Gilles Lavigne

Let's begin with a synopsis of your familial and educational backgrounds, reasons for career choices, and individuals who may have influenced your decisions to become what you are today.

I am the fifth of a family of 6. I grew up in a small town at the border of Québec and Ontario in Canada. The town was bilingual, French and English, the population a mixture, with citizens from Germany and Eastern Europe. Many of these multicultural neighbors became my patients when I graduated as a dentist.

I spent my teenage years sailing during summer and fixing snowmobiles that I raced on Sundays during winters. I was also the troubleshooter at the mechanical shop! This was a precursor of my actual practice in oral medicine and my research career: finding the causes of problems.

Between college and university I was an assistant at the "international office" of Radio Canada (French CBC). During those years I was in charge of hosting guests from Europe. This was "centuries" before September 11th since I was authorized to greet the guests directly at their planes and go through customs without any questions! Times have certainly changed.

During the long summer of 1973, I had to choose between dentistry and landscape architecture since I was accepted in both programs. The choice was between being creative in providing health care or designing new environments to improve quality of life! Finally, pragmatic reasons drove me toward dentistry, including the wish to be my own boss. After a first year immersed in plaster and wax, I entered the second year with enthusiasm: courses in occlusion and oral function, oral pathology, and pharmacology. During that year, a prosthodontist trained in Ann Arbor, Michigan, Dr Louis-Philippe Lemay, introduced me to one of his dreams, one wherein dentists should be able to rehabilitate patients with compromised oral function to prevent pain and discomfort, to manage pain, etc. It is with such an ideal that I completed dentistry at Université de Montréal in 1977. With a group of young dentists, physicians, and pharmacists, we built a new health center to offer more integrated care to the population of my 'home' town. I worked 4 days a week in private practice and maintained a 1-day-a-week link with the Faculty of Dentistry as a clinical teacher in periodontics and occlusion. After 3 exciting years in private practice, I decided it was time to start training in research, a longstanding dream. I completed a master's degree in neuroscience under the supervision of Professor James Lund, a young dentist/scientist at that time with an outstanding profile in oral neurosciences. During those years I continued to practice a day per week. This period was followed by a postdoctoral exposure to the neuropharmacology of pain and clinical research at the US National Institutes of Health with Raymond Dionne and Ronald Dubner. While completing my postdoctoral training at the NIH, I also pursued a specialty in oral medicine at Georgetown University, Washington, DC, under the supervision of the outstanding late clinical mentor, Dr W. Bottomley. Finally, a PhD was completed at the Faculty of Dentistry of the University of Toronto under the supervision of Professor Barry Sessle, a remarkable scientist in pain and motor control. The thesis was on the neurobiology of sleep bruxism and was done on both humans and animals.

Over the years, I felt some European exposure would offer a new perspective on applied research. In the late 1990s I was invited by the Italian government to San Raffaele Ospedale, Milano, as a scientist to carry out experimental studies on perception of pain during sleep with the neurologist Marco Zucconi.

As a clinical scientist over the last 17 years, I have received the generous support of my institution, the Université de Montréal: research space and staff and more importantly, time for research (3 to 4 days a week). During these years 60% to 75% of my salary was covered by a fellowship from the Fonds de la Recherche en Santé du Québec. Without this assistance my research development and productivity would certainly have been very different.

At the Hospital du Sacré-Coeur de Montréal, my colleagues and I were given a full floor of a hospital wing to develop the Sleep Disorders Research Team. The director is Professor Jacques Montplaisir, a psychiatrist and neuroscientist. The research team at the hospital is composed of 2 physicians (psychiatry and cardiology),

5 psychologists, and myself as a dentist-neuroscientist. I finally had a dream fulfilled; I obtained space in the hospital to run my own sleep laboratory. Most of our research projects are supported by the Canadian Institutes of Health Research.

In summary, research assistance, time allocated for research and reimbursement of my salary to the faculty, space to develop projects and space for student study rooms, alliance with other sleep researchers, and hospital facilities contributed to the productivity I maintained over the years.

How has your sense of scholarship coalesced and focused over the years? Can you comment on your major influences over the years and their relationship to your personal objectives?

The decision to devote my energies to research in "applied dentistry" was taken when I was in the second year of dentistry but was reinforced by my private practice experiences. So many questions were left without sound supporting evidence from experimental and clinical sciences.

Although my actual academic life is mainly dedicated to experimental clinical research, I maintain a pain–oral medicine practice 6 to 8 hours per week, focusing on unusual pain, movement disorders, sleep apnea, and bruxism. My research interests were naturally influenced by the close contact I maintained over the years with the reality of clinical dentistry. I also realized very rapidly that the training in oral medicine and the hours spent in clinical psychiatry during my postgraduate training were highly valuable for "navigation" through complicated complaints and medical history from chronic pain and dysfunction patients. Moreover, the most enriching learning experiences came from the close research collaborations with neurologists, pneumologist-respiratory physicians, psychiatrists, ENT specialists, and dentists. Dentists who worked in my laboratory were important collaborators in studies on oral devices made for pain, bruxism, and sleep apnea. One important aspect of my mentorship style is to consider the undergraduate and graduate students as the most important "raison d'être" of my academic life, they are the absolute priority!

