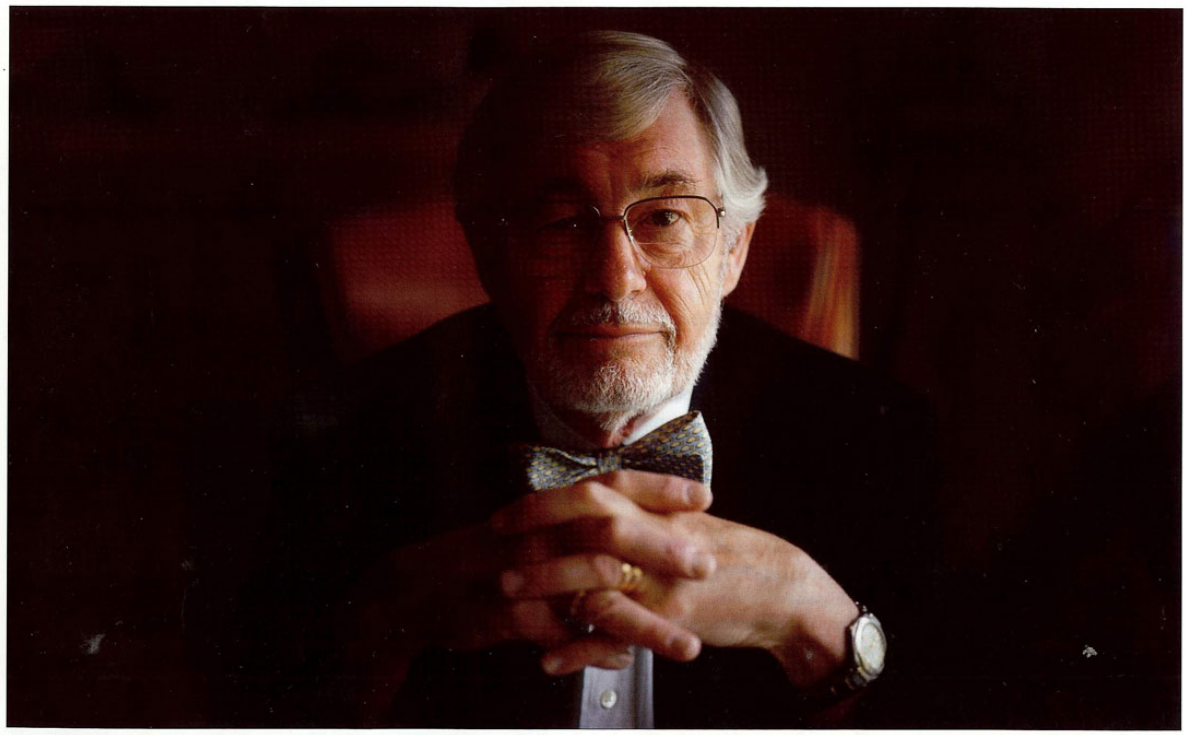
# Nobel Biocare NEWS

Information for the Osseointegration Specialist

Issue 1/2011

# The Titan of Titanium

**Professor Per-Ingvar Brånemark grants a rare interview.**

**Science is what you know. Philosophy is what you don't know. Per-Ingvar Brånemark remains interested in both.**

*By Frederic Love*

At its annual inventor awards ceremony this spring, the European Patent Office (EPO) presented Professor Per-Ingvar Brånemark with the organization's lifetime achievement award for his discovery and development of osseointegration.

Regarded as the most prestigious prize for European inventors, the award went to Brånemark because, "During the course of his career, he has continued to refine his approach into what has become the gold standard of dental implantation globally—the method of osseointegration." According to the EPO, "more than eight million people have benefited from Brånemark's landmark methods," since he treated his first osseointegration patient, Gösta Larsson, in 1965.

## Serendipity and hard work

I met with Professor Brånemark recently, not far from the University of Gothenburg, Sweden, where he has worked most of his life. When I asked about the award, he replied simply, "I have received quite a few prizes and awards over the years, but this beats everything else. It represents recognition from colleagues and laymen alike that my method has already helped an enormous number of people. What greater commendation can a scientist hope to receive?"

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# Innovation on a Firm Foundation

**NobelReplace® evolves**

*By Frederic Love*

Suitable for both experienced restorative clinicians and surgical implant users, NobelReplace has evolved into two new versions, both of which retain the key innovations of NobelReplace Tapered.

These features include the tapered implant design, of course, which facilitates high initial stability. They also include the standardized step-by-step drilling protocol, with its straightforward surgical kit, and the color-coded surgical and prosthetic components, all of which help to reduce placement time by enabling the rapid and safe identification of all components.

