infection with inflammation. It has communities of microorgan-
isms, which raises interest in terms of inflammation reaction and the
microbial burden in fields like card-

ology and obstetrics. This means
we all have a common interest in the

aetiological factors.

What information does current research
give us about the microbiological interac-
tions in biofilm?

One first has to understand that
this is not simply about a small
group of bacteria, but perhaps about
the total microbial burden and the
immune reaction to this burden. For
example, Streptococci are early colon-
iser bacteria that might play a role
in other diseases. In the field of peri-
dontology, we haven’t paid much
attention to this thus far.

Do you see a need for improved coop-
eration between dentistry and medical
science?

I already work with cardiologists
and gynecologists at the University
of Seattle and with physicians from
Sweden and Bern in Switzerland
because as a dentist, I have micro-
biological information they may not
have. You see, there is close cooper-
ation in the fields of periodontology, immuno-
ology and social behavior.

Despite this cooperation, we may
be too late in some cases. Periodon-
tal treatment of a 70-year-old patient
will yield no improvement, but we
might be able to treat 50-year-old
patients with the help of a special diet
and improved oral hygiene, or with
antimicrobial and anti-inflammatory
treatment methods that influence
cardiovascular conditions.

I also see a lot of potential in
cross-sectional intervention studies.
In these studies we observe healthy
and sick patients and examine their
dental conditions and the way in
which these conditions and other
medical conditions change because of
treatment.

Can you give an example?

One could look at epidemiologi-
cal studies of Jönköping County
(a province in Sweden), conducted
from the 1970s until today. In 1970,
almost 80 percent of the county’s
residents had some form of perio-
dontitis, and a rather small num-
ber, about 15 percent, suffered from
severe periodontal disease. The
first group of people do not have
periodontitis nowadays, which indi-
cates a significant change over the
last 50 years. However, the group
with severe periodontitis has not
changed.

Why is that?

In my opinion, because of the
Swedish health care system. Patients
with periodontal disease underwent
treatment, but in the group with severe periodontitis, these methods
were not successful.

Current methods in periodontol-
yogy are not sufficient in my opinion.
Mechanical treatments, such as scal-
ing and root planing, are not able
to remove bacteria in patients that
already have symptoms of disease.
It could be that these treatments do the
opposite, and cause coronary embo-
lism. In addition, there is immune
reaction.

There are two studies, conducted
in Australia and the United Kingdom,
that observed blood circulation in
the arms and found that the level of
a certain protein increased shortly
after periodontal treatment (between
2 mg/l and 15–20 mg/l). The levels
decreased after a while, but they did
not return to normal. Therefore, the
separation did not result in the elimi-
ation of infection factors and thus
wasn’t successful in my opinion.

One cannot expect to treat patients
with risk of cardiovascular disease or pre-
term birth successfully because the
studies show that the risks basically
remain the same.

We generally need more knowl-
dge of the relationship between
and the role of microorganisms and
immune defence systems. In addi-
tion, there are socioeconomic and
family factors that we cannot influ-
ce at all. My hope is that politicians
put more effort into supporting joint
academic research between dentistry
and medical science.

Is there a lack of support for such
research?

I think there are enough funds
available for medical research, but
it is very difficult for dentistry to
compete with medical science in that
respect because it is a smaller dis-
cipline. But improved cooperation
between medical science and den-
tistry could reduce the risk of preterm
births and cardiovascular diseases.

Another interesting aspect is the relation-
ship between tooth implants and periodon-
tal inflammation or the so-called peri-
implantitis.

Implants are very interesting as a
replacement for natural teeth, but we
do not know much about the mecha-

isms between peri-implantitis and
systematic diseases. We do know that
Staphylococcus aureus, for example,
sticks on titanium inside biofilm,
and causes inflammation, which was
proved in medical studies involv-
ing titanium prosthetics in hand and
joints.

In my opinion, because natu-
real teeth and implants are not the
same, conditions for the colonisa-
tion of bacteria on implant surfaces
are different from those of teeth. It
is also much more difficult to clean
an implant. The problem is that the
industry propagates very high suc-
cess rates of their products, which is
too short-sighted in my opinion.

Why?

In Sweden, for example, all joint
implants have to be official. We regis-
tered. Therefore, one knows exactly
how many have been implanted, and
how many of those were successful.

In dentistry, such a list does not exist,
and we therefore do not know how
many implants have been successful
thus far.

In addition, it must be noted that
it takes 20 years for natural teeth
to develop periodontitis. The first
implants are about 20 to 50 years
old, and only now can one see how
they have developed. At first, only
patients without risk of peri-implan-
titis received implants; yet, all den-
tsists worldwide can plant implants,
even if he or she is not qualified.

There are certainly ulterior motives
involved here, and it is apparent
that some research is being done on
received implants at all. There is
much potential for mechanical and
technical failure. But how does one
separate correctly treated patients
from patients that suffer from infec-
tions, inflammation and pathogen-
eses? In this case, analysis was not
very accurate.

This issue will continue to be of concern
to dentistry. What can be done?

In Bern, we have been using the
same implant system for years. About
1,000 implants were placed in the
last 10 years, so we have a follow-
up time ranging from five to seven
years. After such a period, one can
conclude how successful treatment
was through microbial, ethnological,
clinical or socioeconomic studies
that determine the success of a treat-
ment.

Multiple center studies could
also help to identify different
mechanisms, and help us choose
patients with minimal risk or no risk
at all of implant failure. Then we
might be able to find methods to treat
peri-implantitis. It helps to also
have to consider antibiotics and anti-
flammatory compounds. Cleaning
implants with hand instruments and
toothbrushes at home isn’t enough.

What role can the industry play?

This is a very interesting ques-
tion. I recently discussed this with a
colleague from Stockholm, and we
both agreed that fluoride toothpaste,
developed mainly by the industry and
not by universities, was the biggest
development in the 1980s and 1990s.
This example shows that research
conducted by the industry can be
very successful.

Personally, I see no problem in this
because implant companies make a
lot of money and should be respon-
sible for putting some of their funds
into research institutes, instead of con-
stantly developing new implant sys-
tems. This could lead to a better
understanding of the mechanics of
successful implants and implants that
fail. It will be up to governments and
health authorities to introduce con-
trol mechanisms for these processes.