One bit of advice I hope my students remember over the years of collaboration with me is to challenge their experience and knowledge with those of other dentists, health professionals, and scientists. The multidisciplinary nature of dentistry should "guarantee" an avoidance of isolation.

What ideas and scholarship initiatives of others have you gleaned most from and regard as "raising the bar" in our discipline?

In 2003 I was an invited to be the James Fairfax Visiting Professor in Prosthodontics at the University of Sydney. I was impressed by the "applied" research of Drs Klineberg and Murray, who had full-time research assistants and engineering support from their university. To my knowledge, the only other prosthodontics department that had such facilities is the University of Zurich, where Dr Palla has a strong technical and engineering team to support technical development in applied prosthodontics. I realized that such support provides innovation and new ways of approaching clinical problems. However, in both universities my prosthodontist colleagues were under an intense teaching load, which continues to be an enormous challenge worldwide in clinical education of dentistry. I do strongly believe that the universities that will be able to devote direct support to clinician scientists in dentistry, including time, space, and research staff, will be the ones that will attract the best brains and that will have a major impact in the development of new knowledge. An approach such as this will enable prosthodontics to ascend to the leading ranks of scholarship and important research grants. Consolidation of expertise and multidisciplinary exchanges are mandatory to impact the future knowledge and care delivery. We in dentistry need to open our doors further, to export our knowledge and be able to import the best of other therapies and ideas.

What is your assessment of today's educational trends or even fashions in dentistry?

Today's dental education needs to be more integrated. Patients rarely present a single or simple problem. Although not all cases are excessively complex, patients request and deserve that dentists guide them in the planning and management of the maintenance of their oral health through the aging process and the various periods of life: stress of work, babies, diseases of relatives or parents, situational adjustment periods, etc. I do strongly suggest to young clinicians and to dentists with experience to continue to learn more about dentistry and new discoveries, more about human diseases and oral medicine, more about personality disorders, mood alteration and psychiatry, more about rapid changes in our societies and its values… And, obviously, more about sleep medicine, since sleep represents a third of our patients' lives and dentistry's role in management of sleep bruxism and sleep apnea is important.

Another aspect is surprising about dentistry. We tend to believe in one product or single treatment philosophy. The best device (eg, implant or splint design) for a patient needs to be chosen according to best evidence and not based on the influences of the strongest marketing strategies. As is the case in medicine where several medications are available to treat a given problem, the art and skill of the oral health clinician is to select the best treatment according to patient condition and the evidence available.

The future of our career is directly dependent on a better integration of knowledge derived from clinical experience with evidence-based dentistry.

Regarding prosthodontics specifically: What, in your body of work, including current work or research, are you most proud of? How would you prefer to be remembered?

Prosthodontists were the first ones to understand the relevance of our work on sleep bruxism. I am very grateful to them for such insight and vision. Moreover, they rapidly felt that knowledge on other sleep disorders, such as sleep apnea, needed to be integrated in the understanding and treatment planning of their patient's comprehensive needs.

I am most proud of my contributions to the *(1)* validation of criteria to recognize and score sleep bruxism; *(2)* demonstrations that sleep bruxism is secondary to a cascade, a sequence of physiological events before teeth get in contact; *(3)* experimental clinical trials with medications and oral devices to better understand the mechanism of sleep bruxism and its management.

My hope is that I will be remembered as an open-minded clinical scientist who devoted his energy to improving the understanding of oral function and dysfunctions for the best management of our patients' needs. Additionally, I hope to be remembered by my students for my role as a mentor for whom patient well-being was a priority along with scientific excellence. Finally, I also hope to be remembered as a promoter of dentists' pride in their professional role as the best of oral health specialists.

Is there anything about your career you could have done differently? What is your advice to the young would-be prosthodontic scholar?

I do not think that I would do anything differently. I am not a person who regrets the past but would instead look toward the future and make decisions based on past experience, in harmony with my environment (my family, colleagues, students, and patients).

The nicest and most intense aspect of dentistry is the time we can take with our patients (in contrast with medicine, in which our colleagues have sometime less than 5 minutes per consultation with patients). The most rewarding aspect after a long consultation with a patient suffering of chronic pain is to see the emergence of a smile and shining eyes! Their hope that something may get better and that if their problem is not resolved at least some clinicians may be able to help them cope with the situation and redefine their expectations. Every dentist who believes in his profession will personally grow with his patients.

Any particular advice for the young clinical academic?

- Remain sensitive to creativity and innovation.
- Be critical of "dogmatic preachers"; avoid following their direction literally, since most of their knowledge is not trendy anymore.
- Evidence-based dentistry is great, but do not forget common sense in treating your patients and planning your research projects. You are the ones who will generate new evidence, so be open to novel avenues and ideas!
- Seek exchanges with other health clinicians and scientists. You will grow faster and "bigger." Dentistry is one element of a health system; it needs better integration with other disciplines.
- Keep studying psychological and social evolution of the population.
- Promote translation of new knowledge to clinicians and to the community.
- Keep time for yourself and family: Priorities need to be set according to your values, not the values of the marketing companies or "Institutes of High Skills with Lean Science."
- Have your students' training needs on your priority list. Their progress is the greatest reward on a daily basis. Our students will pursue our mission, a better oral health for the society.