NobelReplace Conical Connection (CC) has been designed to

more on pages 3–5

**NobelReplace** Platform Shift and Conical Connection.

# Strength of Mind and Character

*By Richard Laube, CEO*

We have come a long way since the 1950s, when a young researcher in Sweden observed that the human body would not only tolerate titanium, but also integrate it into living tissue. Nevertheless, without that young man's curious mind—and admirable tenacity—we'd be nowhere.

The titanium implants used routinely today only exist because of the pioneering work of Professor Per-Ingvar Brånemark. We now have these remarkable objects at our disposal because he was prepared to challenge the conventional wisdom of the times, and demonstrated the determination to systematically document the evidence he needed in order to prevail over well-established opposition.

Since those early days, osseointegrated titanium implants have revolutionized the fields of dental, maxillofacial and orthopedic rehabilitation.

Based on his original findings, innovative bone-anchored restorative solutions have improved the quality of life for millions of people around the world. At Nobel Biocare, we're proud to follow in his footsteps, providing you and your colleagues with evidence-based products that are validated by scientific and clinical research. I trust you'll enjoy the interview with Professor Brånemark that begins here to the left on this page. <

## In this Issue


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## From the Editor

*Nicolas Weidmann*
*Senior VP Global Communications*

After a decade-long hiatus, we are proud to resume the publication of *Nobel Biocare News*. In this first issue—and every issue that follows—we intend to introduce innovations and disclose trends, as we share the stories and experiences of our readers with the global dental community.

### The patient first

From the very beginning, back when Nobel Biocare was known as Nobelpharma, the company has maintained a determined commitment to develop and support evidence-based treatment modalities. This is still the case today. We promote our products and services for the same reasons you choose them: for the benefit of your patients.

This is not an expression of altruism. Ensuring the best interests of the patient makes our business a viable enterprise and your clinic a secure place to practice dentistry.

The editors want *Nobel Biocare News* to be *your* newsletter as well as ours. If there is an insight you would like to share with your colleagues or a topic you would like us to explore, please *do* get in touch.

We're looking forward to the exchange of ideas! <

Nobel Biocare

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**Editor-in-Chief** Nicolas Weidmann
**Managing Editor** Frederic Love
**Production Manager** Jim Mack

**Editorial offices**
Nobel Biocare News
Herdevägen 11
702 17 Örebro, Sweden

Telephone: +46 19-330680
Telefax: +46 19-330681
E-mail: news.editors@nobelbiocare.com

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# The Titan of Titanium

**Exclusive interview with Per-Ingvar Brånemark, continued from the cover**

He has come a long way since those early days in the 1950s when, as a young researcher, he was completely absorbed in the study of the anatomy of blood flow.

As part of that work, he attached a titanium-housed optical component to a rabbit's leg, which made it possible to study microcirculation in the bone tissue through specially modified microscopes. The work at hand was completed successfully, but when it came time to remove the metal-framed optics from the bone, Brånemark famously discovered that the bone and the titanium had become virtually inseparable.

"Not long afterwards," Brånemark said, "we changed the direction of our work to investigate the body's ability to tolerate titanium."

### Multidisciplinary enterprise

To gain a proper understanding of what he would later call "osseointegration," Brånemark recruited experts from other fields—such as physics, chemistry and biology—to his quest. Physicians, dentists and biologists all joined the effort. Together they developed diligent, methodical techniques for the insertion of implants. At the same time, engineers, physicists and metallurgists studied the metal's surface and how the design of the implant might have an effect on bone healing and growth.

For the best part of two decades, Brånemark faced opposition from the medical establishment in his native Sweden. "Our findings that the body would accept titanium over the long term, and even allow it to integrate in bone, flew in the face of conventional wisdom," he explains. "Theorists' textbook opposition asserted that our implants would trigger initial inflammation and would ultimately be rejected by the body's immune system."

The 1960s were trying times for Brånemark. Funding from Swedish research organizations dried up, yet he persevered. With his physician's certification at stake, he repeatedly demonstrated the accuracy of his claims and the viability of osseointegration. Finally, in the mid-1970s, the Swedish National Board of Health and Welfare approved the Brånemark method.

To reach beyond the world of the university clinic, Brånemark looked for an industrial partner. "I chose Bofors, an antecedent to Nobel Biocare, because they were one of the few companies who knew how to machine titanium," says the professor. Thus a long-term relationship began.

Over the years, this relationship has had its ups and downs, but both parties have benefited from a long-term devotion to the support and practice of good science. When I asked Brånemark what characterizes good science for him personally, he responded thoughtfully.

