

Dr. Richard Bélanger is full professor in plant pathology, head of the Department of Plant Science and holder of a Canada Research Chair in plant protection at Laval University. His research endeavors concentrate on the development of biological and non-chemical approaches to control plant diseases. Along those lines, sustained efforts have been devoted to the study of the prophylactic properties of silicon (Si) against plant pathogens with a special emphasis toward understanding the elusive properties of Si as it interacts with plants. His group was the first one to propose as early as 1992 that the mode of action of Si extended beyond a mechanical barrier through the stimulation of plant defense reactions. This concept is now widely recognized and has been validated in a large number of plant-pathogen and plant-insect interactions. His group has recently shown that silicon would interfere with fungal effectors thereby preventing plant recognition. Additional efforts have led to the first full transcriptomic analyses of plants' responses to Si amendments under conditions of pathogen stress. These results led to the conclusions that Si benefits were significantly more manifest when a plant was exposed to a stress. In recent activities, Bélanger's team has been investigating Si transporters and absorption in plants in order to optimize the application of Si through a better understanding of the genetic predisposition of plants to absorb the element.