

## **Dr. Limor Avivi-Arber**

### **Title**

Brain Plasticity: The Basis for a Paradigm Shift in Oral Rehabilitation

### **Abstract:**

The brain has a remarkable capacity for structural and functional neuro-plasticity throughout life. This capacity is a crucial brain mechanism that determines a subject's ability to adapt (or maladapt) and learn (or not) new sensorimotor skills in an experience-dependent manner, or relearn old skills following injury. After many years of basic neuroscience research, neuroplastic principles have been translated into clinical evidence-based practice and novel treatment approaches have harnessed adaptive neuroplasticity to enhance functional recovery following limb injury. Regrettably, current oral rehabilitation practice is largely based on biomechanical concepts utilizing dental prostheses and implants instead of neurobiological principles which may explain why many patients maladapt to the dental treatments. This lecture will present current knowledge of neuroplastic principles and their clinical implications to oral rehabilitation.

### **Learning Objectives**

1. Increase awareness and understanding of the basic principles that govern cortical neuroplasticity
2. Understand the sensorimotor recovery following intraoral intervention including tooth loss and oral rehabilitation is a learning or relearning process supported by cortical neuroplastic mechanisms
3. Appreciate the need for incorporating oral neurophysiology studies into current dental curriculum and needs for funding basic neuroscience research

### **Biography**

Dr. Avivi-Arber completed a BSc (Med&Pharm) and DMD at the Hebrew University in Jerusalem, and then a MSc, Prosthodontic diploma 1994 and PhD (Neuroscience) at the University of Toronto. She is currently a full-time Assistant Professor, Departments of Prosthodontics and Oral Physiology in the Faculty of Dentistry at the University of Toronto. She is also a member of the ICP Board of Councillors and an IJP Associate Editor. Her basic science research activities have been supported by the Canadian Institutes of Health Research, the U.S. National Institutes of Health and University of Toronto internal funds. Her research focuses on elucidating brain neuroplastic mechanisms associated with altered orofacial sensory and motor functions in clinically-related animal models including models of tooth loss and dental implant treatment. Her hope is that with better understanding of CNS mechanisms governing orofacial sensory and motor behaviors we will be able to develop improved preventative and curative management of maladaptive behaviours related to tooth loss and oral rehabilitation.