"Good science is all about good method. Making observations, collecting facts and data and creating a hypothesis to explain what you've seen—it all starts there. Then you have to deduce the implications of the hypothesis and put the implications to the test. It is very important that all data be considered, not just those that support your ideas. Finally, you have to subject your findings to peer review. At the end of the day, there may be no 'final' truth, but in our field, a valid hypothesis will inevitably lead to practical achievement as it stands up to the scrutiny of other researchers in the field."

As successful as Brånemark has been as a scientist, he has also been successful as an evangelist for the "good news" of osseointegration. When I point out that people listen to him, and ask why, he responds with a smile on his face.

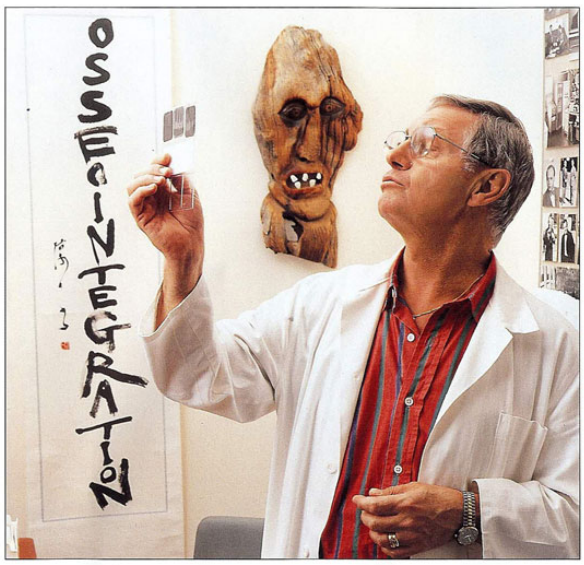
"They listen to me because I know what I'm talking about. Before treating the first patient, I had accumulated more than ten years of experience in the lab, for example. I don't rush to conclusions, and I think people appreciate that."

### Followers everywhere

I follow up with the question, "How much of your success can be accounted for by such personal characteristics as perseverance—stubbornness, if you will—and how much by the apostles you recruited around the world?"

"One person alone can't have much impact on the world. I've been privileged to meet and collaborate with some extremely talented people over the years. In addition to all the dental and medical students who have passed my way, I had something like 44 doctoral candidates at the University of Gothenburg over the years, and almost all of them taught me as much as they learned."

Per-Ingvar Brånemark has coined many words and phrases that have become commonly used terms in dentistry. "Fixtures", "anaplastology" and "osseointegration" come immediately to mind, of course. When he introduced the concept of the "third dentition," Brånemark got thousands of professionals to start thinking of implant-based solutions not as "false teeth" but "total rehabilitation."




**Per-Ingvar Brånemark:** "It is very important that all data be considered, not just those that support your ideas."

"I chose these words because I found them succinctly descriptive. There's a beauty in language like that. I certainly didn't anticipate how widely they would be accepted, but was pleased, of course, to see how quickly they gained traction in both scientific literature and clinical communication."

When asked to comment on the practicalities of cooperative efforts between science and industry, Brånemark takes the high ground. "We have always needed each other's expertise and have generally enjoyed a symbiotic relationship. In an ideal world, maybe talented scientists would also be gifted production engineers and marketers; and maybe industrialists would be able to see beyond the bottom line; but in the real world—in order to achieve our goals—we each do what we do best and turn to others with complementary skills for help with the rest."

To the question, "Do you think that Nobel Biocare has succeeded in being a good steward of the trust that you long-ago established among dentists?" Brånemark replies: "I think I see a company today that wants to build on its scientific heritage. Together we ushered in a new era, but we all have to remember to respect the molecules. Our method stands for reconstructive biology, not carpentry." Looking toward the future, he adds, "I'll be very happy if Nobel Biocare keeps the rigorous scientific philosophy of the early years alive in its corporate culture."

### Eye on the horizon

While we're on the subject of the future, I ask, "What's next?"

"If you'll allow me to speculate a bit, I believe that we may be on the threshold of a paradigm shift in the professions we practice. Once we realize that biology—especially immunology—lies at the heart of both modern dentistry and medicine, I think we'll start educating dentists and doctors along similar lines at the same institutions. Perhaps the traditional partitions between them will even disappear altogether in the next generation or two."

"As far as my own research is concerned, I see great strides being made in the area of osseoperception, whereby bone-anchored prostheses transmit information that can be intuitively interpreted via the central nervous system. I have patients with osseointegrated limbs, who can actually 'feel' the texture of the rugs on which they're walking today. This aspect of osseoperception is a bountiful field for further research."

Eighty-two years-old and still full of enthusiasm for the work at hand, Professor Per-Ingvar Brånemark remains the best known personality in the world of osseointegration to this day. He has certainly earned the title, "Father of modern clinical implantology." <